

Mushroom Fund

Annual Report 2019/20

About Hort Innovation and the Mushroom 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 mushroom R&D and marketing levies, together with Australian Government contributions, into key initiatives for growers, through the Hort Innovation Mushroom Fund. We're extremely proud of the work we do to help drive productivity, profitability and demand for mushroom growers, and for the horticulture sector at large.

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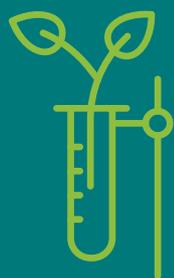
About the year

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.

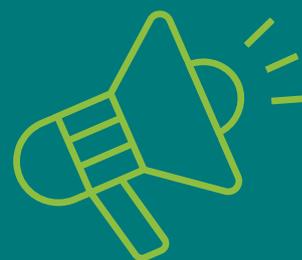
Through it all, though, activity in the Hort Innovation Mushroom Fund remained strong. While some activities inevitably changed under COVID-19, it was still a solid year of investment. There was some \$2.19 million invested in R&D for the industry (including into five new projects), plus more than \$2 million in marketing. Read on for an overview of what was delivered.

2019/20 Mushroom Fund snapshot



\$2.19M

invested in R&D



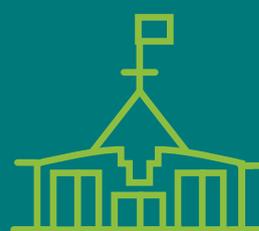
\$2.08M

invested in marketing



25

active R&D
investments



\$4.95M

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

Did you know?



**70,000
tonnes**

The Australian mushroom industry produced around 70,000 tonnes per annum over the five years to 2018/2019



7%

Production value increased at an average annual rate of around seven per cent in the five years to 2018/19



35%

Victoria is Australia's main mushroom-producing state, growing 35 per cent of total production volume, followed by New South Wales at 31 per cent

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.



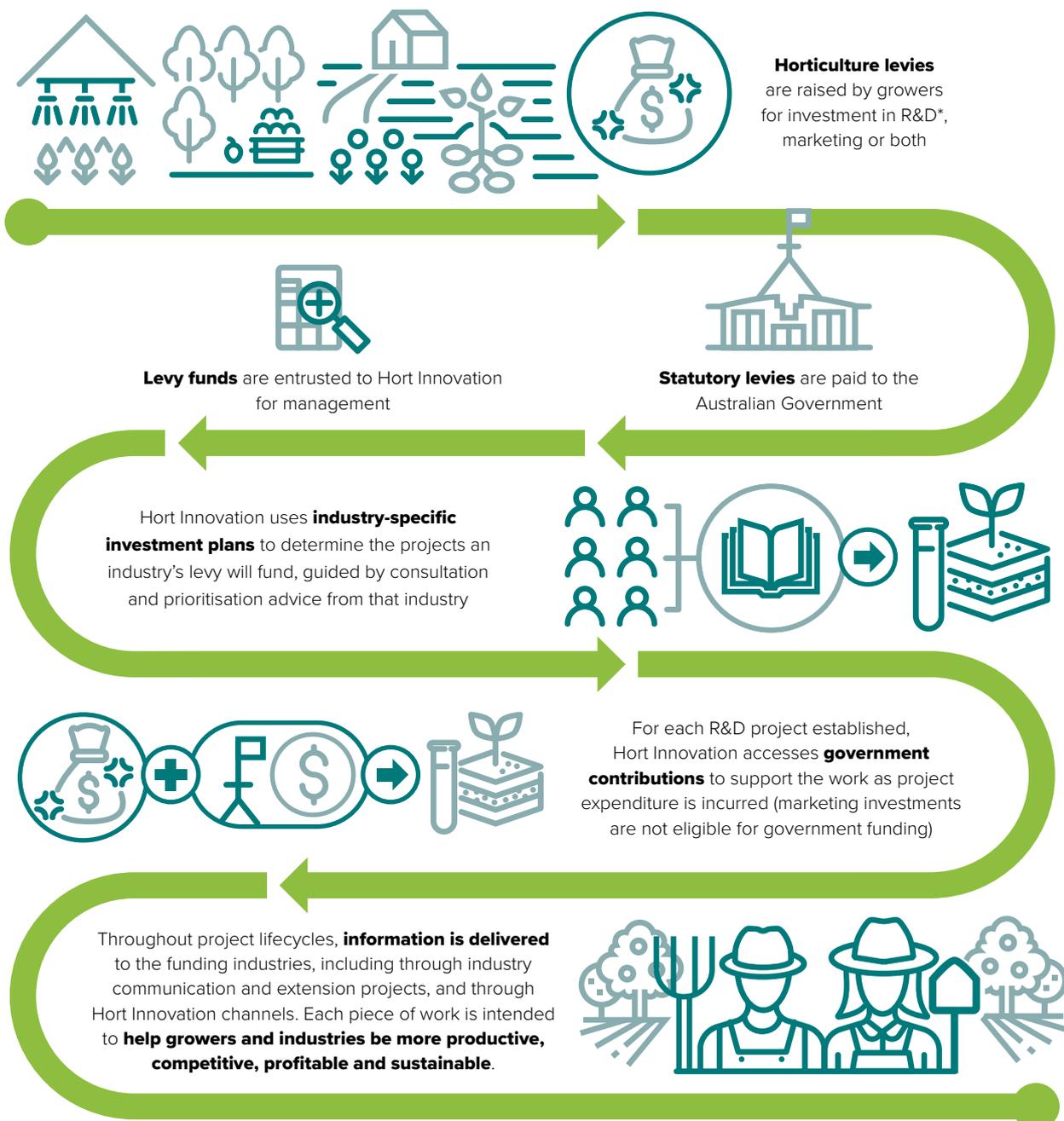
Just some of the things delivered for you during the year:

- ✓ **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)*
- ✓ **The industry communications program**, delivering the *Australian Mushrooms Journal*, *Industry Update* emails and more (p11)
- ✓ **AGORA**, which is the industry's knowledge database for pest and disease management (agora.australianmushrooms.com.au)
- ✓ **A wealth of information about the health benefits of mushrooms**, used to educate health professionals with evidence-based claims, which included sharing the benefits of 'tanning mushrooms' – exposing them to UV light to increase their vitamin D content (www.bit.ly/tan-mushrooms)
- ✓ **The mushroom Harvest to Home dashboard** providing regular household purchase data and insight reporting, at www.harvesttohome.net.au
- ✓ **Climate change adaptation and mitigation case studies** from around the world for the mushroom industry to consider, available at www.bit.ly/mu17008
- ✓ **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 Mushroom 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 mushroom R&D and marketing levies were invested this way during the year, guided by the Mushroom Strategic Investment Plan and advice from the industry’s investment advisory panel.



* Encapsulating extension and international trade

To learn more about funding specific to the Hort Innovation Mushroom Fund, visit www.horticulture.com.au/mushroom. 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 Mushroom 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/mushroom-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/mushroom in 2021.

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

You can see how investment expenditure in the Hort Innovation Mushroom Fund aligns to the industry's current strategic investment plan with the interactive analysis information available from www.bit.ly/mushroom-investment. The analysis shows the allocation of funding against each of the mushroom 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

MU18006	Development of a biosecurity plan for Australian mushrooms
MU19000	Mushrooms attitudinal research*
MU19005	New innovations to improve mushroom whiteness shelf life
MT19000	Phenomenom phase two launch and professional development series*
MT19001	Chef's Table culinary literacy for Australian mushrooms and onions*

* These flagged projects were both new and completed in 2019/20

ONGOING INVESTMENTS IN 2019/20 (continued)

MT18001	Foodservice syndicated market reports
MT18011	Ex-post impact assessment [^]
MT18018	Generation of data for pesticide permit applications in horticulture crops 2019/20
ST17000	Generation of data for pesticide applications in horticulture crops 2018 [†]

[^] 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

[†] Activities for the mushroom industry under this investment are funded wholly through the government's AgVet grant program

ONGOING INVESTMENTS IN 2019/20

MU16002	Mushroom industry minor use program
MU16003	Pest and disease management and research services
MU16004	Marsh Lawson Mushroom Research Centre (MLMRC)
MU17002	Educating health professionals about Australian mushrooms
MU17004	Optimising nitrogen transformations in mushroom production
MU17006	Developing a database of bio-markers for compost quality control to maximise mushroom production yield
MU18001	Mushroom industry communications program
MU18007	Australian mushrooms crisis and risk management
MT17015	Consumer behavioural and retail data for fresh produce

INVESTMENTS COMPLETED IN 2019/20

MU16000	Food safety and QA risk management
MU17005	Mushroom production waste streams – novel approaches to management and value creation
MU17007	Feasibility of compost substrate alternatives for mushroom production
MU17008	Understanding and managing the impacts of climate change on Australian mushroom production
MU18002	Agri-tech investment opportunities in the mushroom industry
MT18009	Ex-post impact assessment – industry specific
ST16008	AgVet collaborative forum

R&D report

Take a closer look at some of the key investments in the Hort Innovation Mushroom Fund during 2019/20. You can also visit www.horticulture.com.au/mushroom 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.

Mushroom production waste streams – novel approaches to management and value creation (MU17005)

NOW COMPLETE

Key research provider: Xinoa

During 2019, this investment investigated the value-adding or cost-saving opportunities related to waste from Australian mushroom businesses – including spent mushroom compost, unused mushroom stems and subprime whole mushrooms. The project team evaluated technologies relating to waste stream management from across the world to identify the most promising approaches for application in the Australian mushroom industry.

The researchers identified four opportunities for the mushroom industry to pursue further:

- 1. Recycling spent mushroom substrate back into the production process as either casing or compost.** Recycling substrate as casing was found to be financially viable, however the current lack of naturally weathered substrate and the continual management and re-pasteurisation is likely to challenge adoption by industry. Combined recycling options (compost and casing) were found to provide the best opportunity for rapid payback, although further trials will be required to weigh cost reductions against any potential decreases in yield and quality.
- 2. Pelletiser systems.** A pelletiser system – using non-thermal dewatering of spent substrate for on-site energy or off-site sales into energy and fertiliser markets – was found to be a technically feasible and financially viable solution for industry to increase revenues and to generate operational cost savings. Producers with the highest quantities of spent substrate and the lowest sale price have the most compelling consideration.

- 3. Mushroom powders.** This involves drying and powderising edible mushroom waste into a shelf-stable powder for high value food markets. Subprime mushrooms (including stems) can be used to make powders for markets such as high-margin supplements or ingredients for meat alternative products. This approach provides the grower with a new business income stream, product diversity, longer shelf life, and improved nutritional attributes when compared to fresh mushrooms.
- 4. Edible shelf-life extenders.** This considered applying edible coatings to fresh mushrooms to extend shelf life and reduce costs and spoilage. While edible shelf life extenders are an exciting opportunity and the products assessed during this research yielded positive results, the pathway to significant operational cost savings or new revenue is undetermined. More time is required for the technology owners to progress regulatory approvals and product development to meet the exact requirements of the industry at scale.

Full details of these options and their assessments can be found in the project's final research report at www.bit.ly/mu17005.

Feasibility of compost substrate alternatives for mushroom production (MU17007)

NOW COMPLETE

Key research provider: Murrang Earth Sciences

In 2019, this investment explored alternative sources of carbon for use in mushroom compost production. While wheaten straw is currently the most common carbon source used in mushroom compost production, it's predicted to become more difficult to acquire and more expensive over time, so this investment was all about future-proofing the mushroom industry.

[Continued >>](#)

The research team investigated alternative carbon sources that could partially or completely substitute for wheaten straw in compost substrate, looking at the physical and chemical properties, compost quality, mushroom yields, relative benefits and potential risks of each. The worked narrowed down to four alternatives: wastepaper, forestry waste, corn stover (leftover plant material from corn harvesting), and sugar bagasse (the residue left after sugarcane is crushed).

Both corn stover and sugar bagasse appeared to be ideal substitutes for wheaten straw in terms of performance, however transport distances could pose a logistical hurdle. Wastepaper – either shredded or soft-mixed – was found to be limited in composting by its physical properties, however the researchers found it could replace around 20 per cent of wheaten straw in compost without negatively impacting on mix porosity.

Overall, the assessment found that wheaten straw has unique properties that are difficult to replicate. And while there are some possible alternative carbon sources, they are also subject to similar price competition due to their use in other industries, especially the feedstock industry.

For more information, including the project's final research report, visit www.bit.ly/mu17007.

Food safety and QA risk management (MU16000)

NOW COMPLETE

Key research provider: Scheme Support Services

From 2017 to 2020, this investment worked to raise the industry's awareness across a broad range of risk management areas, and provided mushroom growers with the knowledge and tools to better manage those risks. By building on the foundations of the industry's long-running Food Safety and Quality Assurance Risk Management Service (FSQARMS) program, it provided an effective risk management mechanism at both an individual business and broader industry level. Key activities included:

- » Providing a direct industry support service, offering timely information and assistance on request to help individual businesses identify, manage and resolve food safety and quality issues
- » Delivering ongoing compliance education for growers, including through articles in the *Australian Mushrooms Journal*, industry e-newsletters, training and direct engagements
- » Collaborating and sharing information with and from an international network to keep relevant food safety and quality information accessible to Australian mushroom growers



- » Supporting industry in the transition related to the Harmonised Australian Retailer Producer Scheme (HARPS), including delivery of Freshcare training and implementation
- » Supporting the industry's independent verification testing service through advice, review and interpretation.

Learn more about the project's work and resources at www.bit.ly/mu16000.

Agri-tech investment opportunities in the mushroom industry (MU18002)

NOW COMPLETE

Key research provider: KPMG

This investment took place during 2019 to explore the current global landscape of agri-technology solutions being used in mushroom growing, with a focus on tools and technologies that may be most advantageous for Australian growers. Implementing agri-technology solutions has the potential to lower production costs, increase yields and improve product quality.

The project team identified more than 150 technologies for potential adoption, of which 10 were prioritised as having the greatest relevance to local growers. These solutions ranged from sensing and decision-support tools to automated harvesting systems and even wearable 'smart glasses' to help guide workers in their activities.

Find an overview of these 10 technologies, together with the project's full final research report, at www.bit.ly/mu18002.



Understanding and managing the impacts of climate change on Australian mushroom production (MU17008)

NOW COMPLETE

Key research provider: Applied Horticultural Research

Climate variability and change present a range of potential risks to the technical and economic viability of Australian mushroom growers, compost producers and support industries. This short project, which ran from 2019 to 2020, identified current and future climate-related risks across production regions. These were identified as including:

- » Availability of peat for casing
- » Availability, cost and quality of wheat straw for compost
- » Availability and quality of manure for compost
- » Impacts of temperature extremes on compost production, growing and transport
- » Energy – reliability of the power grid and costs of electricity and gas
- » Government emissions control policies
- » Water availability, cost and quality for compost production and mushroom growing
- » Pests and diseases, increased fly activity and the spread of disease, weed moulds and Trichoderma.

The project team also looked at how to manage these risks, how to reduce greenhouse gas emissions to help mitigate them, and provided education on how improving environmental performance can be used to a marketing advantage. This included the production of six case studies, which are available, together with the project's full final research report, at www.bit.ly/mu17008.

New innovations to improve mushroom whiteness shelf life (MU19005)

NEW IN 2019/20

Key research provider: Applied Horticultural Research

This investment is investigating new innovations to improve and maintain mushroom whiteness, looking at both pre- and post-harvest factors. It will produce a grower-focused guide that outlines the most effective technologies, techniques and strategies that growers can use on-farm to improve and maintain mushroom whiteness, with information to improve handling and management through the supply chain as well.

Presenting clean, white mushrooms to consumers at retail is a proven method of increasing sales, whereas conversely, browning on mushrooms is negatively perceived by consumers and is associated with the produce being 'at the end' of its storage life. Improving and maintaining whiteness has the potential to boost sales and reduce waste, and ultimately improve the profitability of the mushroom sector.

Development of a biosecurity plan for Australian mushrooms (MU18006)

NEW IN 2019/20

Key research provider: Plant Health Australia

Beginning in 2020, this investment will produce the mushroom industry's biosecurity plan. The plan will be a top-level document that identifies high-priority endemic and exotic pests and diseases, along with the risk mitigation, surveillance and diagnostic activities required to reduce their biosecurity threat. When complete, the plan will provide a strategic framework for industry and government to work together to improve preparedness for and response to these potential threats.

Mushrooms attitudinal research (MU19000)

NEW IN 2019/20 & NOW COMPLETE

Key research provider: Fiftyfive5

Beginning and ending in 2019/20, this short investment undertook research to increase understanding of consumer behaviour and attitudes towards mushrooms. The project team profiled mushroom consumers and delivered insights into mushroom usage, attitudes and consumption occasions, as well as identifying triggers and barriers to purchase, and quality and taste expectations.

By identifying key targets and growth opportunities, this research will be used to inform future Hort Innovation Mushroom Fund marketing activities and will be available as insights for the mushroom industry at large.

Phenomenom phase two launch and professional development series (MT19000)

NEW IN 2019/20 & NOW COMPLETE

Key research provider: Edible Adventures Productions

During 2019, this investment delivered information on the Phenomenom initiative (www.phenomenom.com.au). Phenomenom was developed to educate children about vegetables through videos, podcast episodes and downloadable teaching materials, and includes modules and resources specific to Australian mushrooms. Project MT19000 ran two professional development workshops to help educate and upskill teachers about the materials and logic behind Phenomenom. It also developed and delivered a launch toolkit and event, held at the very beginning of 2019/20.

For full details on the project, visit www.bit.ly/mt19000.

Chef's Table culinary literacy for Australian mushrooms and onions (MT19001)

NEW IN 2019/20 & NOW COMPLETE

Key research provider: ClubsNSW

A collaboration with ClubsNSW's 2019 Chef's Table event, this investment helped educate foodservice industry leaders about the health and nutrition benefits of Australian mushrooms and onions, and their use in cooking, through a masterclass skills session. ClubsNSW has some 1125 member clubs, with the Chef's Table event bringing together chef representatives from their kitchen teams.

Optimising nitrogen transformations in mushroom production (MU17004)

Key research provider: The University of Sydney

Ongoing through 2019/20, this project will ultimately help mushroom growers optimise the rate and timing of nitrogen additions, to achieve maximum yield and nutritional value.

The project team is exploring the fate of nitrogen used in mushroom production and composting, including developing a better understanding of the microorganisms that are involved in transforming the nitrogen that is added throughout the mushroom production process into other forms. They are also looking at ways and timings to maximise nitrogen use efficiency and promote nitrogen retention for composting, and more. A best practice guide for growers will be produced out of the project findings.



Developing a database of bio-markers for compost quality control to maximise mushroom production yield (MU17006)

Key research provider: The University of Sydney

The quality and yield of button mushroom crops is critically dependent on the quality of compost used. This ongoing investment is exploring how microbial populations within compost can be used to understand, measure and manipulate compost quality.

The project team's work involves investigating microbial populations across a range of mushroom composting facilities. This includes looking at the microbial population dynamics at different points along the composting timeline, how they align with other compost quality indicators, and correlating everything back to mushroom crop yield and quality.

The research will culminate in a database of compost 'bio-markers' (microbe indicators) for the industry, which will be able to be used to assist in maximising productivity and crop outcomes.

Pest and disease management and research services (MU16003)

Key research provider: University of Tasmania

Running since late 2017, this investment is assisting growers in understanding and managing key pests and diseases of mushrooms. It delivers farm-focused resources and education, and maintains AGORA, which is the industry's web-based pest and disease management knowledge database, established in earlier levy-funded work.

Continued >>

Accessing AGORA via agora.australianmushrooms.com.au requires an assigned username and password. If you're unsure of your details, require access for new staff members, or would like to arrange a time for a phone tutorial on how to use AGORA, contact Judy Allan at judyallan@bigpond.com.

The project's ultimate goal is to reduce the threat and costs of both endemic and exotic mushroom pests and diseases. Specific activities over the course the work include:

- » Conducting a review of new and emerging pathogens, including the bacterial *Janthinobacterium agaricidamnorum*, *Burkholderia gladioli pv agaricola*, *Ewingella americana* and *Psuedomonas agarici*; the fungal *Syzygites megalocarpus*, *Mycogone pernicioso* and *Trichoderma aggressivum*; and the viral mushroom X virus
- » Creating new and emerging symptom recognition resources for use on-farm
- » Delivering grower alerts about any activity of the pathogens in Australia
- » Delivering updates and information to growers at industry events and in the levy-funded *Australian Mushrooms Journal*.

Australian mushrooms crisis and risk management (MU18007)

Key research provider: Porter Novelli

This investment is refreshing and maintaining a crisis and reputation risk management plan for the Australian mushroom industry. In the event of an issue or crisis, having a clear plan in place ensures the industry is prepared with the information and processes needed to respond effectively, responsibly and in a coordinated, unified way. A plan, and the relevant training this project is delivering, also ensures that stakeholders involved in crisis response for the industry understand the process and are equipped and ready to be involved.

Marsh Lawson Mushroom Research Centre (MLMRC) (MU16004)

Key research providers: The University of Sydney and Applied Horticultural Research

Ongoing during 2019/20, this project supports the running and development of the Marsh Lawson Mushroom Research Centre (MLMRC) at the University of Sydney. The MLMRC is a world-class facility dedicated to mushrooms, and the research that takes place there will help the mushroom industry drive innovation, adopt best practice and tackle issues, while encouraging new expertise in the industry.

Mushroom industry communications program (MU18001)

Key research provider: Team Rowley

This ongoing industry program delivers effective and timely communications to ensure Australian mushroom growers and other industry stakeholders are kept up to date with the latest mushroom R&D and marketing investments, developments and outcomes, and other industry news and information.

This investment produces and maintains a number of regular communication channels, including but not limited to:

- » The quarterly *Australian Mushrooms Journal*, delivered electronically
- » The monthly *Industry Update* e-newsletter
- » Support with the maintenance and upgrading of AGORA, described on [p10](#)
- » Videos on R&D investments.

If you're involved in the mushroom industry and don't currently receive the industry magazine or newsletter, contact Chris Rowley at chrisrowley@optusnet.com.au to be added to the distribution list. Likewise, if you have team members or know of any additional people that would benefit from a wider understanding of the issues affecting the industry, encourage them to be in touch.

Educating health professionals about Australian mushrooms (MU17002)

Key research provider: Nutrition Research Australia

This education program is delivering research and information on the nutritional benefits of mushrooms to Australian health professionals including dietitians, nutritionists, GPs and more. The project team is bringing together the latest science on the health benefits of mushrooms, and using this for the development and dissemination of evidence-based messages and tools. The goal is to educate and empower these health professionals to in turn motivate their patients and clients to include mushrooms in their diets.

Apart from reviewing and consolidating research, specific project activities include a review of the health and science section of the www.australianmushrooms.com.au website, presentations at relevant professional conferences, the distribution of materials such as brochures and e-newsletters, and other engagement activities for health professionals such as webinars.

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 mushrooms, 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, as well as Hort Innovation Mushroom Fund marketing plans.

Mushroom industry minor use program (MU16002)

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 mushroom 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 [p13](#).

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 (ST17000 and MT18018)

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 APVMA which, when approved, provide access to safe and effective chemicals for the management of pests, weeds and diseases.

The multi-industry projects *Generation of data for pesticide applications in horticulture crops 2018* (ST17000) and *Generation of data for pesticide permit applications in horticulture crops 2019/20* (MT18018) are responsible for generating the data needed to support a range of registration and minor use applications across a variety of horticulture crops, including mushrooms. Work for the mushroom industry under ST17000 is funded wholly by grant funding secured by Hort Innovation under the Australian Government's Access to Industry Priority Uses of AgVet Chemicals program.

Ex-post impact assessment – industry specific (MT18009)

NOW COMPLETE

Key research provider: AgEconPlus

During 2018/19, Hort Innovation engaged independent consultants to evaluate the impact of our R&D investments. This included a specific look at the impact of work within the Hort Innovation Mushroom Fund, with a focus on projects completed within the five years to 30 June 2018, aligned to the current industry strategic investment plan. Five random projects were assessed, revealing a range of economic, social and environmental impacts being generated for growers, supply chain participants and the community at large. The projects had a benefit-cost estimated at 2.22 to one, and were expected to deliver some \$3.41 million in additional value to the industry and community over the next 30 years. Specific impacts ranged from the adoption of best practices to gain efficiencies in cost of production, through to improved health outcome for the community with increased mushroom consumption.

Explore the full details at www.horticulture.com.au/mt18009.



Minor use permits

The Hort Innovation Mushroom 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-mushroom.

Permits in 2019/20

During the 2019/20 financial year, a successful new permit for PER88212 was issued, with the application submitted through the *Mushroom industry minor use program (MU16002)* in the previous financial year.

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 mushroom industry, current as of 21 September 2020.

PERMIT ID	DESCRIPTION	DATE ISSUED	EXPIRY DATE	PERMIT HOLDER
PER12172 Version 4	Pyrethrins + piperonyl butoxide (Pyzap insecticide) / Mushrooms / Mushroom flies <i>Please note: This permit formerly covered SUPAPY Insecticide, but this product has since been registered by Botanical Resources Australia</i>	01-Jul-10	30-Sep-22	Australian Mushroom Growers' Association (AMGA)
PER12645 Version 2	Prochloraz (Octave WP fungicide) / Mushrooms / Cobweb disease	01-Apr-12	31-Mar-22	AMGA
PER12782 Version 2	Bioresmethrin + Piperonyl Butoxide (David Grays Thermal Fogging and ULV Insecticide) / Mushroom compost manufacturing and operation halls / Mushroom flies and mosquitoes (NSW only)	07-Aug-13	30-Sep-20	ELF Farm Supplies NSW
PER12965 Version 2	Imazalil (Imazagard) / Cultivated mushrooms (<i>Agaricus bisporus</i> only) / Green mould	31-Jul-12	31-Jul-22	AMGA
PER87515 (replaced PER14350)	<i>Bacillus thuringiensis subsp. israelensis</i> serotype H14 (Vectobac WG Biological Larvicide) / Mushrooms / Sciarids	15-Mar-19	30-Jun-24	Hort Innovation
PER14949 Version 2	Carbendazim (Howzat SC Fungicide) / Mushrooms / Dry bubble, wet bubble and green mould	16-Mar-16	28-Feb-21	AMGA
PER88212	Salt (sodium chloride) / Mushrooms / Dry bubble and cobweb disease (suppression only)	07-Nov-19	30-Nov-24	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 mushroom marketing levy into a range of activities to drive awareness and consumption, under the Hort Innovation Mushroom Fund. Read on for a snapshot of activities and results from 2019/20.

This year was the final in a three-year marketing strategy showcasing the ease, taste and health benefits of mushrooms through the industry's 'Chop Chop' campaign. A comprehensive range of touchpoints ensured that consumers were engaged with the Australian Mushrooms brand throughout the year, including advertising and public relations (PR) through media, 'always on' online communications, and in supermarkets. Additional activities to support the campaign included development of creative materials, branding, monitoring and evaluation of the campaign, and support for R&D-funded initiatives such as Phenomenom (p10).

Advertising

There were two bursts of advertising activity in 2019/20, the first in August through to November 2019 to bolster mushroom sales in the warmer months, and the second in April through to June 2020 to support the stronger sales of mushrooms leading up to the cooler months.

IMPACT OF COVID-19

The COVID-19 pandemic affected all Australians and the media landscape during the second burst of advertising leading into winter. Outdoor advertising was one of the hardest hit channels as people were required to stay indoors as much as they could. As more people were spending time at home, consumption across other channels including TV, online video, streaming radio, news and lifestyle content increased.

These changing market conditions were considered when planning and pivoting activity in 2020 to ensure that Australian Mushrooms advertising was delivered through the most relevant and effective channels, to successfully drive consideration and inspiration for mushrooms.

In response, a shift was made from out of home advertising to online content partnerships to inspire usage and communicate the versatility of mushrooms. There was also an increased emphasis on audio channels such as



streaming radio and podcasts, as more people listened to audio content at home on their computers or smart speakers, versus during commute.

There were slight shifts in brand messaging to increase the relevance of mushrooms' health benefits during the pandemic, when interests in health and immunity grew. For example, messaging through the news service The Squiz and through articles on *Taste.com.au* showcased health benefits such as the ability of mushrooms to boost immunity.

These campaign changes were communicated at the time of change to the whole of industry through the levy-funded communications program, in the article, "[A changed approach to mushroom marketing](#)".



Television

During October and September 2019, Australian Mushrooms appeared on regional television in New South Wales, Victoria, Tasmania, and Queensland to drive mass awareness. The campaign appeared in eight out of the 10 best performing shows at the time, including *Australia's Got Talent*, *The Block* and *The Bachelor*, resulting in a reach of over 3.2 million grocery buyers. Prioritising regional TV enabled cost-effective advertising to reach grocery buyers in non-metro areas and allowed the remaining budget to be utilised through other priority channels in metro areas.

Out of home

Leading up to summer, out of home advertising was leveraged to target consumers on the path to purchase – so that as consumers travelled to the supermarkets, they could be exposed to Australian Mushrooms advertising. The types of out of home advertising included the following formats, reaching nearly four million Australians at least eight times each.

- » **Retail panels:** 1,600 digital panels displayed Australian Mushrooms directly outside major supermarkets, nationwide
- » **Street furniture:** Australian Mushrooms ads were featured on equipment on streets, such as bus stop signage
- » **Transit:** Australian Mushrooms were featured on the sides of 80 buses
- » **Large format panels:** As a negotiated added value, five roadside billboards displayed the Australian Mushrooms campaign.

Radio and online audio

Radio and online audio channels including online radio, podcasts, The Squiz and Spotify were utilised to drive mass awareness of Australian Mushrooms throughout the campaign in 2019/20.

- » **Radio:** Metro and regional radio ads ran for eight weeks in the first phase of the campaign, and metro radio advertising ran for eight weeks in the second. Advertising activity

was increased on the weekend and Monday before consumers' weekly shop.

- » **The Squiz:** Australian Mushrooms partnered with The Squiz, a trusted news service in the form of a daily podcast and e-newsletter reaching young professionals. The listens and e-newsletter reads led to a reach of 715,364 over the two bursts of advertising.
- » **Podcasts:** Australian Mushrooms advertising was streamed during popular podcasts and across the ARN podcasting network, targeting grocery buyers listening to podcasts under the themes of 'food and drink', 'health and fitness' and 'parenting and lifestyle'. This advertising resulted in 1.6 million opportunities for people to hear the mushroom-inspired content.
- » **Spotify:** Audio advertising on popular streaming music service Spotify resulted in a reach of 2.5 million people for Australian Mushrooms.

Digital video

Australian Mushroom video advertising was showed across major catch-up television channels, including 7Plus, 9Now, 10Play, SBS and Foxtel. The top performing shows across the networks that delivered the majority of views included *Lego Masters*, *MasterChef*, and *My Kitchen Rules*.

Another major component of video advertising was across video-sharing website YouTube. The strategy involved targeting consumers through several themes including parents, fitness, foodies, mushrooms, health, and cooking.

This activity's targets were exceeded for the first burst of advertising activity and were then outperformed further in the second burst leading into winter. Due to the surge in viewing of online content during the COVID-19 lockdown, the campaign delivered 14 million opportunities to see the

content, double the set target. YouTube advertising was particularly impressive, more than doubling the target number of impressions.

Content partnership

In 2020, media activity was shifted from out of home advertising to a partnership with leading publisher NewsCorp. NewsCorp's food websites include Australia's number one food website, *Taste.com.au*, as well as *Australia's Best Recipes*.

The partnership enabled the creation and dissemination of mushroom content, including through recipe videos, online articles, social media posting, e-newsletter features and digital banner advertising. The recipe videos were very successful, bringing to the life how easy it is to create delicious mushroom meals. Out of six videos created, **Lasagne-stuffed mushrooms was the best performing recipe**, tripling the goal number of views.

Overall, the content partnership led to the creation of bespoke, engaging mushroom content that delivered a minimum 6.7 million opportunities for Australians to be inspired by mushroom recipes.

Social media, PR and brand ambassador

SOCIAL MEDIA AND PR

Social media and PR activity occurred throughout 2019/20, aiming to remind and inspire Australians to cook with mushrooms through engaging year-round content. Social media drove consideration and awareness with consistent posting of mushroom recipes, preparation tips and tricks, and health benefits through Australian Mushrooms Facebook (www.facebook.com/AustralianMushrooms) and Instagram (@australianmushrooms). Vegetarian and vegan mushroom recipes were highly engaged with, showing an increase in value from the consumers' perspective.





Social activity also enabled engagement and retention of consumers through social media competitions. The first social competition was the #BBQmushies competition to provide summer mushroom inspiration when consumers needed it most. This activity was paired with PR activity, which included sending mushroom hampers to media and pitching them summer mushroom recipes.

The second social competition was #mushroommeals to encourage cooking with mushrooms in a variety of ways, directly following the Mushroom Meal Makeover series (read on for more on this). Together, these two competitions drew 909 entries, delivered 9,000 engagements (likes, comments and reshares), and delivered 149 million opportunities for Australians to see the content as a result.

Overall, social media and PR activities exceeded targets, with a total achievement of 81.2 million opportunities to see over the year.

MUSHROOM MEAL MAKEOVERS

The Australian Mushrooms brand ambassador, Miguel Maestre, provided the brand with delicious recipes and video content, and amplification through his channels, media appearances and consumer events. During this campaign, Miguel was the hero of media and PR activity in June 2020, through his Mushroom Meal Makeovers online cooking series.

Miguel presented a series of video events over June designed to both generate media coverage and drive consumer engagement. Fresh from

his win on the television program *I'm A Celebrity... Get Me Out of Here!*, the timing took advantage of Miguel's high media interest and growing audience. With COVID-19 restrictions in place, the cooking series was delivered through the Australian Mushrooms social media channels and featured five deliciously different recipes intended to engage and excite consumers about the unique benefits of mushrooms.

In order to build up excitement with the Australian Mushrooms online audience, the events were promoted weekly on the Facebook and Instagram pages (a combined reach of 174,000 followers) and also through the Australian Mushrooms e-newsletter sent to 33,000 consumers. Viewers were also encouraged to cook along with



Miguel during the two Facebook Live events, with the social pages promoting the recipe ingredients in advance of the episodes.

The approach was successful in delivering key mushroom messages to tens of millions of Australian consumers. In total, the events and new recipes promoted with Miguel led to a reach of 26 million impressions through 67 pieces of coverage across print, online and social media. Importantly, the promotion was covered by several high-reach print and online media outlets such as *News.com.au*, *The Daily Telegraph*, *Herald Sun*, *Kidspot*, and *The Courier Mail*.

Consumer e-newsletter and website

Monthly e-newsletters delivering mushroom meal inspiration were sent to the Australian Mushrooms database of over 33,000 mushroom lovers. The e-newsletter has an impressive average open rate of 24 per cent (compared to industry average of 19 per cent) and click rate of 17 per cent (significantly above the industry average of 2.1 per cent). These results are due to quick, easy, and delicious mushroom recipes

such as the top performing e-newsletter feature of the period, Australian Mushrooms' Chicken and Mushroom Pie. Furthermore, Miguel Maestre was a major drawcard with content featuring the ambassador accounting for 42 per cent of clicks on the e-newsletter.

The performance of the Australian Mushrooms website also reflects consumers' interest in the campaign's mushroom recipes. The e-newsletter and social media channels direct consumers to the website (www.australianmushrooms.com.au), which has had an increase of 45 per cent for total users, and an increase of 46 per cent of visits to the website.

In-store sampling

Australian Mushrooms conducted in-store sampling nationwide in Woolworths, Coles and independent supermarkets. The sampling activity took place in two bursts, the first from November to December 2019 to boost sales of mushrooms in the warmer months, and the second from February to March 2020.

Shoppers were invited to trial Mushroom Stroganoff and Mushroom Bolognese Nachos in the first and second bursts,

respectively. Everyday meals were chosen to encourage quick at-home adoption and were made vegetarian and gluten-free to ensure as many consumers were able to sample as possible. In addition to samples, shoppers were able to take away a recipe brochure to inspire greater mushroom consumption at home, which were well-received.

The sampling sessions were activated in 250 stores in the first burst, and 123 stores in the second burst, with the latter activity unfortunately cut short due to the COVID-19 pandemic.

Campaign evaluation

In addition to planning and implementing the Australian Mushrooms marketing campaign, monitoring and evaluation of the campaign's effectiveness was also conducted during 2019/20. This provided insights into Australian consumer reactions to Australian Mushroom activities and this research will inform the new marketing strategy and 2020/21 marketing campaign.



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	2,012,060	(259,065)	1,752,995
Levies from growers (net of collection costs)	1,337,615	3,616,163	4,953,777
Australian Government money	1,290,875	–	1,290,875
Other income*	22,239	8,202	30,441
TOTAL INCOME	2,650,729	3,624,365	6,275,093
Project funding	2,185,113	2,083,289	4,268,402
Consultation with and advice from growers	31,372	15,950	47,322
Service delivery – base	100,688	98,652	199,341
Service delivery – shared	144,578	141,655	286,233
Service delivery – fund specific	120,000	190,000	310,000
TOTAL EXPENDITURE	2,581,751	2,529,547	5,111,297
Levy contribution to across-industry activity	–	–	–
CLOSING BALANCE	2,081,037	835,753	2,916,791
Levy collection costs	1,388	4,103	5,491

* Interest, royalties

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