

What happened in the **Mushroom Fund** last year?

Annual Report 2021/22



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 Mushroom Fund. We're proud of the work we do to help drive productivity, profitability, and demand for mushroom growers and the horticulture sector.

Read on for an overview of what Hort Innovation delivered in the Mushroom Fund during the year.

We also encourage you to download a copy of the overarching Hort Innovation Annual Report 2021/22 at www.horticulture.com.au/annual-report-portal to see how Hort Innovation worked to benefit the horticulture sector during the year.

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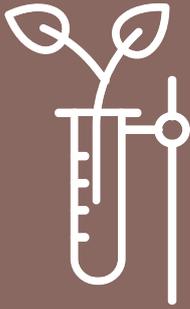
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\$1.91M

invested in R&D



\$2.83M

invested in marketing



\$5.06M

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

Industry facts



68,936t

In 2020/21, 68,936 tonnes of mushrooms were produced with an industry average of 69,500 per annum over the five years in 2020/21



26%

Around 26 per cent of mushrooms (domestic and imported) are sent to the foodservice sector



37%

Victoria is Australia's main mushroom-producing state, growing 37 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. See www.horticulture.com.au/horticulture-statistics-handbook.

Consumer insights



4.5kg

Australian households purchase an average of 4.5 kilograms of mushrooms a year



7.9 million

7.9 million Australian households purchased mushrooms in 2021/22

These insights were made available through the Harvest to Home platform (www.harvesttohome.net.au) delivered as part of an investment providing regular consumer behaviour data and insight reporting.

Just some of the things delivered for you during the year



A new industry communications program MushroomLink to deliver the quarterly industry magazine, monthly e-newsletter, AGORA website and much more – visit www.mushroomlink.com.au



The mushroom Harvest to Home dashboard providing regular household purchase data and insight reporting at www.harvesttohome.net.au



Access to consumer insights through multi-industry investments to understand consumer behaviours, attitudes and purchase intentions – see www.horticulture.com.au/mushroom



Renewed investment into Marsh Lawson Mushroom Research Centre of Excellence investment – read more at hortinn.com/mu21004



Investigations into the price elasticity of demand for mushrooms to inform the industry about the optimum value vs volume mix – see hortinn.com/mu21005



A multi-pronged domestic marketing campaign – read more on [p11](#)



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*

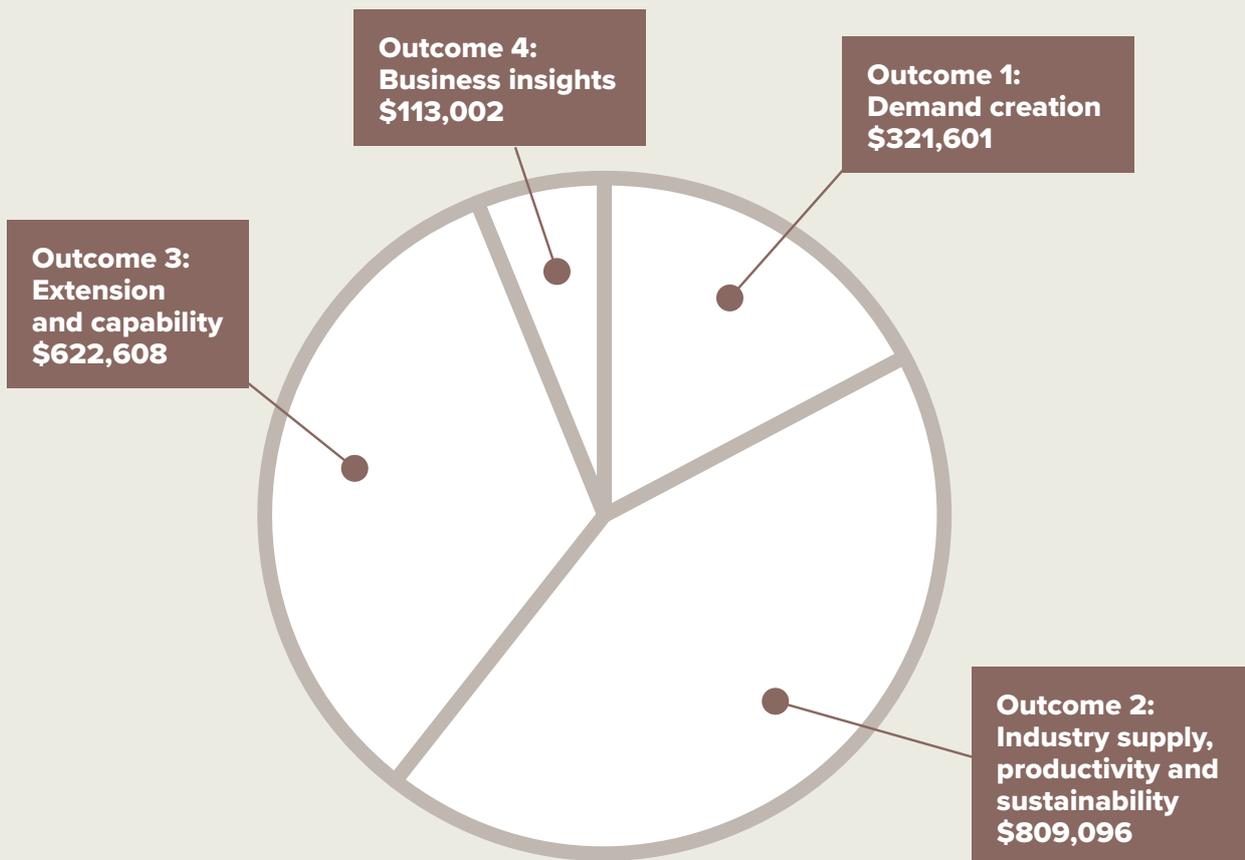


Projects supported by grants secured by Hort Innovation, ranging from cross-sector Rural R&D for Profit initiatives to horticulture-specific work to aid in access to crop protection products – see the Hort Innovation Annual Report 2021/22 for more details*

You can visit www.horticulture.com.au/mushroom at any time to access information on new, ongoing and completed projects, and to download resources produced by your levy investments.

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

Here's how your R&D levy was invested over the year



The mushroom Strategic Investment Plan (SIP) guides investments specific to the Hort Innovation Mushroom Fund. The SIP features priority outcome areas identified and agreed upon by the industry. Hort Innovation works to invest in R&D and marketing initiatives aligned to these.

The above chart shows how project expenditure in the Mushroom Fund during 2021/22 was aligned to the SIP. We have allocated each project to a SIP outcome based on its primary objective.

Which projects were in each of the SIP outcome areas?

Outcome 1: Demand creation

Demand creation supports the Australian mushroom industry to develop existing and future domestic markets.

Marketing activities during 2021/22 also contributed towards the demand creation outcome. You can read more about this year's mushroom marketing campaign on [p11](#).

| Project title and code | 2021/22 investment | Status | More information |
|---|--------------------|-----------|---|
| Educating health professionals about Australian mushrooms (MU17002) | \$130,000 | Completed | hortinn.com/mu17002 |
| Mushrooms and their potential health benefits of lowering blood cholesterol (MU20001) | \$56,640 | Ongoing | hortinn.com/mu20001 |
| Educating the food industry about Australian Mushrooms (MU20003) | \$109,041 | Ongoing | hortinn.com/mu20003 |
| A scoping study to review fungi based global innovations to inform product development opportunities (MU20004) | \$25,920 | Completed | hortinn.com/mu20004 |



Investments

Outcome 2: Industry supply, productivity and profitability

The Australian mushroom industry has improved profitability, efficiency and sustainability through innovative production systems, reduced costs, and effective risk management.

| Project title and code | 2021/22 investment | Status | More information |
|--|--------------------|-----------|--|
| Plant Biosecurity Research Initiative – Phase 2 (HA19007) | \$1,840 | Ongoing | |
| Regulatory support and coordination (pesticides) (MT20007) | \$7,197 | Ongoing | hortinn.com/mt20007 |
| Strategic Agrichemical Review Process (SARP) – Updates (MT21005) | \$4,000 | Ongoing | hortinn.com/mt21005 |
| Mushroom industry minor use program (MU16002) | \$700 | Ongoing | hortinn.com/mu16002 |
| Pest and disease management and research services (MU16003) | \$169,969 | Completed | hortinn.com/mu16003 |
| Marsh Lawson Mushroom Research Centre (MU16004) | \$167,790 | Completed | hortinn.com/mu16004 |
| Optimising nitrogen transformations in mushroom production (MU17004) | \$82,800 | Ongoing | hortinn.com/mu17004 |
| Developing a database of bio-markers for compost quality control to maximise mushroom production yield (MU17006) | \$44,000 | Ongoing | hortinn.com/mu17006 |
| Development of a biosecurity plan for Australian mushrooms (MU18006) | \$25,917 | Ongoing | hortinn.com/mu18006 |
| Mushroom industry crisis and reputation risk management (MU20006) | \$39,732 | Ongoing | hortinn.com/mu20006 |
| Risk analysis and management strategies for mushroom compost production (MU21001) | \$68,645 | Ongoing | |
| Desktop review of pathway risks for the mushroom industry – Agaricus mushrooms and growth substrate imports (MU21002) | \$26,460 | Ongoing | hortinn.com/mu21002 |
| Marsh Lawson Mushroom Research Centre of Excellence (MU21004) | \$130,320 | Ongoing | hortinn.com/mu21004 |
| Recycling spent mushroom substrate (SMS) for fertiliser in a circular economy (MU21006) | \$39,726 | Ongoing | hortinn.com/mu21006 |

Investments

Outcome 3: Extension and capability

Improved capability and an innovative culture in the Australian mushroom industry maximises adoption of investments in productivity and demand.

| Project title and code | 2021/22 investment | Status | More information |
|---|--------------------|-----------|--|
| Mushroom industry communication program (MU18001) | \$258,295 | Completed | hortinn.com/mu18001 |
| Extension and adoption for food safety, quality and risk management (MU20000) | \$105,973 | Ongoing | hortinn.com/mu20000 |
| Digitisation of mushroom industry archive (MU21000) | \$36,500 | Completed | hortinn.com/mu21000 |
| Mushroom industry communications program (MU21003) | \$201,840 | Ongoing | hortinn.com/mu21003 |
| Mushroom industry conference (MU21008) | \$20,000 | Ongoing | hortinn.com/mu21008 |

Outcome 4: Business insights

The Australian mushroom industry is more profitable through informed decision-making using consumer knowledge and tracking, trade data and production statistics, forecasting, and independent reviews.

| Project title and code | 2021/22 investment | Status | More information |
|--|--------------------|-----------|--|
| Consumer behavioural and retail data for fresh produce (MT17015) | \$13,142 | Completed | hortinn.com/mt17015-mushroom |
| Consumer demand spaces for horticulture (MT21003) | \$10,191 | Ongoing | hortinn.com/mt21003 |
| Consumer behavioural data program (MT21004) | \$33,609 | Ongoing | hortinn.com/mt21004 |
| Seasonal horticulture labour accommodation study (MT21007) | \$2,696 | Ongoing | |
| Economic contribution of Australian horticulture (MT21010) | \$8,259 | Ongoing | hortinn.com/mt21010 |
| Foodservice foundational market insights (MT21011) | \$11,557 | Completed | hortinn.com/mt21011 |
| Creative campaign evaluation (MT21012) | \$1,508 | Ongoing | |
| Pilot program: Consumer usage, attitude and brand tracking (MT21201) | \$10,273 | Completed | hortinn.com/mt21201 |
| Consumer usage and attitude tracking 2022/23 (MT21202) | \$20,687 | Ongoing | hortinn.com/mt21202 |
| Mushroom price elasticity of demand (MU21005) | \$1,080 | Ongoing | hortinn.com/mu21005 |

Financial operating statement

Mushroom Fund Financial operating statement 2021/22

| | R&D (\$) | Marketing (\$) | Total (\$) |
|---|------------------------|------------------------|------------------------|
| | 2021/22 July – June | 2021/22 July – June | 2021/22 July – June |
| OPENING BALANCE | 2,642,385 | 508,025 | 3,150,410 |
| Levies from growers | 1,366,037 | 3,693,358 | 5,059,395 |
| Australian Government money | 1,103,475 | – | 1,103,475 |
| Other income* | 5,234 | 2,541 | 7,774 |
| TOTAL INCOME | 2,474,746 | 3,695,899 | 6,170,644 |
| Project funding | 1,910,963 | 2,825,356 | 4,736,319 |
| Consultation with and advice from growers | 2,463 | 5,552 | 8,016 |
| Service delivery | 293,524 | 529,891 | 823,416 |
| TOTAL EXPENDITURE | 2,206,951 | 3,360,799 | 5,567,750 |
| CLOSING BALANCE | 2,906,116 | 831,959 | 3,738,075 |
| Levy collection costs | 4,064 | 11,166 | 15,230 |

*Interest, royalties

Levy collection costs – These are the costs associated with the collection of levies from industry charged by Levy Revenue Services (LRS)

Service delivery – Also known as Corporate Cost Recovery (CCR), this is the total cost of managing the investment portfolio charged by Hort Innovation

Making sure that levy investment decisions align with industry priorities

What will be the Mushroom Fund's focus over the next five years?



Hort Innovation developed the mushroom Strategic Investment Plan (SIP) in 2021 to reflect current priorities for the mushroom industry, involving extensive consultation with mushroom growers and industry stakeholders, including the Australian Mushroom Growers' Association. The SIP is the roadmap that helps guide Hort Innovation's oversight and management of individual levy industry investment programs.

The mushroom SIP lays the foundation for decision-making in levy investments and represents the balanced interests of the mushroom industry. The most important function of the SIP is to make sure that levy investment decisions align with industry priorities.

The mushroom SIP identifies four outcome areas that will contribute to the productivity and profitability of the sector. They are:

- Industry supply, productivity and sustainability
- Demand creation
- Extension and capability
- Business insights.

What projects will the Fund be investing in next year?

The mushroom Annual Investment Plan (AIP) 2022/23 details how Hort Innovation spends levy funds over 12 months. The mushroom industry SIP guides investment decisions, and our consultation process prioritises investments based on potential impact and levy fund availability.

Hort Innovation publishes Annual Investment Plans each year over the lifespan of the SIP and advises industry stakeholders via various communication channels.

Hort Innovation will continue to report on fund performance regularly, focusing on outcomes and the impact of investments.



Visit www.horticulture.com.au/mushroom-fund-management to view both documents and better understand how Hort Innovation invests your levy.

Meet a researcher

The Hort Innovation Mushroom Fund invests in a wide range of research to drive productivity and profitability.

Meet Dr Jenny Ekman, Research Scientist at Applied Horticultural Research and former Board Member at the Australian Mushroom Growers' Association



Jenny Ekman, Research Scientist.

How long have you been involved in the mushroom industry?

I have been involved in the mushroom industry since completing my honours project, which was actually funded by Hort Innovation. I was investigating whether you could develop modified atmosphere packaging for mushrooms. Unfortunately I found that it doesn't work. As soon as CO₂ is increased, the mushrooms keep growing, elongating and turning yellow.

I used to eat samples collected fresh for experiments! I fell in love with mushrooms – not only a divine food, but I found it amazing and fascinating to learn how they grow.

How is the mushroom industry supported by your work with Applied Horticultural Research?

Through the Hort Innovation Mushroom Fund project *Extension and adoption for food safety, quality and risk management* (MU20000) we deliver a free testing service for growers to help them meet their food safety program certification requirements. Any grower can access the testing – from major producers to suppliers of farmers markets.

The project team checks and interprets the results. If any potential issues are identified, we can help them work through what might have happened. We are also available via phone call to offer advice on how to navigate the mushroom food safety space.

Continued



What changes have growers made or you hope will make from this work?

It's been great to see a few growers review their processes and identify areas that could be potential sources of food safety issues. We have also supported some growers to optimise their growing and packing processes.

What else have you been working on?

I am fortunate to have worked on a number of levy-funded mushroom projects over the years, including research into replacing peat as a casting material, postharvest quality and the industry's response to climate change.

“

I used to eat samples collected fresh for experiments! I fell in love with mushrooms – not only a divine food, but I found it amazing and fascinating to learn how they grow.”

Jenny Ekman, Research Scientist

Most recently I have become involved in the industry's new mushroom communications program known as MushroomLink. I encourage all growers to look out for the new look MushroomLink magazine and other resources including a monthly e-bulletin, webinars and podcasts. They are all available at www.mushroomlink.com.au.

Getting more Aussies to add the Mighty Mushie to their meals

Hort Innovation is responsible for investing the mushroom marketing levy into a range of activities to drive awareness and consideration. Here's a quick look at some of the activities and achievements in 2021/22.

In 2021/22, the objective of the Australian Mushrooms marketing program was to inspire consumers to consider and use mushrooms more often. Based on consumer data that Australians' eating habits post-COVID are leaning towards cooking at home, consuming less meat and focusing on nutrition, the 2021/22 brand strategy was focused on pitching mushrooms as an everyday, healthy, essential ingredient for everyone.

Driving top-of-mind awareness

In 2021/22, the mushroom marketing program drove consumer awareness using the recently developed 'Add the Mighty Mushie' campaign. The hero 'pan flip' creative was run across an online video (catch-up television), 'out of home' large format panels, digital displays (including retail online shopping channels), and print for retailer magazines.

New mushroom recipe content was shot with contemporary everyday dishes (such as burgers, tacos, and san choy bao). It was showcased on static and digital retail panels, social media, and the Australian Mushrooms website.



Continued



The campaign was evaluated on creative performance, reach and recall measures. The evaluation found that:

- The creative content is working and driving the right messages.
- Video, radio and 'out of home' achieved strong above benchmark scores across Captivate, Connect and Compel measures.
- Advertisements are captivating and vividly convey taste, health and versatility.
- Advertising connects strongly to the brand, with Australian Mushrooms having 90 to 93 per cent brand integration.
- The messaging is compelling, evoking the correct associations and encouraging people to incorporate mushrooms into everyday cooking.
- The campaign is easy to understand, believable, informative, and enjoyable.
- The media buy was perceived as cost-efficient.

Despite positive creative results, the campaign recall was low against current norms. To improve the campaign in the future, the focus will be to increase campaign reach and recall by considering the right channel mixture to optimise investment.

This strategy is being supported by strategic public relations activity. One example is the highly successful campaign with celebrity Chef Adam Liaw, appearing on Weekend Sunrise from the 'Mushroom Meastery', which achieved substantial reach via television audiences and other media channels.

Below-the-line promotional activities (using media channels other than mainstream radio or television to market products) were used, so mushrooms were at the forefront of consumers' minds. In 2021/22, the levy-funded Grassroots Product Demonstrations and Events program delivered by the Australian Mushroom Growers' Association was launched in metro and regional areas to create local product demonstration events that build lasting connections with consumers.

The Australian Mushrooms digital campaign was designed to encourage purchase frequency among the existing Australian Mushrooms target audience and inspire consumers with engaging mushroom content.

An 'Add the Mighty Mushie' digital program was devised using email marketing and website activities to encourage consumers to transform their meals with Australian Mushrooms. The shared content focused on mushrooms' health and flavour benefits, including their high vitamin, mineral and antioxidant status and naturally rich umami flavour.

Nutrition and health credentials

Another focus of the program was to promote mushrooms' nutrition and unique health benefits by educating and inspiring consumers to incorporate mushrooms in their home cooking. The research run by agency Fiftyfive5 is an excellent example of this initiative in action. To participate in this research, consumers were asked to rank a variety of mushroom health claims against criteria of appeal, credibility and uniqueness.

There were some surprising consumer reactions to the claims. The four key outtakes were:

1. Health is not a barrier and is not new news.
2. Immunity and calcium absorption claims do well.
3. A simpler health claim is best.
4. The cancer claim has potential but needs further evidence.

The results have been summarised in a handy grower fact sheet, accessed through www.australianmushrooms.com.au in the new 'Industry Portal' section.



Win in retail

To drive sales in the retail sphere, the visibility of mushrooms needs to be increased in retail settings to capitalise on impulse buying. The retail activity aims to inspire shoppers to purchase mushrooms through pre- and in-store inspiration. This includes retailer in-store advertising, online shopping advertising and out-of-home advertising panels close to or inside retail stores.

Impulse buying can also be achieved with in-store sampling. Australian Mushrooms have a nationwide retail sampling activation that commenced in late August and will run through to the end of October 2022.

Infiltrate café culture

The campaign is weaving mushrooms into Australia's café culture and the nation's beloved brunch mealtime. The aim for mushrooms is to follow in the wake of smashed avocado on toast and become a must-have menu item. The Australian Mushroom Growers' Association-run #MyMushroomToast project is designed to infiltrate café culture with a food service program developed to promote mushrooms on toast as an essential café menu item. The program has had a strong start in 2022 and will continue into 2023.

In 2021/22 the Hort Innovation Marketing function underwent a significant shift in their approach to investing marketing levies. You can read more about this in the 2021/22 Hort Innovation Company Annual Report at www.horticulture.com.au/annual-report-portal.

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 to manage pests, weeds and diseases.

For full details on these activities and links to relevant information, visit hortinn.com/mushroom-minor-use.

Current permits

Below is a list of minor use permits for the mushroom industry, current as of 15 August 2022.

| Permit ID | Description | Date issued | Expiry date | Permit holder |
|-----------------------|--|-------------|-------------|-----------------|
| PER12172 Version 5 | Pyrethrins + Piperonyl Butoxide (Pyzap insecticide) / Mushrooms / Mushroom flies | 01-Jul-10 | 30-Jun-27 | Hort Innovation |
| PER12645 Version 3 | Prochloraz (Octave WP fungicide) / Mushrooms / Cobweb disease | 01-Apr-12 | 31-Dec-26 | Hort Innovation |
| PER87515 | Bacillus Thuringiensis Subsp. Israelensis Serotype H14 (Vectobac WG Biological larvicide) / Mushrooms / Sciarids | 15-Mar-19 | 30-Jun-24 | Hort Innovation |
| PER14949 Version 4 | Carbendazim (Howzat SC fungicide) / Mushrooms / Dry bubble, wet bubble and green mould | 16-Mar-16 | 30-Jun-26 | Hort Innovation |
| PER88212 | Salt (Sodium Chloride) / Mushrooms / Dry bubble and cobweb disease (Suppression only) | 07-Nov-19 | 30-Nov-24 | Hort Innovation |
| PER91265 | Bacillus amyloliquefaciens strain MBI600 (Serifel biofungicide) / Mushrooms / Green mould | 22-Nov-21 | 30-Nov-24 | Hort Innovation |
| PER90382 | Metrafenone (Vivando fungicide) / Mushrooms / Cobweb disease and dry bubble | 27-Jan-22 | 31-Jan-25 | Hort Innovation |

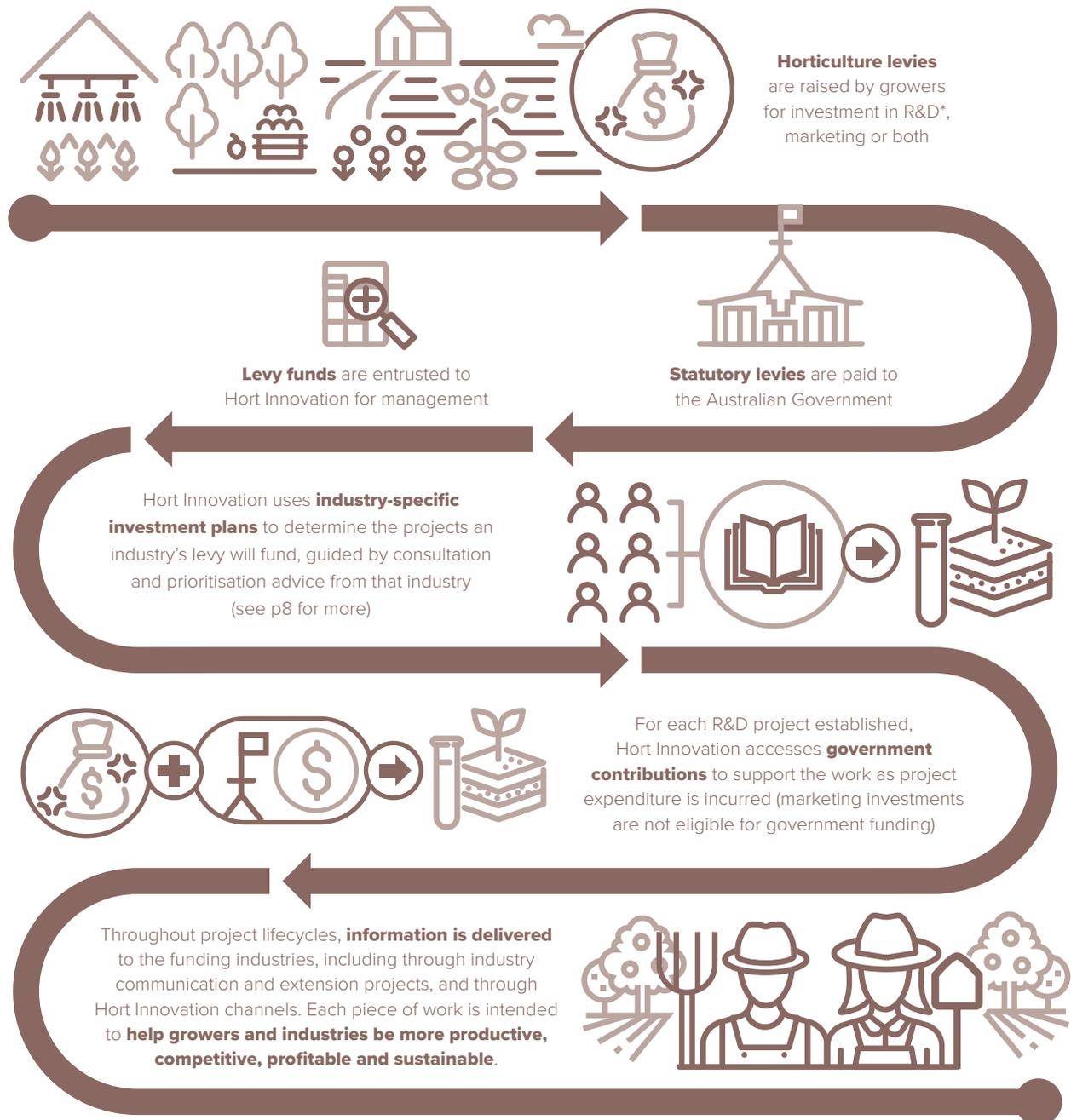
All efforts have been made to provide the most current, complete and accurate information on these permits, however you should always confirm all details on the APVMA website at portal.apvma.gov.au/permits. Details of the conditions of use associated with these permits can also be found on the APVMA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

How strategic levy investments are made in the Mushroom Fund

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 2022-2026 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 reserve.

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