Final report

Project title:

Extension and Adoption for Food Safety, Quality and Risk Management

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MU20000

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Public summary

This project was undertaken to support the Australian mushroom industry (producer businesses and the associated suppliers of compost, spawn and other critical inputs) with a proactive focus on food safety and on all aspects of compliance and risk. Underpinning the ethos of 'promote & protect' in managing the image and reputation of Australian mushrooms.

Building on strong industry foundations, including the mushroom industry HACCP Plan, the AMSAFE initiative, AMGA coordinated verification testing, and the long-established food safety and quality assurance risk management service, the project was designed to support and inform industry and individual businesses through three distinct but interrelated components.

- Knowledge and Information Hub
- Communication and Extension Hub
- 'Act and React' Industry Support

This project structure was designed to facilitate the development and delivery of planned resource and extension, whilst at the same time remaining agile and responsive to react and resolve real time issues and situations.

Through the five-year duration of the project information flowed into the project through the 'Knowledge and Information Hub', from key areas of food safety and compliance focus including legislation, customer requirements, compliance system requirements, research findings and associated extension resources. The focus on both Australian and international information sources, the latter delivered though an annual 'Global Scan' report and supported through a well-established international industry network.

Recognizing that an industry is only as strong as its weakest link and that the ramifications of a food safety incident would likely extend across the entire mushroom production supply chain, the project sought to extend information back out to industry through the 'Communication and Extension Hub' developing resources and delivering a range of pro-active activities to establish best management practices across the industry. Key deliverables included the development of the SAFE MUSHROOM Program and associated resources (fact sheets, videos, posters), reviews of research on specific food safety and compliance topics, regular articles in the AMGA Journal and presentations through topic specific industry webinars, at the AMGA Conference and through the establishment of 'SAFE MUSHROOM month', annually in September.

In addition to the proactive information and resource collection, development and dissemination, the project also delivered and supported core foundational industry services critical to food safety compliance through the 'Act and React' industry support component. These included support for the AMSAFE Committee, Verification Testing, a Food Safety Advisory Service and an on-call Crisis Support Service.

Through the five-year duration of the project, every element of the project can be demonstrated to have delivered tangible value back to individual businesses and to the Australian mushroom industry more widely. The project has delivered as intended, identifying risks and mitigating impacts across the entire mushroom production supply chain; upskilling industry personnel, and establishing strong compliance focussed connections in Australia and overseas. The project has built further on well-established foundations to leverage and deliver ongoing benefits for the Australian mushroom industry.

Project resources, including the SAFE MUSHROOM Program are available to industry through the AMGA website (registration required) or by direct request from the AMGA.

Keywords

Mushrooms; food safety; quality; compliance; verification; knowledge; extension and adoption; communication.

Introduction

The best marketing and promotion strategies in the world cannot support and grow an industry without strong foundations on which to base those market facing messages. The co-concept of 'promote and protect' is at the forefront for success for all our fresh produce industries.

As primarily a single commodity industry, with a small number of identified producer businesses (over 40 when the project began, to just 29 producers of *Agaricus bisporus* – March 2026) the Australian mushroom industry has long embraced the 'promote and protect' concept to manage the image and reputation of mushrooms. Establishing strong foundations of knowledge, research, extension and support to ensure that a crisis can be effectively managed both as an individual business and for the industry as a whole.

The Australian mushroom industry has always had a proactive focus on food safety compliance and risk management;

- Australian mushrooms were the first industry sector to develop a commodity specific HACCP plan, long before food safety certification was a requirement to supply.
- Through the simple and effective AMSAFE initiative (well recognised and replicated by other industries), potential industry crises have been identified, reviewed, and resolved.
- Through the AMGA managed Verification Testing Program Australian mushroom growers have been supported in the selection, conduct and interpretation of input and product testing, for both investigative and compliance purposes;
- The Food Safety and Quality Assurance Risk Management Service (FSQARMS) underpinned the mushroom industries risk management process and framework for over two decades.

Acknowledging the strong foundations, this project was designed and delivered to support and inform industry and individual businesses through three distinct but interrelated components.

- Knowledge and Information Hub
- Communication and Extension Hub
- 'Act and React' Industry Support

The project structure was designed to facilitate the development and delivery of planned resource and extension, whilst at the same time remaining agile and responsive to react and resolve real time issues and situations as they arose.

The close and collaborative relationships between service providers working on mushroom industry projects was a key consideration in project design and success. Leveraging those established relationships ensured the best possible utilisation of resources and the most effective mechanisms for communication, extension, and support.

With the Australian Mushroom Growers Association (AMGA) as the project lead, the opportunities and mechanisms to engage at all levels of industry were maximised, and the project structure facilitated effective, seamless and confidential interface with critical industry led activities such as verification testing and AMSAFE.

Through the life of the project, multiple food safety, quality and wider industry risk scenarios were identified and managed through both short-term reactive responses and longer-term proactive engagement. These included:

- Support to the Mushroom Industry Crisis and Risk Management project and the AMGA during the Leongatha wild mushroom poisoning incident,
- Support to Food Standards Australia and New Zealand (FSANZ) during their investigation into imported enoki, which further supported the reputation of the Agaricus industry,
- Successfully assisting the AMGA to submit a formal request for HARPS 2.0 to be updated, to recognise the mushroom substrate production process as verified alternative to AS4454.

The January 2026 contract variation included an additional output to be delivered with this final report. It relates to an identified need for a rapid review of microbiological risk and management strategies for packing facilities. To fill this knowledge gap and provide guidance to growers, Dr Mark Bradbury from La Trobe University completed a confidential report which reviewed published literature from 2017 onwards, highlighting procedural insights and future recommendations for research, development and extension to support the industry.

Through the delivery of this project, the Australian mushroom industry remains well prepared with strong knowledge foundations and established dissemination networks, enabling it to effectively deal with food safety, quality and wider risk management scenarios through a tested, effective and proven process.

Methodology

The project was structured and delivered through three distinct core components, as illustrated below.

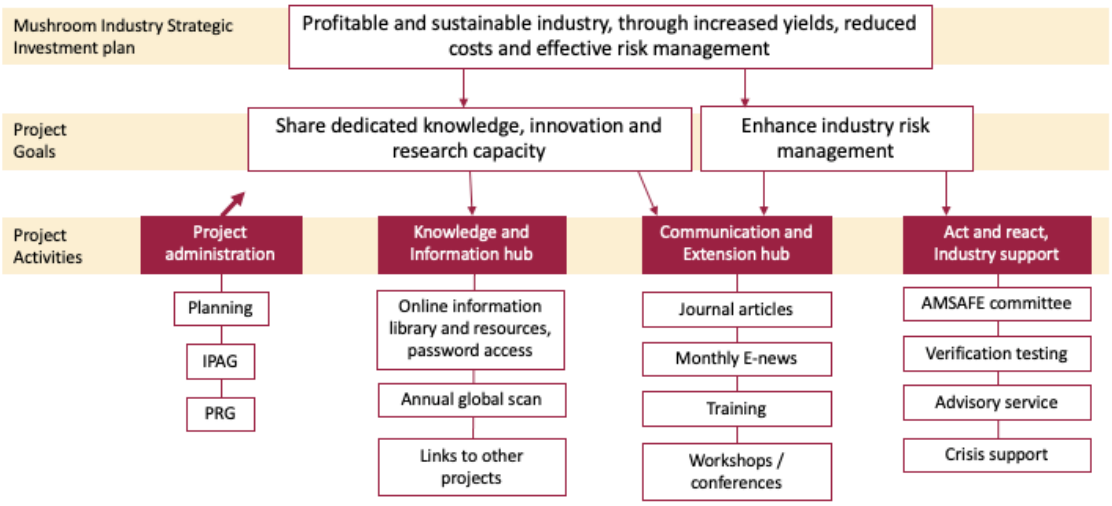

Figure 1. Project logic diagram

The project structure was designed to facilitate the collation of information, and the development, delivery and extension of resources, whilst at the same time remaining agile and responsive to react and resolve real time issues and situations as they occurred.

The methodology was developed based on experience, survey findings (MU16000) and broad consultation with industry, providing a balanced combination of information gathering and review, and information dissemination and extension. Whilst also structured to provide a mechanism to deliver reactive support on immediate issues, and to identify and communicate research and development priorities in the food safety, quality and broader compliance space.

Project Administration - Annual Project Planning, PRG and IPAG

Agile planning to support industry needs

Established at the outset, the annual project planning meetings were a critical element in ensuring effective stakeholder engagement through both the Project Reference Group (PRG) and International Project Advisory Group (IPAG), and through endorsement of the annual operating plan guiding project focus, delivery and timing.

The annual Project Reference Group (PRG) meetings focused on:

- Industry engagement challenges
- Feedback on information resources provided to date
- Alternate information dissemination options
- Collaborative opportunities for other projects

The annual International Project Advisory Group (IPAG) meetings focused on:

- International developments in food safety, risk and compliance
- Industry engagement challenges
- International project collaboration

Annual reflection on the issues raised through the 'Act & React' components of the project acted to inform the focus of future activity and enabled the project to pivot to best meet industry needs.

With multiple, concurrent activity streams, regular project team meetings were essential to ensure steady progress without duplication of effort, meetings were held monthly, coordinated by the AMGA as project administration provider.

The project commenced pre-COVID and the pandemic impacted elements of the planned delivery model, including regional training workshops and on farm engagement and extension. The forced changes to methodology and the associated project variation, ultimately delivered a more targeted outcome and more tangible outputs for industry. As discussed later in this report, proactive industry engagement was a challenge, so the focus instead pivoted to ensure strong and easily accessed knowledge foundations and mechanisms to deliver reactively for industry as the need arose.

Knowledge and Information Hub

Information gathered 'in' to the project, to inform the content for the communication 'out'

The Knowledge and Information Hub was designed to facilitate the regular collection and review of information through multiple, concurrent pathways, namely:

- Customer engagement (Australia)
- Legislative watch (Australia)
- Compliance watch (Australia)
- Global Scan - Food Safety R&D monitoring (Australia and International)
- General food safety information monitoring

In addition, information from Australian and Global media and resource scans further informed the project.

Content was then curated and made available to industry through a secure logon to the AMGA website, providing controlled, secure ease of access to information. The library structured as per the resource map following.

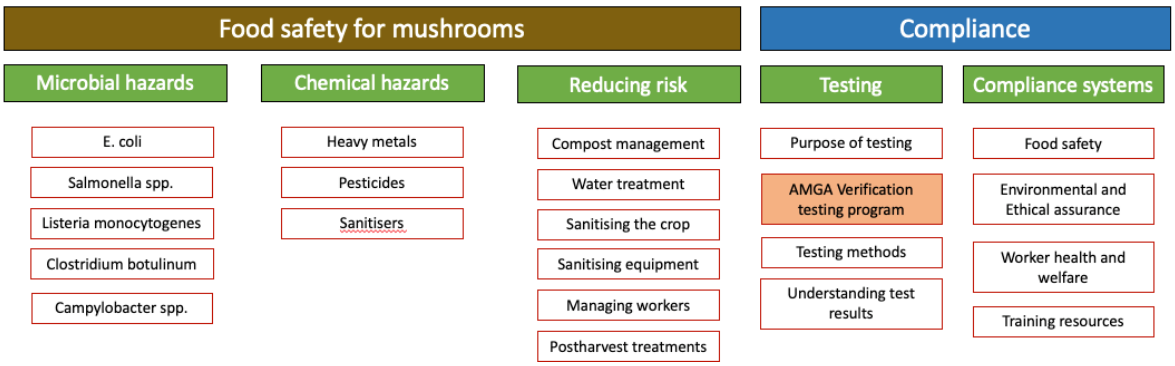

Figure 2. Project resource library

Communication and Extension Hub

Communication 'out' to industry, including training, grower engagement of programs

The Communication and Extension Hub was designed to extend project outputs to industry. The original methodology focussed on regional training workshops and on farm extension activities was curtailed by the COVID restrictions of 2020-21. The focus instead changing to resource development, including the SAFE MUSHROOM Program and associated supporting materials including record keeping forms and video training; and the dissemination of those resources through established channels including direct industry communication, published articles and the focussed activities of the annual 'safe mushroom month'.

Act and React, Industry Support

Agile engagement, delivering positive outcomes

The Act and React, industry support component of the project was designed to deliver key operational support elements to industry, as well as providing an on-call response service to support industry or individual businesses with food safety. Quality and wider risk management issues.

The size and structure of the Australian mushroom industry facilitating close engagement and response, and the embedded knowledge and expertise of the project team enabled the effective design and delivery of this project component. Through the life of the project the emphasis of this component changed in response to industry needs.

Several core activities undertaken by the AMGA on behalf of the Australian mushroom industry, require technical input and support. These activities were embedded in the Act and React, Industry Support component of MU20000, including:

AMSAFE Committee – food safety and compliance advice

Verification Testing – coordination of the free verification testing program, activities ranging from the database management, annual program review, advice on test selection, review and interpretation of results and follow up / investigative support as required.

Advisory Service (industry) - support and advice on all aspects of food safety system compliance, including support in Certification Body and auditor selection issues, advice on the audit and CAR closure process (industry level, not individual businesses) and the identification of research required to underpin critical limits.

Advisory Service (external stakeholders) - support mechanism through which industry wide technical issues can be addressed with and through external stakeholders, both in terms of making recommendations to solve the immediate problem and in making recommendations for further action or research.

On-call Crisis Support – on the rare occasions that an issue escalates into a potential crisis and has the potential for it to adversely

affect an individual business or the entire industry; the AMSAFE Committee may request support for the business involved, through a telephone call and / or site visit.

Annual R&D Meeting - Participation in the annual AMGA R&D review meeting.

Results and discussion

Over its five-year duration the project established a knowledge and information gathering framework, extended that knowledge back to industry in multiple formats, and delivered key resources and services as outlined in the project methodology and as listed in the outputs and appendices to this report.

Whilst proactive industry engagement in the project deliverables proved challenging, reactive responses to individual or industry wide issues were timely, effective and underpinned by strong foundational resources.

A total of forty-one (41) issues were reported (in confidence) through the Act and React, industry support mechanism during the project, and all were addressed and resolved satisfactorily. Examples of engagement were wide ranging and included:

- Substrate inputs, quality and integrity
- Temperature impacts on product quality
- Cross contamination in the supply chain
- Review, interpretation and investigation of verification test results
- Microbial growth patterns and monitoring
- Certification standard compliance
- Wild harvest risks
- Quality and food safety of imported mushrooms

Annual, complimentary verification testing (chemical and microbial) was offered to all Australian mushroom growers during the project; however, uptake was limited with a total of only 52 tests undertaken. In September 2024 after a free test promotion during Safe Mushroom Month, the project team sent 14 kits to interested business, with only three being completed.

The uptake of the SAFE MUSHROOM Program was also limited, with three businesses engaging in training and none moving through to mock audit. In February 2026, the project team identified the need for a complimentary resource for Safe Mushroom program, the Safe Mushroom Food Safety Management Plan for small food manufacturers. This resource has been accessed by three businesses.

Whilst these tangible results appear disappointing, we had plenty of positive feedback on both initiatives in principle, but in practical terms farms who supply major retailers are required to be certified to Freshcare or another GFSI accredited program, with associated verification testing requirements, and farms that do not supply the major retailers are currently not required to be trained or certified to any standard, hence the lack the time and motivation to adopt a voluntary code and associated verification processes.

Outputs

Table 1. Output summary

Output	Description	Detail
Knowledge and Information Hub / Communication and Extension Hub	A password protected, curated and searchable resource that includes food safety, quality and wider risk management material from Australia and Internationally. Informed by an **Annual Global Scan** that reviews relevant information published in peer reviewed journal articles over the preceding 12 months; Australian and International regulatory and customer driven compliance information; International mushroom industry issues relevant to the Australian industry and other sources of information as deemed relevant to the project scope.	The Knowledge and Information Hub (AMGA Document Library) is accessible to all levy paying mushroom growers and AMGA members. Accessed via the AMGA website secure logon due to the sensitive nature of some resources. Material available through the Knowledge and Information Hub has formed the basis of key project communication activities, including articles in MushroomLink magazine and the AMGA Journal. In addition, the project participated in the two industry conferences. Appendix 1 AMGA Conference 2022 Dr. Jenny Ekman presentation Appendix 2 AU + NZ Mushroom Conference 2024 - Exhibition poster
Articles in MushroomLink	Communication with Australian	Appendix 3 Food Safety a Key Industry Priority

magazine and the AMGA Journal	mushroom industry stakeholders on key topics including project progress, key outputs and food safety, quality and wider risk management information sourced through the Knowledge and Information / Communication and Extension Hubs	Appendix 4 Factsheet: Temperature Critical to Mushroom Quality and Safety Appendix 5 Focusing on Food Safety Culture, the what, why and how Appendix 6 MushroomLink Article – Protecting Australian Mushroom Industry with Safe Mushroom Appendix 7 Focusing on Food Safety Culture, the what, why and how Appendix 8 FSANZ – Focused on Food Safety Culture Appendix 9 Promoting Verification Testing (A3 poster) Appendix 10 Fact Sheet - Storing Chemicals Safely Fact Sheet Appendix 11 MushroomLink Article- Safe Mushrooms – a new food safety code of practice for the mushroom industry. Appendix 12 LinkedIn Article: Introducing the Safe Mushroom Program (Jan 23) Appendix 13 MushroomLink ebulletin: Safe Mushroom Month (Dec 24) Appendix 14 MushroomLink – SAFE MUSHROOM Food Safety Month e-bulletin October 2025 Appendix 15 LinkedIn Post – Safe Mushroom Month 2025
SAFE MUSHROOM Program	The SAFE MUSHROOM Program provides a food safety compliance framework to assist non-certified Australian mushroom growers to adopt food safety best practice on farm; comprising a voluntary HACCP based code of practice and associated forms and compliance resources to support implementation.	The SAFE MUSHROOM Program is accessible via the AMGA website for all Australian growers of fresh mushrooms, including levy payer and non-levy payers (exotic varieties). Food safety video and poster resources, with an introduction to the Safe Mushroom training program are available publicly on the AMGA website, with the Safe Mushroom Toolkit for the program accessed via a secure logon, to ensure its accessible by Australian mushroom growers only. Details of the SAFE MUSHROOM program have been included as feature articles MushroomLink magazine and the AMGA Journal. SAFE MUSHROOM Program Toolkit (https://australianmushroomgrowers.com.au/safe-mushroom-toolkit/ requires registration) Appendix 20 Introduction Video – SAFE MUSHROOM – Introducing the SAFE MUSHROOM Program Appendix 21 Training Video - SAFE MUSHROOM – Harvester food safety induction Appendix 22 Training Video – SAFE MUSHROOM – Farm Hands food safety induction Appendix 23 Information Video – Food Safety, Quality and Risk Management for the Australian Mushroom Industry Appendix 24 SAFE MUSHROOM Free Resources Appendix 25 Introducing the SAFE MUSHROOM Program (Training modules require registration) Appendix 27 Free Food Safety and PPE posters for farms
SAFE MUSHROOM training videos	A suite of training videos to support the on-farm implementation of the SAFE MUSHROOM Program.	The SAFE MUSHROOM Program is accessible via the AMGA website for all Australian growers of fresh mushrooms, including levy payer and non-levy payers (exotic varieties). As part of the toolkit, the Safe Mushroom program videos are accessed via a secure logon, to ensure its accessible by Australian mushroom growers only. Appendix 26 Training Videos – SAFE MUSHROOM video instructions for the toolkit
SAFE MUSHROOM Food Safety Month	The project team delivered a 'SAFE MUSHROOM Food Safety Month' in	Details of the SAFE MUSHROOM Food Safety Months were promoted in the MushroomLink website, magazine, e-

	September 2024 and 2025. The month-long engagement programs disseminated free food safety resources, delivered the SAFE MUSHROOM training, offered free verification testing, and presented an educational webinar for certified and non-certified growers (including outreach to exotic growers), to promote good food safety culture for the Australian Mushroom industry.	bulletins and LinkedIn and the AMGA Journal. Factsheets, posters, SAFE MUSHROOM program launch and video resources were disseminated, and multiple webinars conducted: Appendix 16 Webinar: Food safety certification FAQs with Clare Hamilton-Bate (19 Jan 23) Appendix 17 Webinar: Navigating food safety certification standards (11 Sept 24) Appendix 18 Webinar: The Safe Mushroom standard – basic food safety for non-certified farms (25 Sept 24) Appendix 19 Webinar: When things go wrong. Practical steps for mushroom growers (23 Oct 25) Appendix 12 LinkedIn Article: Introducing the Safe Mushroom Program (Jan 23) Appendix 13 MushroomLink ebulletin: Safe Mushroom Month (Dec 24) Appendix 14 MushroomLink – SAFE MUSHROOM Food Safety Month e-bulletin October 2025
SAFE MUSHROOM Food Safety Management Plan for small food manufacturers. (Additional deliverable)	A HACCP based compliance program and associated resources designed to assist businesses involved in mushroom based food manufacturing.	The SAFE MUSHROOM Program is accessible via the AMGA website for all Australian growers of fresh mushrooms, including levy payer and non-levy payers (exotic varieties). The food safety management plan template can be accessed via a secure logon, to ensure its accessible by Australian mushroom growers only. SAFE MUSHROOM Food safety management plan for small manufacturers (https://australianmushroomgrowers.com.au/manufacturing-food-safety-plan/ requires registration)
Mushroom Verification Testing Program	Free verification testing program offering analyzed results and compliance support. Designed to encourage mushroom growers to test regularly. The deidentified test results and associated FreshTest data set for mushrooms accessed through this project, provides a robust data set to underpin an industry compliance narrative.	52 tests were taken over the life of the project. Considerably less than the contracted KPI due to very low grower uptake, as explained in this report. With Hort Innovations endorsement, the project team used the remaining funds to extend the life of the project by 3 months, and fund the La Trobe University Rapid Review. Free verification testing was communicated by the AMGA directly to growers via email, mail and phone calls. Safe Mushroom Food Safety Month was used to promote the importance of regular farm testing, and the benefits of using the free verification testing with analysed results. Details of the Verification Testing Program have been included as feature articles MushroomLink, MushroomLink magazine and the AMGA Journal. MushroomLink Poster & e-bulletin
Act and React, Industry Support Program	The long-established mushroom industry Food Safety and Quality Assurance Risk Management Service was incorporated into MU20000, providing on call support and advice to the AMSAFE Committee (part of MU20006 - Mushroom Industry Crisis and Reputation Risk Management) and to wider industry when support is required on food safety issues and related topics.	Industry service coordinated through the AMGA and closely aligned with AMSAFE as a component of MU20006 - Mushroom Industry Crisis and Reputation Risk. Regular communication to industry through articles in MushroomLink magazine and the AMGA Journal, and through direct grower engagement.
Mushroom Industry	An educational video that explains the structure and processes that	The video is housed on the AMGA website and YouTube

Information Video	comprise the Australian mushroom industry. Outlining the *A.bisporus* production environment and growing process, and highlighting the critical control points that underpin the delivery of safe quality mushrooms.	Appendix 23 Information Video – Food Safety, Quality and Risk Management for the Australian Mushroom
Microbiological Risk Profile and Management Strategies in Mushroom Production	La Trobe University conducted a scoping report providing a rapid review of microbiological risk and management strategies.	Rapid Review – microbial risk profile and management strategies in mushroom production (Confidential report) is submitted separately to Hort Innovation and is available by request and strict approval from the AMGA.

Outcomes

In designing the project in 2020, the core deliverable for MU20000 aligned directly with the following mushroom industry Strategic Investment Plan (SIP) priority "Profitable and sustainable industry through increased yields, reduced costs and **effective risk management"**.

Whilst risk management can relate to a broad spectrum of risk areas, MU20000 focussed on food safety and quality risk and associated compliance and verification aspects.

In reporting the project outcomes, core deliverables are also reported against the current SIP (2022-2026)

Table 2. Outcome summary

Outcome	**Alignment to fund outcome, strategy and KPI**	**Description**	**Evidence**
Industry members have access to food safety knowledge, innovation and research results, and industry risk management is enhanced. Creation of a **food safety knowledge and information hub** and a **communication and extension hub**, providing growers with relevant and up-to-date resources. Development of mushroom industry specific resources, including SAFE MUSHROOM Program and associated support materials.	Outcome #3: Improved capability and an innovative culture in the Australian mushroom industry maximises adoption of investments in productivity and demand. Strategy #1: Deliver communication and extension capability to support positive change in the areas of pest and disease management, biosecurity, food safety and supply chain practices along with enhancements to production and on-farm sustainability KPI : Establishment of a baseline in relation to those farm managers having an awareness and/or introduced improved management (such as biosecurity, food safety and growing) to enhance supply, expressed as the percentage of total production under improved management systems	The knowledge and information resources collated through the project provide a world class database of food safety, quality and risk management resources. The information utilized to underpin core industry knowledge, inform strategic outcomes and enhance risk management. Adoption of food safety management systems and capacity building in food safety training.	Through the course of the project 'one on one' feedback was sought from individual Australian mushroom growers on more than one occasion. Given the size of the industry (less than 30 growers), the survey engagement reaches over 75% of production businesses. The feedback informing project logic and direction.
Act and React Industry Support; support provided as requested in response to 100% of industry engagement opportunities.	Outcome #2: The Australian mushroom industry has improved profitability, efficiency and sustainability through innovative production systems, reduced	Issues raised in confidence by both individual businesses and on behalf of wider industry were addressed utilizing the Act and React	Through the course of the project forty-one (41) individual support issues were raised and addressed, with no adverse outcomes.

	costs, and effective risk management.	support process. A tried and tested model that effectively delivers for industry.	Both business specific and industry wide issues were resolved in full.

Monitoring and evaluation

Table 2. Key Evaluation Questions

Key Evaluation Questions	Project performance	Continuous improvement opportunities
Effectiveness - to what extent has the project achieved its expected outcomes? To what extent has the project increased the adoption of the industry Best Practice Guidelines with regard to food safety and quality? Has the project provided food safety information and training to industry members, with a focus on those previously less involved with this issue? To what extent has the project assisted in managing / avoiding any crises? To what extent has the project demonstrated increased knowledge, skills, aspirations and attitudes (KASA) as well as practice change from adoption of R&D outputs?	The establishment of the food safety knowledge and information hub and communication and extension hub, the project has provided growers with ease of access to relevant and up-to-date resources. Training and support (SAFE MUSHROOM Program) has been widely promoted through the duration of the project; particularly focused on those businesses not currently required to undertake food safety training or implement a food safety system. Immediate uptake has been disappointing, however the content remains active and accessible beyond this project. The project has provided strong foundations and guidance, assisting in the resolve of several issues with potential industry wide impact. In the current economic climate allocation of resources to anything beyond core business is limited; uptake of project deliverables was disappointing, but overall awareness of quality and food safety issues has increased through the work undertaken.	Maintaining quality, food safety and risk management resources to underpin business and industry compliance. Continue to promote available resources to industry, and facilitate training and support as required. Encourage industry wide adoption of a base food safety standard, minimizing risk.
Relevance - how relevant was the project to the needs of intended beneficiaries? To what extent has the project enabled industry members to meet and exceed food safety requirements?	The project deliverables effectively addressed a whole of industry requirement for current food safety and quality knowledge. The proactive use of project resources should have facilitated further adoption and implementation of food safety systems for businesses not already required to comply with customer certification requirements. This appears not to be the case current economic climate, where allocation of resources to anything beyond core business is limited. The Act and React, Industry Support program has facilitated individual business and whole of industry resolve of key issues of food safety, quality and risk management; assisting industry to meet	Continue to promote available resources to industry, and facilitate training and support as required. Encourage industry wide adoption of a base food safety standard, minimizing risk. Continuation of the Act and React, Industry Support program

	and exceed food safety requirements.	
Process Appropriateness - how well have intended beneficiaries been engaged in the project and to what extent were engagement processes appropriate to the target audience/s of the project? Has the project team successfully engaged with industry? Has there been two-way dialogue with industry members, based on information provided directly and online? Have regular updates and news been provided through linkage with the industry communication project? Did the project engage with industry levy payers through their preferred learning style? How accessible were extension events to industry levy payers?	Industry engagement and interest in the project was positive throughout; however proactive adoption of available resources was limited. Consultation on extension activities, learning styles and uptake support was undertaken, however engagement was limited in the current economic climate, without clear drivers for adoption. With a small grower cohort (less than 30 growers) engagement levels were good, although challenges remain in the dissemination of information to key operational staff. Regular updates and articles have been delivered to industry.	Continue to promote available resources to industry, and facilitate training and support as required. Encourage industry wide adoption of a base food safety standard, minimizing risk.

Recommendations

Over the five years of project activity, MU20000 has delivered fully against the original project aims and objectives, reinforcing well established industry foundations in food safety, quality and broader risk management, and extending knowledge, resources and support to a wider audience.

The original auspice under which this and previous iterations of the project were established, namely the underpinning ethos of 'promote & protect' in managing the image and reputation of Australian mushrooms has been achieved.

The AMGA and project team experience, across industry engagement and long established external stakeholder relationships have ensured that the industry remains well supported and protected in key reputational risk areas.

However, throughout the project, proactive grower engagement was a challenge, and this impacted a number of delivery areas, particularly the limited uptake of the SAFE MUSHROOM Program and disappointing uptake of (free) verification testing. This challenge remained despite multi-channel communication and direct one-on-one contact with all levy paying growers.

While food safety is clearly of critical importance regardless of business size or market served, if there are no requirements to demonstrate compliance through training and audit, and no incidents have occurred, then it is easy for growers to choose not to make time or resource available. Moreover, the current operating environment for mushroom farms is extremely challenging. Falling demand, coupled with rising input costs, lack of availability of skilled labour and low farm gate returns means that many mushroom farms are currently struggling. In these cases, for non-certified growers where food safety training, certification and testing is not a requirement for them to operate, allocating time and resources to increase their knowledge of food safety issues, and training staff (who may or may not stay), is less of a priority.

An additional issue with the "Safe Mushroom" code of practice is that – while we had plenty of positive feedback on this in principle – in practical terms farms who supply retailers are required to be certified to a minimum of Freshcare or other GFSI accredited program. They cannot choose to do Safe Mushroom instead. Farms that do not supply major retailers are not required to be trained or certified to any standard, hence the lack the time and motivation to adopt a voluntary code.

Similarly, non-certified farms do not have to conduct food safety testing. Even though the service is free, there is no driver for them to do this, and so it can easily be put off until another time. Larger farms may find it easier to simply ask their market agent to submit a sample to FreshTest or to engage directly with accredited laboratories to meet their nominated scope and frequency of testing. The cost of testing is a cost of compliance for certified businesses and the offer of one free test per year is likely to be considered more of a complication to their regular procedures, rather than a saving, hence the limited uptake.

However, when the need arose the reactive industry engagement process was immediate and complete, reiterating the unquestionable value of the foundations established and maintained through this project. Without the knowledge and resources available, the ability for the project team to react in a timely manner and facilitate positive, reactive outcomes would be impacted.

Future iterations of this project should focus on core activity, maintaining the knowledge base and resources, but with a focus on

information being available as and when the need arises, and facilitating a continued steady information flow through established communication channels. The Act and React, Industry Support component remains critical at both an individual business and across industry level.

In addition to the resources, training, advice and support available to industry members, the ongoing focused efforts in a single "Food safety month" should be maintained, generating interest and awareness and provide an annual reminder on this critically important topic.

Refereed scientific publications

Not applicable.

Intellectual property

No project IP or commercialisation to report.

Acknowledgements

The collaborative nature of the Australian and wider international mushroom industry was reflected in the conduct of this project. The project team were supported by a Project Reference Group (PRG) drawn from the Australian mushroom industry, and an International Project Advisory Group (IPAG) comprising industry representatives from the UK, Canada and the US.

The support, knowledge and sector expertise of the PRG and IPAG is acknowledged, both in assisting in the project delivery, but also in continuing to facilitate a proactive and collaborative network strengthening the industry knowledge foundations and preparedness worldwide.

Project Reference Group (PRG)

The members included leaders of other levy funded mushroom projects as well as industry representatives:

- Chris Rowley (MU18001)
- Warwick Gill (MU16003)
- Judy Allan (MU16003)
- Patrick McClelland (MU18007
- Ashton Debono (MU18007)
- Dr Geoff Martin – Compost expert, Dr Mush
- Mohammad Mirzadeh – Grower, Bulla Park
- Matthew Fensom – Postharvest, White Prince Group

International Project Advisory Group (IPAG)

- Dr Lise Korsten, Department of Plant Sciences- Plant Pathology in the Faculty of Natural and Agricultural Sciences, University of Pretoria South Africa.
- Mr Mark Haynes, non-executive director of the fresh mushroom division of G's(UK) and advisor to the UK Soil Association.
- Dr Luke LaBorde – Professor of Food Science, Penn State University, USA.
- Dr Ralph Noble – Co-owner of Microbiotech Ltd, Worcestershire, UK.

Appendices

1. Appendix 1 AMGA Conference 2022 Dr. Jenny Ekman presentation
2. Appendix 2 AU + NZ Mushroom Conference 2024 - Exhibition poster
3. Appendix 3 Food Safety a Key Industry Priority
4. Appendix 4 Factsheet: Temperature Critical to Mushroom Quality and Safety
5. Appendix 5 Focusing on Food Safety Culture, the what, why and how
6. Appendix 6 MushroomLink Article – Protecting Australian Mushroom Industry with Safe Mushroom
7. Appendix 7 Focusing on Food Safety Culture, the what, why and how
8. Appendix 8 FSANZ – Focused on Food Safety Culture
9. Appendix 9 Promoting Verification Testing (A3 poster)
10. Appendix 10 Fact Sheet - Storing Chemicals Safely Fact Sheet
11. Appendix 11 MushroomLink Article- Safe Mushrooms – a new food safety code of practice for the mushroom industry.
12. Appendix 12 LinkedIn Article: Introducing the Safe Mushroom Program (Jan 23)
13. Appendix 13 MushroomLink ebulletin: Safe Mushroom Month (Dec 24)
14. Appendix 14 MushroomLink – SAFE MUSHROOM Food Safety Month e-bulletin October 2025
15. Appendix 15 LinkedIn Post – Safe Mushroom Month 2025

16. Appendix 16 Webinar: Food safety certification FAQs with Clare Hamilton-Bate (19 Jan 23)
17. Appendix 17 Webinar: Navigating food safety certification standards (11 Sept 24)
18. Appendix 18 Webinar: The Safe Mushroom standard – basic food safety for non-certified farms (25 Sept 24)
19. Appendix 19 Webinar: When things go wrong. Practical steps for mushroom growers (23 Oct 25)
20. Appendix 20 Introduction Video – SAFE MUSHROOM – Introducing the SAFE MUSHROOM Program
21. Appendix 21 Training Video - SAFE MUSHROOM – Harvester food safety induction
22. Appendix 22 Training Video – SAFE MUSHROOM – Farm Hands food safety induction
23. Appendix 23 Information Video – Food Safety, Quality and Risk Management for the Australian Mushroom Industry
24. Appendix 24 SAFE MUSHROOM Free Resources
25. Appendix 25 Introducing the SAFE MUSHROOM Program (Training modules require registration)
26. Appendix 26 Training Videos – SAFE MUSHROOM video instructions for the toolkit
27. Appendix 27 Free Food Safety and PPE posters for farms

Not publicly available

- PRG and IPAG Guidelines (supplied with MS102)
- Annual Global Scans: 2022, 2023, 2024, 2025-26 (AMGA Document Library - password protected)
- SAFE MUSHROOM Program Toolkit (https://australianmushroomgrowers.com.au/safe-mushroom-toolkit/ requires registration)
- SAFE MUSHROOM Food safety management plan for small manufacturers (https://australianmushroomgrowers.com.au/manufacturing-food-safety-plan/ requires registration)
- Rapid Review – microbial risk profile and management strategies in mushroom production (Confidential report)