

Final Report

Food Safety Training, Extension and Capacity for the Melon Industry

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Delivery partner: NSW Department of Primary Industries

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VM17002

Project:

Food Safety Training, Extension and Capacity for the Melon Industry VM17002

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Summary

The Australian melon industry recently experienced two foodborne illness outbreaks caused by rockmelons contaminated with *Salmonella* (2016) and *Listeria* (2018). As a result, melon growers and others in the supply chain suffered reputational damage and economic losses worth millions of dollars. Such incidents are detrimental to consumers' confidence in Australian melons and the growth and profitability of the industry. During 2014-17 the NSW Department of Primary Industries identified the need for improving the food safety systems of the melon industry. There were serious gaps in the postharvest practices such as inadequate fruit washing and sanitation, a lack of regular monitoring of critical processes and poor packhouse environmental control.

This project was aimed to strengthen the food safety systems of the melon industry (rockmelons, honeydews and specialty melons) through adoption of best practice across the supply chain. As part of this project, one-on-one food safety consultation and training was provided to 30 growers, who supply > 95% of the total fruit across melon growing regions of Australia. The project team built trust-based relationships with the growers by overcoming behavioural and commercial confidentiality barriers. These relationships enabled the adoption of best practice by growers and packers. All known packhouses (17) were visited to review their food safety systems and train key staff in managing food safety risks and monitoring the packhouse environment. Following our business-specific recommendations, the packhouses made changes in their infrastructure and postharvest operations. This led to a transformation of the food safety systems which enabled the industry to regain domestic and export markets. A Best Practice Guide and a Food Safety Tool Box were developed to provide all stakeholders with the practical resources to identify, assess and manage food safety risks associated with rockmelons and specialty melons. A national collaborative network was established with various government and industry organisations. Through this network, five melon food safety workshops were delivered across melon growing regions which were attended by over 95 participants including growers, packers, regulators, chemical re-sellers, consultants and researchers. A range of stakeholders including growers, packers and importers have consulted the food safety helpdesk for technical enquiries related to the melon food safety.

This project initiated the momentum of nurturing a food safety culture in the melon industry. The introduction and enforcement of the food safety regulation for high-risk horticultural industries including melons is imminent. The services delivered though this project have laid the foundation for the melon industry to successfully transition into a regulated environment. The growers have been supplying safe rockmelons with zero product recall during the past 10 months, even under heavy surveillance by the food and health regulators. This can be attributed to the enhanced capacity and knowledge of growers in successfully managing food safety risks.

Keywords

Melons, rockmelons, food safety, postharvest, sanitisers, packhouse, Salmonella, Listeria

Introduction

Food safety is a continuing challenge for fresh horticultural produce industries including melons. Foodborne illness outbreaks linked to the horticultural produce cause huge economic and reputational damage to the industry with a loss of consumer confidence. During 2016-18, 2 out of 4 food safety incidents related to domestic produce were linked to rockmelons and were multi-jurisdictional in nature affecting a large number of consumers. These incidents have caused huge economic and reputational losses to the industry in domestic as well as export markets. Due to the market conditions, small growers have been driven out of businesses. Large-scale growers have financially struggled to recover from these outbreaks with a breakdown of export channels.

Microbial contamination is the greatest challenge for the melon industry (especially rockmelons) around the world including Australia. Proximity of rockmelons to the soil during production and the netted rough skin are key factors predisposing the fruit to contamination. Bacteria such as *Salmonella* species and *Listeria monocytogenes* are the most common foodborne pathogens implicated in human illnesses due to consumption of contaminated rockmelons. There are multiple sources and routes of melon contamination in the field and after harvest. These need to be recognised and understood by the growers, packers and supply chain operators, especially as contamination of produce can occur at any stage along the supply chain. Supplying safe produce for human consumption is the responsibility and accountability of everyone involved in the supply chain and is the fundamental of any food business.

Globally, the number of foodborne illness outbreaks related to fresh produce has increased which can be attributed to the enhanced surveillance, better diagnostics and improved traceability along supply chains. The application of whole genome sequencing has recently opened up new vistas for rapid traceback investigations and containment of outbreaks. Perhaps, the technological developments in diagnostics and surveillance to protect the public health have outpaced the evolution of food safety systems and risk mitigation tools available to horticultural growers. Food and health regulators have already recognised this gap and are progressing towards filling it with a food safety regulation for high-risk fresh produce in Australia. The drivers and enablers shaping the future of melon food safety are presented in our vision for the Australian melon industry in the illustration below:



Through a 'Safe Melons' initiative, the NSW Department of Primary Industries has been providing the melon industry with food safety R&D services since 2014. The aim of the 'Safe Melons' initiative is to safeguard the Australian melon industry and consumers against the food safety risks. During 2014-17, a strong need for improving the food safety systems of the melon industry was identified as there were serious gaps in the postharvest practices such as inadequate fruit washing and sanitation, a lack of regular monitoring of critical

processes and poor packhouse hygiene.

Preventing contamination is the most effective and economical approach to minimising the risks of contamination during field production and postharvest handling. To follow this approach, the knowledge of potential sources and routes of contamination is a prerequisite. Growing produce in open fields brings in a number of risk factors that are complex to understand. Therefore, the basic knowledge of food safety risk factors and the procedures to minimise those risks can help in achieving the safe supply of fruit. The services delivered through this project strengthened knowledge and adoption of best practice in food safety for melons across the supply chain by developing evidence-based and practical resources; delivered a series of training activities in all regions capturing growers, managers and key farm staff; reinforced food safety capacity across the supply chain; and contributed to the development of a food safety culture in the industry.

Methodology

PROJECT ACTIVITY 1: Visit all growers and packhouses to review and audit current practice and critical control points and provide one-on-one food safety consultations with growers, managers and key farm staff.

Rockmelon growers and packers were consulted to review their current practices and critical control points. More than 30 rockmelon growers and packers who supply >95% fruit to domestic and export markets were visited and provided with food safety consultation. The following activities were undertaken:

- On-site review of current food safety plans of growers and packers
- On-site review of postharvest practices and packhouse environmental control

The data and information about the growers has been treated in confidence. As such, individual businesses cannot be identified and the results can only be reported in aggregate. A summary of the one-on-one consultation with rockmelon growers and their locations across Australia is attached as Appendix I. The summary captures high level information on critical control points and processes in melon food safety and provides a snapshot of the industry practice.

PROJECT ACTIVITY 2: Develop a Best Practice Guide (Back to Basics) for melon food safety informed by the findings from consultations with growers and packhouses.

A Best Practice Guide for melon food safety has been developed and implemented in the industry. This guide covers food safety principles and practices pertaining to preharvest and postharvest handling of melons which are generally washed before shipping to markets. Use of the term 'melons' in this guide refers to rockmelons, honeydew melons and specialty melons (e.g. Piel de Sapo, Orange Candy). It does not provide guidance on fresh watermelons and pre-cut melons. The main purpose of this guide is to provide a practical food safety resource to growers, packers, transporters, wholesalers, retailers and others involved in the supply chain. The existing melon food safety resources available within Australia and from overseas were reviewed to develop this guide. The latest scientific research on food safety of melons was incorporated in this document. The industry baseline data collected during the consultation process was used to tailor these guidelines for quick and easy adoption to mitigate food safety risks. The Best Practice Guide Document is attached with the report and will be uploaded on the websites of NSW DPI and Australian Melon Association. Appendix II is the cover page of the guide.

PROJECT ACTIVITY 3: Visit all growers and *packhouses* to monitor current practice and train key staff on the Best Practice Guide

This activity was an extension of the project activity 1 covering growers and packers to monitor their current practice and train key staff in assessing and managing food safety risks. During the visits, the operational packhouse facilities were assessed for washing and sanitising processes such as measurement of sanitisers concentrations, contact times, wash water sources, injection and monitoring of sanitisers and packhouse environmental monitoring. The packhouse staff were trained in measurement of sanitiser concentrations, identification of hot-spots for cross-contamination in their businesses and implementation of packhouse environmental monitoring program through training in cleaning, sanitising and microbiological sampling.

Microbiological analysis was conducted on the fruit and environmental samples collected from nine participating packhouses. Approximately 1800 tests were conducted on samples from various packhouses across melon growing regions and retail stores. Less than 2% samples tested positive for *Salmonella* and/or *Listeria monocytogenes* and were mainly fruit contact surfaces. The test results were confidentially shared with the participating packhouses along with recommendations for corrective actions, if required. A snapshot of the microbiological analysis verifying food safety systems across the industry is presented as Appendix VIII.

PROJECT ACTIVITY 4: Develop Food Safety Toolbox with resources for farm and packhouses to support the Best Practice Guide.

A Best Practice Toolbox has been developed integrating new knowledge focused on risk-reduction strategies along with a compilation of related resources and information. This toolbox has been included as the last chapter of the Best Practice Guide. The toolbox (snapshot as Appendix III) contains the following key food safety topics:

- Fruit washing and sanitising critical control parameters
- Dump tank management
- Validation of fruit washing and sanitising processes
- Chlorine understanding its chemistry and management
- Peracetic acid understanding its chemistry and management
- Potential hot spots for cross-contamination of melons
- Packhouse cleaning and sanitising
- Packhouse environmental monitoring program
- Responding to microbiological test results
- Developing standard operating procedures
- Tips for writing a standard operating procedure
- An example of a standard operating procedure
- Melon food safety checklist preharvest
- Melon food safety checklist postharvest

The industry practice influencing food safety risks was highly variable due to a diversity of processing machinery, water sources, types of sanitisers and application methods, scale of operation and packhouse design. Therefore we compiled general guidelines for developing standard operating procedures (SOP) for melon packing operations and wrote tips for writing a SOP. An example of a SOP for harvest bin cleaning and sanitising is presented in the Best Practice Guide.

PROJECT ACTIVITY 5: Deliver regional roadshows/workshops in key growing regions to socialise the Food Safety Best Practice Toolbox and Best Practice Guide

In collaboration with state agencies and industry organisations, we delivered five workshops on melon food safety across the country under the current project (VM17002). The workshops were successful with over 100 participants representing a range of stakeholders such as growers (33%), supply chain participants (33%), QA managers, researchers and exporters. The aim of these workshops was to train and educate the participants in identification, assessment and management of food safety risks along the supply chain. The participants were given an opportunity to learn the latest developments in melon food safety and technical strategies to minimise the food safety risks. Appendix IV provides an overview of the workshop dates, venues, collaborators, and the number and nature of participants.

PROJECT ACTIVITY 6: Consult with growers and packhouse staff to ensure adoption of Food Safety Best Practice Toolbox and implementation of Best Practice Guide

Following our business-specific recommendations, the packhouses made changes in their infrastructure and postharvest operations leading to a transformation of the food safety systems which enabled the industry to regain domestic and export markets. All packhouses (17) went through significant changes ranging from minor (cleaning and sanitising schedules) to major infrastructural (e.g. water treatment systems, washing and brushing systems) and process changes (e.g. automation of sanitiser injection and monitoring). To measure the project outcomes, the changes in industry practice were documented and have been listed in the Appendices V & IX.

PROJECT ACTIVITY 7: Provide a Food Safety helpdesk for the project duration.

A Food Safety Helpdesk service was provided as a technical support to the growers, packers and other stakeholders. We addressed over 60 enquiries related to a variety of topics including microbial food safety risks, routes of contamination and preventive measures, selection of sanitisers and their concentrations, water treatment options, interpretation of microbial results and packhouse hygiene. Growers, packhouse staff and public

health regulators were the main users of this service. However, enquiries were also received from other supply chain participants such as agronomists, chemical resellers, extension officers, and exporters. The project leader has been providing this service to the industry since 2014, especially during the 2016 Salmonella outbreak and the 2018 Listeria outbreak. A snapshot of this project activity is attached as Appendix VI.

PROJECT ACTIVITY 8: Liaise with the Australian Melon Association and Hort Innovation to provide relevant communication about the project, in particular, the availability of resources, planned visits and roadshows.

The project leader liaised with the Australian Melon Association and Hort Innovation with regard to project communications. The schedule of all workshops was communicated to individual growers and other organisations through the AMA's Melon News and Hort Innovation's industry events portal.

PROJECT ACTIVITY 9: Identify opportunities for future R & D investment to ensure ongoing food safety and prevention of food-borne pathogen contamination.

Recommendations for future R&D investment:

- Continue food safety training, extension and capacity building program to develop and nurture a food safety culture in the industry.
- Enhance food safety capacity of watermelon growers in managing food safety risks during production and postharvest handling.
- Develop a Best Practice Guide for Watermelons to manage microbial food safety hazards at both producers and retailers levels.
- Achieve consistency in the industry practice through development and implementation of a voluntary standard for postharvest washing and sanitation of melons.
- Explore new postharvest treatments (e.g. heat, fungicides, coatings) to improve quality and safety of melons in the export chains.

Outputs

The following outputs have been delivered:

- a Best Practice Guide for melon food safety addressing key knowledge gaps for the industry and providing practical solutions to embed food safety across the supply chain (Appendix II and attachment)
- a Food Safety Best Practice Toolbox with key resources for farm and packing sheds to support the Best Practice Guide (Appendix III and attachment)
- five food safety workshops in key growing regions and a presentation in the Melon Industry Conference in 2018 (Appendix IV)
- adoption of best practice in food safety for the melon industry and upskilled supply chain to restore consumer confidence in the product (Appendix V)
- a Food Safety Helpdesk for technical support to stakeholders (Appendix VI)
- opportunities for future R & D investment to support ongoing food safety in the industry (Recommendations section)
- a final report.

A summary of project achievements is as below:



Outcomes

The main outcomes of this project were:

- immediate technical support to the melon industry in expediting the recovery from the 2018 Listeria outbreak linked to rockmelons. The one-on-one consultations were very effective in developing relationships and discussing food safety practices with confidentiality. The growers and packers could share their data and information to seek technical advice for potential changes in their food safety practices. As a result, the growers have been supplying safe rockmelons with zero product recall during the past 10 months, even under heavy surveillance by the food and health regulators. This can be attributed to the enhanced capacity and knowledge of growers in successfully managing food safety risks.
- identification of gaps in the knowledge and industry practice that could be addressed through continuous
 improvement of the risk management strategies adopted by the Australian melon industry. Finding the
 gaps in the industry practice and the level of growers' knowledge formed the basis of the content and
 scope of the Best Practice Guide, Food Safety Toolbox and training materials. The topics in the guide and
 food safety toolbox are targeted at key issues that were identified during nation-wide consultation.
- scientific evidence and data-driven approach to effectively communicate the project outputs with a final goal of industry adoption, hence mitigating food safety risks to consumers and industry leading to rebuilding of consumer confidence. All known packhouses (17) which supply >95% of rockmelons participated in the project to share their current practices. The project team suggested changes in the infrastructure and postharvest processes. The adoption of these changes led to transformation in the food safety systems, enabling supply of safe rockmelons to consumers in domestic and export markets. The outcomes of this project were also shared with key stakeholders (importers, regulators and supermarkets) in major export markets. This helped changing their mindset and attitude towards Australian melons and industry's approach to manage food safety risks.
- delivery of data and information from the project to inform all players in the melon supply chain ensuring
 a consistent delivery of safe produce, thus strengthening the industry's goal to enhance melon
 consumption in domestic and export markets. The food safety workshops delivered across Australia
 attracted a range of supply chain players such as growers, packers, exporters, chemical re-sellers,
 researchers, agronomists and regulators. The presentations were aimed to increase adoption of best
 practice across the supply chain through the enhanced knowledge of the food safety risks and their
 management.
- reducing economic and reputational losses to the industry due to food safety failures. Minimising the food safety risks linked to production and postharvest supply of melons could prevent the public health concerns in the near future. The project outputs have directly contributed to the industry's ambition of achieving the zero product recall.

Monitoring and evaluation

Challenges

There were some difficulties in achieving grower participation in this project. In the beginning of the project (June-August 2018), a lack of growers' interest stemmed from the anger and frustration caused by the Listeria outbreak in February 2018. However, the Australian Melon Association and other supply chain players facilitated the consultation visits by convincing some uninterested growers who later became the active project participants. The remote location of melon farms across the country was the greatest challenge. Some growers and packers were identified as 'high-risk' because of the gaps in their food safety practices. These businesses were visited twice to make sure the suggested changes were implemented. This caused significantly higher travel costs to the project than the estimated costs at the time of project planning. Some large scale growers also expressed their concerns of supplying commercial in confidence information. Despite these challenges, the project team built trust-based relationships with the growers by assuring them the confidentiality of their information and providing them with the much needed technical support to improve their systems.

Key evaluation questions

Effectiveness

Has the project team consulted and visited rockmelon growers in melon producing states and territories? Is there evidence of adoption of best practice (practice change or introduction of new food safety practice)? Have all activities, KPIs and outputs been achieved?

This project had an extensive outreach to rockmelon and specialty melon growers across Australia. We had proposed to consult 35–40 rockmelon growers. However, after the listeria outbreak, at least 5-6 small to medium scale growers in NSW, Qld and NT suspended their production due to the unfavorable market conditions. There were another 5–6 small scale growers in Western Australia (Geraldton and Perth Metropolitan) who could not be provided with one-on-one consultation due to their remote locations and their unwillingness to participate. The characteristics of rockmelon growers who could not be consulted are as follows:

- Irregular growing and very small production scale (<5% of the total industry)
- Supply fruit locally to green grocers and food service
- Non-HARPS compliant
- No proper fruit washing and sanitising facilities.

Some WA growers kept supplying unwashed fruit to the local stores which was a serious concern and was escalated to the WA Department of Health. However, the project leader did not receive any response from the agency. AMA also contacted the supermarkets which were storing and retailing the unwashed melons. These growers will be engaged in the second phase of this project (VM18003) and provided one-on-one consultation to improve their food safety practice.

The adoption of best practice was successful as the growers and packers implemented key changes in their systems that enabled them to supply safe melons to consumers. The microbiological survey and business-specific changes as shown in Appendix V are evidence of the adoption of best practice. Approximately 2000 sample tests for foodborne bacterial pathogens were planned, but 1813 were actually analysed. Two packing sheds were supplied with over 200 sampling sponges and kits, but failed to return the samples for testing due to unknown reasons. While some other businesses were keen to get an additional round of testing to verify their food safety practices.

Relevance

Did target beneficiaries participate in the project and had access to technical information and advice as proposed? To what extent has the project met the needs of Australian melon industry? Are there any gaps or additional opportunities for research?

Participation of target beneficiaries was satisfactory in this project. The rockmelon industry has recently consolidated with a small number of growers (30) who supply the majority (95%) of the fruit. Though the number of growers has declined, the production volume has remained at past levels. The consolidated nature of the industry was a key factor in achieving higher participation and adoption of the project outputs.

Food safety is a high priority for the melon industry. The project deliverables have supported the industry to recover from the listeria outbreak through one-on-one consultation and provision of food safety practical resources and training opportunities. There are additional opportunities for R&D to minimise microbial food safety risks in the melon industry. These are included in the recommendations section of the report.

Process appropriateness

Did the project engage with industry levy payers through appropriate methods? How appropriate were the project activities and outputs for achieving its intended outcomes? How appropriate were the management and governance processes and the resources used for delivering the project?

There were different levels and methods of engagement with levy payers such as one-on-one consultation, group workshops, a helpdesk service and industry conferences. The on-site visits and individual consultation was probably the most effective method of achieving positive food safety outcomes. The training of packhouse staff customised to their business specific operations was received and acknowledged as the real value for their levy. The microbiological survey offered an opportunity for packers to seek and destroy resident pathogens in their facilities without involvement of any regulatory burden. The growers have been requesting more microbiological sampling even after the project has come to near completion. This shows the importance and value of this project activity to growers and packers. NSW DPI's project management systems were used to monitor project progress and the utilisation of resources. The project progress was presented to the melon industry SIAP in October 2018. Commendation was received from the Chairman and SIAP for reaching out to the melon growers and packers on their sites at remote locations.

Efficiency

Did the project identify opportunities to improve efficiencies? (Including implementation of new technology, technique, practices, workflow etc.)

The project involved consultation, training and outreach activities. One-on-one training and consultation was though an old style extension and advisory service, but was perhaps the most effective and needed for the industry which has been labelled as 'high-risk'. Overall efficiencies in terms of resource use were low, but the return on investment turned out to be brilliant with regard to the adoption success. There were serious gaps in the industry practice and a low level of food safety knowledge among growers and packhouse staff. Modern methods of learning using contemporary aids such as virtual reality could enhance the efficiency of the project.

A snapshot of stakeholder feedback on the project is attached (Appendix VII).

Recommendations

Key recommendations to the melon industry:

- Preventative and proactive approaches should be followed to manage melon food safety. The growers, packers and supply chain participants must acknowledge their moral and legal responsibilities to supply safe food to consumers.
- Agronomic practices such as no use of raw animal manures, avoiding the use of composts containing animal manures, monitoring irrigation water quality, using potable water for chemical sprays, using plastic mulch and drip irrigation, using windbreaks to minimise dust load on fruit, and preventing livestock and wildlife incursions in the field are effective in mitigating microbial contamination risks in the field.
- Postharvest practices such as precooling, dry dumping, drinking quality wash water containing an effective sanitiser, proper contact time of fruit with the sanitised water and brushes, and automation of sanitiser injection and monitoring should be followed.
- Packhouse cleaning and sanitising should be conducted by trained workers following a standard operating procedure at the end of each shift.
- Packhouse environmental monitoring program based on a 'Seek and Destroy' approach should be followed to prevent the entry and establishment of foodborne pathogens.
- Training field and packhouse workers in food safety practice and hygiene can contribute significantly to nurturing a food safety culture in the industry.

Recommendations for future R&D investment:

- Continue food safety training, extension and capacity building program to develop and nurture a food safety culture in the industry. The melon food safety project will ensure the growers and packers are supported for 2-3 years with an anticipation of continuous improvement in their food safety systems. Once the food safety culture is established in the industry, they should be able to supply safe fruit to consumers.
- Enhance food safety capacity of watermelon growers in managing food safety risks during production and postharvest handling.
- Develop a 'Best Practice Guide' for watermelons to manage microbial food safety hazards at both producers and retailers levels. The engagement with retailers can be a challenge and can be potentially addressed through assistance and facilitation by the public health and food regulators. It is therefore critical to engage with all stakeholders along the value chain to achieve positive outcomes.
- Achieve consistency in the industry practice through development and implementation of a voluntary standard for postharvest washing and sanitation of melons.
- Explore auxiliary postharvest treatments (e.g. heat, fungicides, coatings) to improve quality and safety of melons in the export chains.

Refereed scientific publications

None to report

Intellectual property, commercialisation and confidentiality

There are two major project outputs from VM17002:

- Melon food safety a best practice guide for rockmelons and specialty melons
- Melon food safety toolbox- practical resources for implementing best practice

These documents will be published (print and electronic formats) by the NSW Department of Primary Industries. The funding statements, acknowledgements and agency logos have been included as per Hort Innovation's guide. These resources will be available to all users and will be uploaded on the websites of Hort Innovation, Australian Melon Association and NSW DPI.

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- Australian Melon Association (growers consultation, workshops and conference)
- Dianne Fullelove, Australian Melon Association (growers consultation and speaker at workshops)
- Dr Craig Shadbolt, NSW Food Authority (food safety incident, compliance and training)
- Dr Fahri Fahri, NSW Food Authority (food safety training)
- Anne McIntosh, NSW Food Authority (food safety auditing)
- John Shields, NSW Food Authority (food safety compliance)
- Alan Edwards, NSW Food Authority (food safety compliance)
- Lorraine Spohr, NSW Department of Primary Industries (final report and training material)
- Anne Harris, NSW Department of Primary Industries (training material)
- Joel Dinsdale, Vegetables WA (workshop and growers consultation)
- Valerie Shrubb, WA Department of Primary Industries (workshop and growers consultation)
- Annie van Blommestein, Carnarvon Growers Association (growers consultation and workshop)
- Doriana Mangili, Sweeter Banana Co-operative (workshop)
- Chris Hall, Total Quality Assurance (growers consultation)
- Dr Tahir Khurshid, NSW Department of Primary Industries (workshop)
- Dr Fiona Constable, Victoria Agriculture (workshop speaker)
- Michelle Haase, Growcom (workshop speaker)
- Thomas Hertel, Fair Farms, Growcom (workshop speaker)
- Dr Matt Hall, NT Department of Primary Industries (workshop)
- Stacey Spletter, Queensland Health (grower consultation)
- NSW Department of Primary Industries (workshop venues)
- Queensland Department of Agriculture and Fisheries (workshop venue)
- WA Department of Primary Industries & Regional Development (workshop venue)
- Bundaberg Fruit and Vegetable Growers Association (growers consultation)
- Carnarvon Growers Association (growers consultation)
- Ord River District Co-operative Ltd (growers consultation)
- Vegetables WA (workshop)

Appendices

- I. One-on-one food safety consultation with melon growers & industry practice survey
- II. Melon food safety- a best practice guide for rockmelons and specialty melons
- III. Melon food safety toolbox- practical resources for implementing best practice guide
- IV. Summary of workshops
- V. Implementation of best practice guide
- VI. Food safety helpdesk service report
- VII. Stakeholder feedback
- VIII. Microbiological analyses report (confidential)
- IX. Supplementary information to appendix V (confidential)

Appendix I

One-on-one food safety consultation

Thirty rockmelon growers and packers were visited on-site to provide technical support and review their food safety systems. One-on-one consultations allowed these growers and packers to understand and improve their food safety plans and infrastructure so as to minimise the microbial food safety risks. Business specific critical control points for managing food safety risks were identified.

On-site review of growers and packers food safety plans:

Food safety certification

On-site review of preharvest practices:

 Site location, water source and irrigation methods, soil amendments, wildlife control and agronomic practices.

On-site review of postharvest practices:

 Packhouse design and layout (i.e. access control), fruit dumping, washing and brushing, postharvest water source and treatment, pre-sanitisation and sanitisation wash water, sanitisers, fungicides, equipment sanitisation, hygiene control points, environmental hygiene, cool room and packing materials inspections, worker training and hygiene facilities, microbiological testing schedule, monitoring and record keeping.



Packers and growers received a summary of observations, food safety results from onsite testing and potential gaps in preharvest and postharvest practices from each consultation. This also included recommendations to immediately take corrective actions to mitigate food safety risks.

Appendix I contd..



Appendix I contd..



Appendix II



Appendix III



Dr Sukhvinder Pal (SP) Singh www.dpi.nsw.gov.au

Appendix IV

Workshops

Melon food safety workshops were organised in different melon production regions across Australia. The aim of these workshops was training and educating a range of stakeholders in adopting best practice across the supply chain.

Collaborators

These workshops were conducted in collaboration with relevant industry and government organisations.



Workshop Schedule

Region	Venue	Date	Participants
Riverina, NSW	NSW DPI, Griffith	31 October 2018	19
Carnarvon, WA	WA DPIRD, Carnarvon	21 November 2018	17
Bundaberg,	QDAFF,	21 February	23
Qld	Bundaberg	2019	
Sunraysia, Vic	NSW DPI,	8 March	15
& NSW	Dareton	2019	
Perth,	Canning Vale	12 March	22
WA	Markets	2019	

Appendix V



Appendix VI

Food Safety Helpdesk Service This service was provided to a variety of stakeholders to address their scientific and technical enquiries related to melon food safety. Face-to-face at the Melon Industry Conference 2018 Email Phone A TOTAL OF 67 Regulators 14 **TECHNICAL ENQUIRIES** ADDRESSED FROM VARIOUS Growers **STAKEHOLDERS** 31 Packhouse QA Media Importers 2 10 **Enquiry Topics** WORKER HYGIENE WATER FILTRATION MICROBIAL LOAD NEW SANITISERS COMPLIANCE WITH HARPS PRE-COOLING SOIL AMENDMENTS INTERPRETATION OF MICROBIAL TEST RESULTS WATER TREATMENT FERTILISERS SAN **FRUIT WASHING IRRIGATION WATER** SANITISER CONCENTRATION **QA COMPLIANCE** PACKHOUSE HYGIENE POSTHARVEST COLD STORAGE FUNGICIDE SANITISER MEASUREMENT MICROBIAL SAMPLING DUMPTANK MANAGEMENT *FONT SIZE INDICATES HOW FREQUENTLY THE TOPICS WERE BROUGHT UP (THE LARGER THE WORD THE MORE FREQUENTLY IT WAS DISCUSSED)

Appendix VII

Stakeholder feedback

Australian Melon Association

"VM17002 commenced with intensive support for rockmelon growers to ensure that their food safety practices were meeting high level standards. All commercial rockmelon growers participated and there have been no reports of food-borne pathogens in rockmelons since then, despite intensive product testing by the project and state food authorities. The project is being seen as a model for creating culture change in food safety practices in horticultural industries. I have been asked to speak about these outcomes at many food safety forums in Australia and the industry is so confident in our current practices that we have commenced a project to visit our export markets to outline the outcomes from VM17002. Visits have been conducted in Japan, Singapore and Malaysia with the Middle East planned for later in the year"..

A rockmelon grower, packer and exporter from Victoria

"The most helpful aspect to this project for my business was the one on one technical consultation. This gave us an in depth review of our systems and highlighted the areas where we should most focus our attention as well as making helpful recommendations on changes that can be made. It was very helpful to gain a better understanding of typical industry practices through the best practice implementation. This gave us a better understanding of how different systems work and gave us insights into how our own system could be improved. The swab testing that took place was also worthwhile as it gave us re-assurance with our food safety system and also highlighted an area where we could do better. We did not use the food safety helpdesk. The workshop was informative but personally I would say the biggest benefit was from the one on one consultation. In summary, the personal consultation proved highly valuable and I think this aspect should underpin any future project. It is very easy for growers to become complacent with their food safety systems. The old adage of if it isn't broken it doesn't need fixing does not always ring true, and to have an independent expert go over a system and offer best advice and make sure there isn't something that has been overlooked is probably the best way our industry can avoid future food safety incidents".

Vegetables WA

"Thanks for the opportunity to provide you with feedback following your presentation earlier this year. Your content was really well received by our stakeholders in the west. I think the measure of a good presentation is the uptake of the content. Since speaking to stakeholders that attended the session, I have seen and heard of many changes that were essentially brought forward by your session and the information provided. The facts were particularly important for our melon growers but were also useful to our "other produce handlers", government and private sector reps. We were wrapped with the level of attendance and uptake and we are really keen to invite you back as we found you to be a really great speaker! Thanks a lot for your efforts"

A rockmelon grower, packer and exporter from NSW

We would like to comment on the integrity on which the NSW DPI had brought to our business the knowledge and critical information on how we as packers of a product that has now been aware to be a high risk product.We can strongly agree SP Singh has an important role to our industry and also would agree he has done a great job to improve the safety of rockmelons within Australia"