



Department of  
Primary Industries



**Hort  
Innovation** **MELON  
FUND**

# Melon Food Safety

**S.P. Singh, PhD**

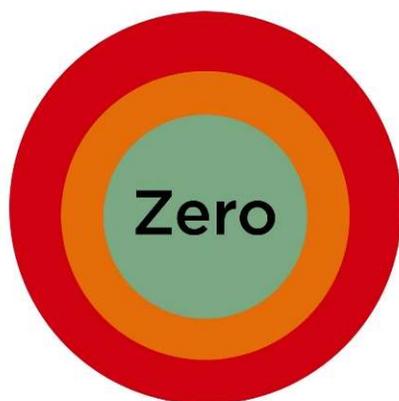
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# Presentation outline

- Safe Melons: Melon R&D levy funded project (VM20005) summary
- Primary Production and Processing (PPP) Standards for Melons
- The way forward- transitioning into the regulatory phase



'Safe Melons' program verifies food safety preventative controls undertaken by growers and packers to ensure we continue to achieve "Zero Product Recall and Zero Incident".

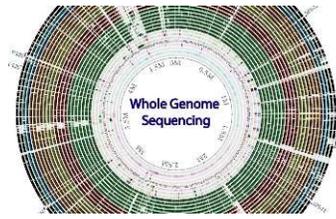


Above and beyond standards, we foster and promote a strong food safety culture in our industry. Led by growers, supported by science- and data-based risk management, and trusted by all supply chain participants, including consumers.

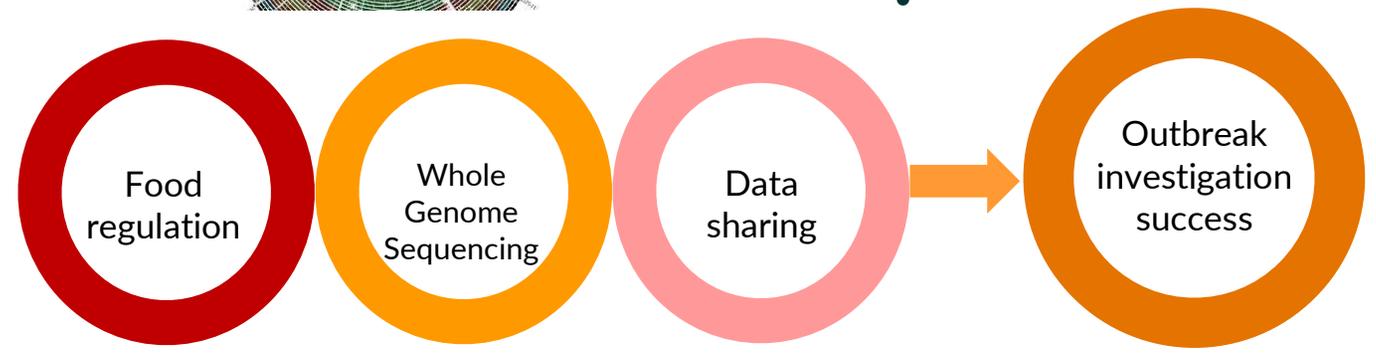


**Consumers**  
**Retailers**  
**Exporters**  
**Importers**  
**Regulators**  
**Packers**  
**Growers**



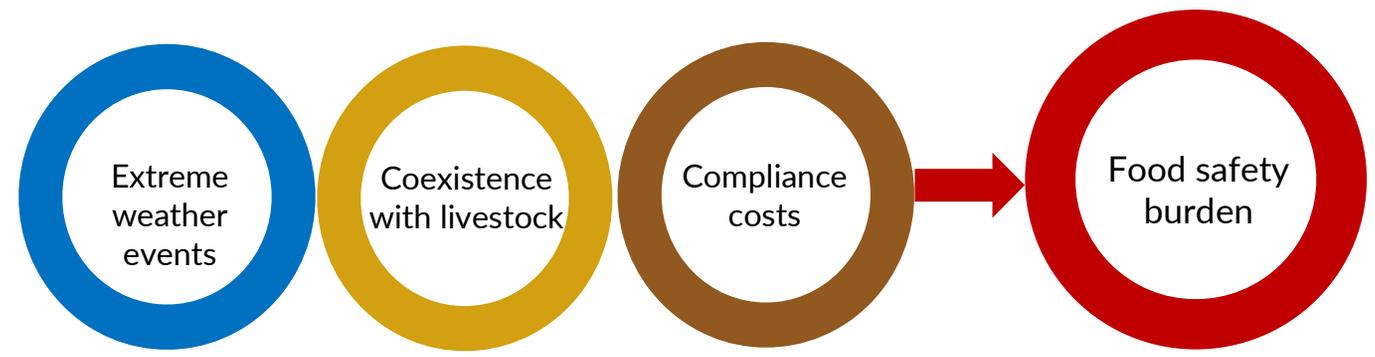


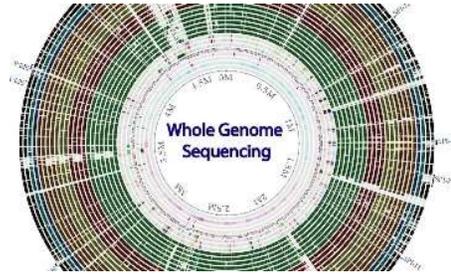
## Regulators



## Industry

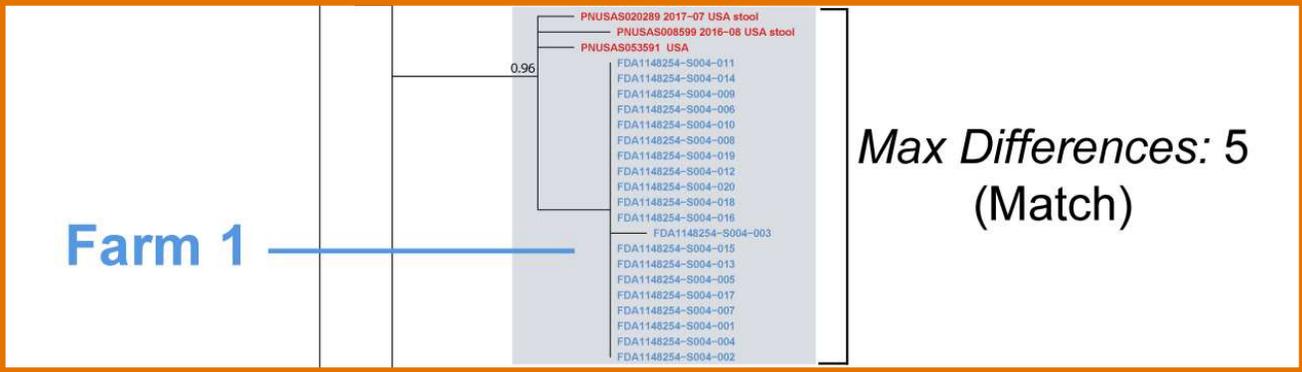
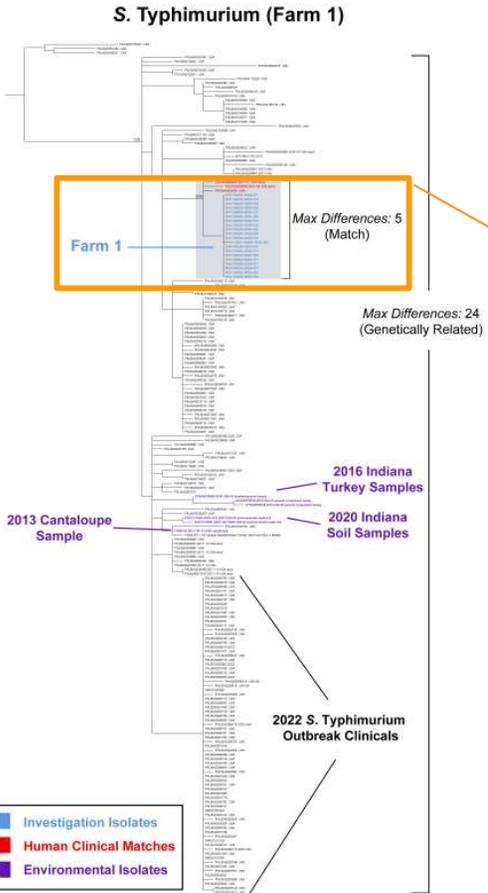
\$250 millions





**Outbreak Investigation Report:**

Factors Potentially Contributing to the Contamination of Cantaloupe Implicated in the Outbreak of *Salmonella* Typhimurium During the Summer of 2022



**Whole-genome sequencing showed no links to the 2022 *Salmonella* outbreak under investigation.** However, a strain matched three human clinical cases collected between 2016 – 2018 indicating that this strain has caused disease.



## Salmonella outbreaks in the USA

- Mid-2022
- Sep 2023 to Jan 2024

**CDC declares end of cantaloupe salmonella outbreak that killed 6, sickened more than 400**

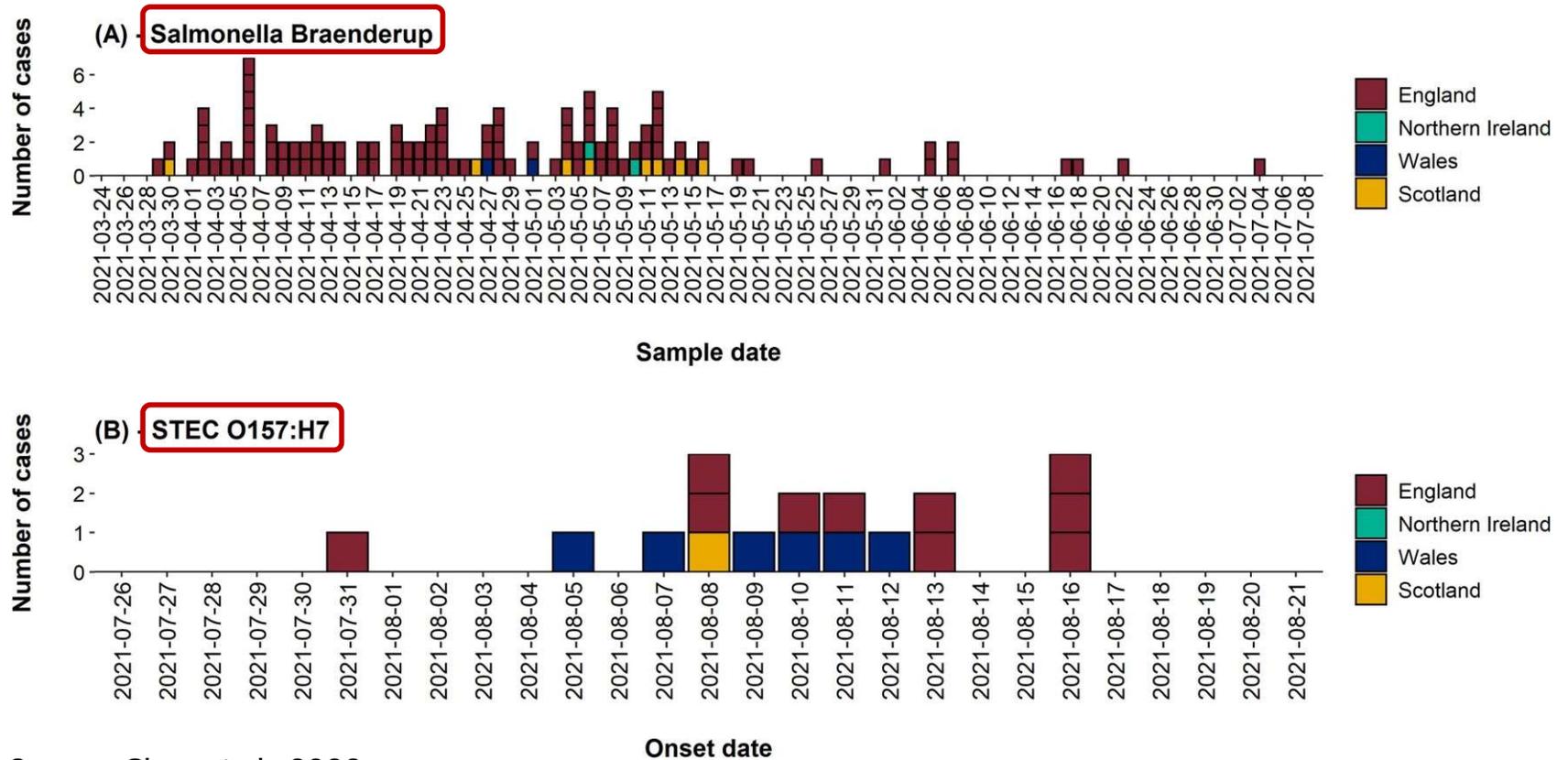


**Natalie Neysa Alund**

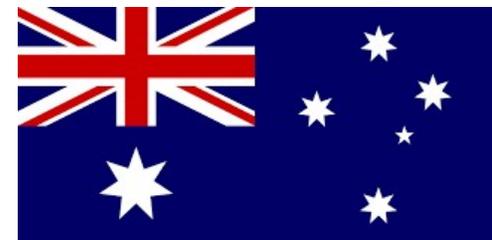
USA TODAY



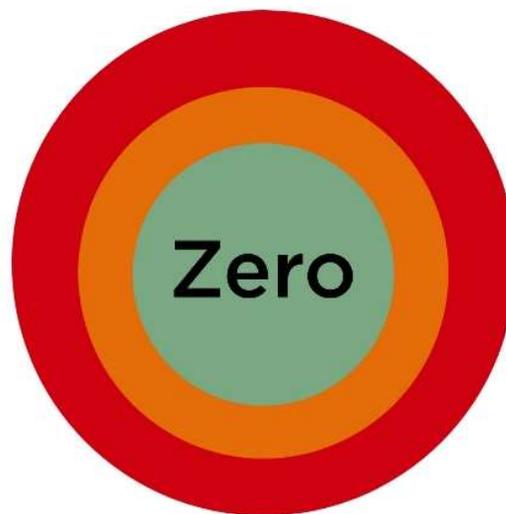
Imported Galia and watermelon caused outbreaks in the UK in 2021.



Source: Chan et al., 2023



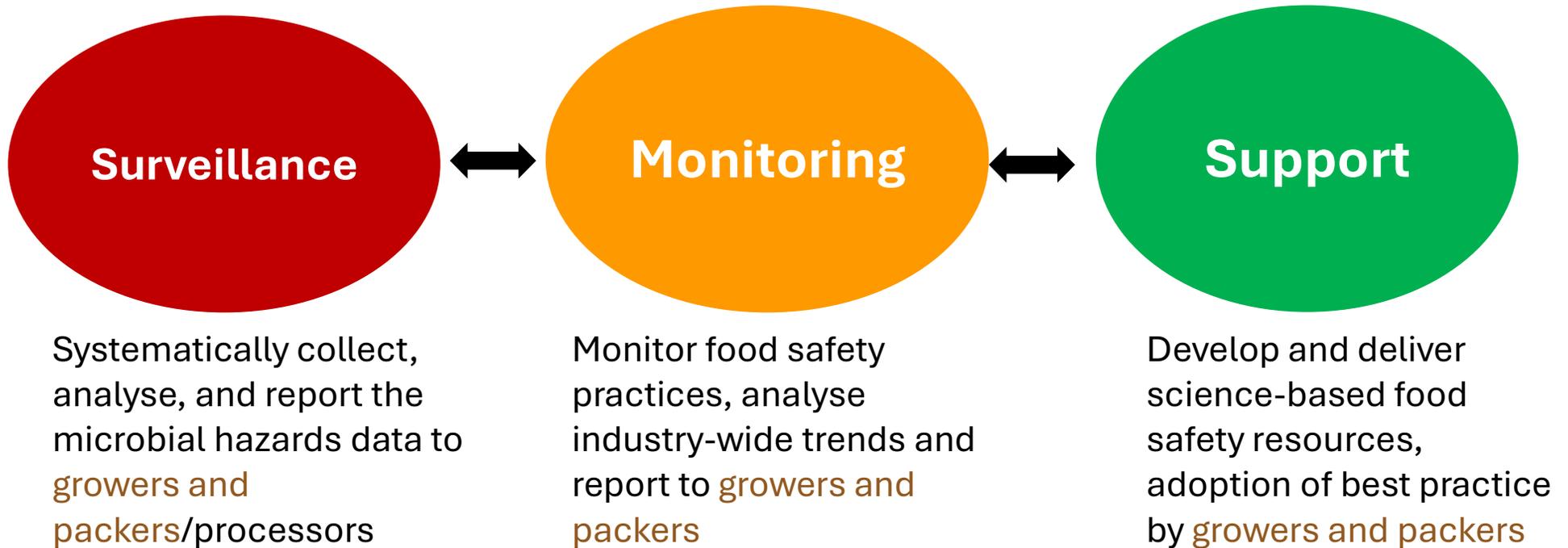
Since 2018  
"Zero Product Recall and Zero Incident".



Anonymity of prevention

## VM20005

# Melon Food Safety Monitoring and Support





(Aug 2021 to April 2024) > 147 growers nationally

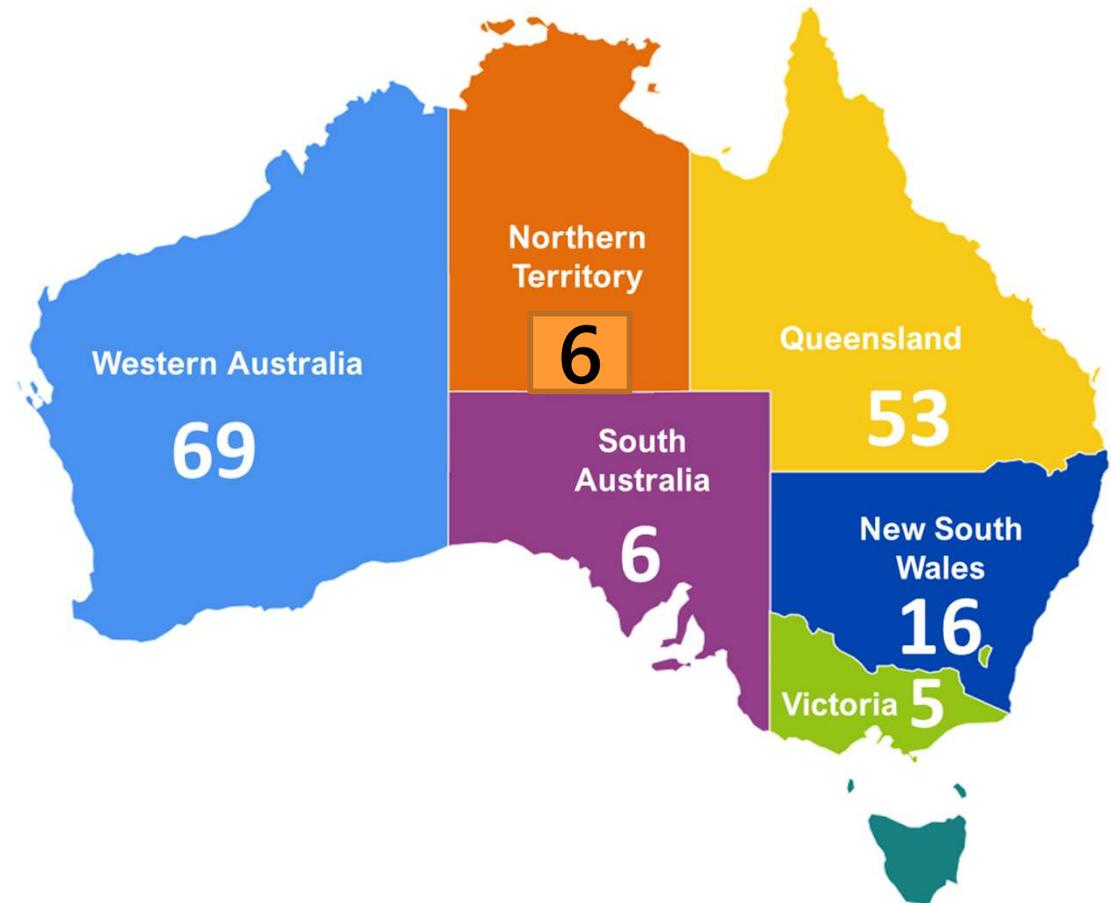
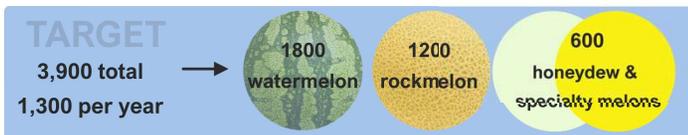
Target locations:

- Melon farms
- Packing sheds
- Wholesale
- Retail

Target pathogens:

- *Salmonella species*
- *Listeria monocytogenes*
- *Shiga toxin producing E. coli (STEC)*

**1,300 samples / year**



# Melon food safety surveillance sampling status

(August 2021 to January 2024)

**Watermelon** 

**Rockmelon & honeydew** 

**Specialty** 

 Fruit  
samples

1,525

2,028

353

 Environmental  
samples

1,037

**Total samples**

4,451

# Melon Food Safety Surveillance Results

National versus the Northern Territory

(Aug 2021 to Jan 2024)

## National Results

4,451 Samples

Confirmed positives

30/4,451

0.67%

*Listeria monocytogenes*



57/4,451

1.28%

STEC



21/4,451

0.54%

*Salmonella species*



## Northern Territory

303 samples

Confirmed positive samples

1/303

0.33%

*Listeria monocytogenes*



0/303

0.00%

*E. coli (STEC)*



3/303

1.00%

*Salmonella species*



## DPI Primefact

## Bushfires in WA

- Displacement of wildlife (e.g. kangaroos) from their native habitat
- Wildlife incursion in produce fields
- Microbial risks increased
- Technical support to WA DPIRD

### Microbial food safety risks associated with producing and processing fresh produce in bushfire-affected regions

December 2023, Primefact PUB23/1247, first edition

Dr Sukhvinder Pal (SP) Singh, Senior Research Scientist, sp.singh@dpi.nsw.gov.au, 0420 593 129

**Are your fresh produce production fields or processing facilities in or near a bushfire-affected region? Or do you source fresh produce from that region?**

**Re-assess microbial food safety risks associated with displaced wildlife due to bushfires and their potential intrusion in the production fields, water sources and processing facilities.**

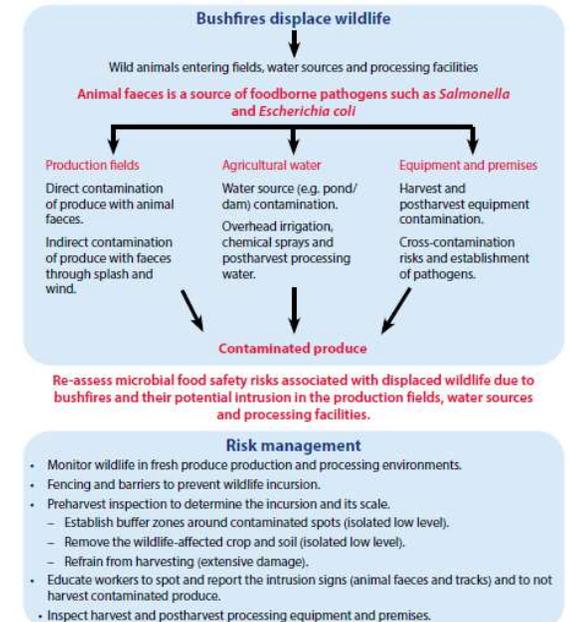
Bushfires have a devastating impact on wildlife, causing profound ecological and environmental consequences. The intense heat and rapid spread of bushfires often destroy natural habitats, leaving animals without shelter, food, and breeding grounds (Figure 1). The immediate consequence includes wild animals (e.g. kangaroos, feral pigs, deer, rodents and marsupials) escaping the fire-affected areas and potentially entering the fresh produce production fields for shelter, water and food.



Figure 1. Bushfires can force wildlife onto fields used to grow fresh produce, causing contamination.

[www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au)

Bushfires can cause wildlife to affect fresh produce safety



## DPI Primefact

# Managing floodwater associated food safety risks in melon production and postharvest handling

December 2023, Primefact PUB23/1340, first edition

Dr Sukhvinder Pal (SP) Singh, Senior Research Scientist, sp.singh@dpi.nsw.gov.au, 0420 593 129

Floodwater is known to be a carrier of biological, chemical and physical hazards that affect food safety during the production and processing of fresh horticultural produce. Run-off from livestock, industrial, residential and sewage treatment areas into waterways and their overflow can contaminate water sources, production fields and postharvest processing facilities (Singh, 2023).

Flooding involves large run-off and/or overflow from surface water sources such as rivers, creeks, lakes and dams, which enters production fields and postharvest facilities. Floodwater can carry physical (e.g. wood, metal and glass), chemical (e.g. chemical residues, heavy metals and toxins) and biological (e.g. bacteria, viruses and parasites) hazards and transfer them into water sources, production fields, processing facilities and on to fresh produce (Figure 1).

### Risk management options

Growers and packers affected by floodwaters are advised to reassess food safety risks associated with producing and postharvest handling of melons. Consider the following factors in risk assessment and management:

- The melon farm's location with respect to floodwater catchment is crucial. If the farm is close to livestock operations, residential, and industrial zones, the food safety risk is high. Run-off from overflowing rivers and creeks can introduce significant food safety hazards from upstream catchment zones. Determine the risk level based on floodwater catchment and neighbouring land use.
- Clearly identify and mark flood-affected zones on the farm to restrict potential transfer of microbial pathogens and produce from the affected zone to the clean zone. Segregate flood-affected crops from non-affected crops with a 10 m buffer zone to prevent cross-contamination between flooded and non-flooded fields.
- **Ready-to-harvest melons that have come in direct contact with floodwater are considered adulterated and cannot be sold for human or animal consumption.**
- For melon crops exposed to a lesser degree, conduct a thorough risk assessment considering factors such as floodwater hazards, type and stage of crop growth, degree and duration of crop exposure to floodwater, and related conditions. Assess the likelihood for crops to absorb or internalise potential contaminants.
- **Conduct microbiological testing for faecal indicators and foodborne microbial pathogens on immature melons, soils, and water samples.** Growers can contact the NSW DPI's Safe Melons team for further advice on sampling and risk assessment.

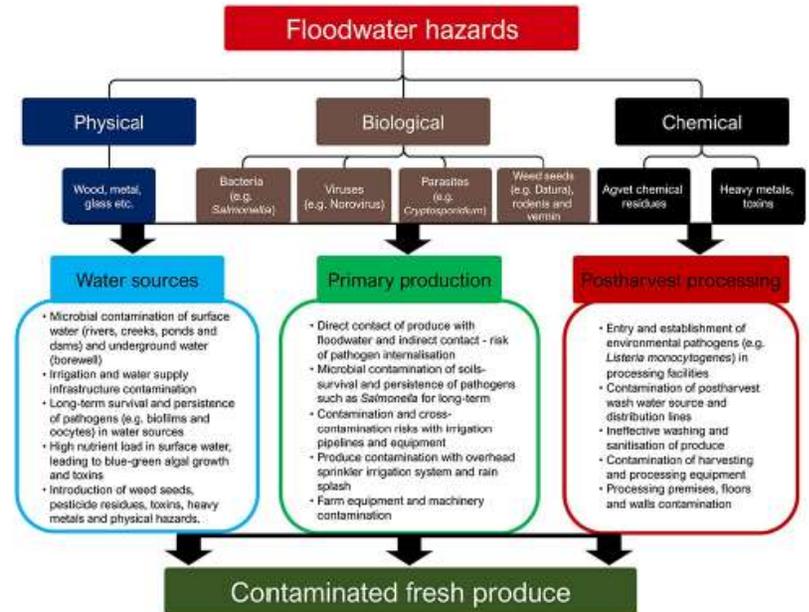
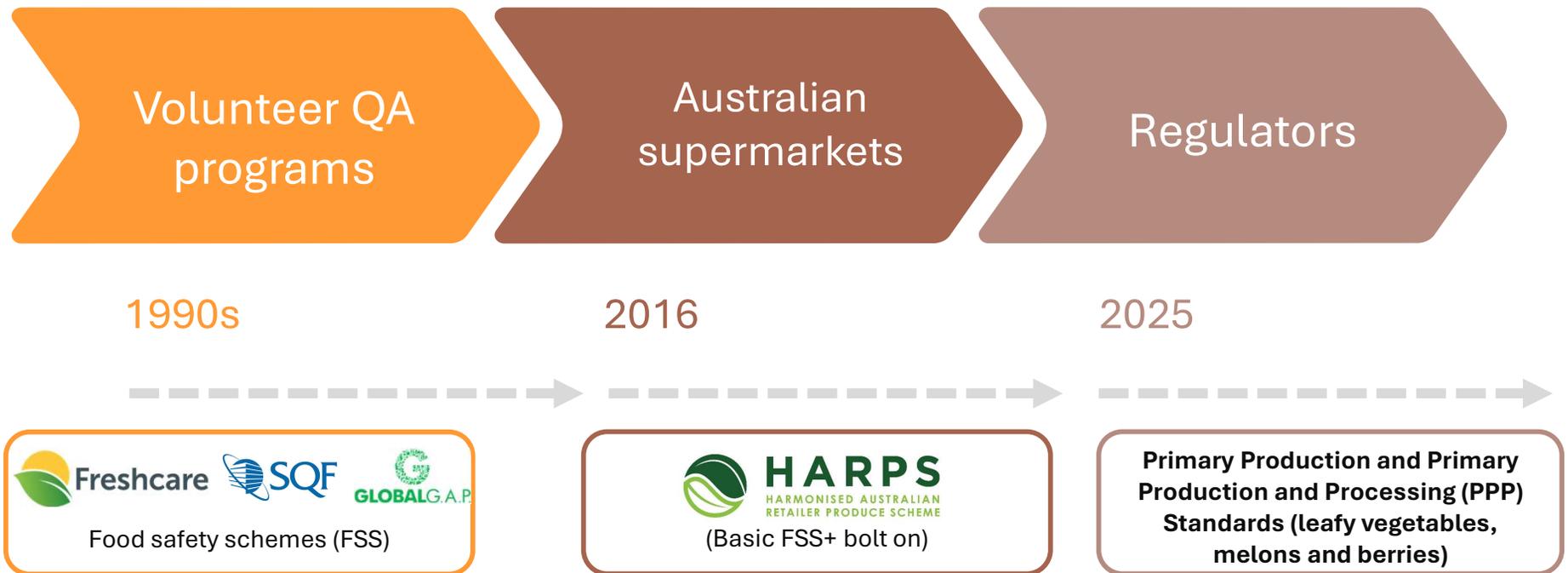


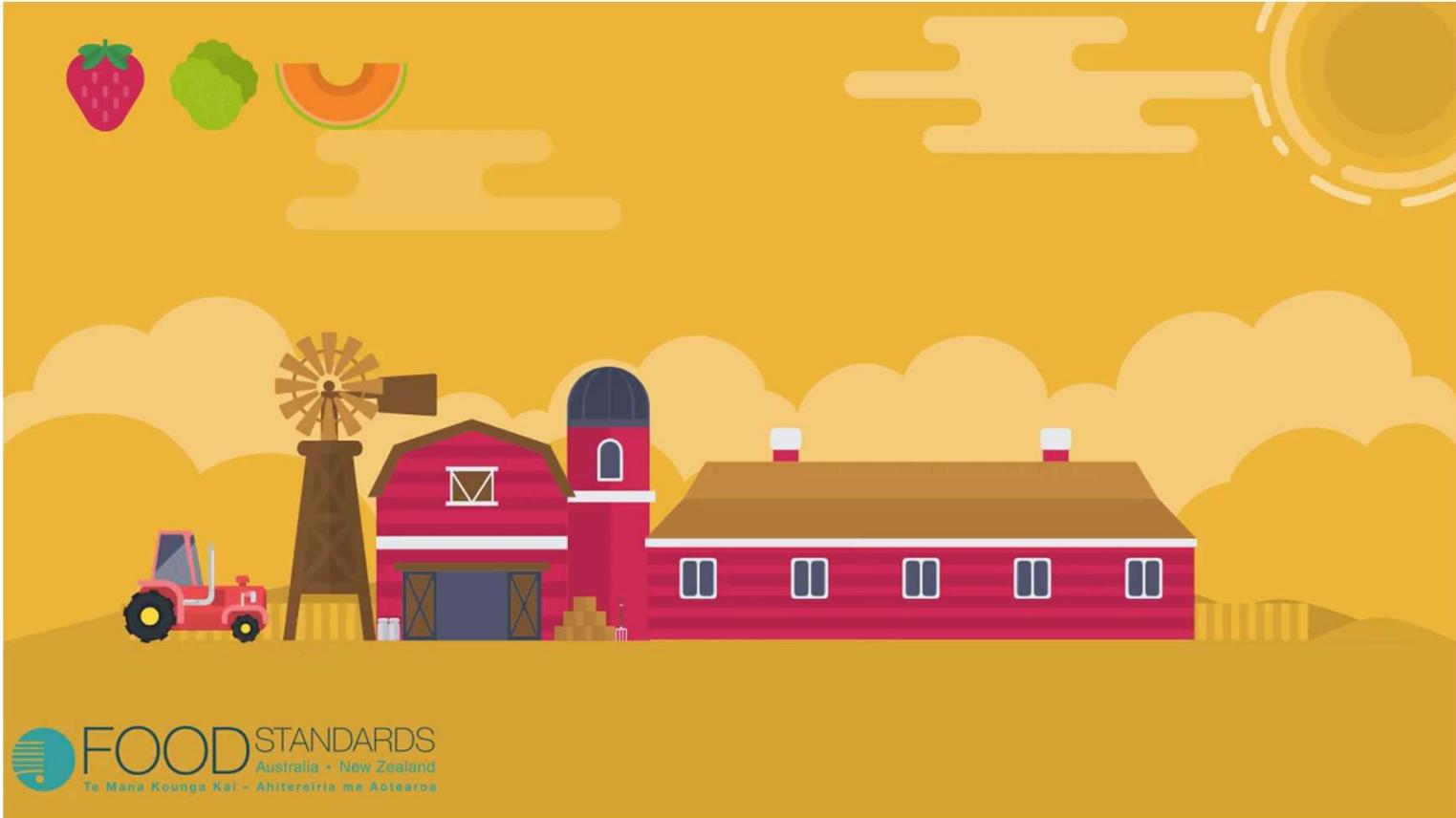
Figure 1. Floodwater as a source and route of microbial contamination in fresh horticultural produce adjacent to livestock, industrial and residential areas. Source: Singh (2023).

# Safe Melons Summary

- Food safety surveillance and monitoring has proven an effective and proactive approach driven by the melon industry. Other industries in the horticulture sector are following this.
- The industry has achieved ZERO product recall and ZERO produce safety incident in the past five years of the Safe Melons program.
- Melon growers and packers are continuing to manage microbial food safety risks through their best management practice adoption.
- Consumers and regulators confidence in the melon food safety is at its best in the recent history.

# Evolution of fresh produce safety standards in Australia





Source: FSANZ

# What is a PPP Standard?

- Primary production and processing (PPP) standards aim to strengthen food safety and traceability throughout the food supply chain, from paddock to plate.
- They are developed by Food Standards Australia and New Zealand (FSANZ) with assistance from other Australian government agencies, industry stakeholders and consumer groups.

Source: FSANZ

- ▶ 4.2.1 PPP Standard for Seafood
- ▶ 4.2.2 PPP Standard for Poultry Meat
- ▶ 4.2.3 PPP Standards for Meat and Meat Products
- ▶ 4.2.4 PPP Standard for Dairy Products
- ▶ 4.2.5 PPP Standard for Eggs and Egg Products
- ▶ 4.2.6 Production and Processing Standard for Seed Sprouts
- ▶ 4.2.7 PPP Standards for Berries
- ▶ 4.2.8 PPP Standards for Leafy Vegetables
- ▶ 4.2.9 PPP Standards for Melons

## 4.2.9 PPP Standards for Melons

The standard requires growers and primary processors (e.g., pack-house)

- to identify and control food safety hazards associated with growing and primary processing of melons
- to have an approved food safety management statement
- to notify regulators of their activities in the respective state/territory jurisdictions

The standard applies to all fresh melon types:

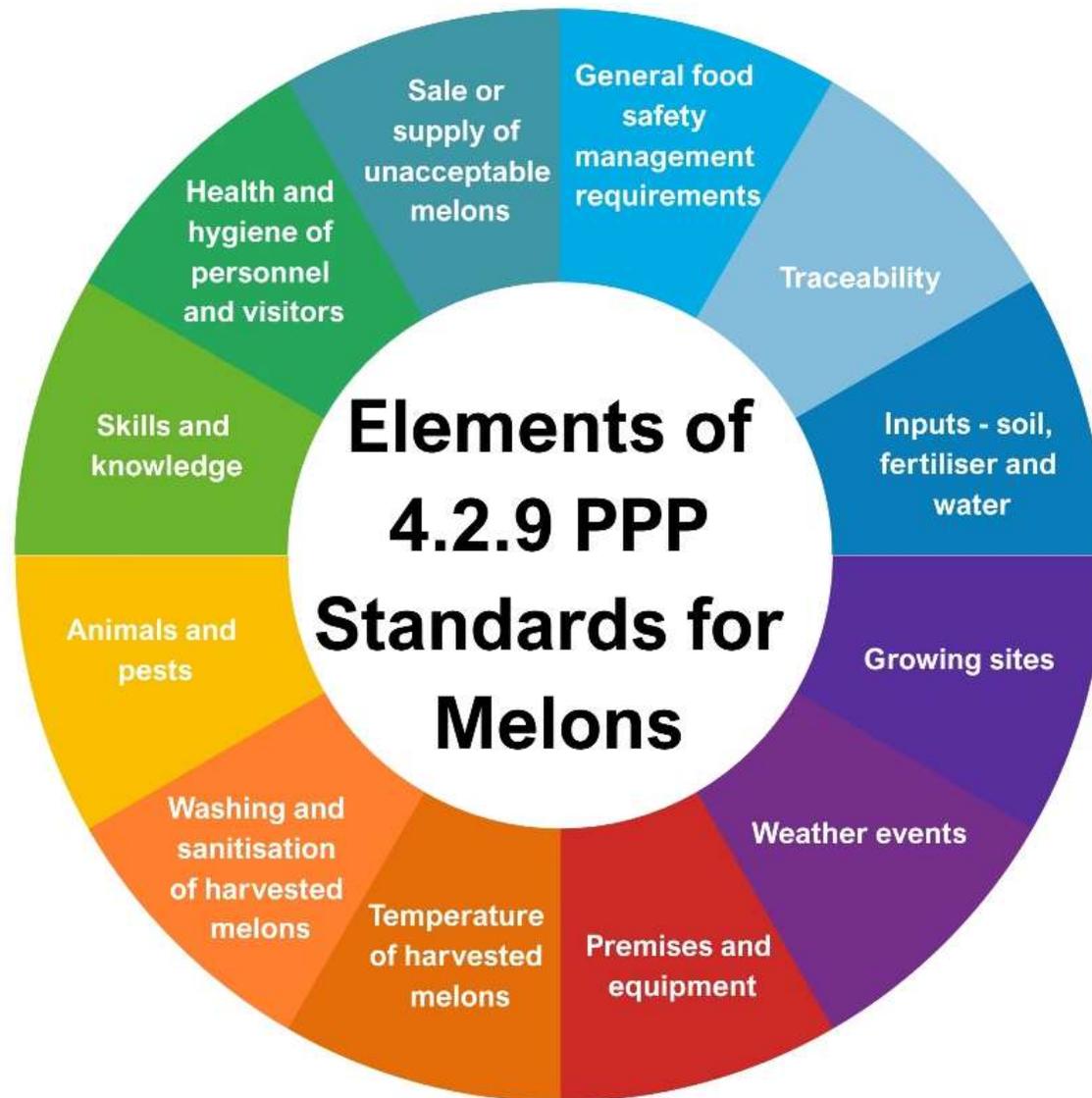
- watermelon, rockmelon, honeydew melon, piel de sapo, galia melon, charentais melon, Korean melon, hami melon.

## 4.2.9 PPP Standards for Melons

***A primary producer*** means a business, enterprise or activity that involves the growing and/or harvesting of melons

***A primary processor*** means a business, enterprise that involves

- (i) washing harvested melons
- (ii) trimming harvested melons
- (iii) sorting harvested melons
- (iv) sanitising harvested melons
- (v) storing harvested melons
- (vi) combining harvested melons
- (vii) packing harvested melons
- (viii) transporting harvested melons between primary processing premises.



# PPP Standards for Melons

- 
**Notify authorities**

 Contact authorities to notify them of your business and discuss requirements that you need to meet
- 
**Traceability**

 Being able to track where melons have come from and who they have gone to
- 
**Safe inputs**

 including soil, fertiliser and water so they do not make melons unsafe to eat
- 
**Clean premises and equipment**

 good hygiene of premises and equipment
- 
**Hygiene**

 good personal hygiene and health practices of workers that handle melons  
 right skills and knowledge
- 
**Right skills and knowledge**

 Persons involved must have knowledge AND skills of food safety and food hygiene matters

- 
**Foods safety management statement**

 an approved food safety management statement showing how risks are managed
- 
**Safe growing sites**

 ensure location, designed, construction, maintenance and operation does not make melons unacceptable.
- 
**Action for weather events**

 Take appropriate remedial action to ensure that melons adversely affected by weather conditions are not unacceptable
- 
**Safe produce temperatures**

 Keep harvested melons at a temperature that does not make the melons unacceptable
- 
**Safe washing and sanitising**

 Remove visible dirt/material from melons  
 Ensure washing and sanitising does not make melons unacceptable
- 
**Control of animal and pests**

 Must take all reasonable measures to minimise the presence of animals, vermin and pests
- 
**Sale and supply of unacceptable melons**

 Must not sell or supply melons for human consumption if they are known or reasonably suspect to be unacceptable

## The way forward- transitioning into the regulatory phase





Department of  
Primary Industries

*Save the date*

12<sup>th</sup>  
February  
2025

Food Standards Australia and New Zealand

Standard 4.2.9 Primary Production and Processing (PPP) Standard for Melons



# Northern Territory

## PPP Standards (as on 29 April 2024)

If you produce leafy vegetables, berries or **melons** in the NT, you **don't need to register as a food business unless you're selling directly to the public**. For example, at the markets.

**Selling food directly to the public requires registration under the Food Act 2004.**

Source: <https://nt.gov.au/industry/hospitality/accommodation-and-food-businesses/food-safety-and-regulations/primary-food-production/primary-production-and-processing-standards>



## Support

- NSW DPI: one-on-one “PPP Food Safety Management Statement” support for all commercial melon growers from July 2024
- NSW DPI: Development and delivery of targeted resources for PPP Standards for melon growers
- Melons Australia: host resources on the website and deliver through industry events.



## FOOD SAFETY HELPDESK

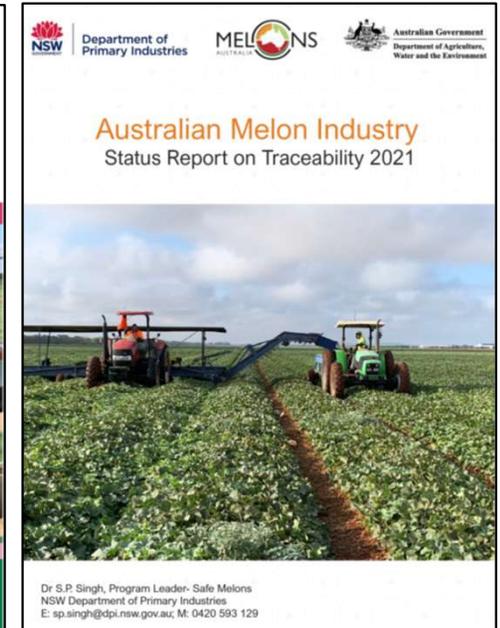
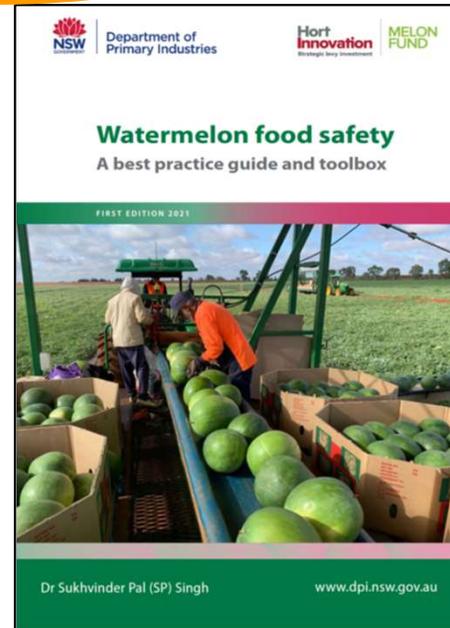
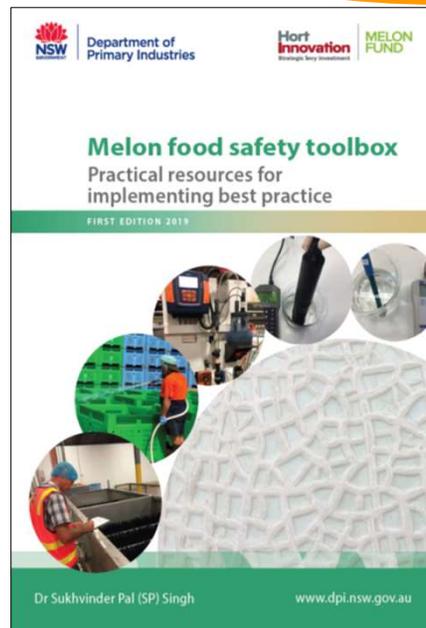
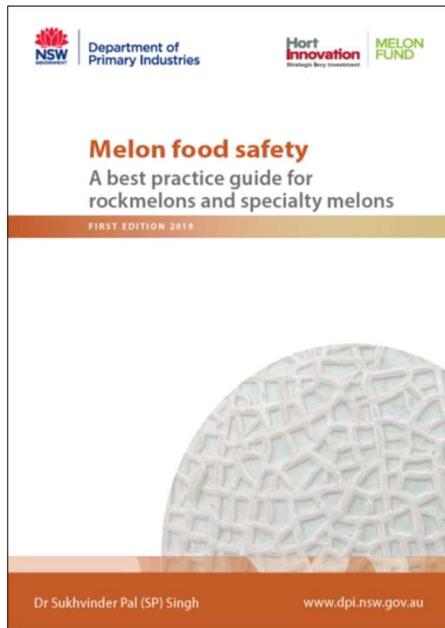
### ASK THE FOOD SAFETY SPECIALISTS

Learn how to mitigate food safety risks and improve your food safety systems.

Contact Dr S.P. Singh  
Phone. 02 4348 1935



# Resources



Resources: [www.dpi.nsw.gov.au](http://www.dpi.nsw.gov.au) or [www.melonsaustralia.org.au](http://www.melonsaustralia.org.au)



# Acknowledgements

- Melon growers and packers
- Melon marketing agents
- All Safe Melons partners and supporters
- Safe Melons- R&D team