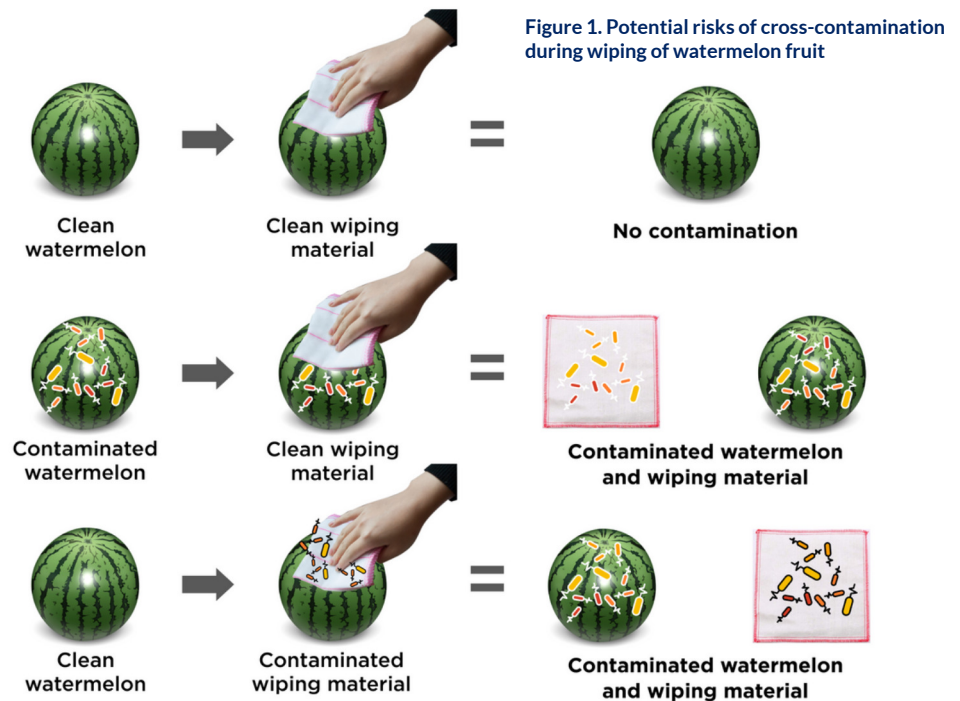


Appendix II. Microbial Food Safety Risks with Wiping of Watermelons

Current industry practice is to hand pick watermelons, clean/wipe with cloths/rags to remove dust and organic matter and then pack in bulk bins for shipping to the markets. Generally watermelons do not receive any further postharvest treatments such as washing, brushing and sanitising. Wiping materials are often rags sourced from local warehouses, which can become a vehicle for cross-contamination when the same cloth is used to wipe multiple watermelons as illustrated in Figure 1.



NSW DPI investigated the cross-contamination potential of wiping material in watermelons. Different types of materials in either damp/wet or dry form were tested for their potential to pick up and transfer *Salmonella Typhimurium* from fruit to fruit. Testing a range of different materials including Chux wipes, cotton cloth and mixed material rags, it was found that the type of material had no significant impact on the transfer of bacteria. However, the risk of cross-contamination with dry wiping material was lower compared to damp wiping material.

- A dry cloth is less effective in removing microorganisms from the surface of the watermelon, but at the same time there is less potential for transferring bacteria to another watermelon when used again.
- A wet cloth on the other hand are more effective in removing microorganisms from the surface of the watermelon, but with an increased potential for transferring bacteria to other fruits when used again.

Dry wiping material



Wet wiping material

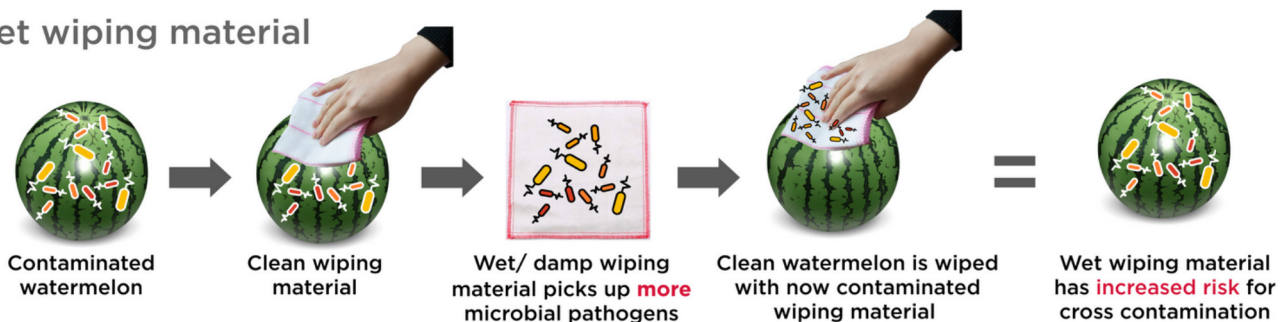


Figure 2. Diagram illustrating dry wiping material's microbial transfer potential compared to wet wiping material.

Appendix IV. Watermelon washing and sanitising

Critical Control Parameters

Use potable/drinking water containing a **sanitiser** for washing the fruit.



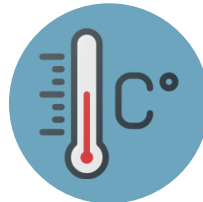
Sanitiser must be **effective** and at an appropriate **concentration**.

Regularly maintain, **monitor** and **record** the sanitiser concentration.



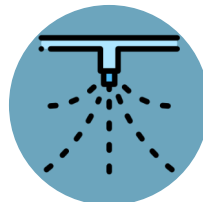
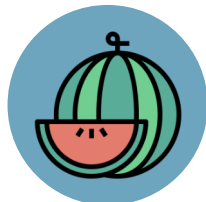
Maintain, monitor and record fruit's **contact time** with sanitised water.

Monitor and adjust pH if **chlorine** is used as a sanitiser.



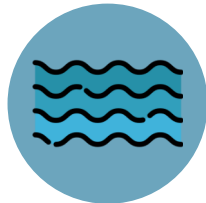
Monitor and record water and fruit flesh temperature.

Sanitised water spray must **cover all** fruit and brushes.



Distribute nozzles for **uniform washing** across all rollers and brushes.

Maintain uniform wash water flow and pressure.

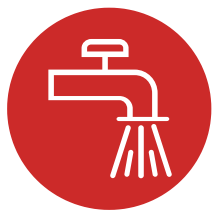


Brushes must be kept **clean** and **debris-free**.



Appendix V. Food Safety Recommendations to Retailers of Cut-Watermelons

Watermelons are hand-picked, cleaned/wiped with cloths and packed in bulk bins for shipping to the markets. Retailers cut the fruit into halves and quarters for retail. In the absence of a washing and sanitisation step, the potential foodborne pathogens (e.g. *Salmonella*) present on the skin can be transferred to the flesh during cutting. The risk of cross-contamination also increases due to cutting equipment and contact surfaces. The display time and temperature for cut-watermelons are critical factors which influence the growth and multiplication of potential pathogens. We recommend the following to minimize the microbial food safety risks associated with retailing of cut-watermelons:



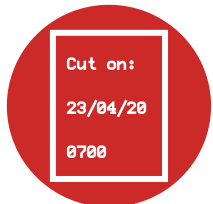
Wash and sanitise watermelons before cutting

- Watermelons should be thoroughly washed before cutting into halves or quarters for retail.
- Drinking quality water containing a sanitiser at appropriate concentrations (e.g. chlorine 100 ppm) should be used.
- Scrub/brush the entire fruit surface while immersed and in contact with sanitiser.



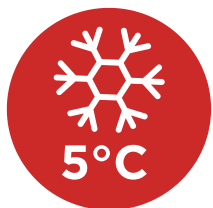
Clean and sanitise cutting equipment and surfaces

- The cutting equipment (e.g. knives) and contact surface (e.g. cutting board) should be cleaned and sanitised as per a standard operating procedure (SOP).
- Frequency of cleaning and sanitisation should be mentioned in the SOP such as before and after cutting each lot of fruit.



Label cut-watermelons with date and time

- Watermelons should be cut in small batches and cutting time and frequency should be recorded.
- All cut watermelon should be cling/shrink-wrapped and labelled with **cutting time** and **date**.
- Advise the consumers for safe handling and consumption.



Refrigerate watermelon displays

- All cut watermelon must be displayed in a refrigerated case at 5°C.
- The cut-watermelons may exude fruit juice during display where pathogenic bacteria can grow and multiply. Regularly clean and sanitise the display shelves.



Discard unsold cut-watermelons

- Cut watermelon that is not sold on the day of cutting should be thrown away.
- Fruit showing any signs of decay, mould or bruising should be discarded.



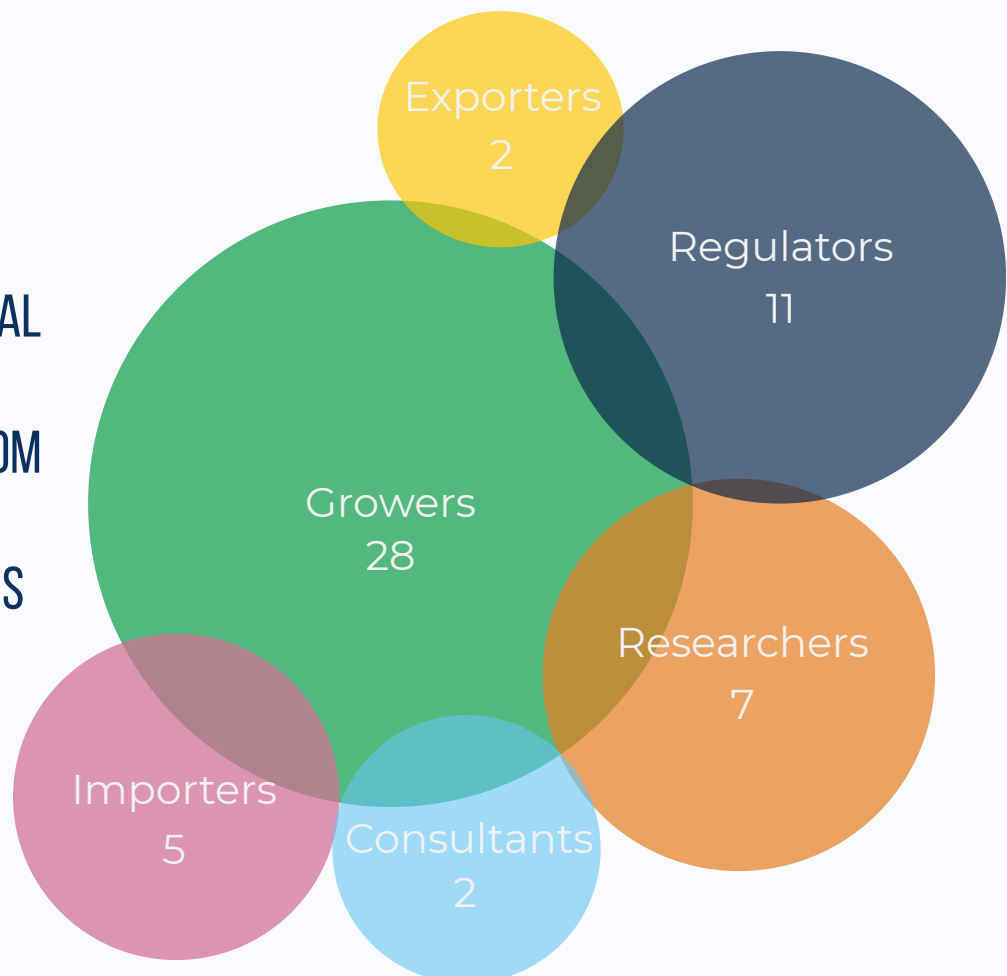
Train staff and consumers food safety

- Only staff trained in food safety should be allowed to handle and cut watermelons.
- Staff should wash hands with soap and water and wear gloves and other personal protective equipment.
- Food safety information should be provided to consumers for safe handling and consumption of cut-fruit.

Appendix VI. Food safety helpdesk service- an update

A range of stakeholders across the supply chain contacted the Project Leader through phone and email to address their technical inquiries related to melon food safety.

A TOTAL
OF **55** TECHNICAL
ENQUIRIES
ADDRESSED FROM
VARIOUS
STAKEHOLDERS



A list of themes for technical inquiries:

- Wash water sanitiser selection (G/P/R)
- Sanitiser monitoring (G/P/R)
- Wash water filtration and treatment (G/P/C/R)
- Postharvest fungicides (G/P/R)
- Alternative sanitisers (G/P/C/R)
- Environmental sampling (G/P/R)
- Industry food safety practice (Rg/I/E)
- Best practice in fruit washing and brushing (G/P/R)
- Food safety certification troubleshooting (G/P/R/C)
- Traceability (G/P/I/E)
- Foodborne outbreaks (G/P)

Key.

G - Grower
P- Packer
C- Consultant
R- Researcher
Rg- Regulator
I- Importer
E - Exporter