Key post-harvest practices impacting melon quality in domestic and export markets

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Post-harvest

Use shade. When temporarily storing full field bins on farm, ensure they are in the shade. Melons in the top bin can reach surface temperatures over 39˚C (and 33˚C pulp) in summer (Image 1).

Image 1: Full bins on farm sat in the sun for up to two hours waiting for transport to the packshed.

Cover the top bins for transport to the packshed; important for temperature management but also to reduce potential contamination from dust and animals such as birds.

Consider night harvest in summer. Use good lighting to assist pickers to identify indicators of maturity to avoid harvesting immature fruit.

Packshed

Sanitiser efficacy. Check that the chlorine sanitiser pH target is reached. Bore water can be alkaline and without pH adjustment to between 6.5-7, the effectiveness of sanitation is compromised (Image 2).

Image 2: Sanitiser dip (left) and spray (right).

Dry Fruit. Use fan forced air drying (Image 3) of melons as wiping fruit may introduce cross contamination.

Image 3: Air drying melons.

Squashed melons. Check that cartons are of sufficient strength to prevent squashing of melons (Image 4) in the pallet.

Image 4: Carton mark on honeydew (left) and squashed cartons on pallet (right).

Tossing cartons. Avoid tossing packed cartons and only place them when building pallets to avoid the risk of melon damage.

Temperature monitoring and management

Temperature is the number one factor governing produce deterioration. Removing field heat as soon as possible postharvest is essential to giving the fruit the best start.

Measuring temperature is the important first step to recognising if you have a problem or for optimising practices. A cheap but effective way to measure temperature experienced by the fruit from paddock to carton is to use a USB-temperature logger (Image 5).

Image 5: USB temperature logger (top left), USB-logger strapped to a melon (top right) and graph generated by measuring temperature from the field to packing (bottom).

Check pulp temperature. Melons may need more than 24 hours in the cold room before dispatch at correct temperature. Check pulp temperatures before dispatch (Image 6). Store and transport rockmelons at 3-5˚C, honeydew types at 7-10˚C and watermelons at 10-15˚C.

Image 6: Checking melon pulp temperature.

"Real-time" temperature logger use (from the packshed) is the best way to check that your cold chain is working properly (Image 7). These loggers provide live monitoring and reporting of your product temperature and location, via smartphone app (Image 8).

Image 7: "Real-time" temperature logger in a carton of honeydew melons (left) and some examples of logger brands (right).

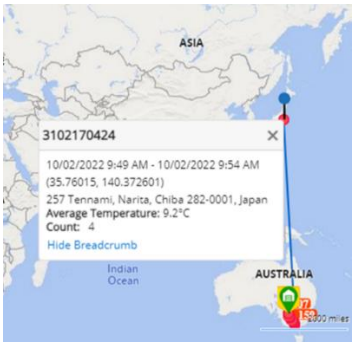

Image 8: Phone app screen showing consignment route, temperature and location information.

Logger placement. It is useful to know the temperature extremes within the consignment. Placing a logger in the coldest and warmest locations within the consignment will give a good indication of the temperature difference across the load and the duration that product temperatures are outside the preferred range.

Share monitoring results with supply chain partners to build stronger relationships and better cooperation in correcting any departures from best practice.

Controlled and Modified Atmospheres

Controlled Atmosphere (CA) and Modified Atmosphere (MA) are not a substitute for good temperature management and quick movement through the supply chain if aiming to maximise fruit quality and shelf life.

Controlled Atmosphere (CA) storage slows ripening by suppressing respiration rate and ethylene production. Regular refrigerated shipment is generally sufficient for two weeks transit time for honeydew and rockmelon. CA may offer moderate benefits beyond this period for a price.

Similarly, **Modified Atmosphere Packaging (MAP)** can slow produce ripening in transit by reducing oxygen and increasing carbon dioxide levels. A small trial comparing plus and minus MA bagged specialty melons (Image 9) found little difference in quality of the melons between the two treatments (each stored at 8˚C for 21 days). Recommended oxygen and carbon dioxide for muskmelons in MAP is (3-5%) and (5-10%) respectively. These gases were measured in the MA bags during the trial and were not found to be at sufficient levels to be of real benefit. There are several companies producing MAP, most produce a range of products and not all MAP behaves the same. Always select MAP designed specifically for your produce.

Image 9: Specialty melons within a Modified Atmosphere bag.

References

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