

Case studies

Four ways to reduce the footprint of melon production

Why this study was done

Hort Innovation commissioned sustainability firm thinkstep-anz to complete a life cycle assessment (LCA) for Australian melon production. The study gives the industry a clear benchmark and helps growers understand where practical changes could reduce impacts.

Download the complete LCA study on the Melons Australia website.

What the study looked at

The LCA measured the environmental impacts of Australian melons from raw materials through to the farm gate, including packaging. It focused on key impact areas such as carbon footprint, water use, energy use, waste and recycling.

How the study was done

thinkstep-anz worked with a pilot group of melon growers across Queensland, Victoria and Western Australia. The team collected 12 months of on-farm data, reviewed the data and used it to build an LCA model. The study followed the international LCA standards ISO 14040 and ISO 14044.



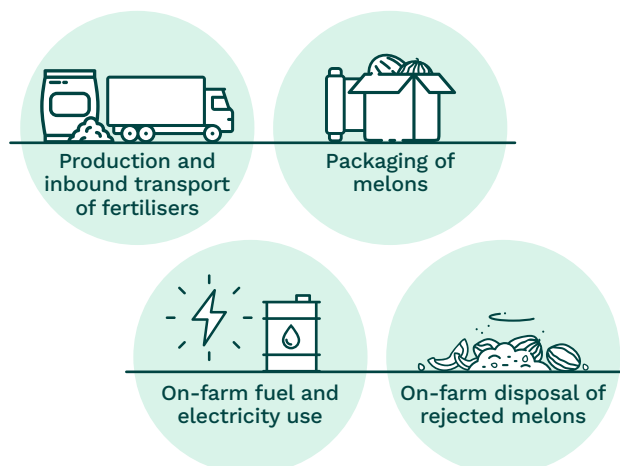
What the study found

The study found that the cradle-to-gate carbon footprint of Australian melons, including packaging, was **0.48 kg CO₂-eq. per kg** of packaged melons.

What the case studies show

The following case studies show how practical changes on the farm could reduce the environmental impact of melon production. The growers in the case studies are hypothetical. They have been created to explain the findings and do not represent specific people or farms.

The main contributors:





Case study

Reducing food loss to increase marketable yield

Keeping more melons in the supply chain can reduce waste and lower the carbon footprint of each kilogram sold.

The opportunity

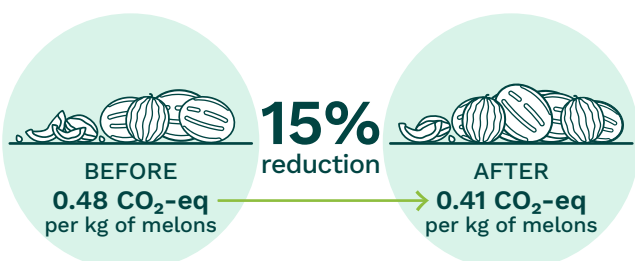
Josephine wants to reduce the amount of fruit lost on her melon farm. She has read the Melon Industry Food Waste Action Plan and wants to play her part by reducing food loss while improving the amount of fruit that can be sold.

What changed on the farm

Josephine introduces practical strategies to maintain the health and appearance of her fruit. She also finds alternative uses for melons that do not meet retail specifications due to size, shape or external blemishes.

What we assumed

This case study assumes Josephine's farm is similar to the Australian melon industry benchmark. It also assumes she can reduce food loss without increasing the farm's use of materials, energy or water.



Impact at a glance



10% less on-farm food loss

More fruit is kept healthy, marketable and out of the waste stream.



10% more marketable yield

More of the crop can be sold.



15% lower carbon footprint

The cradle-to-gate climate change impact decreases from **0.48 to 0.41 kg CO₂-eq. per kg*** of melons.

This is because the same farm inputs are spread across more marketable fruit, with fewer emissions from waste treatment.

*CO₂-eq. means 'carbon dioxide equivalent'. It is a standard way to combine different greenhouse gases into one carbon footprint figure.

What this means for growers

Reducing food loss can help growers get more value from the crop they already produce, while reducing the environmental impact of each kilogram of melons sold.



Case study

Reducing packaging impacts by improving packing efficiency

Fitting more melons into the same packaging can reduce the packaging that's needed for each kilogram of fruit.

The opportunity

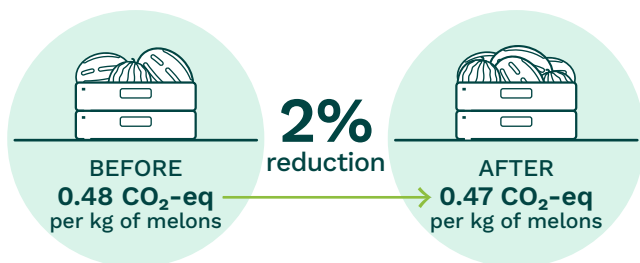
Giancarlo wants to reduce the amount of packaging needed for his melons without changing how the fruit is protected or handled.

What changed on the farm

He increases the capacity of his melon packaging by 10% without using more packaging material. This means the same amount of packaging can carry more melons, reducing the amount of packaging needed per kilogram of fruit.

What we assumed

This case study assumes Giancarlo's farm is similar to the Australian melon industry benchmark. It also assumes the change does not affect the rest of his farm operations. The calculation focuses on packaging only. It does not include any changes to distribution, such as fitting more melons onto a truck.



Impact at a glance



10% more melon capacity

The same amount of packaging can carry more fruit.



Less packaging per kg of melons

Each kilogram of melons carries a smaller share of the packaging impact.



2% lower carbon footprint

The cradle-to-gate carbon footprint decreases from **0.48 to 0.47 kg CO₂-eq. per kg** of melons.

This reduction comes from using less packaging per kilogram of melons. The calculation focuses on packaging only and does not include any changes to distribution.

What this means for growers

Improving packing efficiency can reduce the environmental impact of melons and may also help reduce packaging costs. It is a practical way to get more value from the same amount of material.



Case study

Reducing electricity emissions with on-farm solar

For farms that use electricity on farm, solar can reduce emissions linked to electricity use.

The opportunity

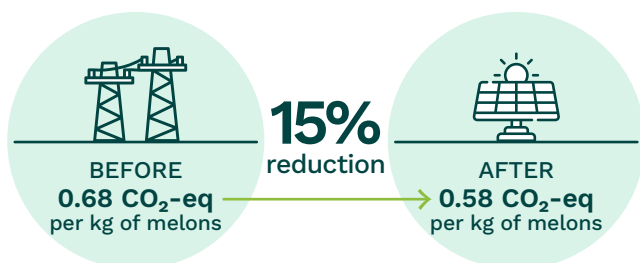
Kathleen wants to reduce the emissions linked to electricity use on her melon farm. She lives in a sunny part of Australia and sees an opportunity to generate renewable electricity on farm.

What changed on farm

Kathleen installs solar panels and switches to 100% renewable electricity for the electricity used on her farm. This means she no longer relies on grid electricity for these activities.

What we assumed

This case study is based on data from a participating grower who uses electricity on farm. It assumes Kathleen's farm is similar to this participating grower and that the only change is the switch to solar electricity. All other farm operations stay the same.



Impact at a glance



100% renewable electricity for on-farm use

Solar panels replace the grid electricity used on Kathleen's farm.



Lower emissions from electricity use

The main reduction comes from cutting emissions linked to electricity.



15% lower carbon footprint

The cradle-to-gate carbon footprint decreases from **0.68 to 0.58 kg CO₂-eq. per kg** of melons.

What this means for growers

For growers who use electricity on farm, solar panels may reduce the environmental impact of melon production. They may also help reduce reliance on grid electricity and support future savings on electricity bills.



Case study

Reducing fertiliser transport impacts by sourcing closer to farm

Shortening the journey fertiliser takes to reach the farm can reduce transport-related emissions.

The opportunity

Darryl wants to reduce the emissions linked to the fertiliser used on his melon farm. He sees an opportunity to source fertiliser from suppliers closer to home.

What changed on the farm

Darryl switches from overseas fertiliser suppliers to Australian suppliers located about 1,000 km from his farm. Previously, the fertiliser travelled an average distance of 301 km by truck, 1,500 km by rail and 10,323 km by container ship before reaching the farm.

What we assumed

This case study assumes Darryl's farm is similar to the Australian melon industry benchmark. It also assumes the only change is the transport distance for fertiliser.

The calculation only includes the change in inbound fertiliser transport. It does not include any change to the emissions from fertiliser production.

Impact at a glance



Closer fertiliser supply

Darryl switches to Australian suppliers.



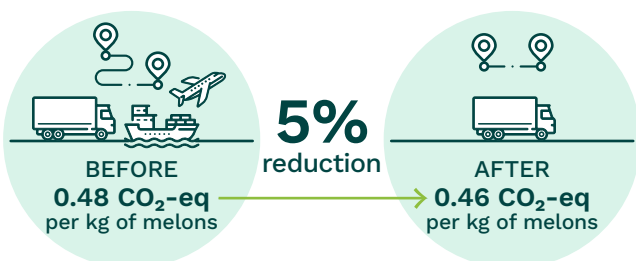
Shorter transport journey

The overseas fertiliser had travelled by truck, rail and container ship before reaching the farm.



5% lower carbon footprint

The cradle-to-gate carbon footprint decreases from **0.48 to 0.46 kg CO₂-eq. per kg of melons.**



What this means for growers

Sourcing fertiliser closer to the farm can reduce the environmental impact of melon production. It may also help growers better understand and manage the supply chains behind the inputs they rely on.