

March 2023

The environmental performance of New Zealand avocados

A lifecycle assessment

To understand the environmental performance of New Zealand avocados, the New Zealand avocado industry commissioned a Life Cycle Assessment (LCA). This is the first study of its kind for our local industry and an example of using science-based research to guide our work.

This is a summary of a wider LCA study - for full report go to www.nzavocado.co.nz/industry

The New Zealand avocado sector is one of New Zealand's horticultural growth stories



1,800+
growers



4,500+
hectares of
planted avocados



1,100+
export-registered
orchards



10+
export markets



**Strong
biosecurity**
securing market access



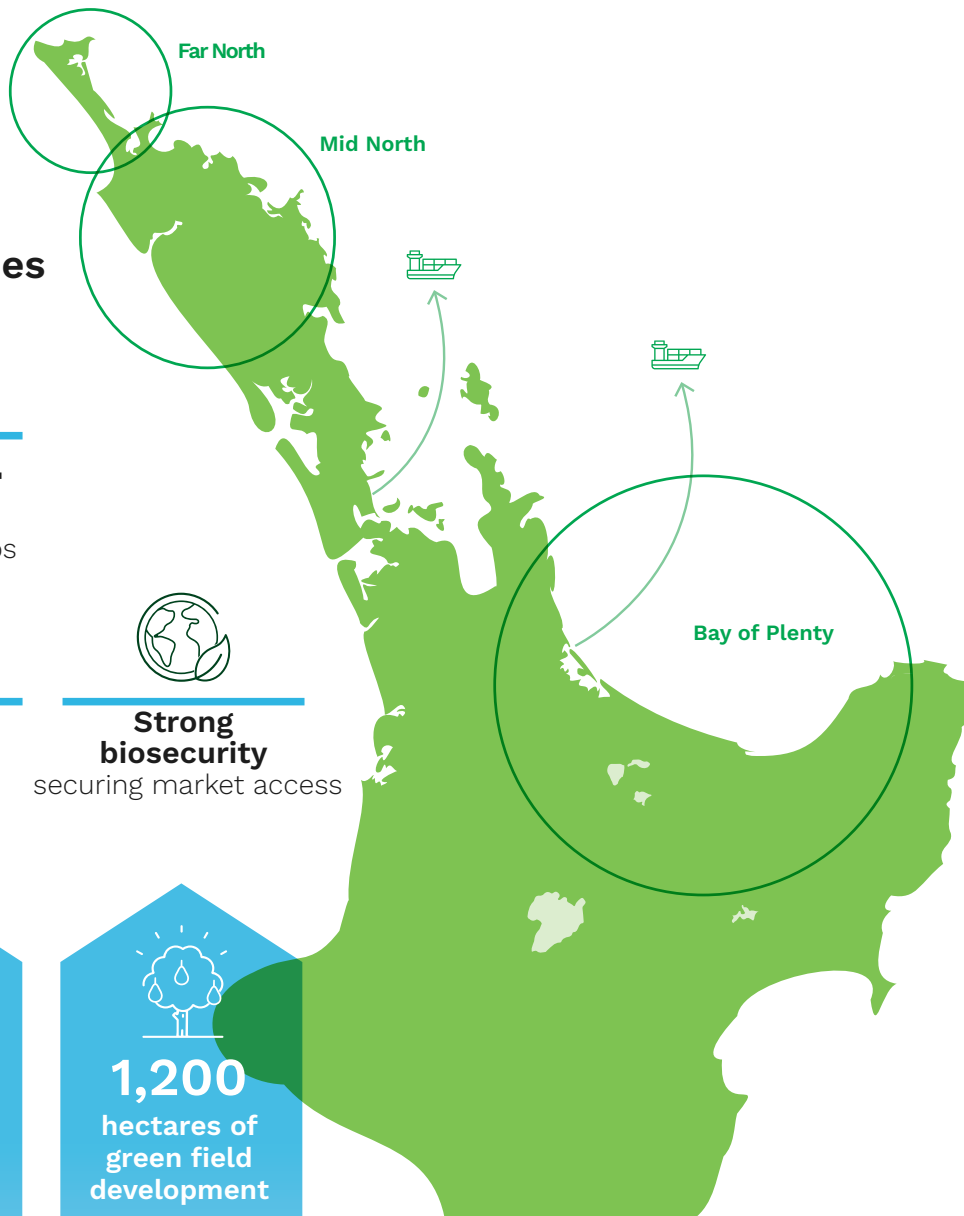
+442%
Export market
return
(to NZ\$168m)



+114%
New Zealand
market return
(to NZ\$60m)



1,200
hectares of
green field
development



Growth in the past decade (2012 to 2022)

The environmental performance of New Zealand avocados



**New Zealand
Avocado**

NZ Avocado Growers' Association Inc.
NZ Avocado Industry Ltd

We assessed the environmental footprint of the avocado supply chain

Our study used Life Cycle Assessment. LCA measures the environmental footprint of a product over its life cycle. It provides science-based data that helps to understand, manage, and communicate environmental performance.



Our unit:
1 kg of packaged Hass avocados produced in Aotearoa New Zealand and distributed to overseas ports and 'first points of sale' in New Zealand¹

The lifecycle:
from growing the avocados in a mature orchard to transporting them to an international port/airport or domestic site to be distributed locally

¹As we used 2019 data, we have avoided the effects of Covid-19



Transport by truck to Tauranga or Auckland
Export: Australia: Brisbane, Melbourne and Sydney
South Korea: Incheon (air) and Busan (sea)
Domestic: 11 points of sale across New Zealand

Our data resources

49 orchards in New Zealand's three main avocado-producing regions

Two packhouses in the Bay of Plenty

The main exporter of New Zealand avocados
Percentage by sea: 98%

The four environmental effects we assessed

In 2020 we carried out a 'materiality assessment'. Our stakeholders believe these are the most important environmental topics for our industry:

This study follows ISO 14040:2006 and ISO 14044:2006. An independent expert has critically reviewed the study.

This is not a comparative LCA. It should not be used to compare New Zealand avocados directly with avocados grown in other countries, or with other foods.



Carbon footprint

Measure: **Climate change**
The impact of greenhouse gases emitted



Nutrient losses to waterways

Measure: **Eutrophication**
The impact of plant and algae growth in waterways



Water footprint

Measure: **Water use**
The impact of the water we use



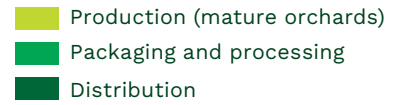
Toxic losses to the environment

Measure: **Ecotoxicity (freshwater, land)**
Pollution of waterways and land when gases, liquids, and particles are emitted



Our results give us a benchmark for our environmental performance

National results: The national score is a weighted average of regional results (based on production volumes) for 1 kg of avocados.



Carbon footprint

0.7 kg CO₂ equivalent



Nutrient losses to waterways

0.004 kg phosphate equivalent



Water footprint

0.54 m³ world equivalent



Toxic losses to the environment freshwater

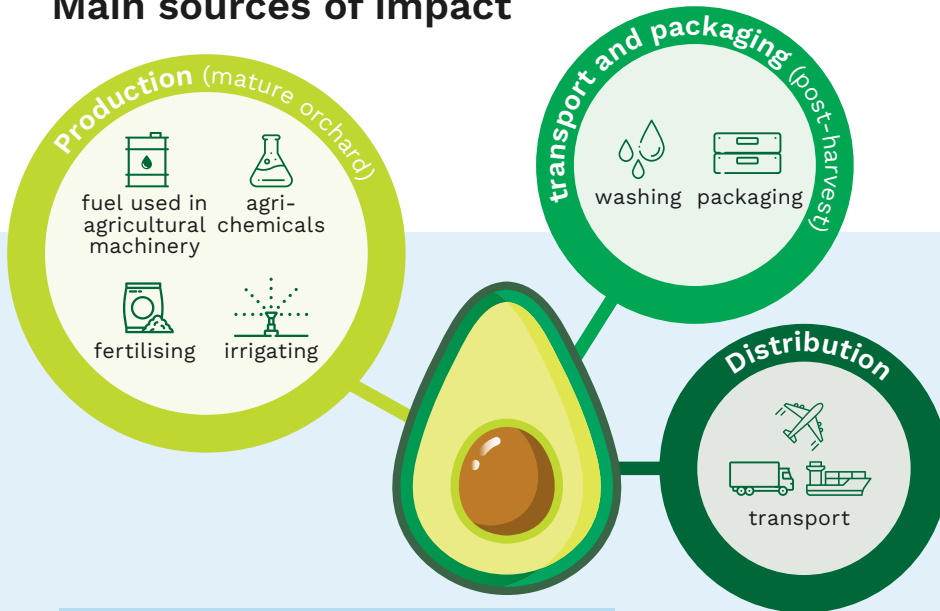
7,837.8 CTUe



Toxic losses to the environment land

6.02 kg 1,4-DB equivalent

Main sources of impact



Regional variations

Results for inputs (e.g. water and fertiliser) and environmental effects differ strongly between orchards within a region and between regions. Many factors contribute, including differences in the orchards' maturity, the type and amount of fertiliser used, and local climate.

Greater productivity and sustainability go hand-in-hand

Yield per hectare affects environmental impacts, especially climate change. In general, the higher the yield per hectare, the lower the climate change effect and vice versa.

This means that making our industry more productive and economically sustainable makes it more environmentally sustainable too.

Sustainability matters to our sector

Our members are working hard to balance the long-term needs of businesses, people, communities, and the environment



We will use this benchmark to continue to improve our industry's environmental and business performance

This data will help us:

1 Environmental effects

Continue to reduce/manage our environmental footprint and risks.

For example, we will:

- guide the industry to use water as efficiently and responsibly as possible in our orchards
- better understand fertiliser loss from our orchards so we know how best to use it (types, amounts, application techniques)
- explore alternative production systems to reduce resources used and operate as efficiently as possible
- continue to research alternative options to manage pests and diseases
- investigate how to collect regular environmental data and report on sustainability progress

2 Processes

Extend the findings from the LCA report to improve industry practices

3 Marketing

Communicate the environmental performance of New Zealand-grown avocados

4 Supply partnerships

Work with our supply chain partners to reduce indirect greenhouse gas emissions (Scope 3 emissions)

5 Innovation

Continue our work with others in the horticulture and agriculture sectors to share research and ideas

6 Right to grow

Advocate with regulators for science-based policy

7 Wellbeing

Advocate for good working conditions, employment opportunities and a diverse, inclusive workforce



Industry benefits


Improved environmental performance


Reduced risk


Stronger supply partnerships


Stronger reputation


Greater innovation

Thank you to the growers, packers, and exporters who contributed data for this study



Commissioned and co-funded this study. Members contributed data.



Carried out this LCA study.

Ministry for Primary Industries
Manatū Ahu Matua



Co-funded this study through the NZ Avocados Go Global programme.



Verified this LCA study and wrote and designed this short-form report.