

How does cow's milk compare to plant-based beverages?

Key messages

Any reference to milk in this document refers to **cow's milk**.

1

Milk is an affordable nutrient powerhouse, naturally containing an array of nutrients in a unique matrix that are well absorbed by the body and deliver positive health benefits.

2

Plant-based beverages contain a **different package of vitamins and minerals** which are often added in (through fortification) and often in **smaller quantities than cow's milk**.

3

The **health benefits of dairy** foods are well supported by a **strong body of scientific evidence**, but with only limited evidence to date to demonstrate the limited evidence to demonstrate the health benefits of plant-based beverages.

4

Plant-based beverages represent a **small share** of the **drinking 'milk' market** relative to fresh and long-life cow's milk. In fact, only 2% of households exclusively buy plant-based beverages.

5

Surveys show the main reason people claim to purchase plant-based beverages is the **belief that they are healthier**, indicating a need to educate consumers about the nutrition and health benefits of milk.

6

Suggestions to exchange dairy foods with plant-based beverages in a quest for a more sustainable diet has the **potential for unintended negative consequences** – such as **getting less nutrients but at a higher price**.

7

Eating according to the Australian Dietary Guidelines which includes milk, cheese and yoghurt and limits intake of discretionary (or junk) foods will have the **most significant impact on improving diet quality** and **reducing our dietary environmental footprint**.

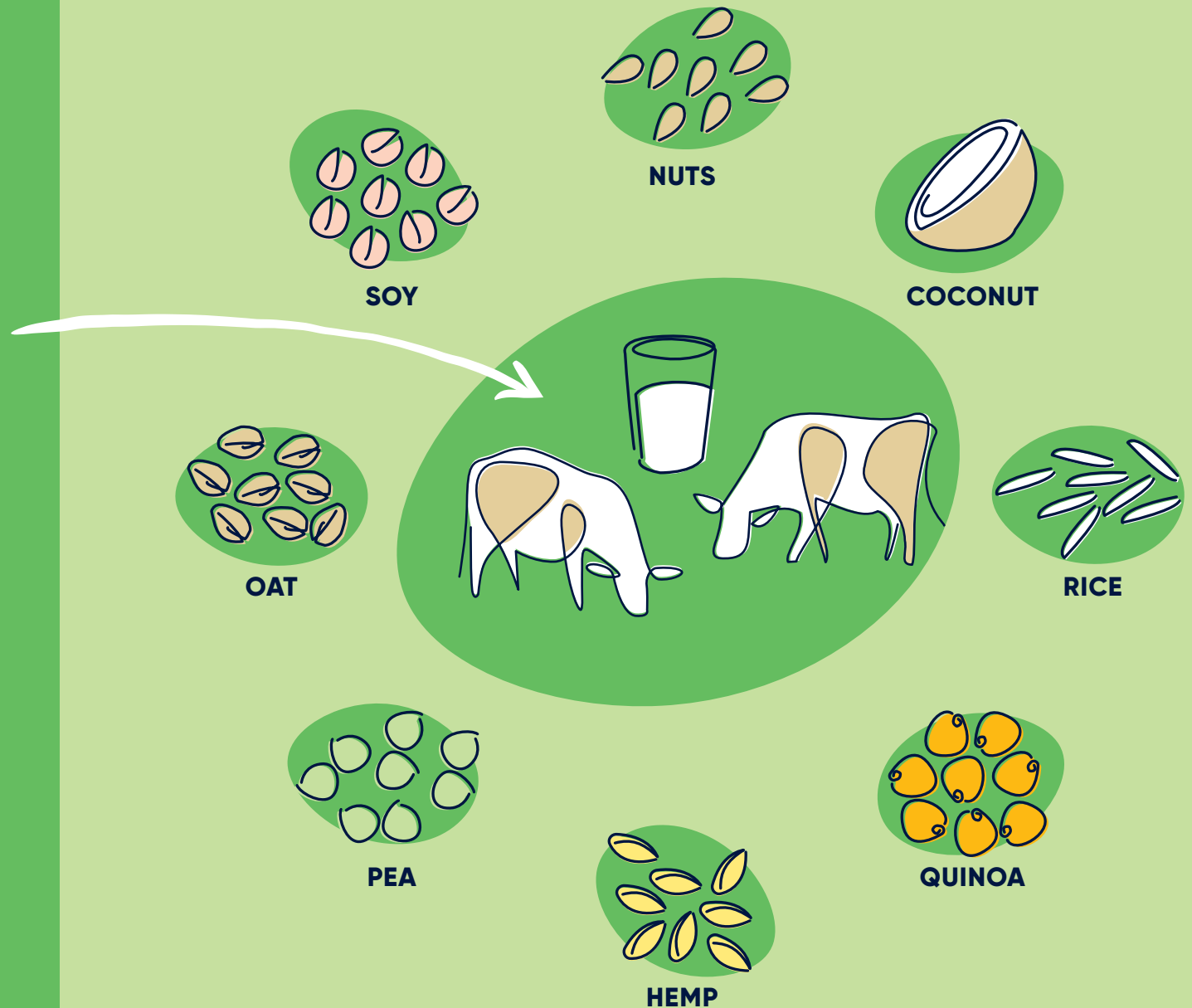


Background

The last decade has seen an increasing number of plant-based beverages on the supermarket shelves including those made from soy, nuts, coconut, rice, oat, pea and newer sources like hemp and quinoa.

These products are marketed as dairy alternatives and when sufficiently fortified with calcium, are included alongside dairy foods in one of the five food groups recommended in the Australian Dietary Guidelines.

So how do these newer beverages stack up to traditional cow's milk from a health, nutrition and environmental perspective?



Supply and demand

Plant-based beverages represent a small share of the drinking 'milk' market relative to fresh and long-life milk. In fact, only 2% of households exclusively buy plant-based beverages.



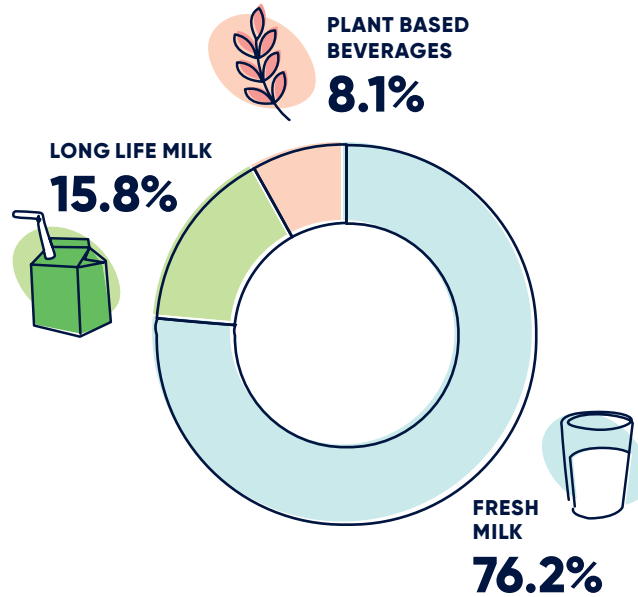
98%
of households in Australia
regularly buy milk

Sales

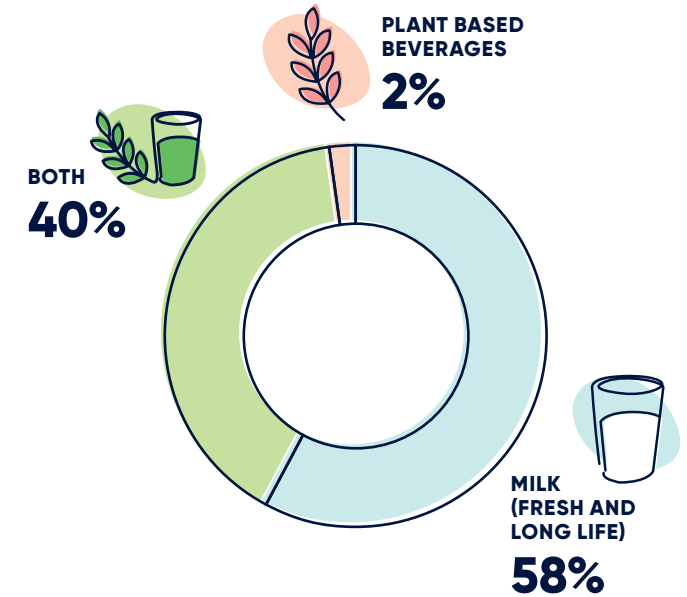
Plant-based beverages have been around for a while but have experienced slow but continued growth over recent years. Regardless, the market for plant-based beverages remains something of a niche, accounting for 8.1% of total sales volume. In the past year, 42% of households in Australia bought plant-based beverages. Most of these consumers also purchased milk, with only a small portion exclusively buying plant-based beverages.

Sales Volume Share

Share of Retail Milk and Plant-Based Beverage Market



Buyer Exclusivity and Duplication

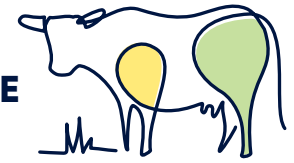


NielsenIQ Homescan based on a continuous panel of 10,000 households; excludes non-private dwellings & businesses, non-permanently occupied households & out-of-home/impulse purchasing. DAIRY AUSTRALIA calculation based in part on data reported by NielsenIQ through its Homescan Service for the dairy category for the 52-week period ending 08/08/2021, for the total Australian market, according to the NielsenIQ standard product hierarchy. Copyright (c) 2021, Nielsen Consumer LLC.

Public perceptions

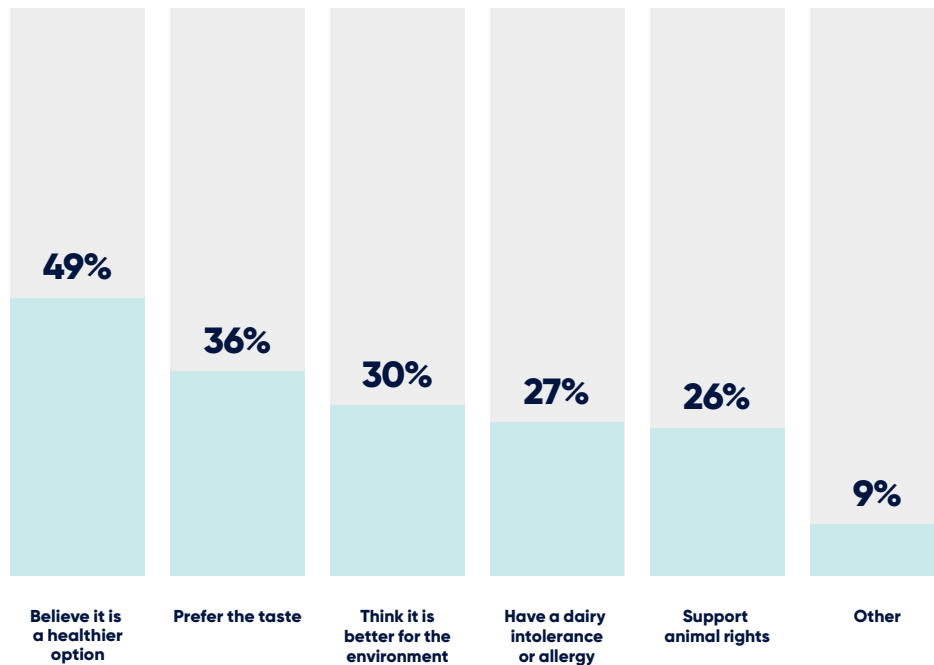
The main reason people claim to purchase plant-based beverages is the belief that they are healthier. There's also been a significant increase year-on-year in these people believing they're better for the environment. Over a third of people are questioning whether milk is more natural than plant-based beverages and a similar proportion believe plant-based beverages are just as good as milk for children's health.

61% BELIEVE COW'S MILK is more natural than alternatives



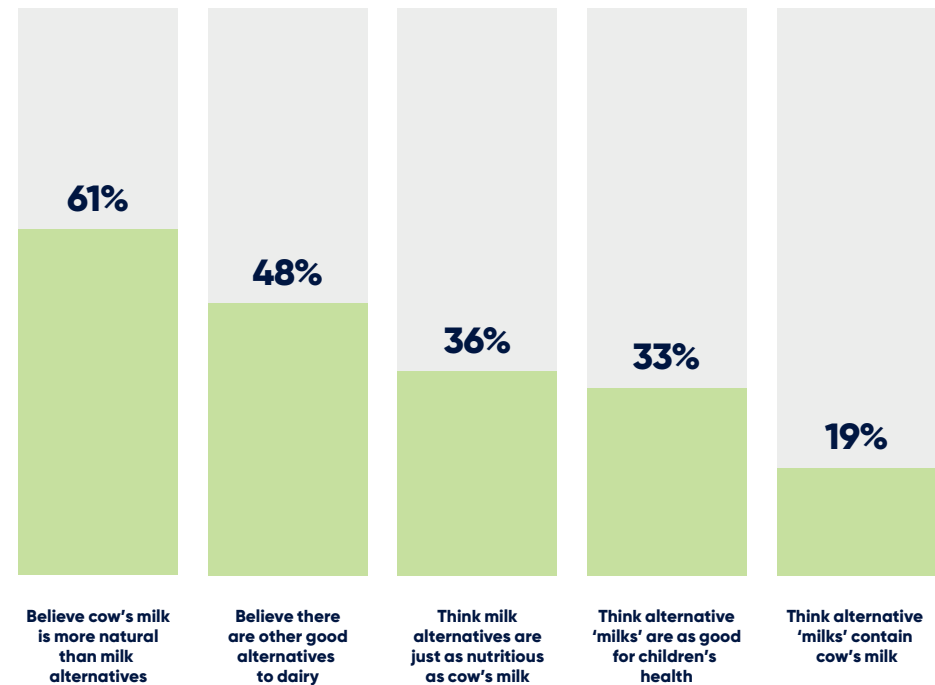
Main reasons for buying alternative 'milks'

Among those who buy alternative 'milks'



Attitudes to alternative 'milks'

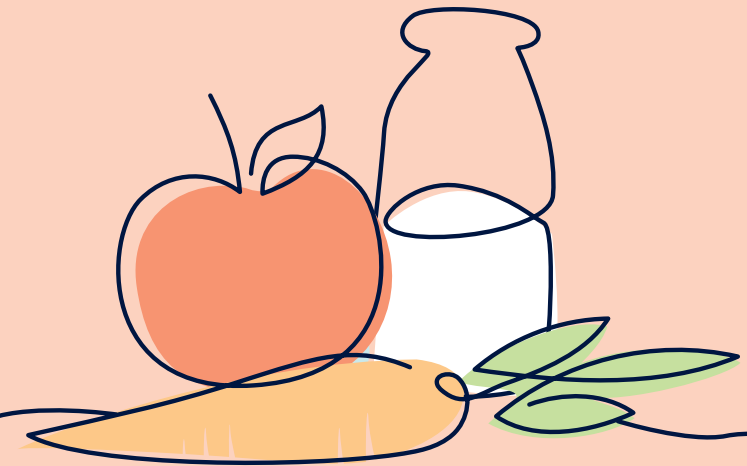
Among total market



Nutrients and health

Milk is a simple product, naturally containing an array of nutrients that are well absorbed by the body.

Visit dairy.com.au/health for more information.



Nutrient package

Compared to milk, plant-based beverages contain a different package of vitamins and minerals, which are often added in (through fortification) and in smaller quantities. Only soy protein contains all the essential amino acids that animal protein contains, but not in the same amounts as milk. Milk contains nutrients in their natural and most bioavailable form.

Plant-based beverages often have little in common with the plants they are derived from. They also cost more on a per litre basis for less nutrition and can vary widely in nutrient composition.

Health benefits

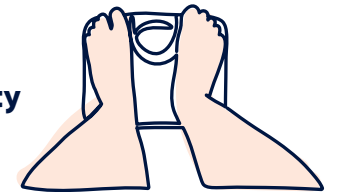
Scientific evidence shows that consuming milk, cheese and yoghurt is linked to a reduced risk of heart disease, stroke, high blood pressure and type 2 diabetes, and is not linked to an increase in weight or risk of obesity. There is currently limited evidence to demonstrate the health benefits of most plant-based beverages, however there is a strong body of scientific evidence for milk, cheese and yoghurt.

MILK, CHEESE AND YOGHURT HELP TO REDUCE THE RISK OF:



- Heart disease
- Stroke
- Hypertension
- Type 2 diabetes

and are **not linked** to **weight gain or obesity**



Nutrient bang for buck – a comparison of milk and fortified plant-based beverages

Milk is naturally nutrient rich and more affordable than plant-based beverages



Vitamins and Minerals (% Regulatory RDI)/250mL

Calcium	34%
Phosphorus	23%
Riboflavin (mg)	28%
Vitamin A	15%
Zinc	7%
Magnesium	8%

Nutrients per serve

Energy (kJ)	698*
Total Fat (g)	8.8
Protein (g)	8.5
Total sugar (g)	13.8
Added sugar (g)	0
Free sugar (g)	0

Vitamins and Minerals (% Regulatory RDI)/250mL

Calcium	37%
Phosphorus	18%
Riboflavin (mg)	4%
Vitamin A	2%
Zinc	3%
Magnesium	17%

Nutrients per serve

Energy (kJ)	620*
Total Fat (g)	7.0
Protein (g)	9.5
Total sugar (g)	6.8
Added sugar (g)	4.5
Free sugar (g)	4.5

Vitamins and Minerals (% Regulatory RDI)/250mL

Calcium	23%
Phosphorus	5%
Riboflavin (mg)	0%
Vitamin A	0%
Zinc	2%
Magnesium	8%

Nutrients per serve

Energy (kJ)	670
Total Fat (g)	2.5
Protein (g)	1.0
Total sugar (g)	9.8
Added sugar (g)	0
Free sugar (g)	0

Vitamins and Minerals (% Regulatory RDI)/250mL

Calcium	22%
Phosphorus	4%
Riboflavin (mg)	3%
Vitamin A	0%
Zinc	2%
Magnesium	6%

Nutrients per serve

Energy (kJ)	160
Total Fat (g)	3.8
Protein (g)	1.2
Total sugar (g)	0
Added sugar (g)	0
Free sugar (g)	0

Vitamins and Minerals (% Regulatory RDI)/250mL

Calcium	36%
Phosphorus	22%
Riboflavin (mg)	0%
Vitamin A	0%
Zinc	2%
Magnesium	6%

Nutrients per serve

Energy (kJ)	583
Total Fat (g)	2.0
Protein (g)	3.5
Total sugar (g)	8.0
Added sugar (g)	0
Free sugar (g)	0

Vitamins and Minerals (% Regulatory RDI)/250mL

Calcium	38%
Phosphorus	25%
Riboflavin (mg)	29%
Vitamin A	18%
Zinc	N/A
Magnesium	N/A

Nutrients per serve

Energy (kJ)	345
Total Fat (g)	5.0
Protein (g)	8.3
Total sugar (g)	0.3
Added sugar (g)	0
Free sugar (g)	0

Please note: The price of plant-based beverages can vary significantly, by up to \$1 or \$2 more per litre.

* Food Standards Australia New Zealand (2014). AUSNUT 2011–13 – Australian Food Composition Database.

Independent product data

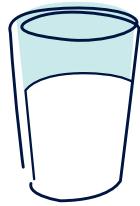
+ DAIRY AUSTRALIA calculation based in part on data reported by NielsenIQ through its Homescan Service for the dairy category for the 52-week period ending 30/01/2022, for the total Australian market, according to the NielsenIQ standard product hierarchy. Copyright (c) 2022, Nielsen Consumer LLC.

RDI: Recommended Dietary Intake. The average daily dietary intake level that meets nutrient requirements of nearly all (97–98%) healthy individuals in a sex and particular life stage group.

Regulatory RDI: The regulatory RDI sets the minimum criteria for claims about the vitamin or mineral content of a food.

Ingredients

Water is the main ingredient in all plant-based beverages. As well as being fortified with vitamins and minerals, many plant-based beverages contain added ingredients during processing such as stabilisers, starches, thickeners and emulsifiers to improve texture, shelf life and product stability. Some also contain added sugar. Plant-based beverages often contain small quantities of the original ingredient, so you don't get the wholefood benefits.

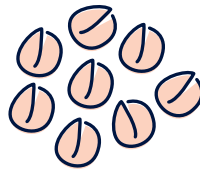


MILK
Milk.



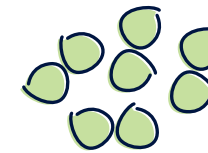
OAT BEVERAGE

Filtered Water, Whole Oats (min 15%), Oat Flour, Sunflower Oil, Gum Arabic, Mineral (Calcium Phosphate), Sea Salt.



SOY BEVERAGE

Filtered Water, Organic Whole Soy Beans (min 17%), Pearl Barley, Barley Malt, Raw Sugar, Sunflower Oil, Minerals (Calcium Phosphate), Natural Flavouring, Sea Salt, Kombu (Kelp), Vitamins (Vitamin B2, Vitamin A, Vitamin B12).



PEA BEVERAGE

Filtered Water, Pea Protein Isolate (4%), Sugar, Minerals and Vitamins (Calcium Phosphate, Vitamin B2, Vitamin D, Vitamin B12), Natural Flavours, Stabilisers (418, 415), Salt.



RICE BEVERAGE

Filtered Water, Whole Brown Rice (min 1.3%), Sunflower Oil, Calcium Phosphate, Sea Salt.



ALMOND BEVERAGE

Filtered Water, Whole Almonds (min. 3.8%), Raw Sugar, Minerals (Calcium Phosphate), Emulsifier (Sunflower Lecithin), Sea Salt, Vegetable Gum (Gellan), Natural Flavour.

Sustainable diets

Sustainable diets have:

- low environmental impacts
- support food and nutrition security and health for both present and future generations.

Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable, nutritionally adequate, safe and healthy; while optimising natural and human resources.*

All food production has an impact and when it comes to eating sustainably, there are trade-offs between environmental, nutrition, social and economic factors.

Learn more about Australian dairy's sustainability commitments at dairy.com.au/sustainability

* FAO and WHO. 2019. Sustainable healthy diets – Guiding principles. Rome.

Environmental sustainability

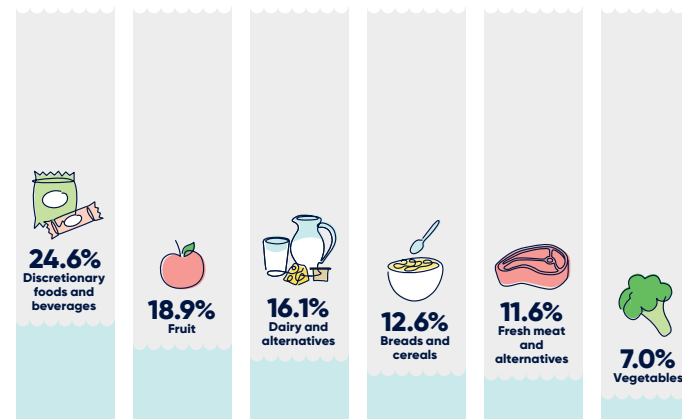
Australian dairy is committed to reducing its environmental impact which includes reducing greenhouse gas (GHG) emissions intensity by 30% by 2030. The dairy manufacturing sector alone has reduced emissions intensity by 23.5% and absolute emissions by 27% since 2010/11.*

Research analysing Australian diets revealed that high nutritional quality, low emission diets typically featured milk, cheese and yoghurt.# Increasingly, it is being recognised that the environmental impact of diets goes beyond GHG emissions, with measures such as water scarcity footprint, cropland footprint and others now being used to analyse performance.

Water

The dairy food group, which includes fortified plant-based beverages, makes a moderate contribution to the water scarcity footprint of Australian's diets.

Water scarcity footprint by food group (% dietary contribution)*

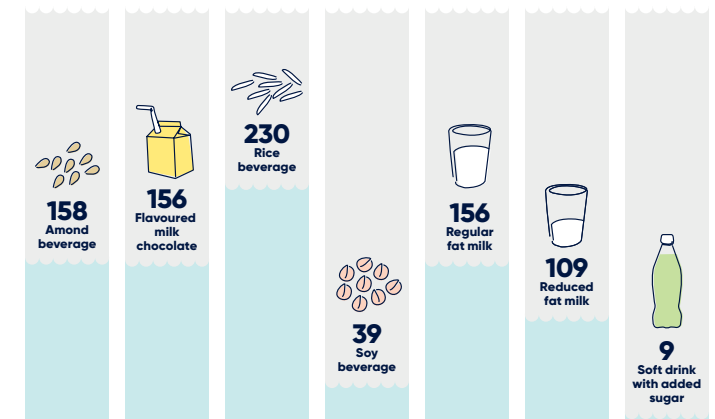


+ Food groups are as defined by the Australian Dietary Guidelines

Ridoutt BG, Baird D, Anastasiou K, Hendrie GA. Diet quality and water scarcity: Evidence from a large Australian population health survey. *Nutrients*. 2019 Aug;11(8): 1846.

When we look at a selection of beverages in the Australian food system, rice beverages have the greatest water scarcity footprint, soy has the lowest of the plant-based beverages and sugar-sweetened soft drink is lower again – however lacks nutritional value.

Water scarcity footprint of milk products, plant-based and other beverages (L-eq kg-1)



Ridoutt B, Baird D, Anastasiou K, Hendrie G. An assessment of the water use associated with Australian diets using a planetary boundary framework. *Public Health Nutr*. 2021 Apr;24(6):1570-1575.

The water scarcity footprint measures both **the amount of water used** to produce a food, and **whether water was scarce or abundant** at the location it was drawn from.

* Australian Dairy Industry Council. Australian Dairy Industry Sustainability Report. Available from: dairy.com.au/sustainabilityframework

Ridoutt BG, Baird D, Hendrie GA. The role of dairy foods in lower greenhouse gas emission and higher diet quality dietary patterns. *European Journal of Clinical Nutrition*. 2021 Feb;60(1):275-85.

Cropland

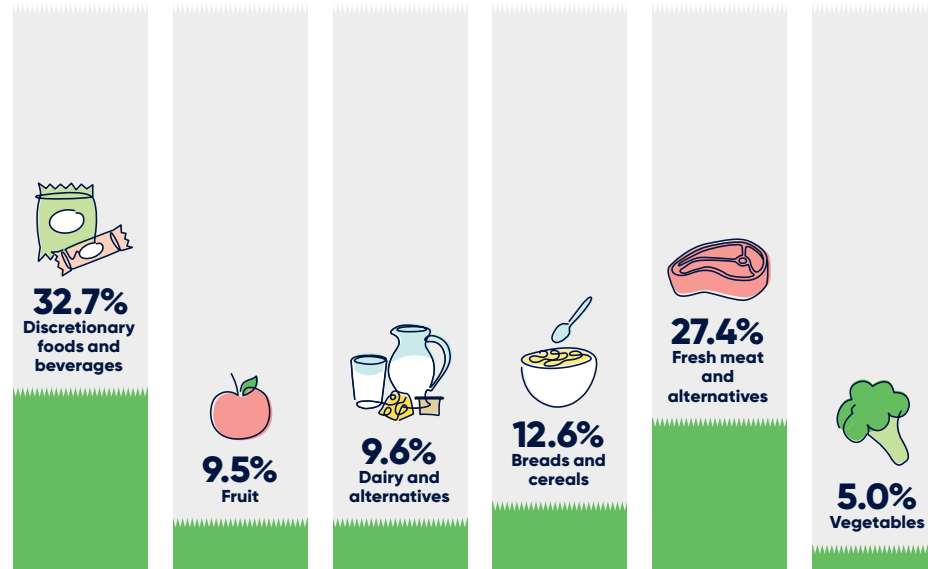
Cropland footprint tells a different story again with the dairy food group making a small contribution relative to other food groups.

Cropland scarcity footprint is a measure of cropland use, taking into account the productivity of the land.

From an individual food perspective, milk products have a greater cropland footprint than plant-based beverages. At the lowest end of the spectrum is sugar-sweetened soft drink which provides no nutritional value. This is where the nutritional attributes of the food and overall diet quality must be considered.

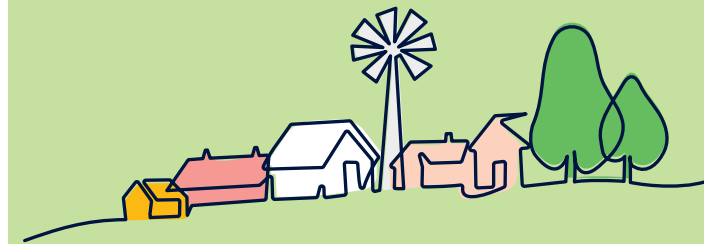
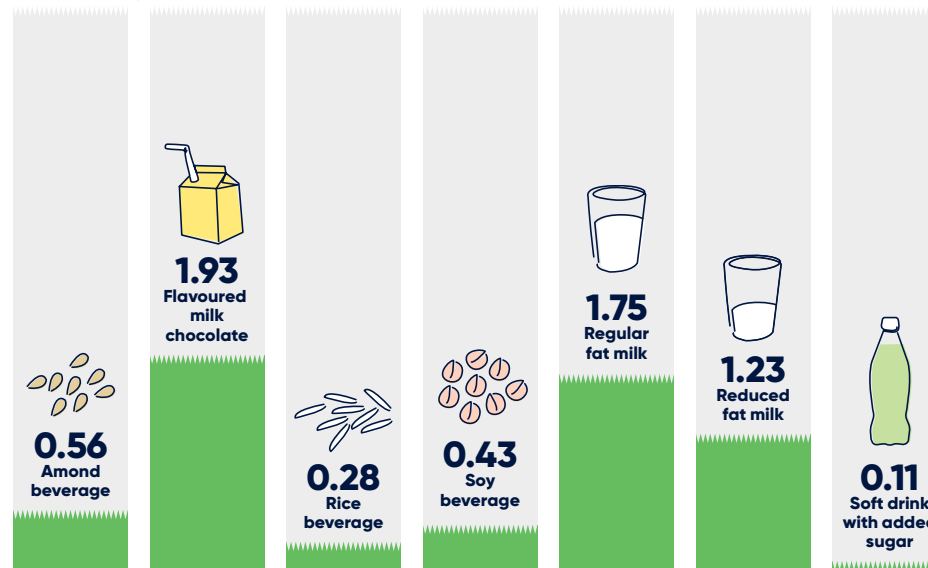
Ridoutt B, Anastasiou K, Baird D, Garcia JN, Hendrie G. Cropland Footprints of Australian Dietary Choices. Nutrients. 2020 May; 12(5): 1212.

Cropland scarcity footprint by food group (% dietary contribution)*



* Food groups are as defined by the Australian Dietary Guidelines

Cropland scarcity footprint of milk products, plant-based and other beverages (m².yr-e/kg)



Eating according to the Australian Dietary Guidelines and **limiting intake of discretionary or junk foods** will have the most significant impact on **improving diet quality** and **reducing our dietary environmental footprint**[#]

[#] Hendrie G, Baird D, Ridoutt B, Hadjidakou M, Noakes M. Overconsumption of Energy and Excessive Discretionary Food Intake Inflates Dietary Greenhouse Gas Emissions in Australia. *Nutrients*. 2016;8(11):690.



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