



# Dairy and food culture: enriching dietary patterns and multicultural Australia

## Our sustainability COMMITMENTS



Enhancing economic viability  
and livelihoods



Improving wellbeing  
of people



Providing best care  
for all our animals



Reducing  
environmental impact

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## Key messages



Australia is recognised as one of the most vibrant, multicultural societies in the world which, in turn, shapes our rich food culture

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Embracing multiculturalism and diverse culinary cultures can have a positive influence on the dietary patterns and health of all Australians

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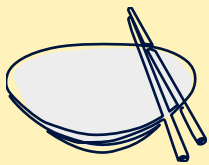
Access to healthy, culturally appropriate food is critical for food security and sustainable diets in culturally, linguistically diverse populations

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Culturally safe practice involves understanding the perspectives of all people and working with them ethically and effectively in culturally sensitive, responsive, and inclusive ways

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Many migrant groups in Australia have a long, intricate history with dairy foods, as core components of their lifestyles and diets across the lifespan, but also as part of feasts, fasting, festivals, religious and celebratory events

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Public health nutrition, dietary interventions and guidelines must embrace multicultural Australia and support the maintenance and honouring of cultural heritage

# Embracing multiculturalism and culturally safe practice

Australia's rich multicultural society results in diverse health professionals, who come from and work with people from a wide range of vibrant, geographical, and cultural backgrounds.

Culturally safe practice involves understanding the perspectives of all people and working with them ethically and effectively in culturally sensitive, responsive, and inclusive ways. People connect to their culture and ethnicity through food and culinary practices. Therefore, it is vital that healthcare professionals are competent in and consider a deep appreciation and understanding of cultural dietary patterns. This resource is designed to support your journey in building competencies in dairy and its place in culinary cultures. We start by exploring changing trends in Australian migration, the importance of maintaining cultural heritage, the connection between culture and sustainable diets, and finally the benefits of seeking a deeper multicultural understanding.

## Changing trends in migration

The richness of Australia's society and culinary culture is largely related to its position as one of the most multicultural countries in the world. A recent estimate shows that 30% of Australia's population was born overseas, indicating a return to levels not seen since the late 1800s<sup>1</sup>. Australia's migration policies restricted the diversity of arrivals from the early 1900s until after World War II, when a labour shortage saw a shift to a less discriminatory stance of the government and subsequent waves of migration.

Today, England still represents the largest proportion of overseas-born Australians (3.8%) with India, China, New Zealand, Philippines, Vietnam, South Africa, Italy, Malaysia, and Sri Lanka making up the top ten<sup>1</sup>. In 2019-20 however India and China were the top two countries providing permanent migrants to Australia with Nepal, Pakistan, and the United States also in the top ten. The top three countries of humanitarian visas were Iraq, the Democratic Republic of Congo and Syria for the same period<sup>2</sup>. All this movement influences the food landscape of Australia, introducing new foods, ways of sourcing, preparing, cooking, and eating, including the experience, and appreciation, of dairy foods.

## Maintaining cultural heritage

New migrants to Australia bring with them a wealth of knowledge and practices of the culinary culture of their homeland, and when able to, generally resist dietary acculturation, that is, they work to maintain their culinary heritage. This is an important act to retain connection to their country of origin and is key to their identity, but it also allows for transmission of culinary knowledge, understanding and skills from the migrant group to the host country population<sup>3</sup>. Further, resisting dietary acculturation and maintaining dietary patterns of home countries can be health protective. From vibrant multicultural food festivals to an abundance of cuisine choice when dining out, migrant culture has enviably shaped Australia's food landscape and is recognised globally. Many migrant groups to Australia have a long, intricate history with dairy foods, as core components of their lifestyles and diets across the lifespan, but also as part of feasts, fasting, festivals, religious and celebratory events. It is imperative that public health nutrition and dietary guidelines embrace multicultural Australia and support the maintenance and honouring of cultural heritage.

## Glossary

- Culinary culture – all the elements that make up and inform the culinary beliefs and practices of a group
- Food culture – a component of culinary culture that focuses specifically on the growth, production and consumption practices and behaviours of a group or population
- Dietary pattern – the quantity, variety, or combination of different foods and beverages in a diet and the frequency with which they are habitually consumed
- Dietary guidelines – informal nutrition education and formal tools that translate the evidence-based science of nutrient requirements to a practical pattern of food choices appropriate for a population
- Culturally safe practice – understanding the perspectives of all people and working with them ethically and effectively in culturally sensitive, responsive, and inclusive ways
- Dietary acculturation – a process where migrants or a minority group adopt the dietary practices of a host country, region or majority group, and at the same time the host population adopts dietary practices of the migrant or minority group

1 Australian Bureau of Statistics. Migration, Australia. Available from: [abs.gov.au/statistics/people/population/migration-australia/latest-release](https://abs.gov.au/statistics/people/population/migration-australia/latest-release)

2 Australian Government Department of Home Affairs. Country profiles list. Available from: [homeaffairs.gov.au/research-and-statistics/statistics/country-profiles/profiles](https://homeaffairs.gov.au/research-and-statistics/statistics/country-profiles/profiles)

3 Satia-About J. Dietary acculturation: definition, process, assessment, and implications. *Int J Hum Ecol.* 2003;4(1):71-86

## Connecting culture and sustainable diets

A healthy, sustainable diet considers nutrition, social, cultural, economic, ecological, and environmental factors<sup>4</sup>. Access to healthy, culturally appropriate food is critical for food security in culturally and linguistically diverse populations<sup>4,5</sup>. Understanding of these factors must drive food-based dietary guidelines that can continue to recommend moderate amounts of dairy in a sustainable healthy diet<sup>4,6</sup>.

### Sustainable diets: What you need to know

- When it comes to eating sustainably, there are trade-offs between environmental, nutrition, social and economic factors
- The environmental impact of a food goes beyond greenhouse gas (GHG) emissions to consider water, land, biodiversity, and deforestation
- All foods have different impacts on a variety of environmental metrics
- While changing dietary behaviours could result in some environmental impact reduction, it is the food production system where opportunity to reduce impact is greatest

## What role does dairy play?

- Dairy products contribute substantially to nutrient security of populations<sup>7</sup>
- Australian dairy has made sustainability commitments to its people, the health and wellbeing of the community, its animals and the environment and reports against these annually through the industry Sustainability Framework
- In the last 10 years, Australian dairy has made the following progress:
  - Dairy manufacturing GHG emissions down 27% since 2010–11
  - 94% of dairy farms implement practices to lower or offset GHGs
  - Dairy manufacturers reduce waste to landfill by 51% since 2010–11

- All dairy farmers commit to complying with animal welfare standards
- Employs 37,400 people including in regional communities

For references and more information on dairy's role in a healthy, sustainable diet visit [dairy.com.au/sustainablediets](https://dairy.com.au/sustainablediets). To learn more about the Australian Dairy Sustainability Framework visit [dairy.com.au/sustainabilityframework](https://dairy.com.au/sustainabilityframework)

## Seeking a deeper understanding

Australia continues to welcome new arrivals and diversify its population. Therefore understanding diets of home countries, global food trends, dietary patterns and guidelines are critical in ensuring cultural competency. Further, varied, ethnic food experiences are prominent when shopping, cooking and dining, influencing the diets of all Australians. This resource focuses on assisting health professionals to develop a deeper understanding of the role of dairy foods, their significant history and modern use in cuisines, dietary patterns, and dietary guidelines in all corners of the globe. Additionally, this resource highlights the substantial role and influence dairy plays within the multicultural Australian diet, emphasising its key role in a healthy and sustainable diet and as a core food group.



4 Food and Agriculture Organization. Sustainable healthy diets – guiding principles. Available: [who.int/publications/i/item/9789241516648](https://www.who.int/publications/i/item/9789241516648).

5 Food and Agriculture Organization. Sustainable diets and biodiversity: Directions and solutions for policy, research and action. Available: [fao.org/3/i3004e/i3004e00.htm](https://www.fao.org/3/i3004e/i3004e00.htm).

6 Nicholls J. and Drewnowski A. Toward sociocultural indicators of sustainable healthy diets. *Sustainability*. 2021;13(13):7226–7235

7 Food and Agriculture Organization. Sustainable diets and biodiversity: Directions and solutions for policy, research and action. Available: [fao.org/3/i3004e/i3004e00.htm](https://www.fao.org/3/i3004e/i3004e00.htm).

## Australia and the modern global dairy scene

Dairy is often described as a very Anglo-Saxon Australian tradition, with typical consumption of milk with breakfast cereal or yoghurt for dessert, when in fact mammalian milk products have an omnipresent role around the globe.

Let's look at an overview of current trends in global dairy production and consumption to set the scene.

### Milk production

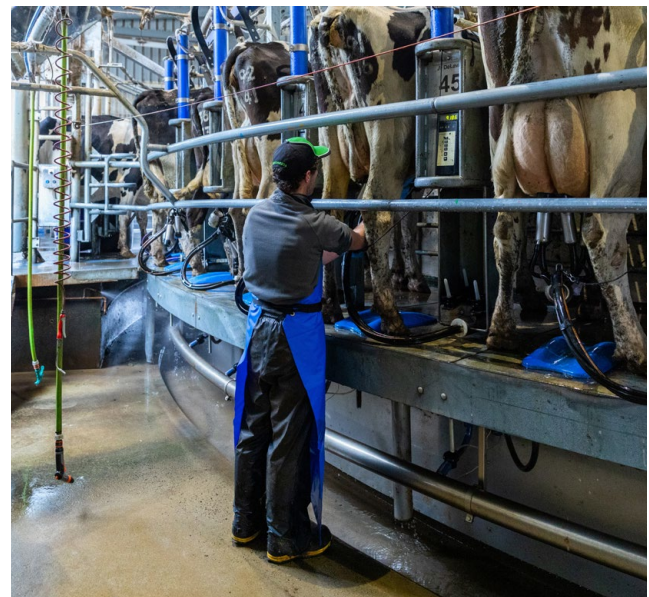
Milk for human consumption is derived from many mammals. Dairy cows produce approximately 81% of the world's milk is produced from dairy cows, followed by 15% from buffalo and 4% from goat, sheep and camel<sup>8</sup>. Milk from other animals such as yak, reindeer, horse, donkey, and others is produced in much smaller quantities. Overall global production of milk from all animals reached 910 million tonnes, with 735 million tonnes of cow's milk in 2020<sup>9</sup>. The Organisation for Economic Cooperation and Development (OECD) jointly with the Food and Agriculture Organization (FAO) of the United Nations predict production to continue to increase to 2030 and to surpass 1000 million tonnes<sup>10</sup>. The top three producers of cow, buffalo, sheep, goat and camel milk in 2020 is described in Figure 1.

Various factors can influence milk production; at a herd level, breed, genetic background, age of animal, feed, stage of lactation, parity, milking frequency and completeness and disease. However drought, war and other large-scale interruptions can impact production at the local and country level. We have however seen milk production trends that are largely resistant to these factors; Asian countries, especially India and Pakistan, have increased production in recent years and are expected to continue this trend in the coming decade. As the European Union pursues sustainable dairy practices, increases in production are expected to slow<sup>11</sup>.

### Milk products

An array of products are derived from whole fresh cow's milk including dried, evaporated, and condensed milks, cream, butter and ghee, and whole and dry buttermilk. Fresh skimmed milk is processed as dried, condensed, and evaporated products. Whey, a by-product of cheese making, is both dried and condensed. Cheese is by far the most diverse processed milk product. Made from whole and skimmed cow's milk, and most other mammalian milks, some suggest there are more than 1,800 different types worldwide<sup>12</sup>.

The largest cheese producer in the world is the European Union (10,350 tonnes in 2019), however when analysed country by country, the United States takes first place<sup>13</sup>. See Figure 2 for the top three producers of cow, sheep and goat milk cheeses. Other processed milk products include yoghurt, and fermented milk products include ayran, lassi, sour cream, cultured buttermilk, kefir, and kumis.



8 Food and Agriculture Organization. Dairy and dairy products. Available from: [fao.org/3/cb5332en/Dairy.pdf](https://www.fao.org/3/cb5332en/Dairy.pdf).

9 International Dairy Federation. The World Dairy Situation Report 2021. Available: [fil-idf.org/news\\_insights/idf-launches-world-dairy-situation-report-2021/](https://www.idf.org/news_insights/idf-launches-world-dairy-situation-report-2021/).

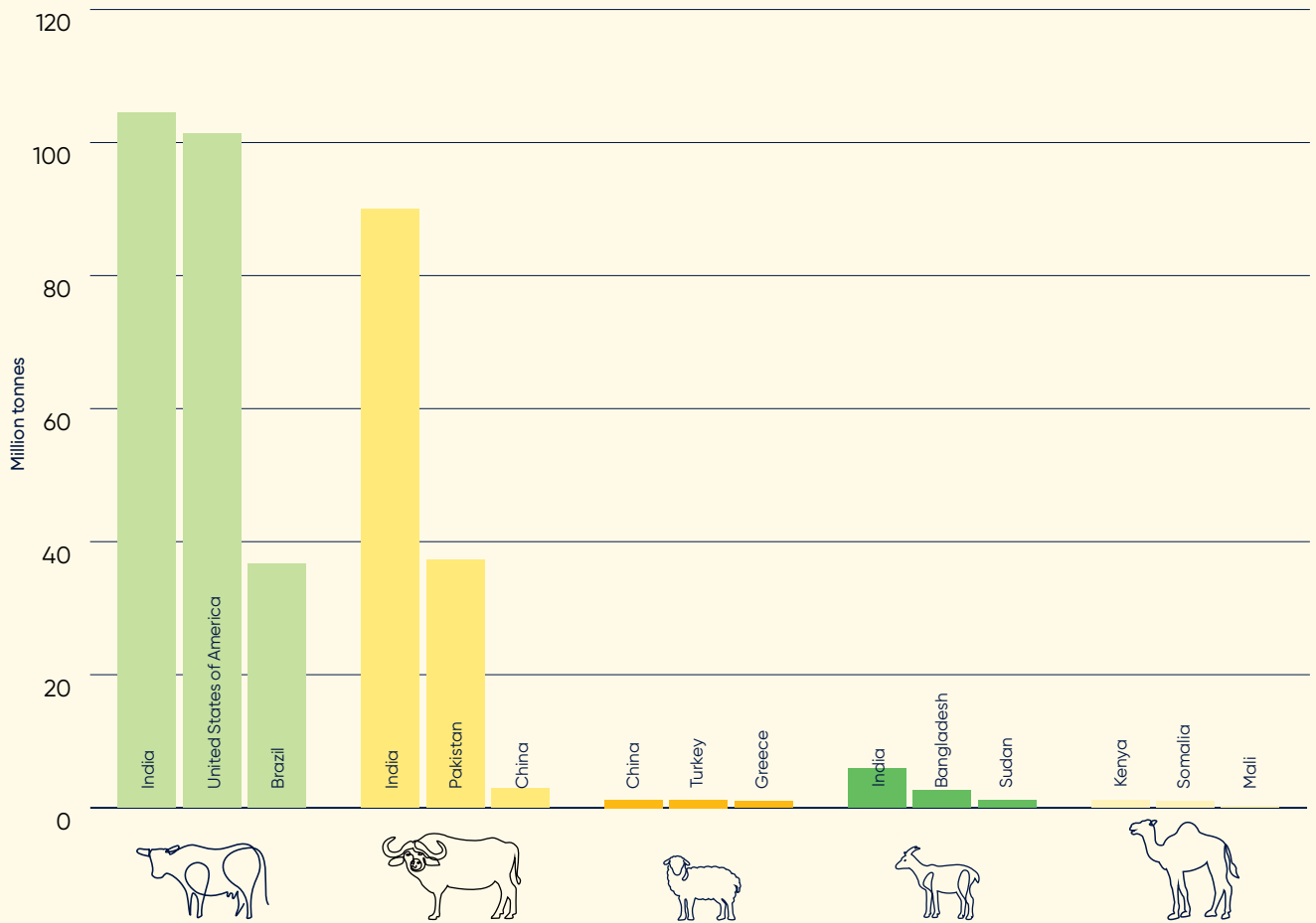
10 Food and Agriculture Organization. Sustainable diets and biodiversity: Directions and solutions for policy, research and action. Available: [fao.org/3/i3004e/i3004e00.htm](https://www.fao.org/3/i3004e/i3004e00.htm).

11 Food and Agriculture Organization. Crops and livestock products. Available: [fao.org/faostat/en/#data/QCL](https://www.fao.org/faostat/en/#data/QCL).

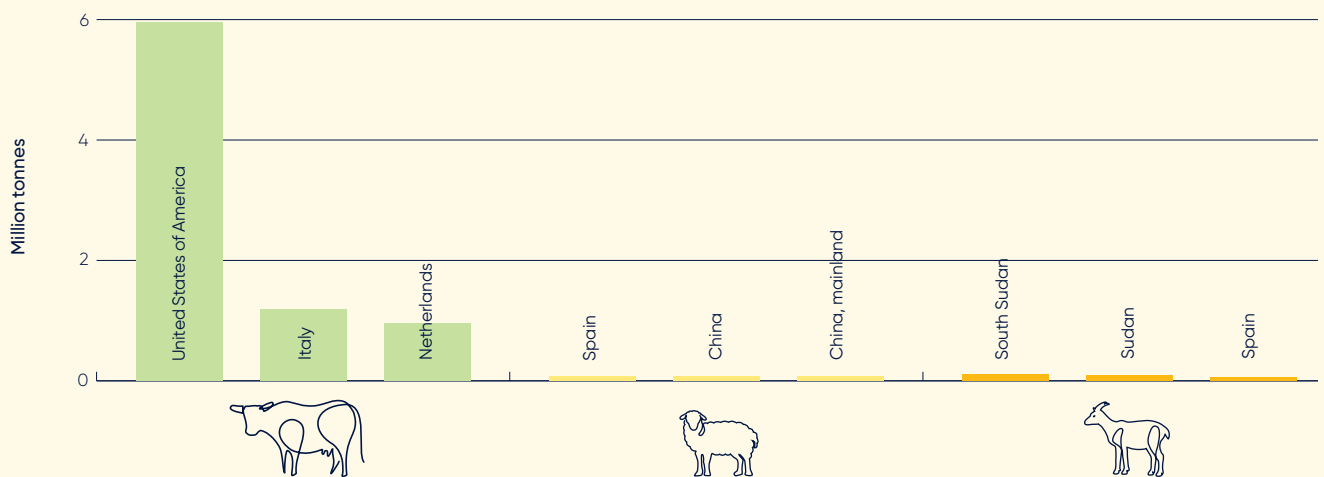
12 World News Incorporated. Cheeses by type. Available: [cheese.com/by\\_type/?per\\_page=20](https://www.worldnews.com/by_type/?per_page=20)

13 International Dairy Federation. The World Dairy Situation Report 2021. Available: [fil-idf.org/news\\_insights/idf-launches-world-dairy-situation-report-2021/](https://www.idf.org/news_insights/idf-launches-world-dairy-situation-report-2021/).

**Figure 1** Top three producers of cow, buffalo, sheep, goat and camel milk in 2020<sup>9</sup>



**Figure 2** Top three producers of cow, sheep and goat milk cheeses in 2020<sup>9</sup>



## Consumer preferences

Consumers of dairy products across the globe generally prefer unprocessed and minimally processed (e.g. fermented) varieties<sup>14</sup>, however this varies by region. In India and Pakistan in 2020, more than two-thirds of dairy consumption was of fresh dairy products, however in the United States, this is less than a quarter and in Australia approximately one third (see Figure 3)<sup>15</sup>, demonstrating the preference for processed dairy products in developed countries.

Cheese dominates the consumption of processed dairy products in developed countries, however butter is the main processed dairy product consumed in Asian countries such as India and Pakistan<sup>16</sup>. While China is the 4th largest producer of cow's milk globally, consumption per capita is substantially lower across fresh and processed dairy products than other major producers.

## Dairy processing

The processing of dairy food and beverages plays an important role in both the safety and availability of product choices in the diets of Australian consumers. Processing can lead to benefits for health, convenience, and the environment. For the dairy industry, pasteurisation, homogenisation, and fermentation are common practices to enable the safe production of nutritious milk, yoghurt, and cheese products. The ability to produce reduced-fat foods or alter the sweetness of products, all rely on processing, as does the ability to reduce food spoilage, extend shelf-life, increase food safety, and reduce food waste. The act of cooking is also a form of food processing with additional steps such as chopping, grating, heating, baking, frying, and roasting used for centuries to enhance flavour and change foods into delicious dishes.

**Fresh dairy products** - all dairy products and milk which are not included in processed products.

**Processed dairy products** - butter, cheese skim milk powder, whole milk powder, whey powder and for few cases casein.

Figure 3a Pakistan

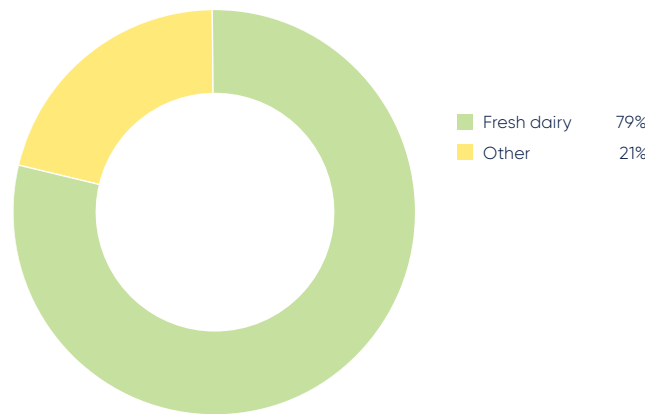


Figure 3b India

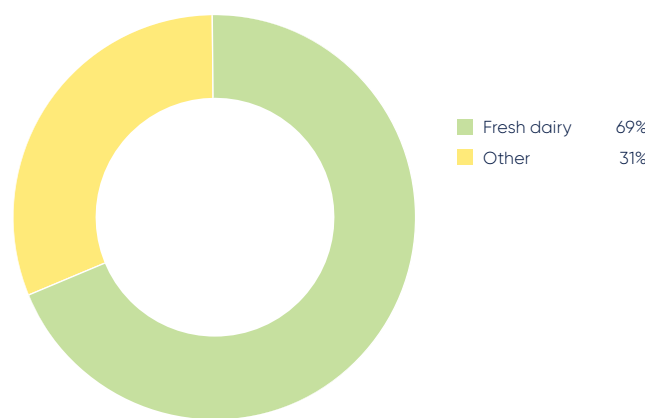


Figure 3c Australia

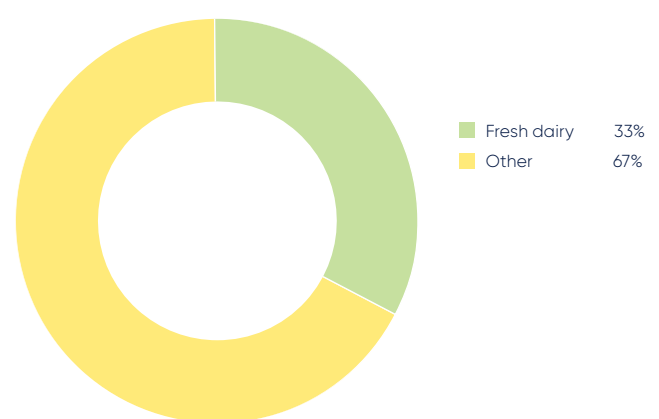
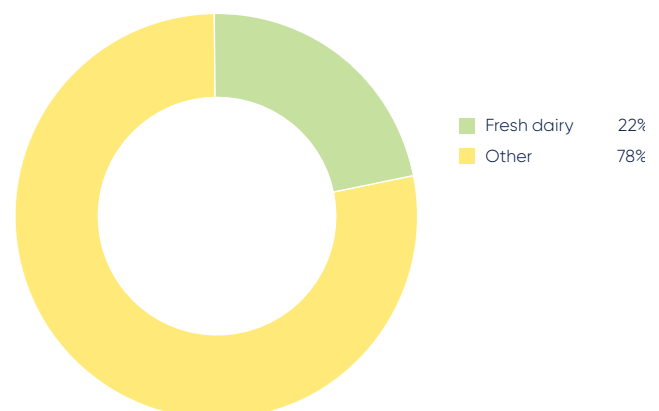


Figure 3d United States of America



<sup>14</sup> Food and Agriculture Organization. Dairy and dairy products. Available: [fao.org/3/cb5332en/Dairy.pdf](http://fao.org/3/cb5332en/Dairy.pdf)

<sup>15</sup> Food and Agriculture Organization. OECD-FAO Agricultural Outlook - Fresh Dairy Products. Available: [doi.org/10.1787/agr-data-en](http://doi.org/10.1787/agr-data-en)

<sup>16</sup> Food and Agriculture Organization. OECD-FAO Agricultural Outlook - Dairy. Available: [doi.org/10.1787/agr-data-en](http://doi.org/10.1787/agr-data-en)



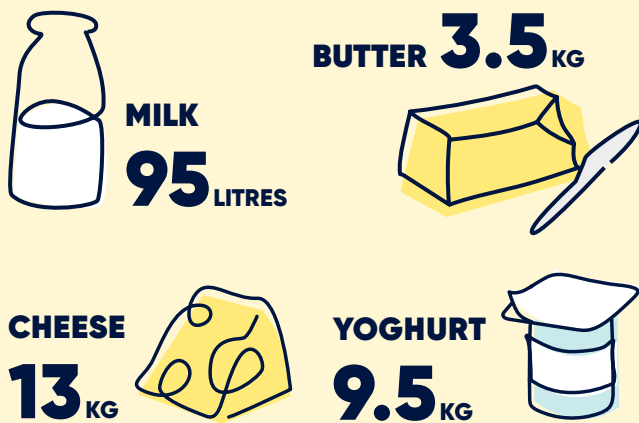
## Did you know?

Paneer, is often referred to as 'cheese', however it is also considered a fresh dairy product. It is made by coagulating milk protein by heat and acid to produce a curd. Ricotta 'cheese' would also be considered a fresh dairy product as it is made in a similar way.

## The Australian context

In Australia, consumption of fresh dairy products has decreased and processed products such as cheese and butter have increased gradually over the past 10 years, however it is expected that this trend will reverse; by 2030 the OECD/FAO project that Australians will consume 1kg more fresh dairy products, 1kg less cheese, and 0.8kg less butter per capita<sup>17</sup>. Cheddar-style cheeses have dominated the production and export market for Australian cheese producers; however this has seen a downward trend in the past two decades with a range of other hard, semi-hard and mould cheeses produced, exported, and consumed by Australians<sup>18</sup>.

Figure 4 Approximate Australian consumption per capita 2020–21<sup>19</sup>



<sup>17</sup> Food and Agriculture Organization. OECD–FAO Agricultural Outlook – Fresh Dairy & Dairy. Available: [doi.org/10.1787/agr-data-en](https://doi.org/10.1787/agr-data-en)

<sup>18</sup> Dairy Australia. Australian Dairy Industry In Focus 2020. Available: [dairyaustralia.com.au/resource-repository/2021/11/19/australian-dairy-industry-in-focus-2020#YocfVXVBw2w](https://dairyaustralia.com.au/resource-repository/2021/11/19/australian-dairy-industry-in-focus-2020#YocfVXVBw2w)

<sup>19</sup> Dairy Australia. Australian Dairy Industry In Focus 2021. Available: [dairyaustralia.com.au/resource-repository/2021/11/19/australian-dairy-industry-in-focus-2021#YocfoHVBw2w](https://dairyaustralia.com.au/resource-repository/2021/11/19/australian-dairy-industry-in-focus-2021#YocfoHVBw2w)

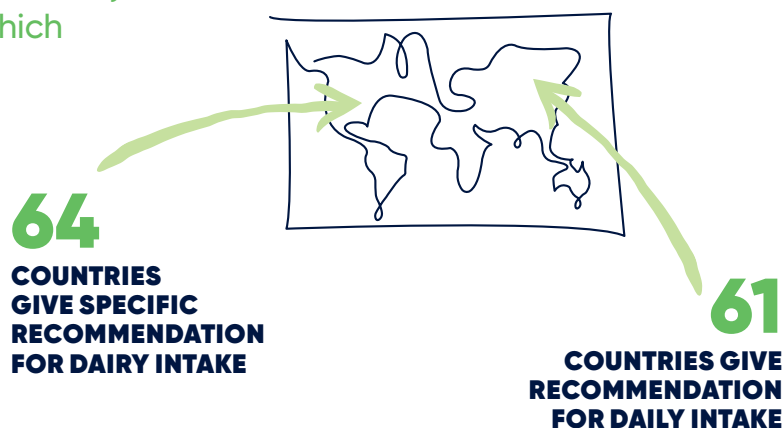
## Dairy around the globe – traditional diets to modern guidelines and the influence on Australia

From English cheddar to Iraqi kashk, dairy foods have a significant history and modern use in cuisines, dietary patterns, and dietary guidelines in all corners of the globe. Let's explore some key examples across different regions and the global influence on Australia.

Snapshot of examples of international dietary guideline recommendations on dairy<sup>20</sup>

Country	Dairy for adults
United States	3 serves/day (1 serve = 1 cup milk equivalent)
Brazil	No recommendation for number of dairy serves/day or what a serve of dairy is, but suggestion to avoid sweetened and flavoured dairy
United Kingdom	Some, choose lower fat options
The Netherlands	Sufficient dairy products, milk, cheese, and yoghurt (2–3 serves/day milk and dairy plus 40g cheese/day, where 1 serve = 150g)
France	2 serves/day (1 serve = 150mL milk, 125g yoghurt, 30g cheese)
Italy	3 serves/day (1 serve = 125mL milk, 125g yoghurt or other fermented milk products), 3 serves/week (1 serve = 100g cheese <25% fat, 50g cheese >25% fat)
Turkey	500g milk or yoghurt, milk no or low fat, yoghurt, and cheese low salt
Greece	2 serves/day (1 serve = 150mL milk, 150g yoghurt, 30g hard cheese, 60g soft cheese)
Arab countries	2–3 serves/day (1 serve = 1 cup milk, 45g cheese, 1 tablespoon cream cheese)
China	300–500g milk and dairy products/day, with a variety recommended
India	3 serves/day (1 serve = 100mL milk or 100g milk products)
Pakistan	2–3 serves/day (1 serve = 1 cup of milk, kheer, feerni (or other milk-based products equivalent to nutrients supplied by 1 cup of milk), yoghurt or 1 slice of cheese)
Dominican Republic, Guatemala and Honduras	3 serves weekly recommendation
Australia	1.5–4 serves per day, depending on age/life stage. (1 serve = 250mL milk, 200g yoghurt, 40g cheese)

FAO database has 96 dietary guidelines. 100% of which mention dairy.<sup>20</sup>



<sup>20</sup> Food and Agriculture Organization. Food-based dietary guidelines. Available: [fao.org/nutrition/education/food-based-dietary-guidelines/regions/countries/en/](http://fao.org/nutrition/education/food-based-dietary-guidelines/regions/countries/en/).



## The Americas

The Americas extend from the most northern Alaskan peninsula to the tip of Cape Horn. This section focuses on insights from two contrasting countries, the United States and Brazil.

Agricultural land use more than doubled in the last century<sup>21</sup>. The United States and Brazil account for 33% and 23% of this land use respectively, with 63% and 76% of agricultural land used respectively for grazing, including dairy production.

Migrants to the United States in the 1600s brought cattle for dairy and beef, mostly for domestic consumption. As the population expanded and cities developed, dairy-specific breeds and large-scale production became the norm in America<sup>22</sup> and characterises dairy production to this day. Dairy production in Brazil, in contrast, is largely in the hand of smallholders (80% of dairy farmers)<sup>23</sup>.

Diets in the United States have evolved substantially over the 20th century. Key agents of change included the 'discovery' of nutrition, vitamins and minerals, war, and the Great Depression, working women, introduction of frozen foods and meals, eating out of home<sup>24</sup>, and migration. Dietary diversification has resulted in new production, preparation and consumption patterns, which has coincided with a period of food and nutrition-related health issues.

Dietary guidelines in the United States reflect guidelines of other developed countries tackling overnutrition with a focus on intake of nutrient-dense foods, while limiting added sugars, saturated fats and reduced sodium intake.

**Dietary Guidelines in the United States refer to cultural preferences, an acknowledgement that healthy dietary changes are more achievable when aspects of traditional diets are incorporated into eating patterns<sup>25</sup>.**

21 Global Change Data Lab. Agricultural area over the long-term, 1600-2016. Available: [ourworldindata.org/grapher/total-agricultural-area-over-the-long-term](https://ourworldindata.org/grapher/total-agricultural-area-over-the-long-term)

22 United States Department of Agriculture. Early History. Available: [nvl.usda.gov/exhibits/speccoll/exhibits/show/the-american-dairy-industry/early-history](https://nvl.usda.gov/exhibits/speccoll/exhibits/show/the-american-dairy-industry/early-history).

23 Brazilian Confederation of Agriculture and Livestock. Dairy. Available: [brazilianfarmers.com/dairy/](https://brazilianfarmers.com/dairy/)

24 Dyson LK. American cuisine in the 20th century. *Food Review*. 2000;23(1):2-7

25 United States Department of Agriculture and United States Department of Health and Human Services. Dietary Guidelines for Americans, 2020-2025. Available: [dietaryguidelines.gov/resources/2020-2025-dietary-guidelines-online-materials](https://dietaryguidelines.gov/resources/2020-2025-dietary-guidelines-online-materials)



A healthy eating pattern in the United States includes 3 serves of dairy products every day, preferably low (1% fat) and no-fat varieties, for the average person. Americans are encouraged to consume dairy as milk (or buttermilk) to drink and yoghurt, kefir, dairy-based desserts, or cheese to eat. However, guidance steers consumers away from cheese to decrease saturated fat intake<sup>22</sup>.

Dietary Guidelines in the United States state that plant-based milks, except fortified soy beverages, are not equivalent to dairy products as their nutrient composition is not similar.

About 90% of Americans fail to meet this guideline, with intakes moving further away from the recommendation as the population ages<sup>22</sup>. About half of dairy products are consumed as milk (51%) either as a drink or on breakfast cereal. Cheese makes up 45% and is typically eaten as part of burgers, sandwiches, pizza, and pasta dishes. Only 3% of dairy consumed is yoghurt<sup>25</sup>. A healthy meal plan for Americans might include milk and yoghurt in an oat-based breakfast, cheese in a burrito bowl at lunch and yoghurt with fruit after the evening meal<sup>26</sup>.

The development of Brazil's diverse dairy culture is a result of multiple factors; traditions of indigenous people, early migration from Portugal, Spain and Italy, later migration from other European countries and Asia, and minor influences from Africa<sup>27</sup>. In recent times, the eating habits of Brazilians has moved away from a high vegetable and legume base towards a diet that includes relatively more meat and milk, but also refined and processed foods<sup>28</sup>.

In response to the changing consumption patterns, the Brazilian dietary guidelines focus heavily on choosing minimally processed foods and understanding which foods are processed or ultra-processed. The guidelines extend to shopping and encourage the general population to connect with food, take time to prepare and eat, learn to cook, and share food preparation and meals with family<sup>29</sup>.

While Brazil does not have a food guide, the dietary guidelines provide multiple sample menus to guide consumers towards a diet based on natural or minimally processed foods and freshly made dishes. Breakfast might consist of milk or a milky coffee to accompany corn cake, plain or cheese bread or *pão-de-queijo* (see featured product on the next page), couscous, tapioca, or cassava cake with fruit and sometimes cheese. Lunches and dinners would usually be a rice-based meal, often with beans, small portions of egg, red meat, fish or chicken, salad, vegetables, and fruit. Milk and yoghurt-based snacks are encouraged, and consumption of fermented dairy products is increasing in Brazil. Cheese is encouraged as an additional element in a natural or minimally processed dish, or meal<sup>26</sup>.

As in the United States, despite the importance of dairy products in a healthy Brazilian diet, consumption does not meet recommendations. In recent research, less than 15% of the study population (n=430) consumed low fat milks or butter daily, less than 10% any type of cheese, and 5% any type of yoghurt<sup>30</sup>.

Traditional diets in Brazil have been influenced by its neighbouring countries and migration, yet regional differences are still present. The production of artisanal cheeses is evidence of this. For more than four centuries, most Brazilian cheese reflected European styles, yet the markedly different climate, local microbiota, dairy animal breeds and other factors prompted local cheese makers to produce products to suit regional geographical areas. The result, almost 30 different regional specialty cheeses across the country<sup>28</sup>.

## Influencing Australia

There are many similarities between Australian and American culture, a result of colonisation, early migration from the United Kingdom and Europe and the influence of American popular culture in Australia<sup>31</sup>. American food culture, especially convenience and fast foods are popular due to modern and social media and will continue to influence Australia's food culture. Brazilian influences are not so overt, but there is a growing community that contributes to the richness of Australia's culture and cuisine. Look out for *pão-de-queijo* or cheese bread in Australian grocery retailers, often marketed as naturally gluten free, along with mouth-watering, Brazilian churrasco BBQ restaurants to sample authentic cuisine.

26 United States Department of Agriculture and United States Department of Health and Human Services. Dietary Guidelines for Americans, 2020–2025. Available: [dietaryguidelines.gov/resources/2020-2025-dietary-guidelines-online-materials](https://www.dietaryguidelines.gov/resources/2020-2025-dietary-guidelines-online-materials)

27 Penna ALB, Gigante ML, Todorov SD. Artisanal Brazilian cheeses – history, marketing, technological and microbiological aspects. *Foods*. 2021;10(7):1562–1583

28 Monteiro CA, Levy RB, Ribeiro de Castro IR, Cannon G. A new classification of foods based on the extent and purpose of their processing. *Cad Saude Publica*. 2010;26(11):2039–2049

29 Ministry of Health of Brazil. Dietary Guidelines for the Brazilian population. Available: [https://bvsm.sau.gov.br/bvsm/publicacoes/dietary\\_guidelines\\_brazilian\\_population.pdf](https://bvsm.sau.gov.br/bvsm/publicacoes/dietary_guidelines_brazilian_population.pdf)

30 Guiné RPF, Florença SG, Carpes S, Anjos O. Study of the influence of sociodemographic and lifestyle factors on consumption of dairy products: preliminary study in Portugal and Brazil. *Foods*. 2020;9(12):1775–1803

31 Roe, M. The ascendance of Australian popular culture. Available: [britannica.com/place/Australia/The-ascendance-of-Australian-popular-culture](https://www.britannica.com/place/Australia/The-ascendance-of-Australian-popular-culture)

## Brazilian pão-de-queijo or cheese bread

This snack in its modern form originates from the Brazilian state of Minas Gerais and is made from cassava root flour and cheese.

In the 1700s, an unwanted by-product of cassava processing (peeled, grated, soaked, dried) was starch. African slaves collected this starch and baked dough balls. Minas Gerais, the centre of dairy production in Brazil, took this basic bun, added local cheese, and created pão (bread)-de (of)-queijo (cheese).

Popular across Brazil, it is one of the most common street-eats during Carnival alongside coxinha (chicken and cheese croquettes), and empanadas stuffed with black beans and cheese.



## Easy Brazilian cheese bread recipe



### Ingredients

- 1 large egg, room temperature
- ⅓ cup extra virgin olive oil
- ⅔ cup milk
- 1½ cups (170 grams) tapioca flour
- ½ cup (packed, about 66 grams) grated cheese, your preference (see recipe note)
- 1 teaspoon salt (or more to taste)

### Method

- 1 Preheat oven to 200°C. Spread a small amount olive oil around the insides of each well of a mini-muffin tin.
- 2 Put all of the ingredients into a blender and pulse until smooth. You may need to use a spatula to scrape down the sides of the blender so that everything gets blended well. At this point you can store the batter in the refrigerator for up to a week.
- 3 Pour batter into prepared mini-muffin tin, not quite to the top; leave about ⅛ inch from the top.
- 4 Bake at 200°C in the oven for 15–20 minutes, until all puffy and nicely browned. Remove from oven and let cool on a rack for a few minutes.
- 5 Eat while warm or save to reheat later.



## Europe

Europe is renowned for its centuries old dairy practices including cheese and yoghurt production. Next, we will highlight insights on the United Kingdom (UK), Netherlands, France, Italy, Turkey, and Greece.

Land used for agricultural purposes in Europe has marginally decreased in the past 100 years<sup>32</sup>, yet the UK, Netherlands, France, Italy, and Turkey are in the top 15 producers of cow's milk worldwide. Italy and Turkey are known for buffalo milk and its products; France, Turkey, Greece and Spain for goat; and Italy, France, Turkey Greece, and Spain, for sheep (ewe) milk.

The diversity of milks in Turkey is due to its distinct geographies and climates, regional differences in culinary culture<sup>33</sup>, rich history, and traditional small family-owned farms. The cradle of agriculture is believed by some to be in modern day south-eastern Turkey/northern Syria<sup>34</sup>, and evidence across ancient Mesopotamia (prior to 3000BC)<sup>35</sup> suggests Turkey has a long history of dairying. At the turn of this century there were 1.7 million dairy farms in Turkey, with 85% of those having less than nine animals<sup>36</sup>.

Long after the milk, butter, and cheese of the 'fertile crescent', the first reference to dairy products in Western Europe is in Homer's Iliad (700BC), with goat and sheep dominating the southern lands and cows in northern countries in the centuries following<sup>33</sup>, a trend that has largely persisted to this day.

Dietary guidelines across Europe generally encourage populations to choose low-fat, sugar and sodium dairy products. The United Kingdom's Eatwell Guide identifies low fat and sugar dairy choices including milk, cheese, yoghurt, fromage frais, quark and cream cheese. In the UK yoghurt is promoted as an alternative to cream, crème fraiche or mayonnaise<sup>37</sup>.

32 Global Change Data Lab. Agricultural area over the long-term, 1600-2016. Available: [ourworldindata.org/grapher/total-agricultural-area-over-the-long-term](https://ourworldindata.org/grapher/total-agricultural-area-over-the-long-term)

33 Keskin E, and Dağ T. Identity of cheese: a research on the cheeses of the Aegean Region in Turkey. *J Ethn Foods*. 2020;7(25):1-9

34 Lev-Yadun, S, Gopher A, Abbo S. The cradle of agriculture. *Science*. 2000;288(5471):1602-1603

35 McCormick F. Cows, milk and religion: the use of dairy produce in early societies. *Anthropozoologica*. 2012;47(2):99-111

36 Kyrdar S, and Karaca OB. An overview of the Turkish dairy sector. *Indian J Dairy Sci*. 2017;70(3):249-255

37 Public Health England. The Eatwell Guide. Available: [gov.uk/government/publications/the-eatwell-guide](https://gov.uk/government/publications/the-eatwell-guide)

Milk is commonly consumed with modern day breakfast cereal in the UK but traditionally, milk is taken in tea, a key ingredient in mashed potatoes eaten alongside meat and vegetables or atop shepherd's or cottage pie, and in desserts such as flummery, custards, rice pudding and Queen of puddings, and in sauces, often with cheese. Cheese is also found in sandwiches, pies, omelettes, and vegetables dishes such as cauliflower cheese<sup>38</sup>. Many of these dishes have been staples in Australian kitchens since animals were successfully reared following colonisation. However, the greatest British legacy to Australian culinary culture is the ubiquitous Cheddar cheese (see featured producer – Ian Fowler over the page), the dominant cheese of the Australian household for more than a century and a half.

### Did you know?

In a 1969 Women's Weekly Cheese Cookbook, many recipes simply called for 'grated cheese', with the assumption that this was likely to be a firm cheddar-style cheese<sup>39</sup>. Contrast this with the huge range of cheeses, from feta to gouda, featuring in modern Australian recipe books and websites.

39 Australian Women's Weekly. Cheese Cook Book. 1st ed. AWW; 1969



38 Hartley D. Food in England. 2nd ed. Little Brown & Company; 1999

Food-related rituals, ceremonies, and festivals are many and varied across the region. In France, ritual dictates the number, type, size, and order of cheeses served and eaten<sup>40</sup>. The English have a ritual for tea making, and a centuries old habit of formal 'afternoon tea', but continue to debate whether to add the milk before or after the tea<sup>41</sup>. In Genoa, and other parts of Italy, 'torta della pasqualina' is, as the name suggests, a pie for Easter, made with a filling of eggs, herbs, parmesan cheese, and ricotta, although historically it is made from a specialty cheese that is hard to find today<sup>42</sup>.

In Turkey, dietary guidelines make specific mention of culinary practices to protect the nutrient content of dairy products, for example: water that exudes yoghurt curd as it is stored should be used and not discarded thus preventing the loss of riboflavin and calcium; yoghurt, or ayran, a salted yoghurt drink, is recommended for people experiencing diarrhoea: tarhana, a traditional dried soup base made from yoghurt and flour, should be dried away from direct sunlight to preserve vitamins; raw milk should be 'boiled' (pasteurised) for the minimum length of time to maximise vitamin retention<sup>43</sup>.

### Did you know?

Did you know? Home-made Turkish cheese is often made daily in households and can be found maturing in preserved 'yoghurt water'.

The food-based dietary guidelines in the Netherlands consider sustainability and environmental impacts by setting maximum limits for consumption of animal products including meat, fish, and dairy products. The guidelines are mindful that intakes of calcium, potassium and vitamin A are marginal in some population groups and dairy products are important for delivering these nutrients<sup>44</sup>. Milk and other dairy products should be low-fat and unsweetened.

The Dutch population are advised to consume 2–3 portions of dairy products in addition to 40g of cheese each day<sup>45</sup>, signifying the cultural significance of cheese, typically Gouda and Edam, in the diet of the Dutch.

40 Roberts SD and Micken KS. Le Fromage as life: French attitudes and behaviour toward cheese. *Adv Consum Res.* 1996;23:111-119

41 Burnett D. How to make tea correctly (according to science): milk first. Available: [theguardian.com/science/brain-flapping/2014/oct/03/how-to-make-tea-science-milk-first](http://theguardian.com/science/brain-flapping/2014/oct/03/how-to-make-tea-science-milk-first)

42 Delicious Italy. Easy recipe for torta pasqualina. Available: [deliciousitaly.com/liguria-recipes/torta-pasqualina-savoury-easter-cake](http://deliciousitaly.com/liguria-recipes/torta-pasqualina-savoury-easter-cake)

43 Ministry of Health of Turkey. Dietary Guidelines for Turkey. Available: [hsgm.saglik.gov.tr/depo/birimler/saglikli-beslenme-hareketli-hayat-db/Turkey\\_Dietary\\_Guidelines\\_2015.pdf](http://hsgm.saglik.gov.tr/depo/birimler/saglikli-beslenme-hareketli-hayat-db/Turkey_Dietary_Guidelines_2015.pdf)

44 Brink E, van Rossum C, Postma-Smeets A, Stafleu A, Wolvers D, van Dooren C, Toxopeus I, Buurma-Rethans E, Geurts M, Ocke M. Development of healthy and sustainable food-based dietary guidelines for the Netherlands. *Public Health Nutr.* 2019;22(13):2419-2435

45 Netherlands Nutrition Centre. Eating more sustainability. Available: [voedingscentrum.nl/Assets/Uploads/voedingscentrum/Documents/Professionals/Pers/Factsheets/English/Fact%20sheet\\_Eating%20more%20sustainability\\_2017.pdf](http://voedingscentrum.nl/Assets/Uploads/voedingscentrum/Documents/Professionals/Pers/Factsheets/English/Fact%20sheet_Eating%20more%20sustainability_2017.pdf)

Italian dietary guidelines provide daily and weekly recommendations with the population encouraged to consume low fat varieties of milk or yoghurt everyday as part of a healthy diet, and cheese three times per week. Italians can consume more cheese if it has 25% fat or less (such as mozzarella – made from cow’s milk, stracchino, provola/provolone, camembert, feta, other fresh cheeses, and ricotta – although this is not considered a cheese but a by-product of cheese production) than those with more than 25% fat (such as gorgonzola, Cacciotti, Parmigiano, grana, gruyere, caprini, pecorino, buffalo milk mozzarella and others<sup>46</sup>). While yoghurt was not typical daily fare for Italians until the 1980s<sup>47</sup>, cheese is an ancient food for Italians with the Romans using rennet to coagulate curd that was then pressed, salted, and aged, and creating the world’s first cheesecake<sup>48</sup>.

The place of cheese in Italian culinary culture is clear in the Italian dietary guidelines where a tip to maintain both tradition and cheese in the diet is to consume lower fat cheeses as a second course rather than an addition to an already complete pasta dish<sup>44</sup>.

The French guidelines address sustainability through the promotion of seasonal, unprocessed foods, using environmentally friendly production methods and short supply chains<sup>49</sup>. The new guidelines in 2017 asked the French to reduce their dairy intake from three to two serves per day<sup>50</sup>, with special mention that cheese should be high in calcium and low in fat<sup>47</sup>. This new dairy guidance, along with suggested limits on meat intake, added fats, salt and sugar containing products, are aimed at improving the health of the French population. When adherence to the new dietary guidelines was examined, researchers reported a lower risk of overweight and obesity associated with following the guidelines, yet the dietary factors attributed with this health improvement related to discouraging red and processed meats, and promotion of whole grains, nuts, and legumes only<sup>48</sup>.

The Greek dietary guidelines refer to the Mediterranean diet, based on the daily consumption of non-refined cereals, vegetables including wild greens, fruit, olive oil and low-fat dairy products<sup>51</sup>. Several dishes well-known in Australia are often associated with Greece, but their origins are likely Persian or Ottoman. Spanakopita, spinach and cheese pies have some similarities with börek dishes found in the region, and moussaka and tzatziki have variations across eastern Mediterranean countries.

## Influencing Australia

European influence on Australia’s dairy culinary culture is extensive – a direct influence of early migrants from European countries, including the United Kingdom, Italy, Greece, The Netherlands, and Germany<sup>52</sup> and more recently Turkey. Further, travelers to Europe returning to Australia are now more keen than ever to expand their daily diets. Perhaps the dish with the greatest presence in the Australian diet is pizza, a centuries old and simple dish of an edible crust, that is served as a plate, with a range of toppings, often cheese. These days, Australians are familiar with other styles of flatbread pizza including those made with alternative bases such as cauliflower or chickpea, and pide from Turkey. In addition to Brie and Camembert cheese, French onion soup with its cheese-topped crouton, croque monsieur, or madame, have been known to many Australian for decades. In fact, no dinner party in Australia’s 1970s was completed without French onion soup, or perhaps Apricot Chicken, a quick casserole made with a dried version of the soup, apricots, and chicken pieces<sup>53</sup>.



46 Food and Nutrition Research Centre. Guidelines for healthy eating 2018. Available: <https://www.crea.gov.it/web/alimenti-e-nutrizione/-/linee-guida-per-una-sana-alimentazione-2018>

47 Dickie J. *Delizia* – the epic history of Italians and their food. 1st ed. Simon and Schuster; 2008.

48 Root W. *The Cooking of Italy: foods of the world*. 1st ed. Time Life; 1970.

49 French High Council for Public Health. Statement related to the revision of the 2017-2021 French Nutrition and Health Programme’s dietary guidelines for adults. Available: [hscsp.fr/explore/cgi/avisrapportsdomaine?clefr=653](https://hscsp.fr/explore/cgi/avisrapportsdomaine?clefr=653)

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51 Kastorini CM, Critselis E, Zota D, Coritsidis A, Nagarajan MK, Papadimitriou E, Belogianni K, Benetou V, Linos A. National Dietary Guidelines of Greece for children and adolescents: a tool for promoting healthy eating habits. *Public Health Nutr*. 2019;22(14):2688-2699

52 Vondra J. *A Guide to Australian Cheeses*. 1st ed. Nelson; 1978

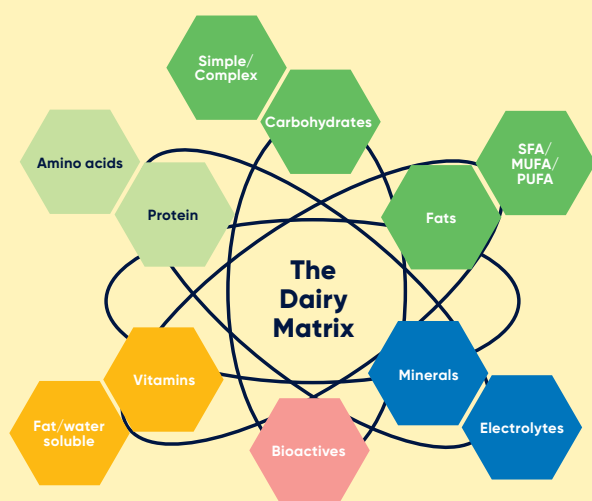
53 Sinclair E. *The Australian Women’s Weekly Cookbook*. 1st ed. AWW; 1970



## The Dairy Matrix

The 2013 Australian Dietary Guidelines (ADGs) recommend consumption of plain and flavoured milk, cheese, yoghurt and/or alternatives (including custard), mostly reduced fat. However, many public health organisations or authoritative bodies interpret this recommendation to mean consumption of reduced fat dairy only.

Since the last review of the ADGs, research supporting the inclusion of regular fat milk, cheese and yoghurt in the diet has grown substantially along with recognition of the dairy matrix. Milk, cheese, and yoghurt each have distinct food matrices in terms of their nutrient composition and structure.



Foods consist of many different nutrients and components that sit within complex physical structures. The 'Food Matrix' describes a food in terms of both its physical structure and how these interact together. There is no evidence to currently support a detrimental effect of regular fat dairy products compared with reduced fat dairy on a range of cardiometabolic disease risk factors including stroke, type 2 diabetes, CVD and overweight and obesity. Based on the findings of more than 56 studies published between 2013–2018, the recently updated Heart Foundation guidelines now recommend that regular fat milk, cheese and yoghurt can be considered a daily option for healthy Australians – revised from previously recommending reduced fat only<sup>54</sup>.

54 Heart Foundation. Dairy & heart healthy eating. Available: [heartfoundation.org.au/getmedia/b7f8c612-c1eb-4139-b4b1-898d8302d234/Nutrition\\_Position\\_Statement\\_-\\_DAIRY.pdf](http://heartfoundation.org.au/getmedia/b7f8c612-c1eb-4139-b4b1-898d8302d234/Nutrition_Position_Statement_-_DAIRY.pdf)



## Artisan cheese production - Ian Fowler Bay of Fires Cheese

Ian Fowler migrated from the UK to Australia in the early 2000's and describes how his wife Tracey bought him a big atlas because of his yearnings to start his own business. "We just looked for somewhere with rainfall and sunshine and somewhere the grass would grow. And if the grass would grow, I could make cheese," said Ian who is a descendant from one of England's oldest cheddar-making families.

Ian landed in the Bay of Fires, Tasmania and has been producing award winning cheeses ever since. "It's very much a hand-made product with the curd being cheddared by hand and salted by hand... in England the cows are housed for 6 months of the year, but in Tassie they are on pasture year-round. The fact that it's cloth-bound is the same as in England, and I also seal the cloths with lard. The whole approach is that which I was taught by my grandfather".





## Middle East and Africa

The Middle East and Africa represent wide geographic areas and diverse countries and next we will highlight insights from Syria, Iraq, and Egypt.

Land for agricultural use in the Middle East doubled from 1910 to 2016 but has remained relatively static for the past 30 years<sup>55</sup>. The vast majority of this land use (85%) is for grazing livestock, however land available for pasture for animals is 9% in Iraq and 44% in Syria, with 21% and 76% of land for total agriculture, respectively<sup>53</sup>. In Egypt less than 4% of land area is used for agriculture, demonstrating the vastly different landscapes of these countries<sup>53</sup>.

With a large part of this region consisting of desert expanses, it is not surprising that dairy production is focused on rearing animals suited to semi-arid and arid conditions. Syria is the fourth largest producer of sheep milk, and fifth for sheep milk cheese, while Iraq is fifteenth. Both Syria and Iraq also produce substantial amounts of goat milk cheese. All three countries are in the world's top 20 producers of buffalo milk, with Egypt fourth largest. Interestingly buffalo were introduced to Egypt from Iraq and India 1500 years ago, where they have become a pivotal element of each household and the national economy<sup>56</sup>.

The Food Dome is a resource that describes dietary guidelines for Arab Countries and is suggested for use across the region. Adults are encouraged to consume 2–3 serves per day of low-fat milk and milk products, preferably fortified with vitamin D<sup>57</sup>. Iraq introduced its first ever nutrition strategy in 2012 with an objective to develop national food-based dietary and physical activity guidelines however, to date, this ambition has not been realised<sup>58</sup>. Similarly, Egypt initiated work on a food and nutrition policy in the 1990s however Egypt and Syria do not currently have food-based dietary guidelines<sup>56</sup>.

Despite the lack of country-specific guidance, the importance of dairy to the diets and culinary cultures of these countries is apparent from the long history of preserving milk.

55 Global Change Data Lab. Agricultural area over the long-term, 1600–2016. Available: [ourworldindata.org/grapher/total-agricultural-area-over-the-long-term](https://ourworldindata.org/grapher/total-agricultural-area-over-the-long-term)

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57 Montagnese C, Santarpia L, Iavarone F, Strangio F, Sangiovanni B, Buonifacio M, Caldara AR, Silvestri E, Contaldo F, Pasanisi F. Food-based dietary guidelines around the world: Eastern Mediterranean and Middle Eastern Countries. *Nutrients*. 2019;11(6):1325–1341

58 Global Nutrition Report. Country Nutrition Profiles. Available: [globalnutritionreport.org/resources/nutrition-profiles](https://globalnutritionreport.org/resources/nutrition-profiles)

## While researchers found 7000-year-old fatty acids in pottery fragments in Croatia<sup>59</sup>, a 3200-year-old cheese found in the tomb of a 13th-century BC Egyptian mayor is believed to be the oldest solid cheese discovered<sup>60</sup>.

Cheese is considered one of the seven pillars of the traditional food system of Egypt and was usually eaten with bread, however in recent decades cheese is found in sandwiches, hamburgers and pizza<sup>61</sup>. Care is taken with breakfast on Fridays, the most important day in a Muslim's week, and usually includes cheese although children may have a glass of milk or milky tea<sup>59</sup>. Bread and cheese or beans, salads, tomatoes, cucumbers, and pickles make up lunch and dinner for workers. Variations on bread such as shamsi (sun) and semeet are sold by street vendors with cheese.

The place of bread in the Egyptian diet is mirrored in the Iraqi diet. Meals are served with bread, usually purchased freshly baked before each meal<sup>62</sup>. Bread filled with cheese with cucumber or watermelon is a typical summer breakfast, or thick clotted cream, with the best from the high fat buffalo milk geymer served with bread or kahi (layered pastry) and date honey. Yoghurt drink made with additional water and a pinch of salt, known as shineena in Iraq<sup>60</sup> accompanies meals in summer, but is made all year round. Rich yoghurts from sheep and goat milk are famous during spring in northern regions<sup>60</sup>, and labneh or drained yoghurt (see featured recipe) and kashk (dried yoghurt or buttermilk) added to savoury dishes are key elements in the traditional Iraqi diet.

Syrians traditionally processed their own dairy products from the family's livestock in the family home. Similarly to countries across the region, dairy is an important component of breakfast dishes with cheese and labneh typical fare, but ful-mudammas, a salad of fava beans (ful), tahini, chickpeas and yoghurt is a dish for special occasions<sup>63</sup> (there are lots of variations of this dish across the region, some including the addition of cheese). Milk pudding, mhalabiya, is a common dessert, or mid-afternoon or late-night snack. During weddings or Eid, at the end of Ramadan, shared meals follow long-held rituals. Mansaf, a multi-component dish of kibbeh, lamb, and spices, is often prepared.

An important element of these shared meals includes pouring a warm yoghurt sauce over the dish in the company of the guests as they share wishes for a prosperous future before eating<sup>64</sup>.

Many foods known in this region are similar. Iraqi clotted cream is known as kaymak in Turkey, and kajmak in the Balkans. Shineena is known as ayran in Turkey, lassi in India, and doogh across northern Africa into central Asia. While kashk is likely to have been the origin of the Turkish tarhana which is like Greek tarhana. Semeet in Egypt is simit in Turkey, and gevrek in Bulgaria, while mhalabiya is spelt in a variety of ways with as many infusions and flavours across the Middle East to Europe.

## Influencing Australia

Iraqis and Syrians first arrived in Australia in large numbers as refugees in the 1990s and 2010s respectively while Egyptians have been counted in the Australian census since 1901 with an marked increase in numbers following Egyptian independence in 1953<sup>65</sup>. The similarity of dishes across the region and history of migration to Australia from neighbouring countries means that new migrant and refugee communities may face less challenges when trying to maintain the diet of their homeland. New arrivals from across the Middle East and Africa will often need to make substitutions, such as cow's milk products in place of goat, sheep, or camel milk<sup>66</sup>. In the Australian food landscape, the labneh that some might identify as Egyptian, will be considered Lebanese, or perhaps as originating from another Middle Eastern or Mediterranean country, by others. Someone might first discover the delicious ful-mudammas, or 'ful' in an Eritrean restaurant sprinkled with feta cheese, but then find a Syrian variation where the yoghurt is warmed from the heat of the beans to provide a completely different dimension to the dish. This expansion of our culinary experience and vocabulary is perhaps more subtle, but importantly, evolving as we learn more about the interconnectedness of many of our migrant communities' cuisines.

59 McClure SB, Magill C, Podrug E, Moore AMT, Harper TK, Culleton BJ, Kennett DJ, Freeman KH. Fatty acid specific  $\delta^{13}C$  values reveal earliest Mediterranean cheese production 7,200 years ago. *PLoS One*. 2018;13(9):1-15

60 Lauth L. World's oldest cheese confirmed in Egyptian tomb – but it may be filled with a deadly disease. Available: [abc.net.au/news/2018-08-17/worlds-oldest-cheese-discovered-in-ancient-egyptian-tomb/10133178](http://abc.net.au/news/2018-08-17/worlds-oldest-cheese-discovered-in-ancient-egyptian-tomb/10133178)

61 Hassan-Wassef, H., Food habits of the Egyptian: newly emerging trends. *East Mediterr Health J*. 2004;10(6):1-18

62 Nasrallah N. Food cultures of the world encyclopedia: Africa and the Middle East. 1st ed. Greenwood; 2011

63 Al Bochi R. My Global Table: Syria. Available: [foodandnutrition.org/from-the-magazine/my-global-table-syria](http://foodandnutrition.org/from-the-magazine/my-global-table-syria)

64 Syria Trust for Development. Traditional food in Syria. Available: [syriatrust.sy/en](http://syriatrust.sy/en)

65 Australian Government Department of Home Affairs. Egypt-born community information summary. Available: [homeaffairs.gov.au/mca/files/2016-cis-egypt.PDF](http://homeaffairs.gov.au/mca/files/2016-cis-egypt.PDF)

66 Renzaho AMN and Burns C. Post-migration food habits of sub-Saharan African migrants in Victoria: a cross-sectional study. *Nutr Diet*. 2006;63(2):91-102



## Home-made Labneh

Making labneh, fresh yoghurt cheese, at home is easy when you know how.

### Ingredients

- Natural set yoghurt
- Pinch of salt
- Flavourings as described below

### Method

- 1 Add a pinch of salt to natural set yoghurt before placing in a double thickness of muslin cloth and suspending over a bowl or placing in a strainer over a bowl to catch the excess whey. Drain for a minimum of 36 hours. Use wet or lightly oiled hands to roll into balls.
- 2 Once drained, flavourings can be added to the yoghurt before or after being rolled into balls.

### Savoury flavourings

- 1 Add crushed garlic and chopped fresh herbs before rolling.
- 2 Roll in dukkah and drizzle with olive oil.
- 3 Sprinkle with black sesame seeds and chopped fresh coriander.
- 4 Store in a jar with fresh herbs and garlic, covered with olive oil.

### Sweet flavourings

- 1 Flavour with sweet ingredients to create an unusual dessert - try vanilla, crushed hazelnuts and cinnamon sugar.
- 2 Great served with a compote of fruit or poached quinces.



## Asia

The Asian continent is expansive and geographically diverse. In this section we explore Pakistan, India, and China.

Both India and China have substantially increased land used for agriculture in the last 100 years, but this has levelled out over the past 30 years in India and decreased slightly in China<sup>67</sup>. Land use differs markedly between India and China with 80% of agricultural lands dedicated to grazing for livestock in China and only 6% in India<sup>65</sup>. This represents India's role as one of the world's largest producers of agricultural commodities, and China's focus on livestock, especially cattle<sup>68</sup>, although buffalo, sheep, and camel remain important milk-producing animals. The grasslands of China have been home to animal herders for millennia with sheep, goat, horse, yak, and buffalo common. Dairy cattle numbers have exploded in the past 70 years, from approximately 100,000 in 1949<sup>69</sup> to more than 6,000,000 today. Per capita milk consumption increased 10-fold between 1980 and 2010<sup>70</sup> in China yet remains relatively modest compared to its neighbours in India and Pakistan.

Historically milk and milk products were not key components of the Han Chinese diet, due to lactose intolerance and culinary practices that did not include any dairy<sup>71</sup>.

However water buffalo milk and milk products, including cheese, have been known in southeast China (Guangdong)<sup>72</sup>, and yoghurt, butter and ghee have been used in Buddhist rituals for centuries<sup>73</sup>.

There are other important culinary stories that highlight the importance of dairy in regional China. A 4000-year-old cheese was found in the Taklamakan Desert in eastern China<sup>74</sup> and street food in parts of the southwest Yunnan province might consist of a dried mozzarella-style cooked and stretched cheese, toasted and served with rose petal jam<sup>75</sup>.

Cow, buffalo and goat milk consumption in India was documented as early as 800 BC<sup>76</sup> and coagulated sour milk products from 1000-4000 BC<sup>77</sup>. Common processed milk products, including ghee, curd (yoghurt), paneer, cheese and buttermilk, have been produced for millennia<sup>74</sup>, and these alongside a multitude of other milk-based dishes are important in the social and cultural fabric of Indian society<sup>78</sup>. Lassi, prepared from yoghurt, is a typical summer drink, but made with additional ingredients during festivals. Bhang lassi is made with cannabis plant extract during Holi and Shivararthri for perceived health benefits<sup>74</sup>.

The lives of the tribal Toda from the Nilgiris in southern India centre around buffalo, with milk, cheese and butter produced, traded, and consumed, and the central place of worship in the village dedicated to the buffalo. There are similarities in animals, products and dishes between Pakistan and India, with additional region-specific products; for example in the Hunza valley, butter is matured in the earth for decades and eaten on special occasions<sup>79</sup>.

China's food-based dietary guidelines highlight the importance of milk as a calcium-rich food through a glass and carton of milk alongside cheese and yoghurt<sup>80</sup>. In India various guides are available to support the dietary guidelines. Milk and milk products are identified as both body building and protective foods and their importance across every life stage is highlighted. A sample diet for adults recommends drinking milk and consuming curd (yoghurt)<sup>81</sup>. The Indian guidelines often refer to culturally specific practices and beliefs that guide consumption of milk and milk products.

67 Global Change Data Lab. Agricultural area over the long-term, 1600-2016. Available: [ourworldindata.org/grapher/total-agricultural-area-over-the-long-term](http://ourworldindata.org/grapher/total-agricultural-area-over-the-long-term)

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For example buttermilk, curd and milk are considered cold foods and therefore healthy, kheer is included as a complementary food for infants. In neighbouring Pakistan, a sample daily diet might include drinking milk, yoghurt, raita, and unsweetened kheer.

Yoghurt is consumed as part of main meals throughout the day, alongside savoury components. Interestingly, ice cream is considered a substitute for milk in Pakistan<sup>82</sup>. While low-fat dairy products are encouraged in India, there is no mention of selecting altered fat content milk and milk products in China and Pakistan in food-based dietary guidelines.

## Influencing Australia

Influences from the region on Australia's dairy food landscape are largely related to migrants from India and Pakistan. These days, processed milk products such as ghee and paneer are moving from specialist South Asian food stores to mainstream supermarkets. Many diners enjoy yoghurt or raita to help moderate the heat in more traditional curries! Chinese migrant influence on choice and consumption of dairy in Australian consumers is negligible in comparison, despite the long history of Chinese in Australia and our love of Chinese food. However, as China continues to expand its production of dairy, and as the diversity of dairy products across China becomes more well-known, Australians' Chinese food lexicon is likely to further expand.

<sup>82</sup> Pakistan Ministry of Planning Development and Reform. Pakistan Dietary Guidelines For Better Nutrition. Available: [panah.org.pk/publication/pakistan-dietary-guidelines-for-better-nutrition/](http://panah.org.pk/publication/pakistan-dietary-guidelines-for-better-nutrition/).

## Home-made Paneer

### Ingredients

- 1.5L unhomogenised milk
- 80mL yoghurt or 2 tablespoons of vinegar or lemon juice

### Method

- 1 Place milk in a heavy-based saucepan and bring to the boil then remove from heat.
- 2 Add yoghurt, vinegar or lemon juice, stir and allow to sit for 5 minutes.
- 3 If the milk has not curdled, return to low heat and cook until curds form.
- 4 Place a clean cheese cloth over a colander and gently pour the curds into the colander.
- 5 Pour cold water over the curd until the water runs clear to remove any lemon juice or vinegar taint.
- 6 Gather cheese cloth and twist to create a firm ball of curd, squeezing to remove water.
- 7 Hang for 30 minutes to allow excess water to drain.
- 8 Loosen knot and lay in flat-based colander or steamer, placing a flat heavy object on top to press more liquid out of the curd.
- 9 Remove after 3–4 hours and place paneer in a sealed container in the refrigerator until needed.





## Recommendations

Fostering culturally sensitive and safe practice involves continual professional development and training.

Health professionals are encouraged to:

- Advocate for dietary policy and practice, including food, nutrition, and dietary guidelines, to be culturally inclusive, representative and promote cultural heritage for all Australians
- Seek ongoing opportunities to develop a deeper understanding of the diverse diets and culinary cultures of our multicultural society through formal learning and informal activity, such as at multicultural festivals and events
- Track global food trends, dietary patterns, and international dietary guidelines particularly in relation to newly arrived migrant and refugee groups to Australia
- Embrace multiculturalism, ethnic cuisines, and culinary nutrition in professional practice to positively influence the dietary variety and patterns of all Australians
- Approach nutrition interventions and education with cultural sensitivity and safety and consider co-design and/or co-delivery with migrant or cultural representatives
- Recognise the role of dairy foods, their significant history and modern use in cuisines, dietary patterns, and dietary guidelines in all corners of the globe





**Dairy Australia Limited** ABN 60 105 227 987  
Level 3, HWT Tower  
40 City Road, Southbank Vic 3006 Australia  
T +61 3 9694 3777 F +61 3 9694 3733  
E [enquiries@dairyaustralia.com.au](mailto:enquiries@dairyaustralia.com.au)  
[dairyaustralia.com.au](http://dairyaustralia.com.au)

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