



STATE OF THE AUSTRALIAN GRAIN INDUSTRY 2026



About GrainGrowers



Empowering Australian grain growers through engagement, policy and capacity building

GrainGrowers is a national organisation, driven by its vision: “Thriving Australian growers in vibrant communities.” Australian growers are at the heart of all that GrainGrowers does.

Guided by grower insights and on-farm experience, GrainGrowers is delivering best practice, future-focused advocacy and development initiatives for the benefit of the grain industry and regional communities.

About the State of the Australian Grain Industry Report

This is the fourth State of the Australian Grain Industry, following similar reports published by GrainGrowers in 2011, 2016 and 2021.

This report aims to provide a five-year overview of the grain industry’s performance, including the key opportunities and challenges facing the sector. Although developed by GrainGrowers, the intention of the report is that it be used industry-wide, as a useful ready-reckoner to the great grain industry.

Unless stated otherwise, data is a five-year average.

Contact us

Level 19, 1 Market Street
Sydney NSW 2000
Freecall: 1800 620 519
Phone: (02) 9286 2000
Email: enquiry@graingrowers.com.au
Website: www.graingrowers.com.au

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Where the wheat meets the sunset - Sophie McKinlay (QLD)

FOREWORD

The 2026 State of The Australian Grains Industry Report reflects an Australian grains industry which remains a powerhouse in the nation's economy and a key contributor to regional communities.

The five years since the last Report have not been without their challenges. Escalating geopolitical conflict, natural disasters and a rising trend of interventionist policies globally have created an extremely uncertain operating environment.

But as they always do, Australia's grain growers have remained resilient and focused on their role of producing food for Australia and beyond.

They diversified their markets, adopted new technologies and drew on our sustainable farming practices to deliver five record seasons in the past six.

All the while, growers have continued to contribute to regional communities: creating jobs; supporting local businesses; and leading community initiatives in the regions they live and work in.

This report consolidates information from a range of sources and agencies and analyses the data to provide a snapshot of the industry over the past five years.

Importantly, the trends, risks and opportunities identified in the 2026 State of The Australian Grains Industry Report must remain front of mind for industry, government and growers themselves.

Working together to address the risks, while supporting our growers to realise the opportunities before them, will ensure the Australian grains industry continues to thrive for the good of growers, our regional communities and the nation.

Fiona Simpson



ABOUT FIONA SIMPSON

Fiona has been an agricultural and community leader at a local, state and federal level since 2008. She stepped down in 2023 from a 7 year tenure as the first female President of the National Farmers' Federation, and is currently Oceania representative and Vice President of the World Farmers' Organisation. Her family farms on the Liverpool Plains of NSW.

As well as being a member of the federal government Trade 2040 Advisory Committee, Climate Change Authority and Nature Repair Advisory Committee, she is a Commissioner and Chair of the Australian Commission for Agricultural Research (ACIAR), Chairs the Future Food Systems CRC, and is a Director on NRMA (NSW), and Foodbank Australia. She was recognised in 2023 as Rabobank's Agricultural Leader of the year and received an honorary ATSE fellowship in 2024. She is also the Patron of the National Rural Press Club, The Gunnedah Gatepost Community Support Centre and the NFF Diversity in Agricultural Leadership Program.



Baled in the nick of time - Nicole Fragar (NSW)



1 AUSTRALIAN GRAIN GROWN

Australia grows on average 60 million tonnes of wheat, barley, oilseeds, pulses and other grains valued at \$27 billion each year.¹

The mix of grains grown is evolving as Australian growers respond to changing market needs and seasonal conditions. The proportion of wheat within the total grain crop is slowly reducing – although it still accounts for half of the nation's annual crop – and more canola and different types of pulses are being grown.

What stands out, however, is the volume of crops grown over time is increasing much more than the area of land they are grown on. These productivity gains by Australian grain growers will become an increasingly important contributor to national and international food security.



Freight train streaking through ripening fields- Georgie Hamilton (NSW)

STATE OF THE INDUSTRY IN 2026

Australian grain growers plant an average of 25 million hectares of grain each year and produce more than 60 million tonnes of wheat, barley, oilseeds, pulses, sorghum and other grains. For the past five years the average annual gross value of production has been \$27 billion.¹

Recent production has benefitted from positive seasonal conditions after dry years in the late 2010s; the five-year average grain production to 2025-26 is 64 million tonnes, compared to 44 million tonnes for the five years to 2020-21.

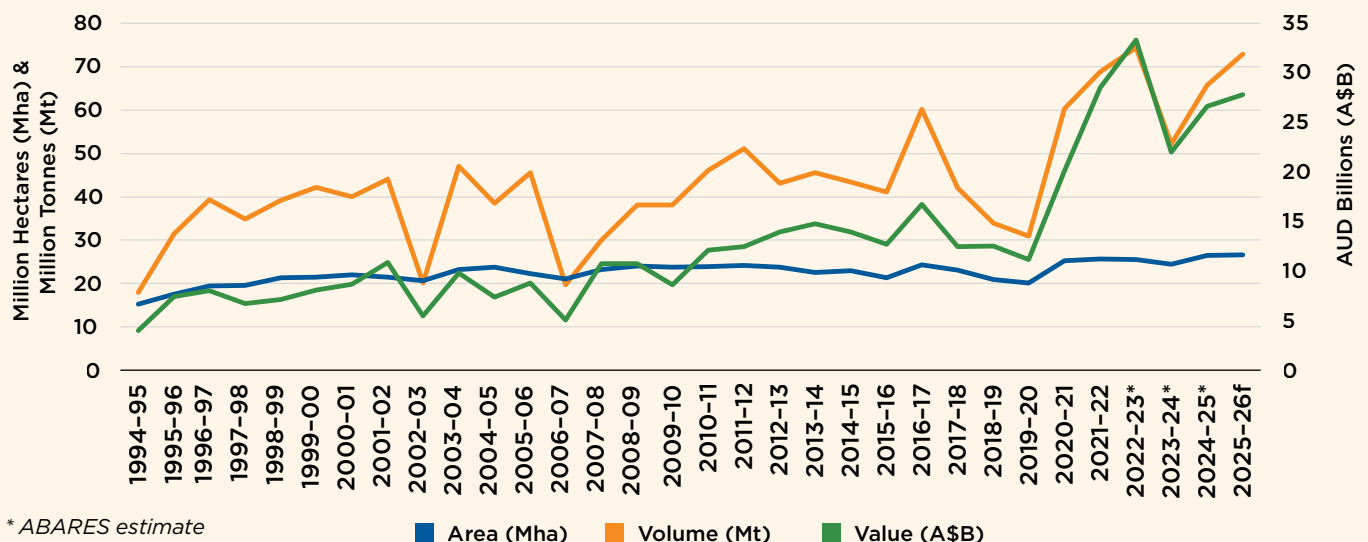
TREND: Volume and value of grain produced increasing faster than area of grain grown

The past six years has seen Australia's five largest grain production seasons, supporting a long-term trend of grain production increasing at a much faster rate than the annual area planted. This highlights the significant productivity gains achieved by Australian grain growers while remaining competitive and feeding a growing global population.

The value of Australia's annual grain crop has also been increasing. While there is a correlation between volume and value of grains, the gap has been closing over the past three decades. Growers are producing a more valuable crop per:

- Output of grain; the five-year average gross value of grains per tonne has increased 2.5 times from 1994 (\$169) to 2026 (\$419)
- Input of land area; the five-year average gross value of grains per hectare has increased 3.8 times from 1994 (\$279) to 2026 (\$1,058).

The past six years has seen Australia's five largest grain production seasons



* ABARES estimate

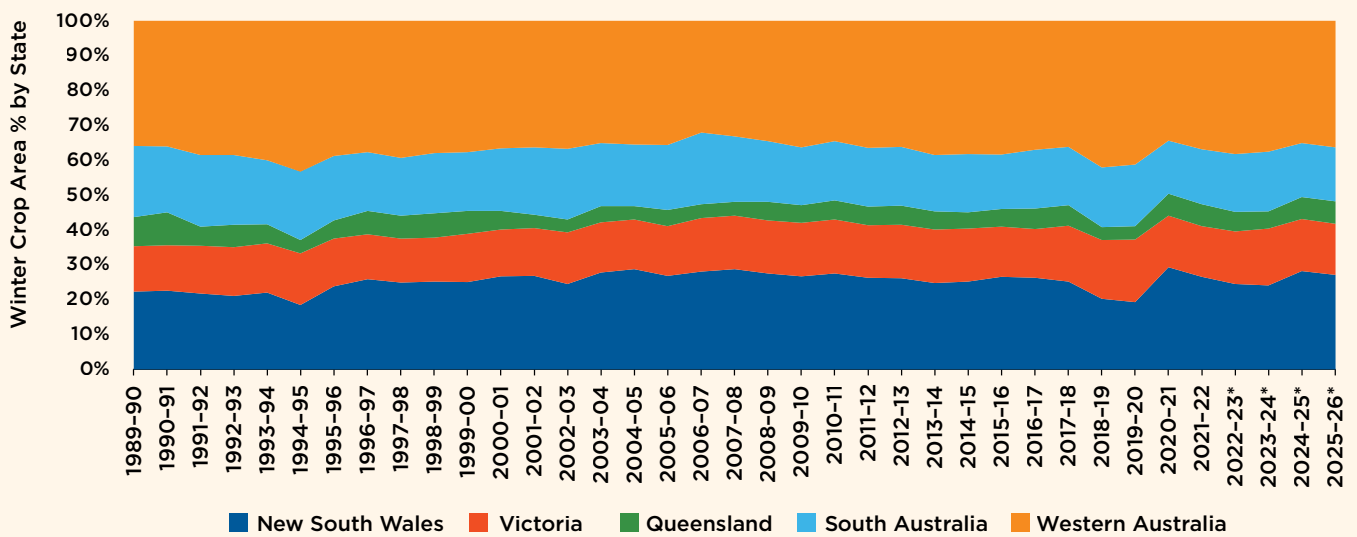
f ABARES forecast

Source: ABARES Australian Crop Report, ABARES Commodities Report

The consequence of these productivity gains is the need for grain freight and transport systems to handle larger crop volumes. The AUSTRALIAN GRAIN SUPPLY CHAINS chapter will discuss how this is currently not being achieved.

About 95% of Australian grains are winter crops (planted in autumn and grown over winter). The 2025-26 winter crop production is forecast to be the second highest on average despite significant variation in growing conditions across states.²

About 95% of Australian grains are winter crops



* ABARES estimate
Source: ABARES Australian Crop Report

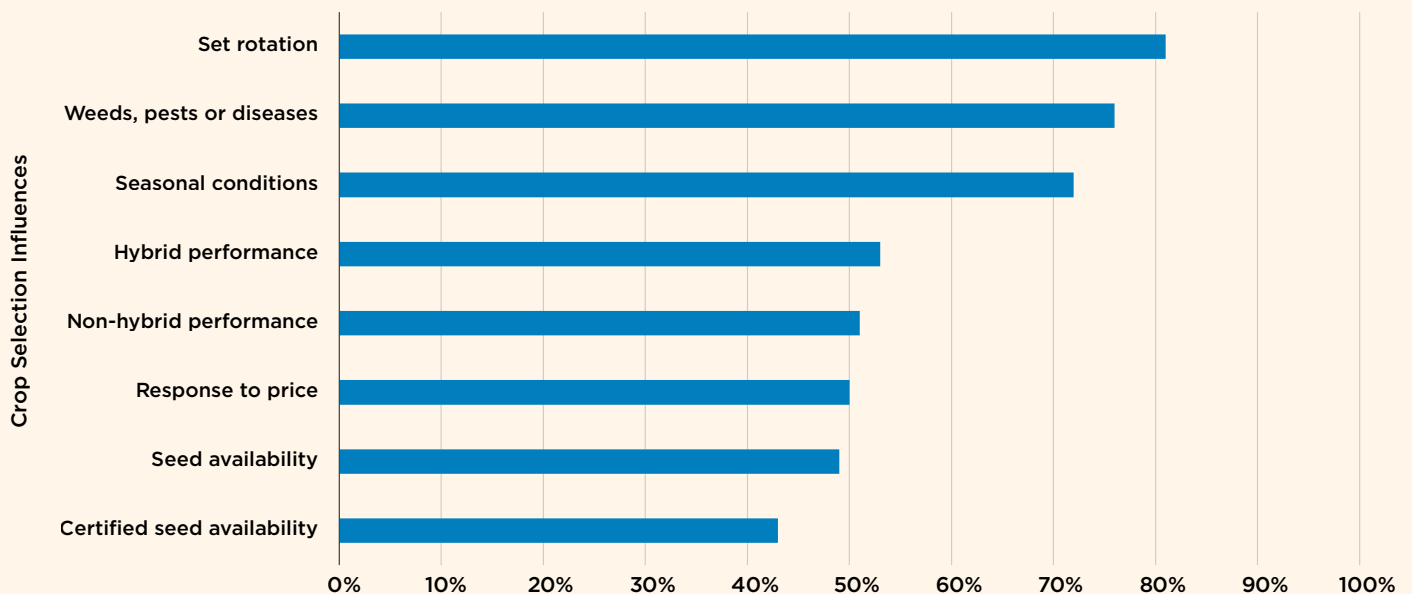
TREND: Increasing diversity of crop production

Grains are grown in Australia's cropping belt: predominantly inland regions from central Queensland down eastern Australia, and across southern Australia.

Growers need to assess a complex mix of factors to decide what crops to grow in any given year – or if to sow at all.

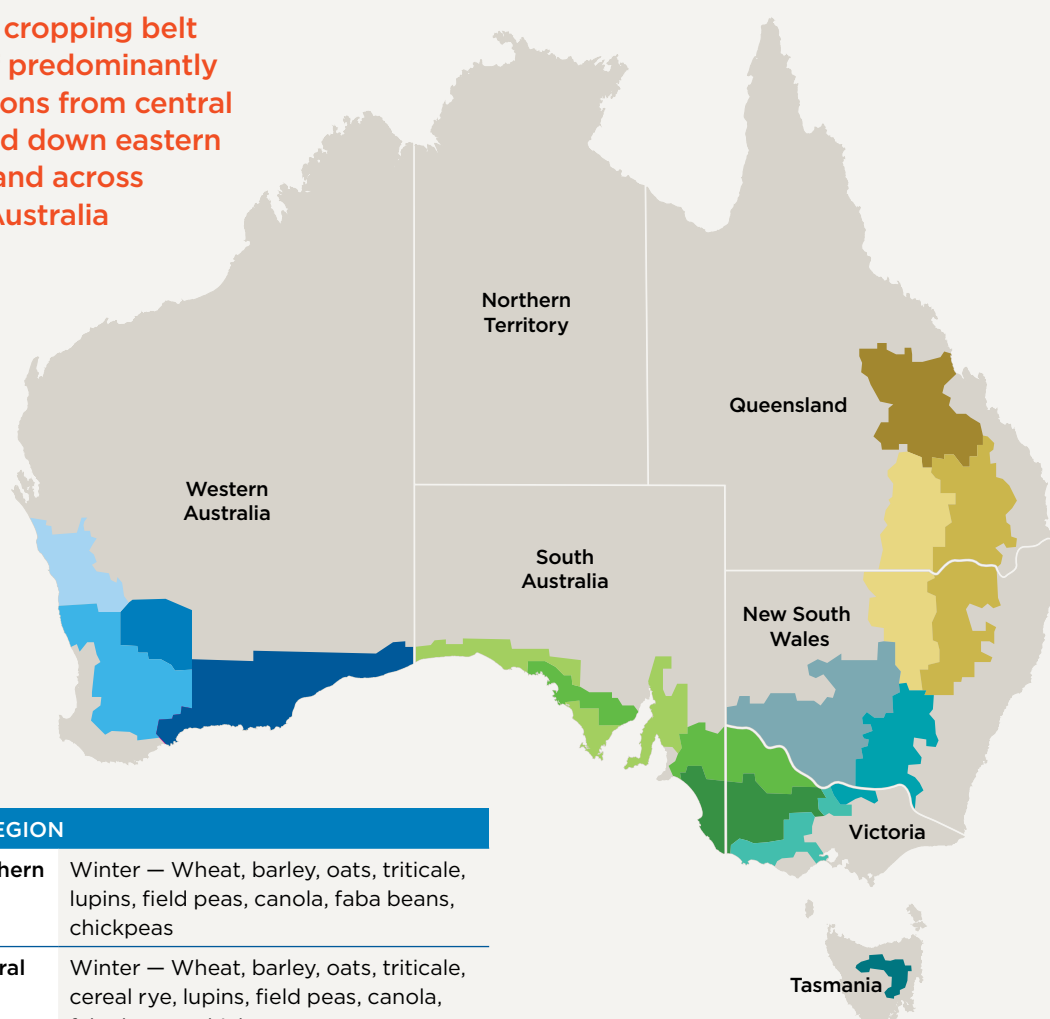
Soil type, seasonal conditions, crop prices, input costs and crop rotation cycles to support soil and crop health or mitigate pest risks are just some of the factors to be considered each year.

Growers must assess a complex mix of factors when selecting crops



Source: GRDC

Australia's cropping belt consists of predominantly inland regions from central Queensland down eastern Australia, and across southern Australia



WESTERN REGION

WA Northern	Winter — Wheat, barley, oats, triticale, lupins, field peas, canola, faba beans, chickpeas
WA Central	Winter — Wheat, barley, oats, triticale, cereal rye, lupins, field peas, canola, faba beans, chickpeas
WA Eastern	Winter — Wheat, barley, oats, triticale, lupins, field peas, canola, faba beans, chickpeas
WA Sandplain and Mallee	Winter — Wheat, barley, oats, triticale, lupins, field peas, canola, faba beans, chickpeas

SOUTHERN REGION

SA Mid-north - Lower Yorke, Eyre	Winter — Wheat, barley, oats, triticale, lupins, field peas, canola, chickpeas, faba beans, vetch, safflower
SA - Victoria Mallee	Winter — Wheat, barley, oats, triticale, cereal rye, lupins, vetch, canola, field peas, chickpeas, faba beans, safflower
SA - Victoria Border - Wimmera	Winter — Wheat, barley, oats, triticale, lupins, field peas, canola, chickpeas, faba beans, vetch, lentils, safflower
Victoria High Rainfall	Winter — Wheat, barley, oats, triticale, lupins, field peas, canola
NSW - Victoria Slopes	Winter — Wheat, barley, oats, triticale, lupins, field peas, canola
NSW Central (south)	Winter — Wheat, barley, oats, chickpeas, triticale, faba beans, lupins, field peas, canola, safflower
Tasmania	Winter — Wheat, barley, oats, triticale, lupins, field peas, canola

NORTHERN REGION

NSW Central (north)	Winter — Wheat, barley, oats, chickpeas, triticale, faba beans, lupins, field peas, canola, safflower Summer — Sorghum, sunflowers, maize, mungbeans, soybeans, cotton
NSW North West - Qld South West	Winter — Wheat, barley, oats, chickpeas, triticale, faba beans Summer — Sorghum, sunflowers, maize, mungbeans, soybeans, cotton
NSW North East - Qld South East	Winter — Wheat, barley, oats, chickpeas, triticale, faba beans, millet/panicum, safflower, linseed Summer — Sorghum, sunflowers, maize, mungbeans, soybeans, peanuts, cotton
Qld Central	Winter — Wheat, barley, oats, chickpeas Summer — Sorghum, sunflowers, maize, mungbeans, soybeans, cotton

Source: AEGIC

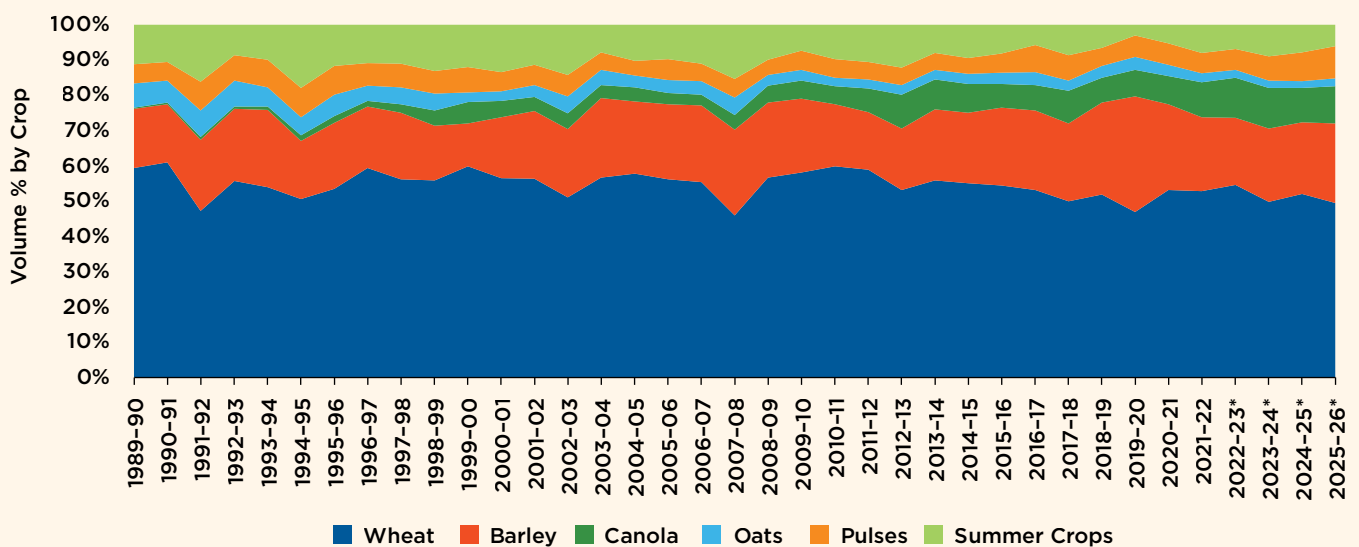


Crop Inspection - Krystal Muller (QLD)

The long-term outcome of these changing factors that growers assess each year has been an increase in the diversity of crops grown. Over the past 30 years, proportionally less wheat and more canola is being planted, and there have been large changes in the types of pulses grown each year.

Further, global economic and supply chain shocks from COVID-19 and the US-Iran war have introduced the need to consider availability of critical inputs like fuel, fertiliser and farm chemicals into the already complex calculation growers make each year.

The last 30 years has seen increasing diversity of crop production with higher canola production and changes in pulse mix



*ABARES estimate
Source: ABARES Australian Crop Report



Wheat production

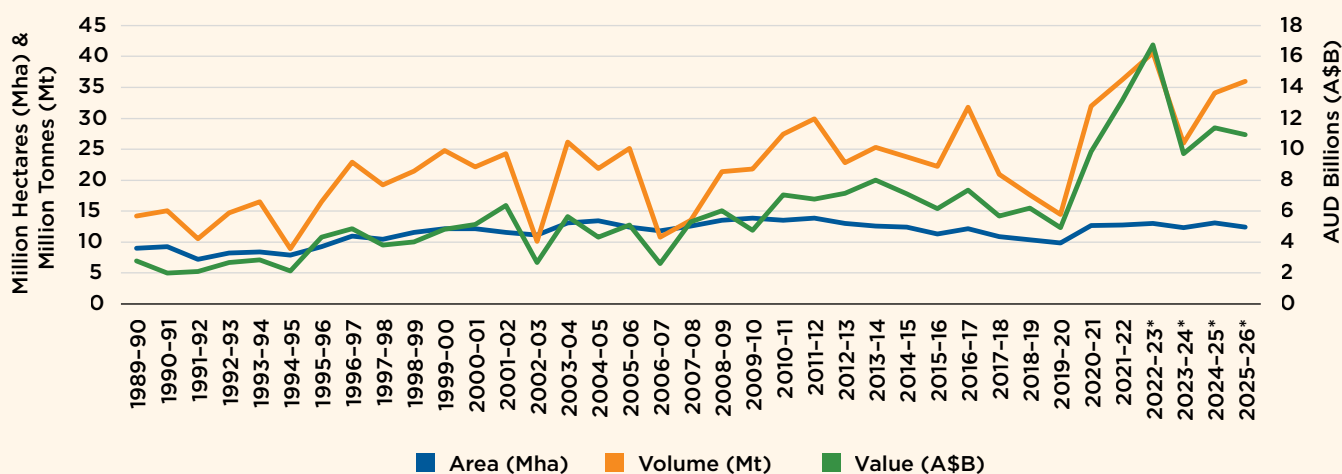
While wheat production has declined slowly as a proportion of the total grain mix – from 57% of the total cropping area in the five years to 1993-94 to 51% in the five years to 2025-26 – it is still by far Australia’s main grain crop. Over half the grain grown each year in Australia is wheat.

While the area planted to wheat has increased by about 50% in 30 years, the volume of wheat

grown each year – about 35 million tonnes on average – has increased by over two-and-a-half times in the same period.[†]

Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) forecasts wheat production to be 35.6 million tonnes in 2025-26, almost 30% above the 10-year average to 2024-25, as illustrated in the figure below.²

Over three decades, the volume of wheat has increased two-and-a-half times compared to the area planted



* ABARES estimate

Source: ABARES Crop Report, ABARES Commodities Report

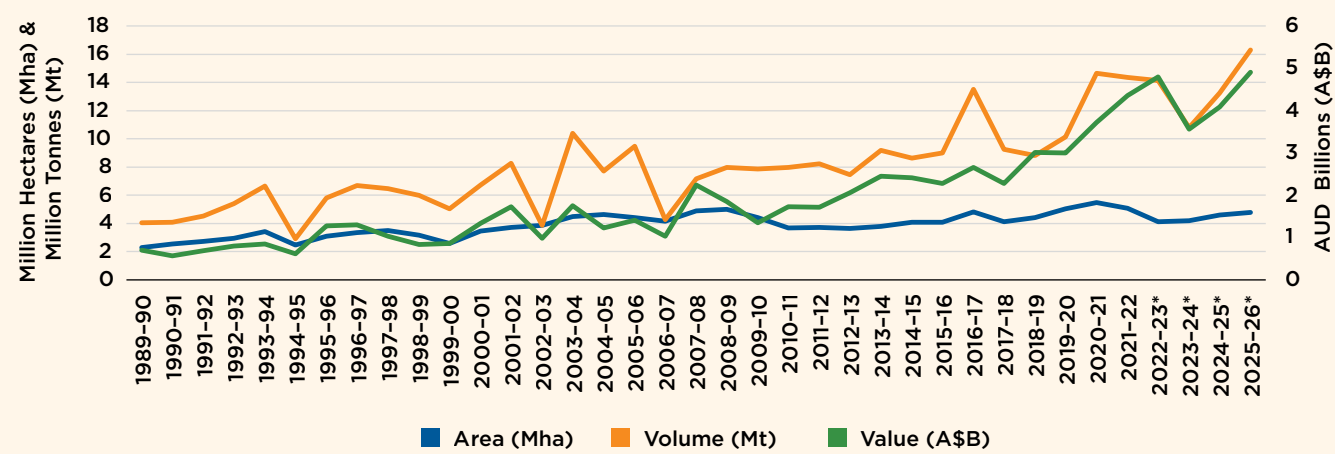
[†]Calculation based on five-year average production to 1995/96, compared to five-year average production to 2025/26.

Barley production

As with wheat, the area planted to barley has increased slightly in the past three decades, but the volume produced has increased by over two-and-a-half times.[‡] As shown in the below

figure, Australia now grows about 13 million tonnes of barley on average each year. In 2025-26, barley production is forecast to be a record 15.7 million tonnes.²

Over three decades, the volume of barley has increased over two-and-a-half times compared to the area planted



* ABARES estimate
Source: ABARES Crop Report, ABARES Commodities Report



[‡]Calculation based on five-year average production to 1995/96, compared to five-year average production to 2025/26.



Spraying fields of yellow - Matthew Burkitt (NSW)

Oilseed production

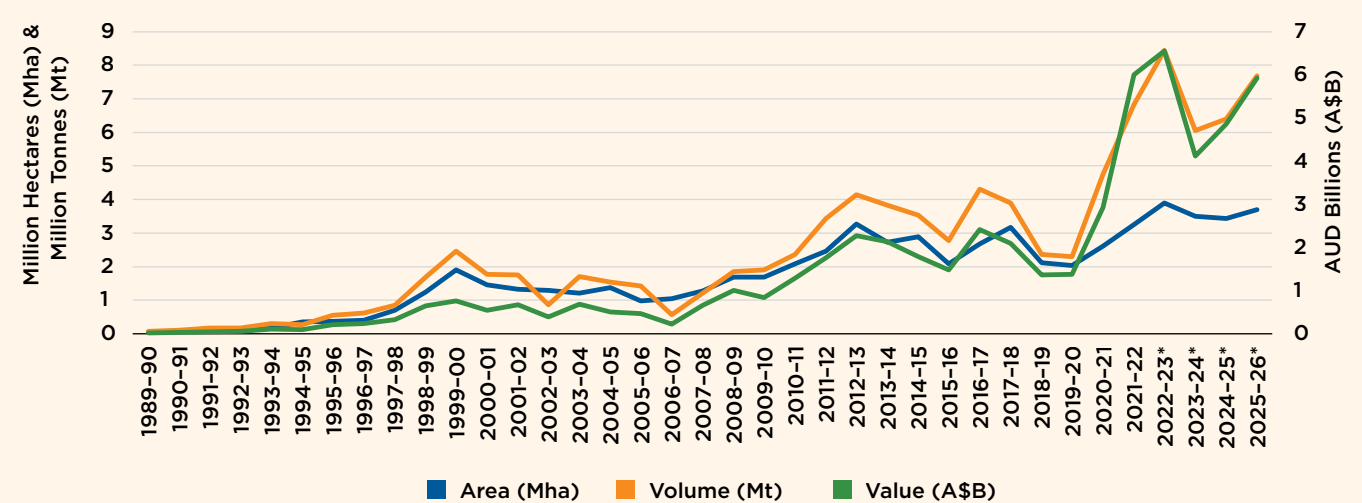
Canola is Australia’s largest oilseed crop.

TREND: Exponential increase in canola production over 30 years

As shown in the below figure, canola production has exploded in the past three decades. Australia now grows almost 25 times as much canola as it did 30 years ago.³ This growth has been driven by strong market signals and ongoing improvements in agronomy, technology and farm management:

- High oilseed prices, particularly in recent years as global energy markets seek biofuel feedstocks, have made canola more profitable, encouraging growers to plant more areas
- Increased domestic crushing capacity is giving growers more access to local markets
- Improved varieties are enhancing yield and water use efficiency
- Canola fits well into many farm rotation systems, providing a break from growing cereal crops to improve soil health.

Australia now grows almost 25 times as much canola as it did 30 years ago



* ABARES estimate
 Source: ABARES Crop Report, ABARES Commodities Report

Pulse production

'Pulses' is the collective term used to describe leguminous broadacre crops harvested for their dry grains. The main pulses grown in Australia are chickpeas, lentils, lupins, faba beans and field peas.

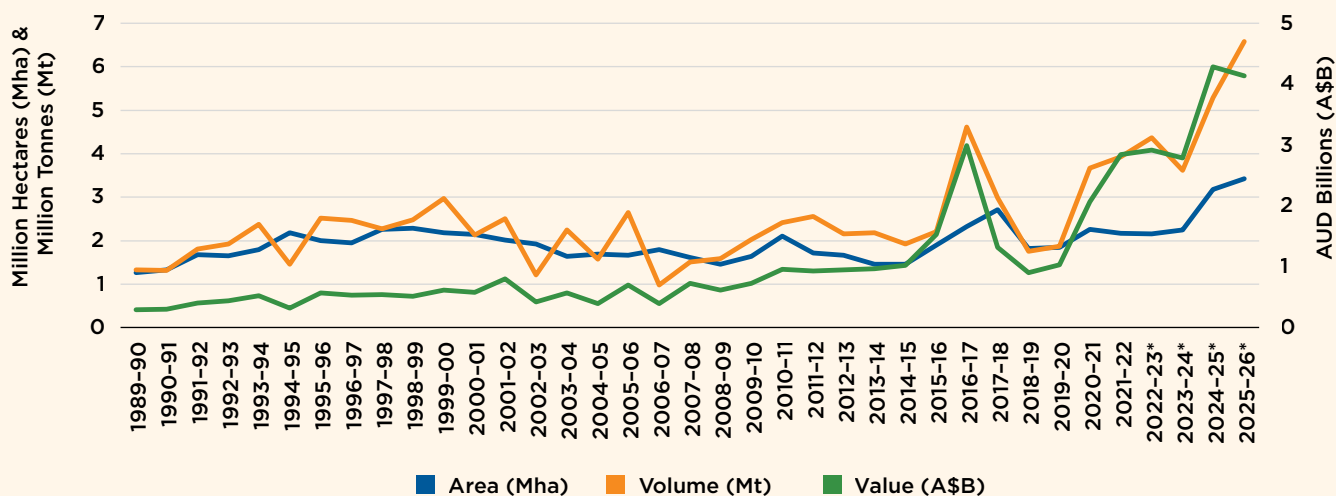
After essentially flatlining in area and production for two decades, the five-year average area of pulses planted increased by 17% and production increased by 55% in the decade to 2025-26. Over the five years to 2025-26, Australia grew on average almost five million tonnes of pulses per year as shown in the figure below.

Pulses are often used as rotational break crops within grain production systems, valued for their contribution to soil health and their ability to reduce fertiliser requirements in later crops through nitrogen fixation and subsequent soil nitrogen carryover.

However, despite improvements in breeding, agronomic management and disease control, pulses remain comparatively sensitive to soil constraints, moisture stress and seasonal variability, which contributes to ongoing production volatility. This volatility has been amplified by periodic trade disruptions outlined in the AUSTRALIAN GRAIN MARKETS chapter.



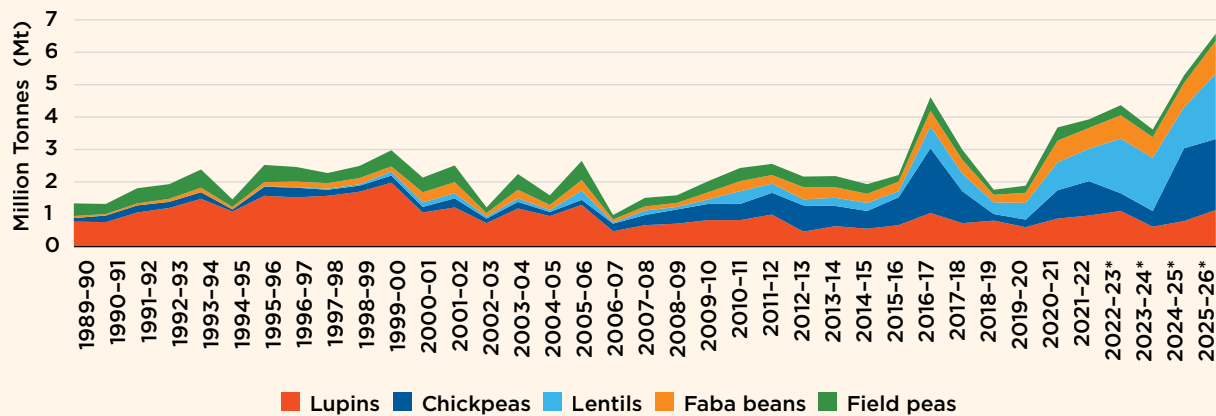
Production of pulses has increased by 55% in the decade to 2025-26



* ABARES estimate

Source: ABARES Crop Report, ABARES Commodities Report

More lentils, chickpeas and faba beans are being produced,
and less lupins and field peas are being produced



* ABARES estimate

Source: ABARES Crop Report

TREND: Change in pulse mix: more lentils, chickpeas and faba beans; less lupins and field peas

Pulses' proportion of the total grains crop has barely changed over the past three decades but a closer look at the mix of pulses grown shows how Australian growers adapt to market signals and new farming systems.

Thirty years ago, lupins were the dominant pulse, accounting for around two-thirds of total pulse production. The area and volume of lupins grown has decreased over time, and it now makes up about 20% of the pulse crop.³ The proportion and volume of field peas have also reduced: it now accounts for barely 0.5% of the annual crop.

In contrast, most other pulses have increased dramatically over the past 30 years:

- The volume of lentils has increased an incredible 380 times, from virtually nothing to 1.5 million tonnes. Growth has been especially strong in South Australia and Victoria, with growers incorporating it in rotations due to favourable gross margins and its tolerance to drier conditions²

- Chickpea production has increased almost seven times, to 1.3 million tonnes, driven by strong export demand and increasing grower awareness of their benefits within crop rotations. Improvements in disease resistance, herbicide tolerance and agronomic management have reduced production risk and supported expansion into new growing regions
- Faba beans have increased over seven times to 0.8 million tonnes.



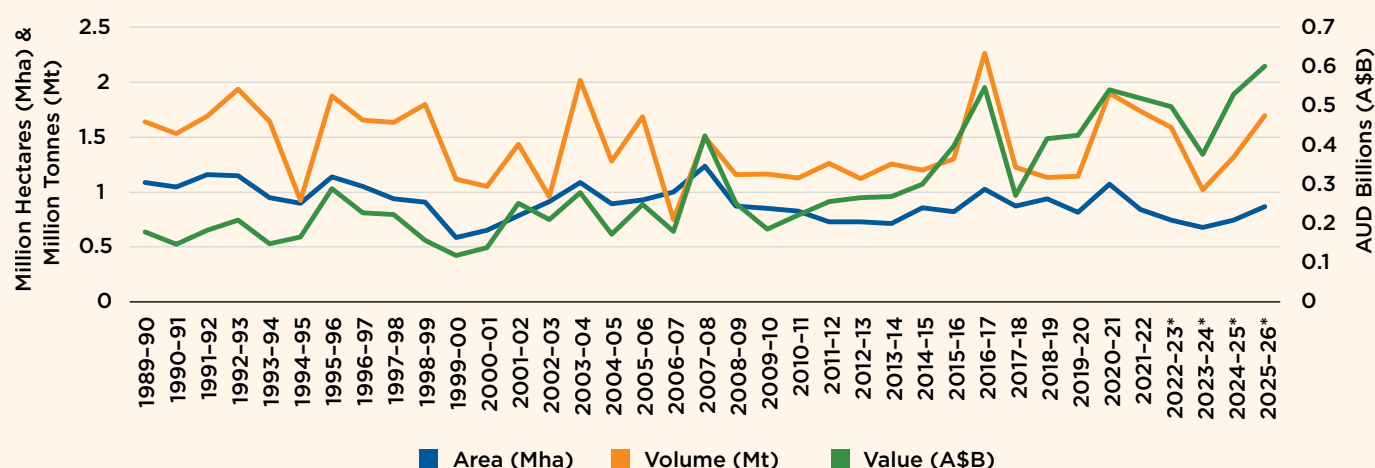
Early oats - Veronica Parker (VIC)

Oat production

While oat production has been trending flat for the last three decades as shown in the figure below, the demand for oats has risen in recent years, partly due to increased recognition of the health properties of the grain. As well as lowering cholesterol and helping to manage blood-sugar levels, special compounds in oats may help protect against heart attacks by reducing inflammation and blockages in blood vessels.

While only a fraction of oats are exported, Australia has a reputation as a world leader in growing high-quality milling oats for the export market, with Australian oats valued for their health and nutritional benefits, low moisture, ease of processing, grain colour and brightness, as well as the clean environment in which they are grown.

Demand for oats has risen in recent years following increased recognition of its health properties



* ABARES estimate

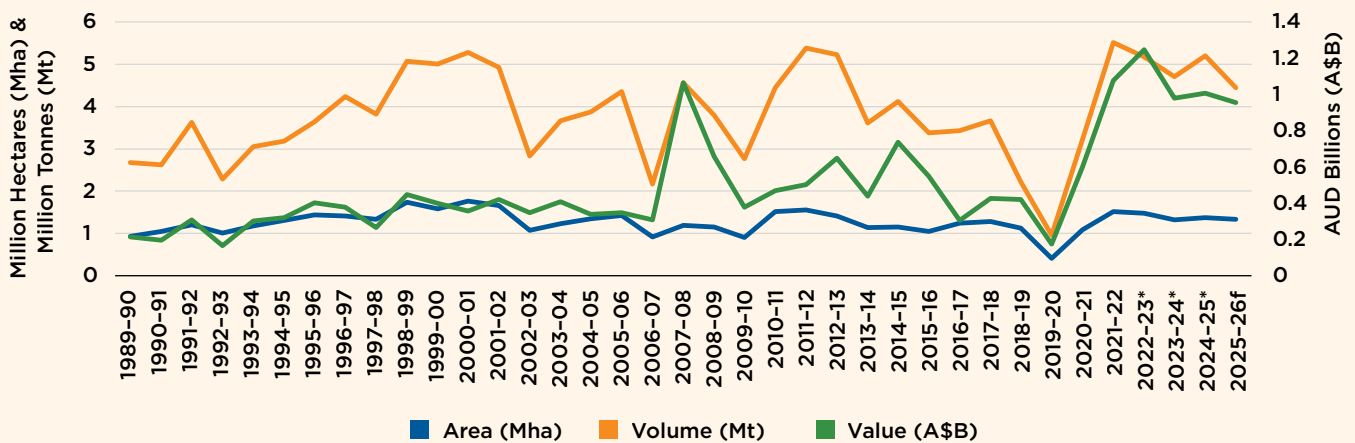
Source: ABARES Crop Report, ABARES Commodities Report

Summer crops production

Summer crops are planted mainly in Queensland and northern New South Wales, where summer rainfall is more pronounced than the southern cropping zone which has a higher proportion of winter rain.

Grain sorghum is the dominant summer grains crop. It is well adapted to heat, challenging soils (e.g. acidic soils with low pH), areas with uneven rainfall distribution, and high year-to-year variation in rainfall and water supply. It can also be a useful rotation crop for winter crops and cotton.

Summer crop production volumes remain relatively flat and seasonal conditions contribute to variability in production



Note: Value (A\$B) does not include cottonseed and rice. Volume (Mt) and Area (Mha) includes cottonseed and rice.

* ABARES estimate

f ABARES forecast

Source: ABARES Crop Report, ABARES Commodities Report

Critical input shortages resulting from the conflict in the Middle East

The escalation of conflict in the Middle East and the effective closure of the Strait of Hormuz in March 2026 had significant implications for the availability and affordability of critical agricultural inputs in Australia. The Strait of Hormuz is one of the world's most important maritime chokepoints, facilitating the movement of approximately 20% of global oil and gas supplies and around one-third of globally traded urea.⁴ During the disruption, ship movements through the region declined by approximately 80%, triggering volatility across global energy and fertiliser markets.

The disruption highlighted Australia's exposure to international supply chains for both fuel and fertiliser. In 2025, 64% of Australia's urea imports originated from Gulf countries,⁵ leaving growers vulnerable to

interruptions in Middle Eastern supply. Global fertiliser markets responded rapidly, significantly increasing input costs ahead of the winter cropping season and making urea difficult to access for many growers.

Australia's fuel supply was also affected despite most refined fuel imports originating from Singapore, South Korea and Japan. These countries remain heavily dependent on crude oil sourced from the Middle East, meaning disruptions in the Strait of Hormuz quickly flowed through to domestic fuel markets. Diesel prices rose to record levels, exceeding \$3.22 per litre nationally.⁶ For Australian growers, the combined impact of higher fuel and fertiliser costs underscored the sector's vulnerability to geopolitical disruptions beyond Australia's borders.

RISKS AND OPPORTUNITIES TO GROWING GRAIN

Evolving customer needs

- Changing consumer and customer needs (see AUSTRALIAN GRAIN MARKETS chapter) will continue to change the types and proportions of grain grown. Australian grain growers have a proven ability to respond to market signals, and to adapt their farming systems with new approaches to better manage risks and opportunities.

Climate change and extreme weather

- Climate change is projected to increase temperatures, change rainfall patterns and create more frequent extreme weather events. These impacts will vary across grain regions, which means impacts on grain yields, production variability and long-term farm viability will vary as well.
- Dry years can reduce yields by 40% compared to average rainfall conditions, while wet years can increase yields by a similar margin.
- Climate models predict with high confidence reduced rainfall for southwest Western Australia, some of southeast Australia and parts of the Eyre Peninsula.⁷
- This increasing exposure to drought and extreme weather events remains a defining challenge, underscoring the imperative for adaptive management and resilient cropping systems. As growers respond to these climate pressures, changes in the geographic distribution, farm size and crop mix of Australian grain production may emerge and present new opportunities to some growers.
- The Australian Government has signaled a shift from monitoring climate change to structured adaptation with the release of the first-of-its kind National Climate Risk Assessment in 2025, which directly informs the National Adaptation Plan with the aim to support governments and industries to prioritise climate adaptation.

- Indirectly, off-farm costs may also increase because of higher insurance premiums or supply chain and workforce availability disruptions, for example.

Biosecurity

- Increasing global movement of goods raises the risk of pest and disease incursions that could impact production and trade.
- Changing temperatures and habitats from climate change will see biosecurity threats evolve.
- Ongoing vigilance, funding, and coordination is needed for a robust biosecurity system to protect biodiversity, improve natural capital, enhance agricultural performance, and facilitate market access.

Input supply and price shocks

- Industry has seen several shocks to the supply of inputs over recent years, resulting in increased costs, delays and scarcity of key inputs. Examples of recent international issues impacting supply chains and markets include supply chain disruptions during COVID-19, recent conflicts between Russia and Ukraine, as well as conflict impacting the Strait of Hormuz.
- Market and supply chain shocks provide both opportunities and risks. For example, opportunities came from increased demand for canola as a result of the Russia-Ukraine conflict but the industry saw increased costs from fuel price volatility during the conflict in Iran.
- The volatility is difficult for businesses to manage, and there is uncertainty about the timeframe over which the shock may occur, but also if the shock signals an ongoing change in price or supply.
- Strategies to improve the security of key inputs and increase resilience of the industry require a nationally coordinated approach.

2

AUSTRALIAN GRAIN GROWERS



37,000 growers grow grain in Australia on 18,000 farms.⁸

The number of grain growers has reduced over time as farms increasingly consolidate into larger and more specialised grain production businesses.

This increasing specialisation in the business of grain growing, together with sustained investment in research and innovation, is increasing the productivity of Australian grain farms.

Outcomes of Australian grain growers adopting new practices and adapting to changes include more grain being grown with every millimeter of rainfall, greater resilience to climate-related impacts, and slowly increasing rates of return on financial capital invested.

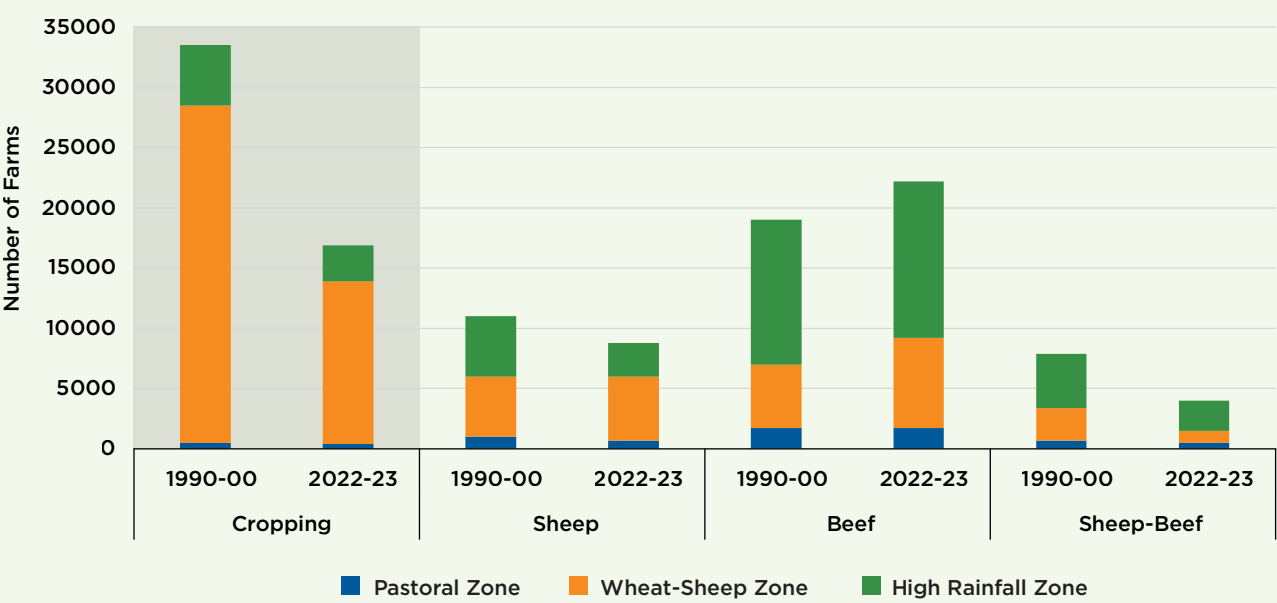
STATE OF THE INDUSTRY IN 2026

Grain growers' human capital

There are estimated to be over 37,000 people employed in on-farm grain production.⁹

TREND: Consolidation of farms and fewer growers, but increasing grain production specialisation

Consolidation of cropping farms into larger enterprises is most predominant in the wheat-sheep zone



Source: ABARES Snapshot of Australian Agriculture 2025

Between 1999-2000 and 2022-2023 the number of specialist cropping farms declined by 40%.¹⁰ This reflects ongoing farm business consolidation and specialisation that has helped to increase productivity.

The largest proportional decline in the number of farms has been in the wheat-sheep zone, where considerable amalgamation of farms into larger enterprises has taken place. Many of these farms have shifted toward more specialised cropping enterprises, which generally have achieved higher average profitability than mixed livestock-crop production.¹¹

While increased specialisation, scale, and adoption of technologies have improved labour efficiency, they have also highlighted the need to attract and keep employees on farms.

In 2024, 69% of grain growers reported they employed someone on their farm. The average grower employed three full-time and two part-time employees.¹²

Farm labour and workforce issues are consistently identified as a priority issue by growers. To gain a more comprehensive understanding of the grains workforce, GrainGrowers' 2024 Annual Policy Survey¹³ included a Grains Workforce¹² section. This revealed the types of on-farm roles growers are advertising for – with the list being led by 77% of growers advertising for farm workers and 45% for tractor/harvester operators, highlighting the need for effective policies and initiatives to address the challenges in securing labour in the industry.

Workplace health and safety

Grain production carries significant physical risks such as operating heavy machinery, working in isolation, confined spaces and elevated infrastructure, alongside psychological pressures driven by climate variability, volatile markets and financial exposure.

TREND: Increasing number of injuries and fatalities

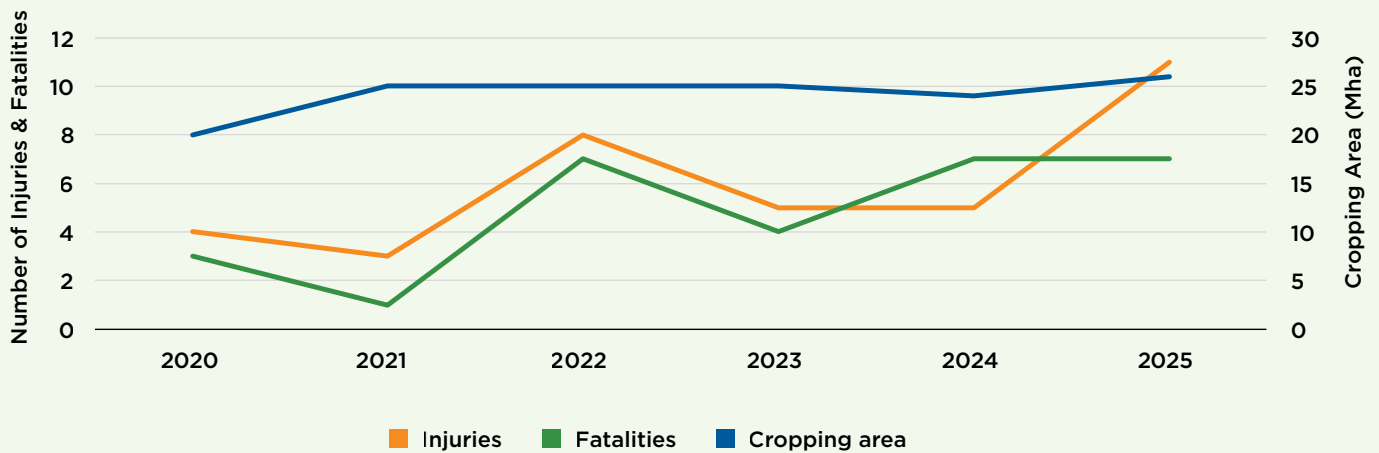
Ag Health Australia's Rural Media Farm Injury Dashboard¹⁴ highlights the impacts of these hazards. From 2020 to 2025 on farms across Australian agriculture:

- Of 325 fatalities, 29 (9%) were related to grain production. Tractors and fixed wing aircraft were the leading causes of fatal accidents
- Of 883 injuries, 36 (4%) were related to grain production. Silos and field bins were the leading causes of injury.

Farm injuries in grain production are rising, independent of cropping area. This shows persistent safety challenges need to be addressed by industry.

Several farm safety programs have been established in recent years to improve insights into incidents, raise awareness, and support actions to reduce the rate of incidents. These include national initiatives such as the Rural Health and Safety Alliance and Farmsafe Australia, state-based programs, and safety programs delivered by GrainGrowers and other industry bodies.

Grain production injuries and fatalities are increasing over time, independent of cropping area



Source: AgHealth Australia

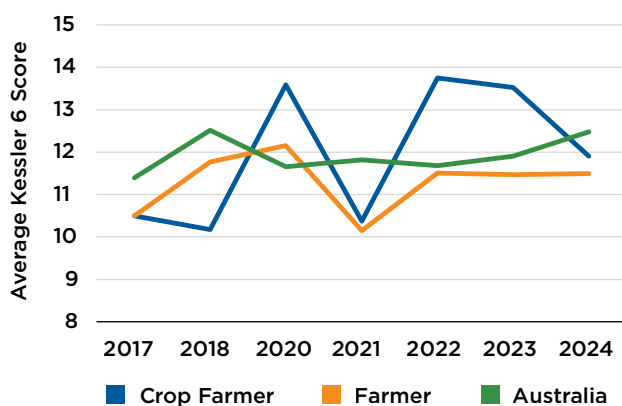
Despite current initiatives, the data suggests a new approach is needed to tackle physical and mental health risks, fatigue, and complacency.

For example, just over half of grain farms reported they had an on-farm workplace safety program in 2025 to manage risks, an obvious starting point for improving farm safety.¹⁵

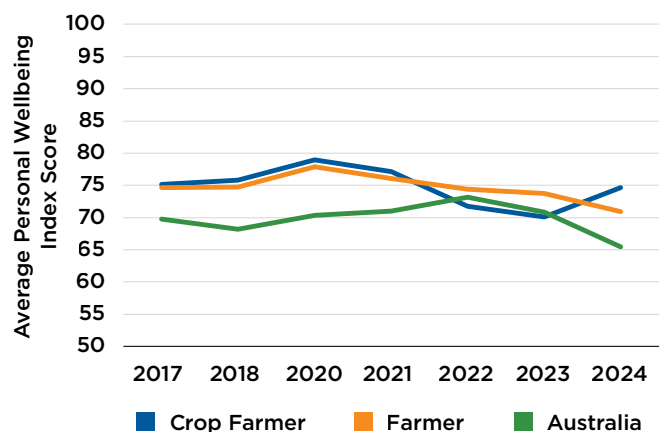
The University of Canberra's Regional Wellbeing Survey indicates grain growers' level of psychological distress is more volatile

than, and on average slightly higher than, all farmers and the Australian population.¹⁶ The same survey shows that the perceived personal wellbeing of grain growers is typically similar to that of other farmers and higher than the Australian population. Agricultural industries are just beginning to quantify wellbeing. As data becomes available over several years, the next step is for social scientists to assess what may be impacting positive and negative wellbeing and how this can be managed.

A grower's level of psychological distress is more volatile than, and on average slightly higher than, all farmers and the Australian population (lower number is better)



A grower's personal wellbeing is similar to other farmers and higher than the Australian population (higher number is better)



Source: Regional Wellbeing Survey

Grain growers' intellectual capital

Although often overlooked in agriculture, intellectual capital is arguably as important as natural or financial capital. A key difference between the performance of farms is often not soil or rain or prices received, it's how well the skills and knowledge of their people – their intellectual capital – were applied to successfully operate their businesses and utilise its natural and financial capital.

On grain farms, intellectual capital is nurtured and applied through careful observation and record keeping, combined with the adoption of new knowledge and technologies derived from investment in research and development (R&D). Outcomes of applied intellectual capital include productivity improvements and production efficiency.

Research and development

The Australian grains industry invests heavily in R&D to improve grower productivity and sustainability, and to monitor and respond to evolving customer needs.

The Grains Research and Development Corporation (GRDC) was established in 1990 with a focus on investing in research, development and extension to increase the profitability of the grains industry in Australia. The GRDC's budget has increased significantly over this time, and in the three years to 2024 it invested an average of \$214 million per year.¹⁷ GRDC's funding comes primarily from grower levies (around 1% of farm-gate value), government matching contributions (up to 0.5% of the three-year average gross value of production), and other income such as royalties and investments.

Research supported by the GRDC delivers benefits across a range of aspects of grain production, including better pest, disease and weed management, improved crop varieties, greater efficiency in farm systems, and increased and less variable farm productivity. Analysis has shown benefits derived from research vary between projects with an average benefit of \$5.10 to the Australian grain industry for every \$1 invested by the GRDC.¹⁷

Furthermore, Grains Australia is an independent organisation that delivers industry-good functions to strengthen the Australian grains industry. This includes investing in market insights to ensure a deep understanding of customers, so Australian grain growers can identify market opportunities and innovate to create value for customers and growers.

In addition to the GRDC and Grains Australia, there is extensive private R&D investment across the country right along the value chain as growers, merchants and others innovate to respond to changing operating environments.

Extension and adoption

Extension is the transfer of research outcomes into practical on-farm decisions. The aim of extension is to support growers to make informed decisions on which new technologies and knowledge they should adopt. In the Australian grains sector this happens primarily through a mix of:

- Public extension activities like workshops, field days, and online materials. These are often coordinated or funded by the GRDC and partner agencies
- Private sector advisory services, where consultants, agronomists and input providers support growers in adopting innovations, especially where commercial value exists for rapid uptake or growers are looking for advice tailored to their farm enterprise
- Partnerships with universities, governments and other agencies
- Grower-led groups, where groups of growers in a region meet regularly to identify local priorities, discuss solutions, and share knowledge.

Farms are businesses operating in complex environments with significant annual expenses. This means growers are likely to change if a new practice or technology is commercially viable for them or an existing practice has been underperforming. For that reason, extension focuses heavily on the costs and benefits of a practice, so growers can make an informed decision if it will add value to their business.

An example of a technology that has been rapidly adopted is yield mapping, which grew from being applied to 29% of cropped area in 2014 to 74% in 2025.¹⁵ Yield mapping uses sensors and Global Positioning Systems (GPS) during harvest to capture spatial yield data and produce detailed productivity maps. These insights enable targeted input use, optimising fertiliser and seed use, improving efficiency, reducing waste, and boosting profitability.

An example of a practice that has not been adopted as quickly is the use of Variable Rate Technology (VRT) in fertiliser application, which grew from 19% of cropped area in 2016 to 30% in 2025.¹⁵ VRT links to yield maps to vary the rate of fertiliser across a field based on the precise nutrient needs of crops and soil in every part of the field. This enhances efficiency and minimises environmental impacts by preventing over-application and nutrient runoff. However, the equipment needed to apply VRT is much more expensive than a yield mapping system. The relatively low level of uptake suggests the returns from investment in VRT are not, for now, sufficient to justify the additional capital expense. However, changes in technology and the operating environment, such as increased input costs or decreases in the price of the technology, may drive future increases in adoption.

Productivity

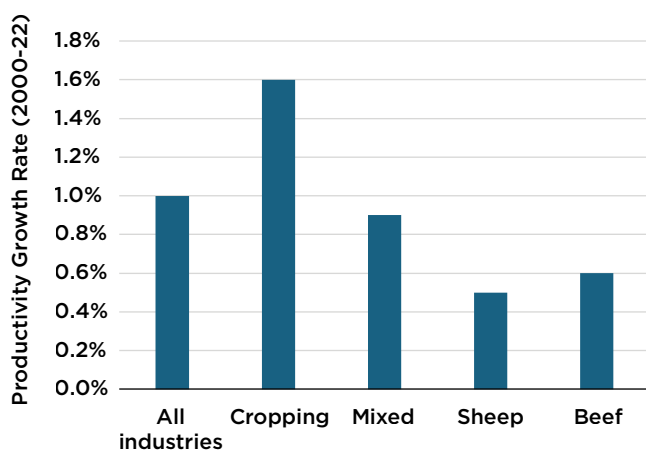
One of the outcomes of R&D is improved productivity: growing more grain with the same or fewer inputs. ABARES uses a Total Factor Productivity (TFP) index to measure this, from a 1978 baseline.

There is a long-term upward trend in cropping TFP relative to the baseline, growing at an average rate of 1.6% between 2000 and 2022, despite volatile climate conditions.

TREND: Long-term growth in productivity, demonstrating adoption of technology and adaption to changes

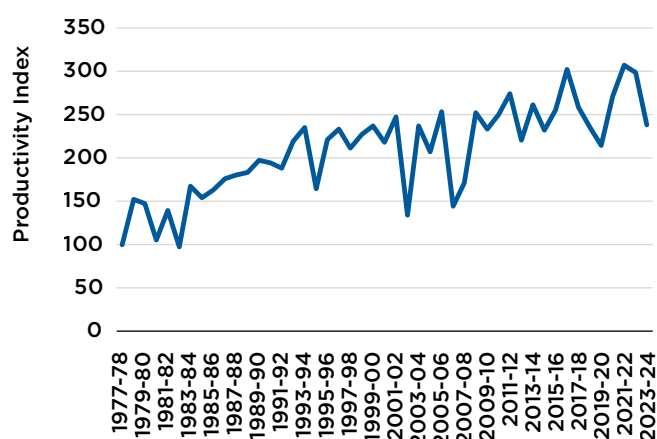
This productivity growth is a result of improvements in crop varieties, mechanisation and automation.¹⁸

Cropping is growing at an average rate of 1.6% despite volatile climate conditions



Source: ABARES Australian Farm Productivity

There is a long-term upward trend in the cropping productivity index





Golden Tonnes - Mindy Hussey (QLD)

Climate adjusted productivity

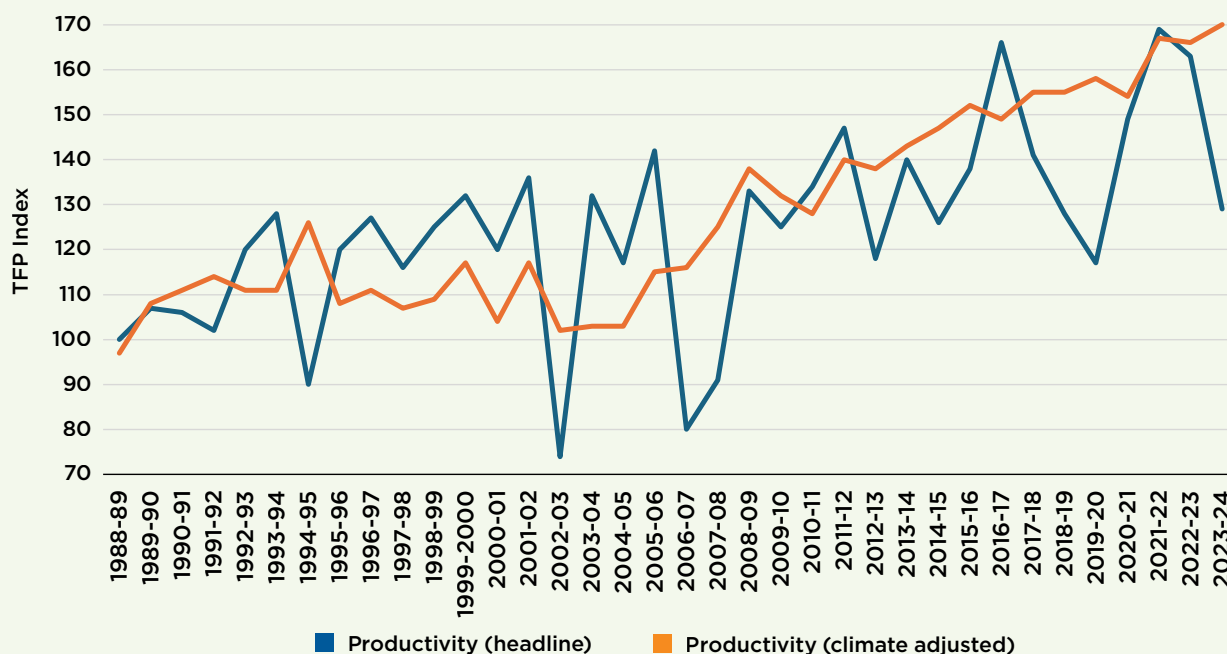
These productivity gains don't just improve financial margins and sustainability outcomes for grain growers. They are also helping to offset the effects of climate change.

Recognising that annual TFP is largely impacted by seasonal conditions, ABARES calculates a climate-adjusted TFP index. This index aims to remove the effects of both annual variations in weather and the long-term trend toward hotter and drier conditions observed in Australia since the early 2000s. By allowing for these climatic factors, the index reveals the underlying pattern

of TFP growth attributable to technology and efficiency improvements in Australian agriculture.¹⁹

Cropping has shown a gradual and positive growth in climate-adjusted TFP over the last 35 years, with the last five years' average of 163 the highest in the series. This means that productivity, after adjusting for climate effects, is 64% higher compared with FY 1989. Productivity gains in the industry have continued to remain strong in recent years, despite the challenging climatic conditions.¹⁹

Cropping climate-adjusted TFP at highest five-year average on record



NOTES: Unadjusted TFP is not directly comparable to its equivalent headline TFP estimate because a different base year is used
Source: ABARES Australian Farm Productivity

Grain growers' natural capital

One of the foundations of agricultural productivity is the natural capital of farms - the soil, water, and biodiversity growers depend on for food and fibre production. However, the quantity, quality, and functional performance of these assets can vary widely depending on location, seasonal conditions, and past management practices.

Measurement and reporting of natural capital resources remain limited, with only a third of growers having been asked for environmental performance data by a supply chain partner in 2025. Regardless, growers are undertaking a range of activities that protect and enhance the condition of these resources, particularly when it comes to soil health. GrainGrowers conducted a survey in 2025 and found that over half of growers had conducted soil health related activities in the past 12 months and a third had conducted biodiversity management activities in the past 12 months.²⁰ The primary motivations driving these natural capital management practices are to improve farm sustainability and to reduce operating costs or increase productivity.²¹

Over the five years to 2026, the widespread adoption of natural capital practices like stubble retention and no- or low-till have remained relatively stable. However, the sector's

continued improvements in climate-adjusted TFP demonstrate the gains in efficiency and technology that are generating co-benefits for the long-term health of on-farm natural capital.

Going forward, further natural capital progress will likely hinge on continued investment in R&D and stronger market signals that customers and governments value the public good provided by natural capital on farms.

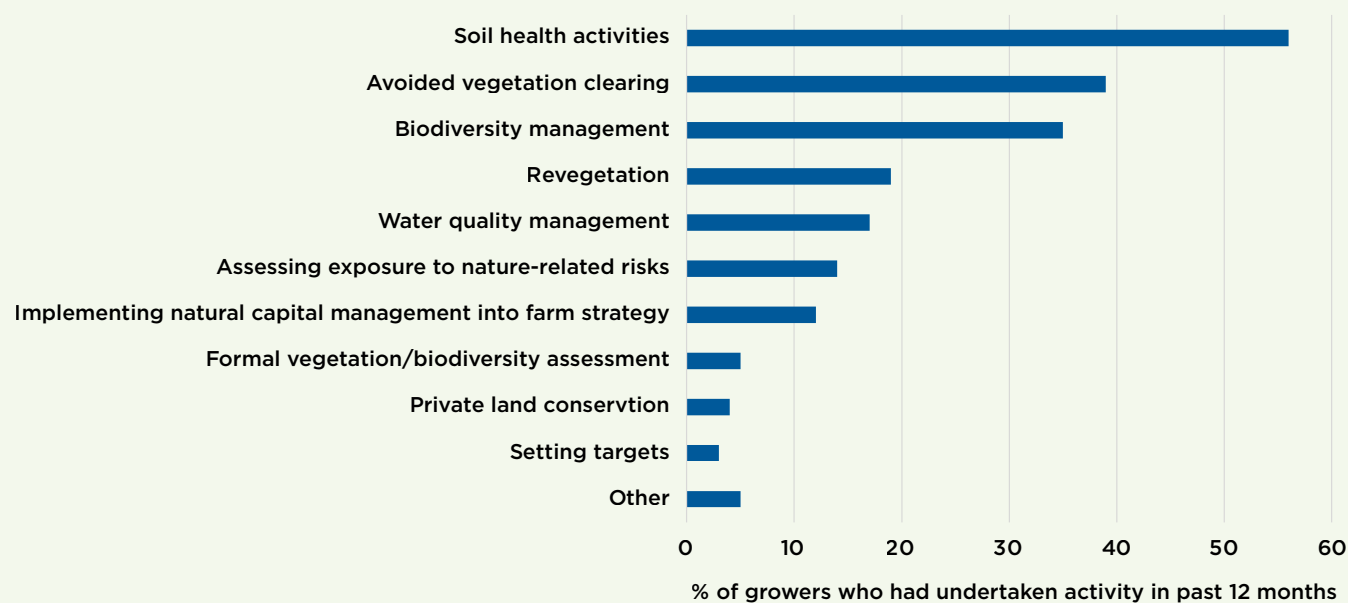
Soil

The last five years have seen a surge in the focus on soil health, driven by its critical role in climate change mitigation, agricultural productivity and resilience. For instance, Australia released its first National Soil Strategy in 2021 and the associated National Soil Action Plan in 2023, aiming to prioritise soil health, empower innovation, and strengthen knowledge. The key challenge will be translating the high-level policy objectives of the program into tangible support for growers.

While the health of Australian soil continues to decline, growers have long implemented soil health management practices. In 2025, widely practiced management activities included:

- 87% of growers undertook zero tillage and low tillage practices (remaining stable since 2016, which was 89%)¹⁵

Virtually all surveyed growers had undertaken nature-related activities in the past 12 months



Source: GrainGrowers Natural Capital Deep Dive

- 81% of cropped area had stubble retained either intact or not standing (up from 70% in 2021)¹⁵
- 56% of growers had undertaken soil health activities (such as contouring, washout repair, and soil mapping) over the last 12 months²²
- 72% of grain farms implement management practices to optimise pesticide use and reduce reliance while maintaining efficacy for crop management. This limits environmental, including soil, damage and reduces input costs, overall increasing efficiency.²¹

TREND: More grain grown with every millimetre of rainfall

Water

Australian grain growers are producing more grain per millimetre of rain than ever before. Measured water use efficiency (WUE) has increased substantially in the past decade.²³

For example:

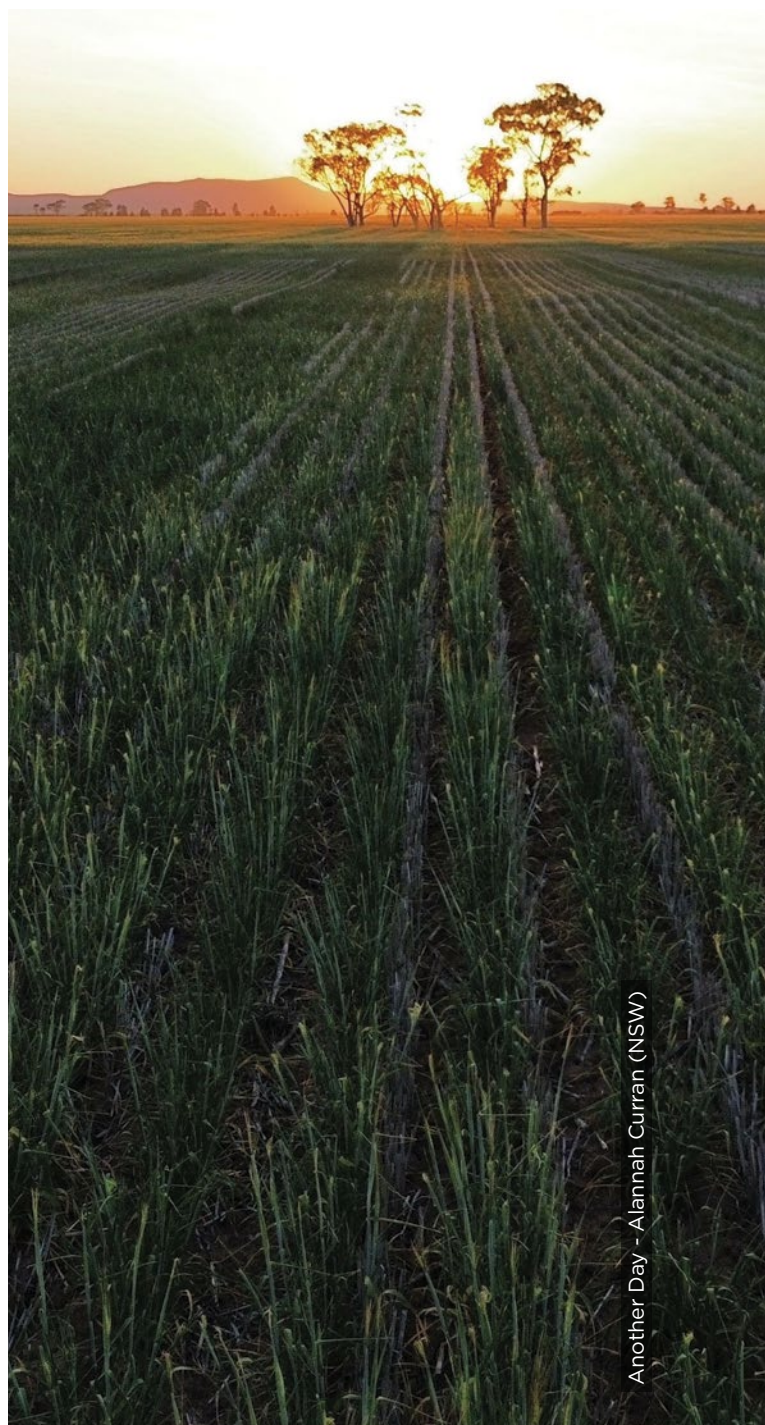
- Wheat WUE has risen by around 36% in Western Australia, 29% in Victoria and 22% nationally
- Canola WUE has increased by roughly 59% in South Australia and 40% in Western Australia
- Barley WUE has increased by about 30% in Western Australia and 28% in Victoria.

Key contributors to improved WUE include soil amelioration and liming, improved plant nutrition, earlier and dry sowing, adoption of improved varieties, precision agriculture technologies and more effective weed management, all of which help growers better match nitrogen and other inputs to seasonal rainfall and soil water.

Most Australian grain production is rainfed, so improvements in WUE have been critical to lifting national grain output and resilience under increasingly variable rainfall.

Biodiversity

Over the past decade, the percentage of Australian grain growing farms with a vegetation management plan has increased from 37%²⁴ in 2014 to 56% in 2025.¹⁵ Vegetation management plans serve as a proxy indicator for responsible land management and ecological integrity for several reasons: they support compliance with land use legislation; prevent ecosystem loss; conserve biodiversity; meet market expectations for sustainability; and deliver long-term grower value through improved resilience and risk management.



Another Day - Alannah Curran (NSW)

Minimum tillage agriculture: a snapshot of grain farm business resources coming together

Grain farms are complex systems, where human, intellectual, natural and financial capital constantly interact. The adoption of minimum tillage gives an insight into the interdependencies of this system.

Minimum or zero-tillage practices involve reducing soil disturbance by tillage; herbicides are used to control weeds instead.

The payoff for grain growers is a practice that benefits natural and financial capital: it reduces erosion risk whilst improving soil moisture management and soil health, and reduces operating costs due to reduced fuel use.

In particular, the improved soil moisture management outcomes have allowed sustained levels of production in the face of climate variability.²⁵

Australia is an international leader in the development and adoption of minimum and no-tillage farming systems.

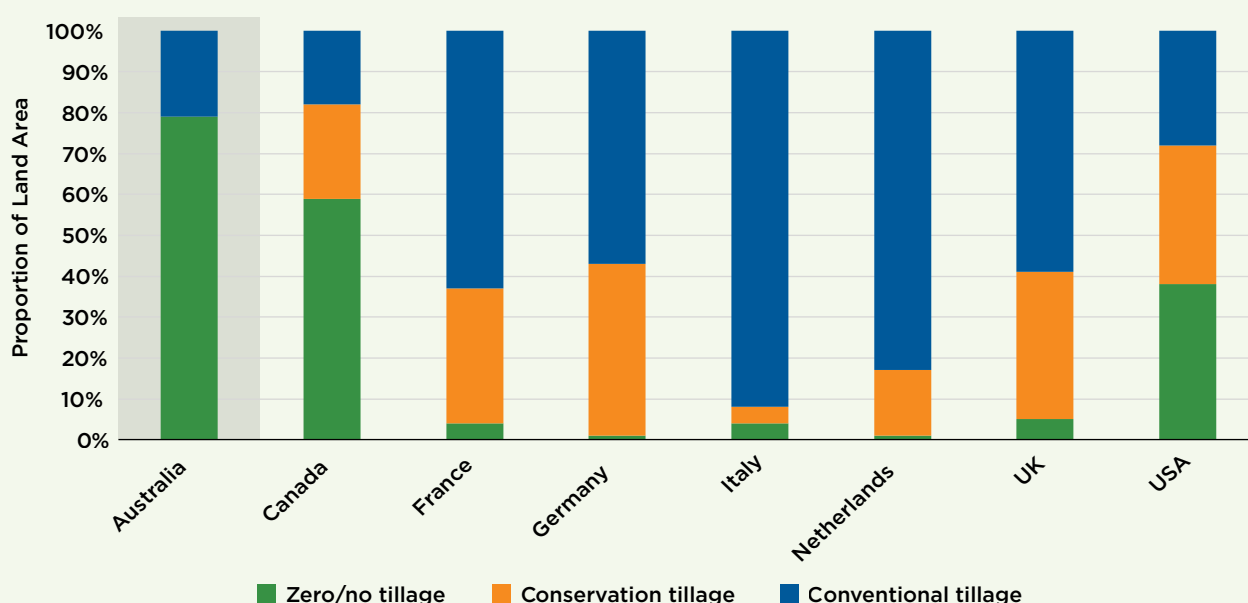
Achieving this has required significant investment in intellectual capital, beginning with research

on conservation farming during the 1960s²⁵ due to concerns related to soil erosion and declining soil fertility. Its development and adoption has been led by grower-led groups which played a crucial role in accelerating practice change and knowledge sharing.

The development of zero and minimum till systems continues to evolve and be adapted to changing circumstances in the industry, needing ongoing R&D and extension and adoption. In 2022 alone, the GRDC had invested \$32 million across 24 projects using practices like reduced tillage to improve soil health.²⁶

Because Australian grain production systems continue to change and develop in response to changing climate, market and operational conditions, this investment in intellectual capital must be sustained. In the case of minimum tillage, increases in herbicide resistance,²⁷ changes to herbicide availability, increasing fuel and input prices, as well as changing crops and pest and disease pressures are some of the interlinked factors that require a continuing evolution of minimum tillage and no-tillage systems.

Australian growers are international leaders in the development and adoption of minimum and no-tillage farming systems



Source: ABARES Insights

Climate change and greenhouse gas emissions

Climate change and natural capital on farms are closely intertwined. Climate change impacts the availability of water, and health and functions of soil and biodiversity. Also, soil and biodiversity management practices can reduce net greenhouse gas emissions from agricultural production.

Climate change

Broadacre farm incomes in the lower rainfall zones of Australia have generally been negatively impacted by climate change over the past 20 years. The impacts are broadly less pronounced or positive in coastal and northern zones.

Cropping farms are particularly impacted in drought years with large declines in revenue from reduced production.

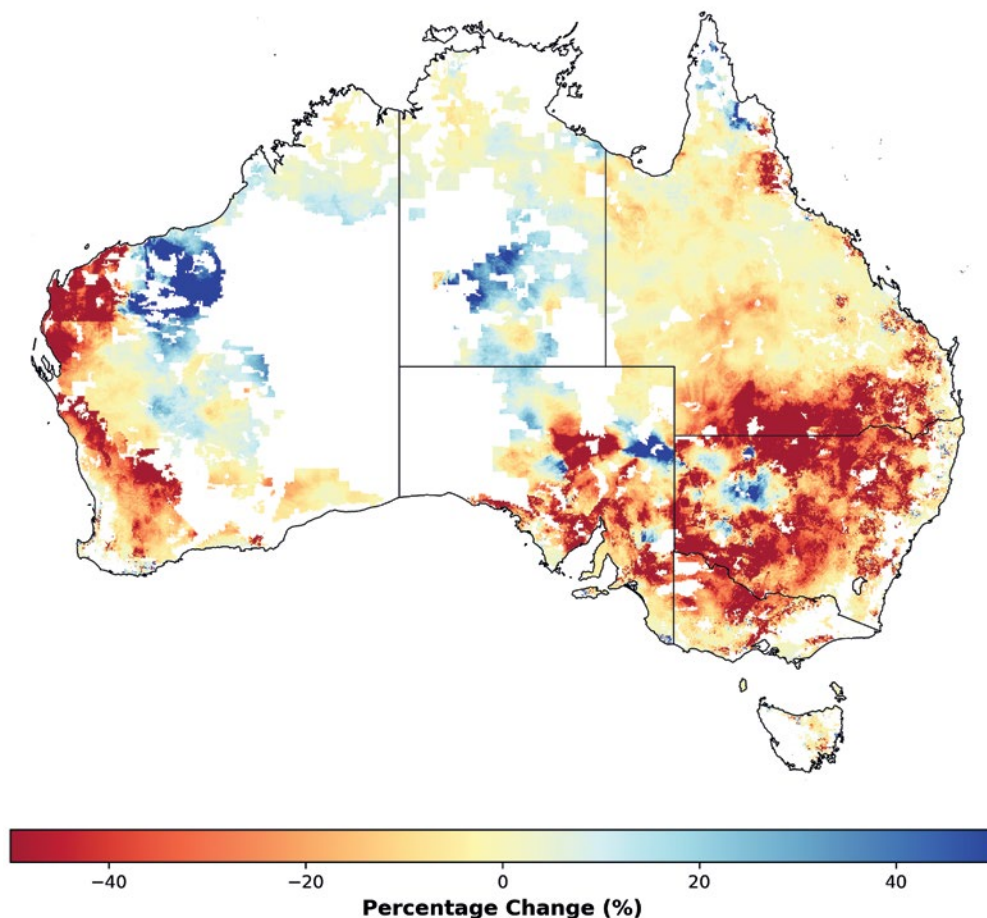
Looking ahead, the Australian Climate Service models with high confidence an increase in

temperature of +3.0°C and a likely reduction in growing season rainfall for southwest Western Australia and parts of southeastern Australia, potentially reducing yields.

Increased extreme heat is expected to place further pressure on productivity across all cropping regions. Increased temperatures will lead to increases in crop water requirements. While there are some frost reductions predicted for eastern winter cropping regions, risks will remain in many production areas. Changed climate conditions will also likely alter the distribution and severity of crop pests and diseases.²⁸

As a result of climate change, ABARES expects further adaption and productivity gains will be required by Australian farms to maintain competitiveness in international markets.²⁹

Recent seasonal conditions have impacted farm profit (2001-2023)



Source: ABARES Snapshot of Australian Agriculture 2026

Greenhouse gas emissions

In 2020, GRDC commissioned a report on the greenhouse gas (GHG) emissions baseline for the Australian grain industry for the financial year 2004-05. In 2025, a new report was produced to compare the GHG account for grain production for the financial year 2020-21 with the GHG baseline from 2005.

Despite higher fertiliser use and an increase in total area under cultivation combined with increased yields, the report calculated total emissions reduced by 50% from 2005 to 2021, and emissions intensity (kg of GHG released per kg of grain produced) has reduced by 64%.³⁰

A significant decrease in land clearing and revegetation efforts have both reduced emissions from land use change and helped store more carbon in vegetation and soils. This may also be supported by increasing soil carbon management practices such as stubble retention, no till, cover cropping, and diverse crop rotations, which boost biomass and soil health. However, the influence of environmental factors (wetter weather conditions) and improvements to modelling are likely to have had greater impact than practice changes between 2005 and 2021.

TREND: Increasing land use competition and diversified income

As climate change drives structural changes, including shifts in land use, diversified income streams may become increasingly important for growers. These alternative revenues often leverage the natural capital resources on farms and may come in the form of biodiversity or carbon farming, agri-tourism, or renewable energy projects. However, there remain critical questions around the financial, tax and land use implications for growers seeking to diversify their operations.

This shift has accelerated over the past five years as a consequence of the formalisation of Renewable Energy Zones in 2020, amendments to the Safeguard Mechanism in 2023 which shifted the primary buyer of Australian Carbon Credit Units (ACCUs) from government to

Safeguard Mechanism entities, the establishment of the Nature Repair Market in 2025, and the signing of the Australia-United States Critical Minerals Framework in 2025, which has further prioritised critical minerals development. Although structural changes in land use are opening up diversified income streams, these must be carefully managed to minimise impact on productive agricultural land.

While some diversified activities may complement existing agricultural uses, others could potentially compete with or replace traditional commodity production. ABARES predicts this competing land use pressure will impact the pastoral zone more than grain production regions, particularly in relation to biodiversity and carbon projects.³¹ While diversified income streams may provide a valuable buffer against climate-driven production risks and price volatility, the emergence of competing land uses under the compounding effect of climate change also heightens pressure on the ongoing protection of prime agricultural land.

To navigate this evolving landscape, policy makers and industry will require robust data and policy frameworks to ensure efforts to reduce national emissions do not inadvertently undermine the long-term viability and productivity of Australia's agricultural lands. Comprehensive data on national land use trends, beyond environmental plantings, and their impacts on agricultural productivity is critically needed.

Additionally, research is required to review current tax treatments of off-farm income, ensuring growers are not financially disincentivised from participating in diversification activities on their land. By addressing these knowledge and regulatory gaps, growers will be better placed to evaluate the viability and tradeoffs of diversification options without undermining the long-term productivity of Australia's agricultural lands.

Grain growers' financial capital

Farm input costs and markets and pricing are consistently the top two issues impacting farm businesses, according to grain growers.¹³

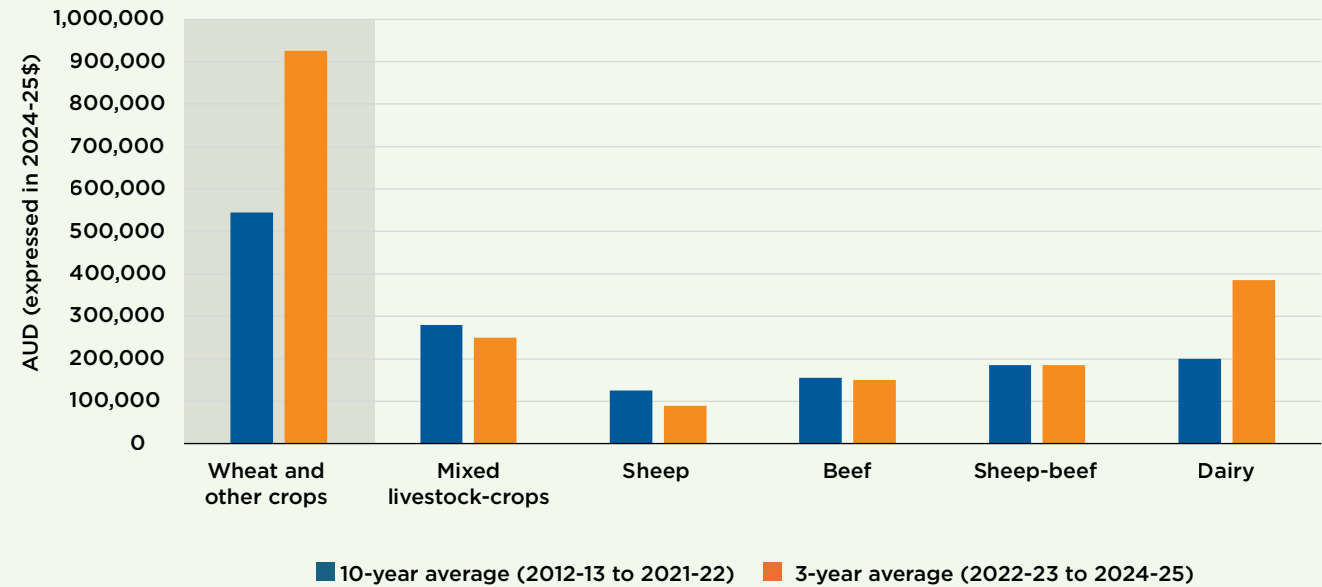
Average farm cash incomes for broadacre and dairy farms over the three years to 2024-25 were well above the average for the previous 10 years as a result of relatively strong prices and favourable seasonal conditions.¹¹

For cropping farms, the three-year average of farm cash income to 2023-24 was more than 50% higher than for the previous 10 years, driven by strong prices although there were significant differences in income across regions due to

variation in growing conditions.¹¹ Despite increases in total cash costs and income fluctuations from year to year, total cash receipts for cropping farms increased at a faster rate than increases in total cash costs over the longer term, reflecting improvements in farm productivity.¹⁰

Land values have also risen substantially in many regions, especially in pastoral and high-rainfall zones, while remaining comparatively lower in the wheat-sheep zones.³² This has helped enable larger cropping businesses in wheat-sheep regions to expand and consolidate through relatively more affordable land purchases.³³

Three-year average farm cash incomes to 2023-24 were more than 50% higher than the previous 10-year average



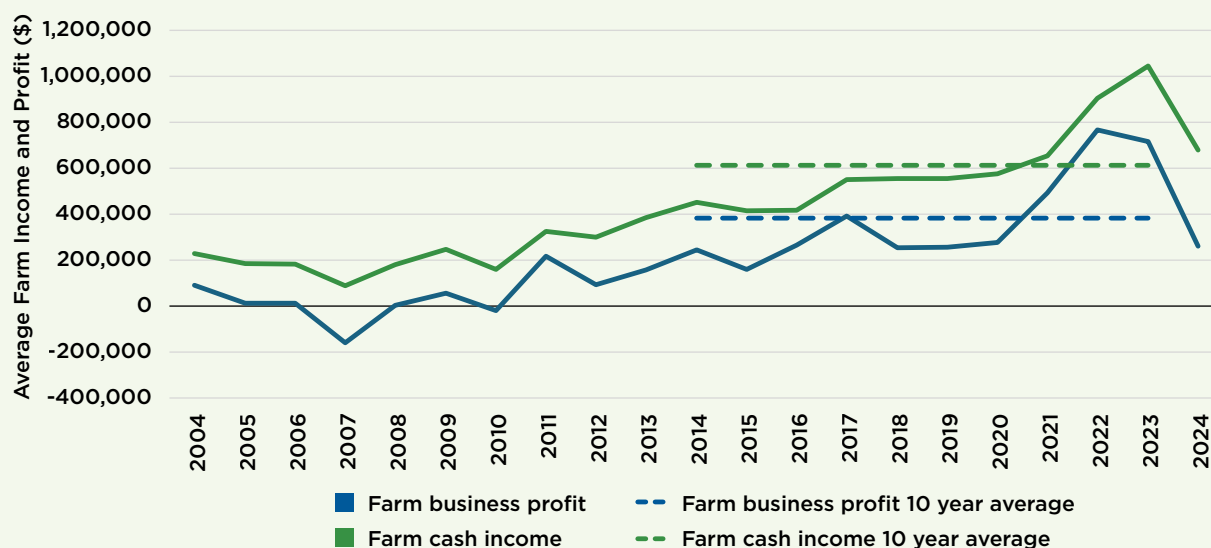
Source: ABARES Snapshot of Australian Agriculture 2026

TREND: Slowly increasing profit and rate of return, but with sharp downturns in 2024

Average cash income for farms growing wheat and other crops has been increasing because of productivity growth, technology adoption, changes to farm size and structural adjustment along with improvements to farm management.

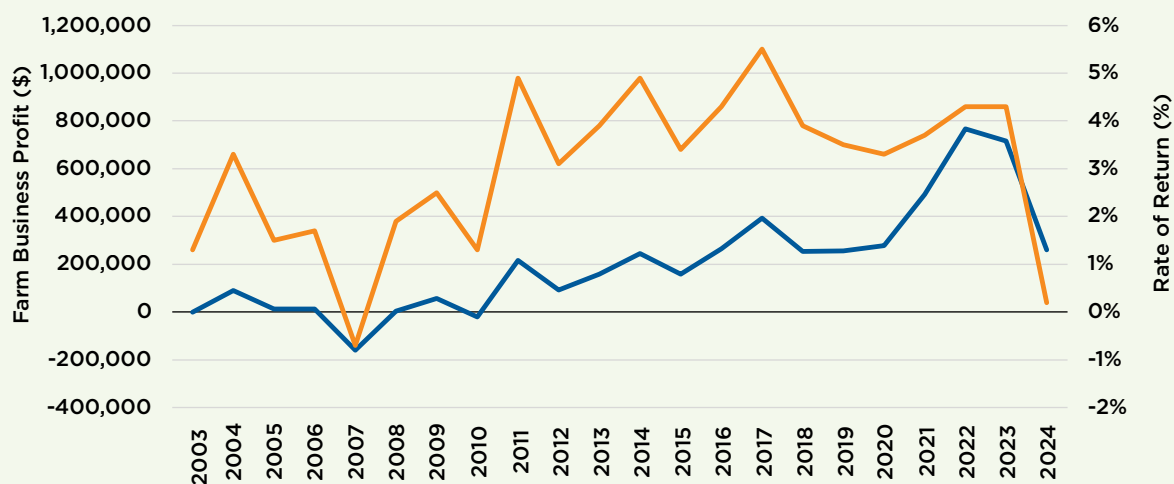
However, there are regional and seasonal differences in farm performance. 2023-24 saw variability in production across Australia, with relatively high crop yields and production in southern and eastern Australia, and relatively lower production in Western Australia and Queensland resulting from less favorable seasonal conditions. At the same time prices were lower for wheat and canola.³⁴ While long-term trends in farm performance can be expected to continue, profitability will be impacted by volatility in prices and input costs.

Average cash income for farms growing wheat and other crops has been increasing due to productivity growth



Source: ABARES Farm Data Portal

Variability in production across Australia, as well as lower prices, impacted profit and rate of return in 2023-24



Source: ABARES Farm Data Portal

RISKS AND OPPORTUNITIES FOR AUSTRALIAN GRAIN GROWERS

Human capital

Strengthening the farm workforce

People are often described as the most important asset in any business, and there is a need to focus attention and resources in workforce management to strengthen business capability.³⁵

Leadership, communication and workplace culture can feel less tangible than production-focused activities, and the benefits of investing in people are often harder to measure and slower to emerge.

Unlike improvements in agronomy or machinery, where results can be seen quickly and directly, investments in workforce capability tend to deliver more gradual, but equally critical, returns.

However, strong human capital underpins the long-term performance, resilience and adaptability of grain businesses.

Research into farm workplaces highlights that successful businesses are those that take a deliberate approach to managing their people — from attracting and retaining the right workforce, to supporting wellbeing, safety and skills development. These factors are increasingly important as farms grow in scale and complexity, and as expectations around workplace standards continue to evolve.

Recognising the importance of building strong, capable farm workplaces, GrainGrowers has developed the **Workforce Resources Hub** to support grain businesses in attracting, retaining and managing people effectively.



The Hub provides practical tools and guidance to help growers strengthen their human capital, including:

- Information on workforce trends, challenges and future opportunities facing the grain industry
- Remuneration benchmarks to support informed decision-making
- Recruitment guidance and tips to assist with attracting workers
- Information on visa pathways to support workforce access and business continuity

By improving how farm businesses manage and invest in their people, growers can build more resilient operations, adapt more effectively to changing conditions, and position themselves for long-term success.

Intellectual capital

- **Behavioral change:** Changing behaviour in humans to adopt technology, innovation and best practices is a constant challenge. Use of models like CSIRO's ADOPT can support the rate and extent of practice adoption by linking to the advantages derived from them, along with a range of factors related to the technology and the capacity of growers looking to adopt the innovation.
- **Continued innovation:** The changing nature of challenges for farming businesses require innovation in business, new knowledge, practices and technologies. Innovation has helped to underpin past productivity gains¹⁸ and will remain critical to meeting future challenges.
- **Advanced plant breeding:** Although there are currently no genetically modified (GM) cereals in Australia, GM technology is well established in canola and a range of advances in plant breeding are being employed to improve crop productivity and resilience and meet customer requirements.
- **Connectivity:** Mobile blackspots and internet connectivity continue to hinder adoption of new technology and business operations.

Natural capital

- **Climate change:** The increasing severity and frequency of extreme weather events driven by climate change poses escalating risks to the natural capital resources underpinning grain production. Impacts such as higher temperatures, lower rainfall, and more time spent in drought predicted across grain regions may reduce yields and cause direct damage to plants, while also heightening mental health challenges for vulnerable remote communities and growers.⁷ While perennial cropping systems may face greater long-term challenges, the flexibility of annual grain crops allows growers to adapt by transitioning to less water-dependent varieties. However, the compounding effects of climate change will necessitate ongoing, proactive management of natural capital resources to build resilience across the sector.
- **Environmental markets:** The Nature Repair Market was established in 2025 to encourage investment in projects that protect, manage, or restore nature. It also allows biodiversity projects to be "stacked" with carbon credits. There are few significant commercial

opportunities for pure cropping operations to directly participate in environmental markets as currently formulated, and there is insufficient data on the co-benefits that may be derived from participation such as improved land value, productivity or profitability.³⁶

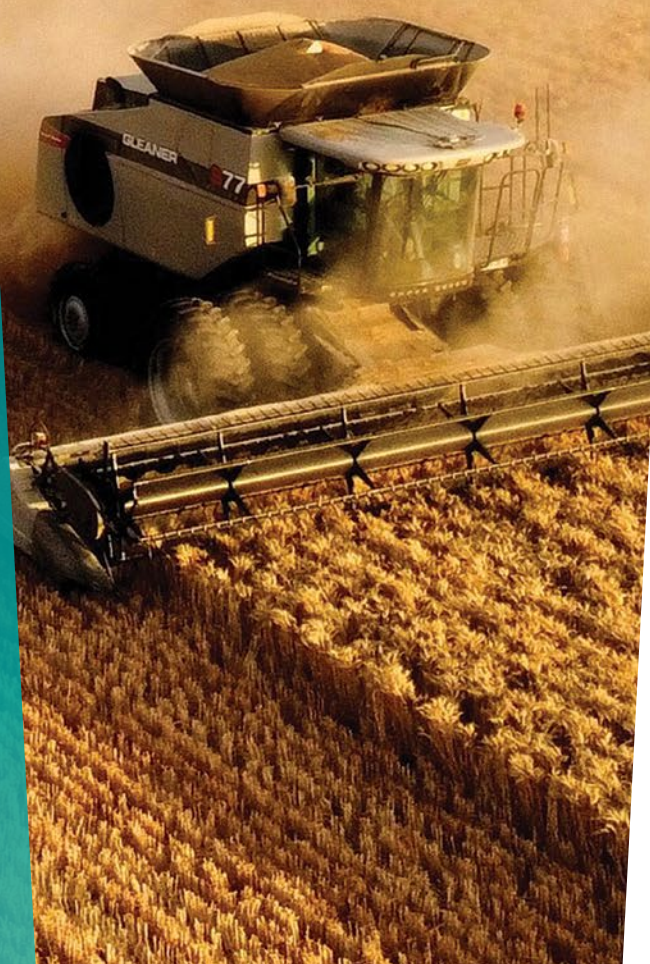
- **Natural capital accounting:** Developments in natural capital accounting, including increased focus on nature risk reporting, present both risks and opportunities for growers. The increasing dominance of sustainability frameworks being applied to the finance sector and corporate ambitions of the grain supply chain could result in greater data collection and reporting requirements for growers, adding cost and time burdens.³⁶ However, as measurement and reporting tools improve and become more practical for on-farm use, growers may leverage these capabilities to quantify the value and functional performance of their natural capital resources. This may allow growers to better understand drivers of productivity and increase opportunities for communicating stewardship downstream.
- **Legislation:** Evolving environmental legislation at federal and state levels will continue to present challenges such as overlapping or duplicative compliance requirements across jurisdictions, which create additional compliance burdens for growers. Resolving these regulatory complexities will be crucial, particularly as Australia undergoes a major overhaul of its federal environmental laws in 2025-26, which has led to significant uncertainty for the agriculture sector. Additionally, increasing the level of direct landholder support for understanding and applying complex environmental legislation on-farm will be necessary.

Financial capital

- **Input costs and availability:** Volatility in global fertiliser, fuel and chemical supply chains highlight the importance of local manufacturing capability and diversification to mitigate the risk of disruption.
- **Decentralised input manufacture:** Regional manufacturing of green energy nitrogen, or low carbon liquid fuels using biomass as an input, could improve certainty of supply, lower costs, and support regional employment. This would also contribute to increasing community liveability, an important aspect for attracting and keeping people on farms.

3

AUSTRALIAN GRAIN SUPPLY CHAINS



Getting Australia's increasing grain crop efficiently to market is essential for the industry's competitiveness.

Each year, approximately 60 million tonnes of grain is moved from 18,000 thousand farms,¹⁰ sorted into multiple quality and specification gradings to meet customer needs, and transported to a variety of domestic and international customers.

Australia's grain freight supply chain is characterised by long, complex and

multi-directional freight journeys across multiple modes of transport. While there has been improvement in ship-loading capacity and some new rail investments in recent years, grain freight costs and efficiencies are a significant barrier to increased grain industry productivity and profitability.

STATE OF THE INDUSTRY IN 2026

Successive record or near-record crops in recent years have increased the volume of grain needing to move from paddock to port, placing growing pressure on regional roads, rail networks, storage systems and export terminals.

This task is particularly important given Australia's unique position in global grain markets. Australian grain production is counter-cyclical to its major competitors in the Northern Hemisphere. The majority of Australia's grain is harvested between December and February, around six months after the Northern Hemisphere harvest. This timing creates a critical export window from December to May, allowing Australian exporters to supply international markets during a period of relatively reduced global supply.

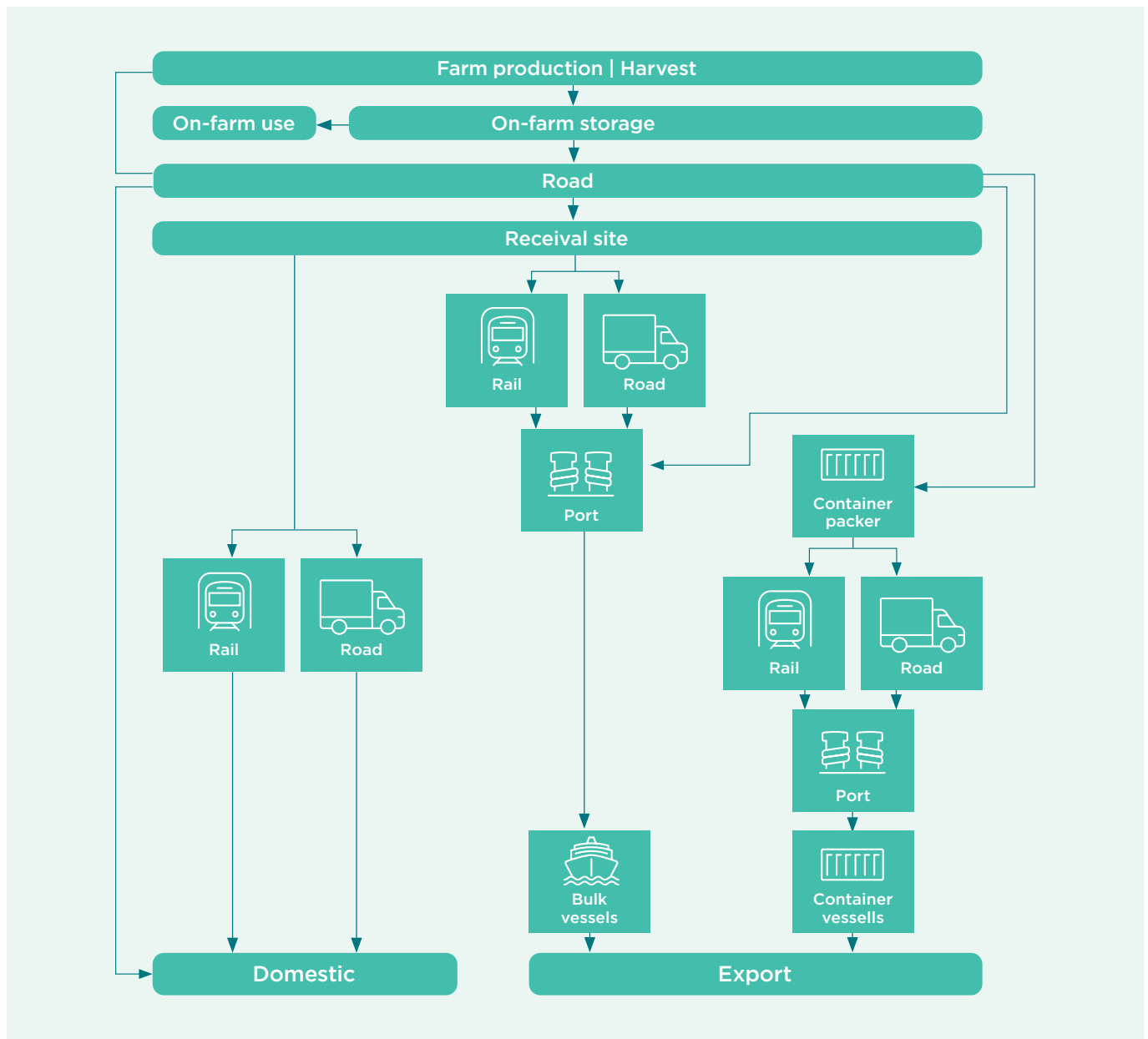
Ensuring grain can move efficiently during this period is essential to capturing this competitive advantage. However, the supply chain is operating in an increasingly complex environment that is putting pressure on costs and efficiencies.

Extreme weather events have damaged critical freight infrastructure and disrupted key transport routes across grain-growing regions. Global conflicts have disrupted major shipping corridors, increasing freight costs and uncertainty in international shipping markets.

Together, these pressures highlight the growing challenge of moving larger volumes of grain efficiently through a supply chain facing increasing operational and external risks.

Freshly Swathed Canola laying out so neatly as it curves up the hillside - Tamara Ward (WA)





Storage and handling

Australia's grain industry operates an extensive bulk-handling system, with hundreds of aggregation hubs and receival sites across all major grain-growing regions that individual grain farms have traditionally delivered to.

Deregulation has fundamentally reshaped how grain moves across Australia.

For much of the 20th century, the grain industry operated within a highly regulated framework, including production quotas and state-based, government-owned grain elevator boards. Growers were required to sell grain through these boards, and in many states, grain movements were effectively mandated onto rail via vertically integrated, state-controlled systems. During this

period, extensive networks of government-owned receival sites were constructed directly adjacent to rail lines, embedding rail as the default transport mode.

A major deregulation shift occurred with the introduction of the Wheat Marketing Act 1989, which for the first time allowed growers to sell directly to local buyers without a permit. This gave growers the opportunity to bypass centralised bulk handling systems and deliver directly to domestic customers such as feed mills, farms and feedlots (markets typically not accessible by rail). The privatisation of grain elevator boards in the 1990s and removal of the wheat export Single Desk in 2008 further accelerated these changes.

In recent years, the bulk handling sector has continued to evolve, with several significant ownership and structural changes among major operators. Notably, the merger of Viterra and Bunge, along with the acquisition of Emerald Grain by Louis Dreyfus Company, has reshaped parts of the bulk handling landscape and reflects the ongoing evolution of Australia's grain supply chain.

TREND: Continuing increase in on-farm storage capacity

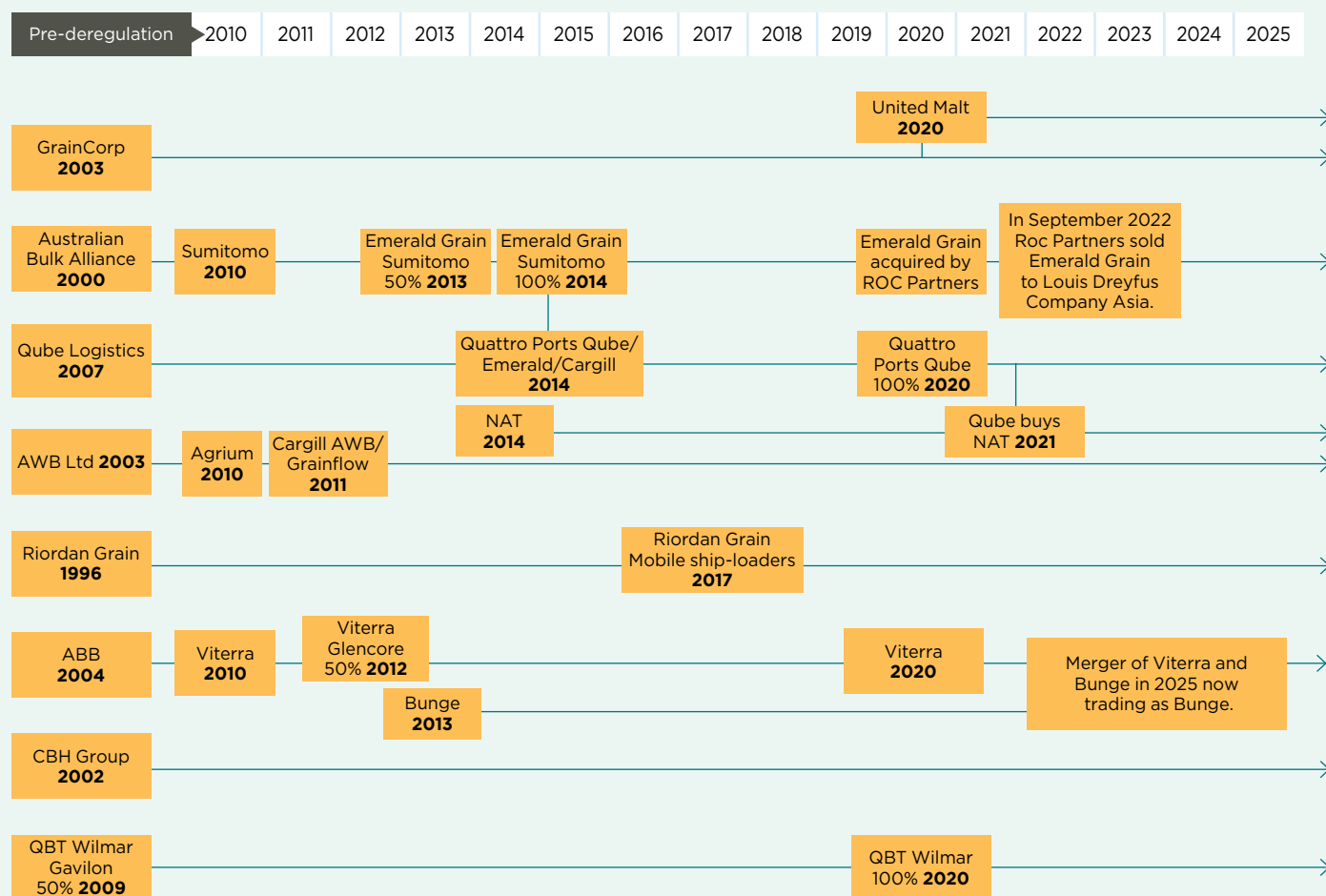
The rapid expansion of on-farm grain storage has further altered grain freight patterns and rail demand. Once a marginal practice, on-farm storage is now a core component of

many farm business and marketing strategies. Instead of delivering grain to a receival site at harvest, on-farm storage lets growers manage harvest logistics, delay delivery, and respond to price signals.

The average amount of grain able to be stored on-farm grew from about 2,850 tonnes in 2021 to nearly 3,200 tonnes in 2025.¹⁵

The growth of on-farm storage has increased reliance on road freight, as grain is more often moved directly from farms to domestic customers or ports at flexible times rather than being delivered immediately to rail-served bulk receival sites at harvest. While this has improved grower flexibility and supply chain responsiveness, it has further reduced the aggregation advantages that traditionally underpinned rail freight in some regions.

Australia's grain industry operates an extensive bulk-handling network



Source: Adapted from AEGIC and LEK Research

Note: Small or prospective new entrants are not fully represented

Road

These structural changes mean road freight has become an increasingly important element of the grain supply chain.

All grain is transported off-farm by road, and then nearly all grain destined for the domestic market is transported by road as only a limited number of domestic grain buyers (such as flour and stockfeed mills) have access to rail facilities. An increasing amount of grain is also transported to port by road on a mix of local, state and federally funded roads.

Local roads

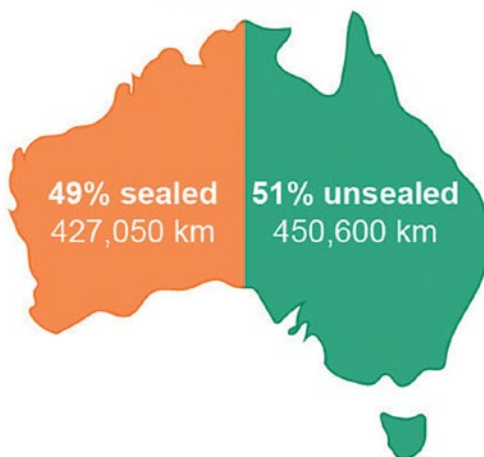
Roads owned by local governments play a critical role in Australia's grain supply chain, often forming the first and last links in the grain freight task. These roads normally have lower volumes of traffic and are often unsealed.

Local roads make up the majority of Australia's road network, representing around 75% of the national road network by length.

However, the condition of many local roads presents an ongoing challenge for the grain freight task. Around 13% of Australia's unsealed roads have been assessed as being in poor condition. Maintaining these roads presents a significant financial challenge for local governments: the replacement cost of unsealed roads currently rated in poor condition is estimated at \$3.9 billion.³⁷

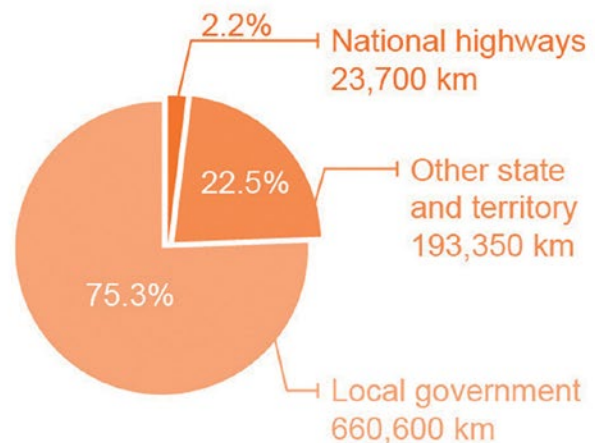
Local roads comprise most of Australia's network, and maintaining unsealed roads poses a major cost for local governments

Australia has 877,650 km of roads



Source: AusRAP

Road management



State owned arterial roads

After travelling along local roads from farms, grain is typically transported via state-owned arterial roads to their next destination. These arterial roads are designed to carry higher traffic volumes and weights, making them vital for supporting agricultural freight movements and linking regional production areas with domestic and export markets.

However, much of Australia's regional road network was built decades ago and was not designed to accommodate the size, weight and frequency of modern heavy vehicles. Advances in agricultural productivity, larger farm operations and the increased use of high-capacity freight vehicles mean significantly greater volumes of grain are now transported on roads that were often designed for lighter vehicles and lower traffic volumes. As a result, many arterial roads face growing pressure from heavy vehicle movements, particularly during harvest and peak freight periods.

The Australian Road Assessment Program assigns roads a safety rating between 1 and 5 stars based on their built-in safety features such as lane width, shoulder sealing, roadside hazards, intersection design and median separation.

An analysis of the 2025 program gave only 53.3% of the analysed road length across the network a 3-star safety rating or higher.³⁸

In addition to safety considerations, the resilience of key freight corridors is also a key challenge. GrainGrowers' 2026 Australian Priority Grain Freight Routes report highlighted many of Australia's most important grain freight corridors are vulnerable to climatic events such as flooding and extreme weather. Disruptions to these routes can have significant consequences for the grain supply chain, delaying the movement of grain to domestic processors and export terminals during critical marketing periods.³⁹

The October 2022 floods and impacts on grain freight routes

The Australian grain supply chain was significantly disrupted by a series of devastating flood events in 2022, which affected large parts of south-east Queensland, New South Wales, Victoria and Tasmania. These floods occurred across key agricultural regions and had widespread impacts on transport infrastructure that supports the movement of grain.

At the peak of the flooding in late 2022, more than 82,000 kilometres of roads were impacted by flood-related closures. Many of these closures occurred on regional and freight routes that are critical for connecting grain-growing regions to storage sites, processors and export ports. For example, in October 2022, a section of the Newell Highway, one of Australia's most important inland freight routes, was closed for approximately seven weeks after around 20 kilometres of the highway was inundated by floodwaters. As a result, grain movements were delayed, freight routes were diverted, and transport costs increased across affected regions.

Flooding and prolonged periods of high rainfall also accelerated the deterioration of road infrastructure across Australia's grain-growing regions. Already under pressure from limited local government funding and heavy freight use, many regional roads experienced further damage, including pavement failures, shoulder erosion and surface degradation. The Australian Local Government Association estimated that repairs to damaged roads across New South Wales, Victoria, South Australia and Queensland would cost approximately \$3.8 billion.⁴⁰

These events demonstrated the growing exposure of Australia's grain freight network to extreme weather and reinforced the need for greater investment in resilient infrastructure capable of withstanding increasingly frequent and severe climatic events.

National highways

Although only 2.2% of the entire network, national highways play an important role, supporting cross border freight movements. National highways are identified as part of National Land Transport Network (NLTN) which is a network of nationally important road and rail infrastructure links and their intermodal connections. The NLTN is

determined by the Minister in the National Land Transport Network Determination 2020 under the National Land Transport Act 2014.

The NLTN was reviewed and updated on 1 July 2020 to ensure it includes nationally significant major road and railway links, including projects recently completed, underway or proposed.

**Although only 2.2% of the entire network,
national highways support cross border freight movements**



Source: Department of Infrastructure, Transport, Regional Development and Communication

Heavy vehicle regulation

Although Heavy Vehicle National Law (HVNL) was introduced in 2014 with the intention to establish a single, nationally consistent framework, significant fragmentation remains across jurisdictions. This is further compounded by the fact that Western Australia and the Northern Territory do not participate in the HVNL.

Under HVNL, access requests are submitted through the National Heavy Vehicle Regulator, but final decisions, including conditions of access, sit with road managers. As custodians of local roads, local governments are responsible for the majority of Australia's road network, meaning freight access outcomes are often highly decentralised.

In practice, this has resulted in inconsistent requirements across neighbouring local government areas. For example, in many grain grower regions, gazetted b-double access can abruptly stop at the local government area border, necessitating costly and time-consuming permits.

This fragmentation creates significant inefficiencies. Grain freight movements often cross multiple local government and state boundaries and the cumulative impact is increased administrative burden, reduced network efficiency, and higher costs across the supply chain.

Rail

Complementing road freight is Australia's long standing rail freight network.

Approximately 60% of grain is transported from upcountry receival sites to port via rail, often travelling long distances. However, this share varies significantly between states, with much higher use of rail in Western Australia and New South Wales, compared to South Australia, Victoria and Queensland.⁴¹

Australia's rail system dates from the colonial era, when each colony developed its own rail network.

Australia's national network is made up of 18 separate rail networks, 11 different signaling systems, and countless different rules.

Across Australia there is approximately 4,700 kilometres of local rail lines built predominantly for the transport of grain from upcountry receival sites to port or other aggregation sites. These local lines have a lower capacity and speed limit than the mainlines they connect to. However,

the resulting mismatch of load limits often leads to lower weights being carried on key sections of the journey contributing to supply chain inefficiencies.⁴¹

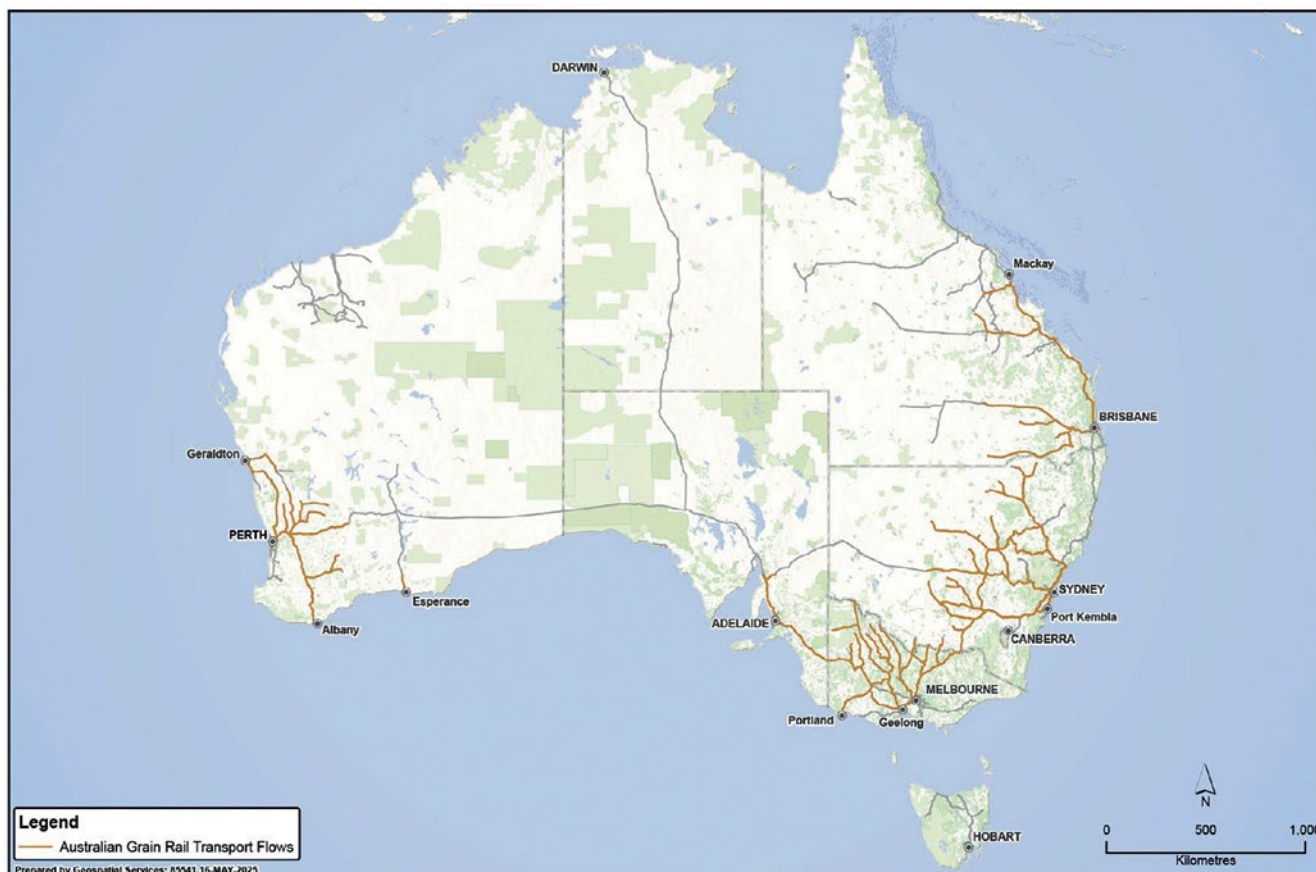
Compounding these challenges, Australia still maintains multiple rail gauges (the distance between the inner rail edges).

Of Australia's 31,212 kilometres of operational heavy railways, approximately:

- 56% is standard gauge
- 35.5% is narrow gauge
- 8% is broad gauge.⁴²

Multiple rail gauges create inefficiencies for rail networks increasing operating and capital costs for rail operators, who must maintain and operate separate fleets for each gauge. This fragmentation also reduces network resilience and scheduling flexibility, whilst reducing the economies of scale, making rail less competitive against road transport.

Australia's national network is made up of 18 separate rail networks with multiple signaling systems, gauges and rules



Source: Bureau of Infrastructure and Transport Research Economics

While these structural challenges remain significant, there have been important and positive developments in recent years aimed at improving interoperability. In 2023, Australian Infrastructure and Transport Ministers committed to a coordinated national approach to enhance rail interoperability and support a more efficient, integrated network.

Key actions underway include the development of a national rail standards framework, the adoption of the European Train Control System as a single digital signalling technology, and progress toward a more consistent national approach to rolling stock approvals. Collectively, these reforms represent a meaningful step toward reducing fragmentation and improving the long-term performance of Australia's rail freight system.

Ports and shipping

As an export-orientated industry, a well-functioning maritime logistics system is critical for Australia's grain industry, which relies on the nation's ports and shipping networks to transport their products to overseas markets.

The majority of grain is exported through Australia's 29 bulk grain terminals at 20 ports.

However, containerised grain export is becoming increasingly prevalent through Australia's five container ports. Victoria and New South Wales are typically Australia's largest source of containerised grain exports, with Queensland's containerised exports being highly variable, dependent on domestic production and global trading conditions.⁴³

Most grain is exported through Australia's 29 bulk grain terminals at 20 ports



Source: ACCC

Containerised grain export is becoming increasingly prevalent through Australia's five container ports



Source: ACCC

TREND: Rising domestic container charges

Over recent years, landside charges (such as terminal access charges) in the container supply chain have increased sharply, becoming a growing and more prominent cost burden across Australia's export logistics network. Stevedores impose these charges on trucks and trains delivering or collecting containers at port, and their escalation has materially increased supply chain costs for exported containerised grain.

Since 2017-18, stevedores have collected \$3.19 billion in terminal access charges, around 2.5 times their aggregate investment of \$1.25 billion over the same period. This divergence between revenue collected and reinvestment has intensified scrutiny on pricing practices and their alignment with efficient port operations.⁴⁴

Shipping lines typically nominate the stevedore, leaving growers, exporters and transport operators with little or no ability to choose

service providers or negotiate charges. This limits competitive tension and creates an environment where landside charges can be increased with minimal constraint. For high-volume, low-margin commodities such as containerised grain and hay, additional costs are typically borne directly by growers or transport operators to avoid making containerised exports uncompetitive.

The Australian Competition & Consumer Commission's (ACCC) 2024-25 Container Stevedoring Monitoring Report found the market is not operating as would be expected in a competitive environment. With limited countervailing power and clear evidence of pricing practices inconsistent with effective competition, the ACCC has pointed to an apparent market failure in landside charges and related fees, highlighting the need for targeted reform to improve transparency, strengthen competition, and ensure that costs across the container supply chain remain fair and efficient.⁴⁴

TREND: Global volatility is leading to increased shipping costs

Although shipping markets experienced a temporary easing in volatility following the peak disruptions of COVID-19, instability has re-emerged and intensified in recent years.

Disruptions across key global trade routes, including the Red Sea, Suez Canal and Panama Canal, have driven a renewed surge in freight rate volatility. Longer shipping distances, higher fuel consumption and escalating insurance premiums have combined to create sustained upward pressure on transport costs.

The World Bank's Global Supply Chain Stress Index provides a useful indicator of these trends. The index tracks disruptions by measuring delays and congestion across global container movements. It captures system-wide inefficiencies in maritime trade and provides a high-frequency signal of supply chain pressure.

Stress levels peaked sharply in late 2021 and early 2022 during pandemic-related disruptions, before easing through 2023. However, from late 2023 onwards, supply chain pressures have begun to build again, with the index rising and reaching a new peak by the end of 2024, underscoring the renewed fragility of global shipping networks.

The Global Supply Chain Stress Index illustrates multiple stress level peaks underscoring the fragility of global shipping networks



Source: World Bank

FUTURE RISKS AND OPPORTUNITIES FOR THE SUPPLY CHAIN

Declining populations and the sustainability of rural road funding

- Declining populations across regional and remote Australia are placing increasing strain on local governments responsible for maintaining the majority of the road network with shrinking rate bases. In rural and remote areas, the cost of maintaining a kilometre of local road is typically shared across fewer than five people, compared to around 175 people in metropolitan regions.⁴⁵
- At the same time, traditional funding approaches such as Cost-Benefit Analysis tend to favour high-traffic corridors, making it difficult for low-volume rural roads to secure investment, despite their critical role in supporting agricultural productivity and connecting grain to markets. These structural pressures are being compounded by the rising cost of labour and materials, combined with limited access to local resources such as quarries.
- Limited alternative revenue streams further highlight the divide, with metropolitan councils able to generate significant income from sources such as parking, while regional councils operate with far fewer options. Together, these trends point to a funding model that is increasingly unsustainable without new approaches to support rural road networks into the future.

Decarbonisation

- The transition to low emission vehicles remains a significant challenge for the agriculture industry. Reducing the road transport industry's emissions has been identified as a key element in achieving the Commonwealth Government's emissions reduction target of 62-70% below 2005 levels by 2035 and reaching net zero emissions by 2050. Freight accounts for over 5% of Australia's total emissions.
- Electric or hydrogen technology is not yet commercially viable for long haul trucking despite the progress made to date for shorter haul freight vehicles. It also appears highly likely that the shift to low carbon freight modes such as batteries or hydrogen will significantly increase the weight of vehicles, further exacerbating challenges arising from existing mass limits on road networks. The grain industry will require significant capital investment into charging infrastructure and bridge upgrades in grain growing regions.
- There are concerns the early rollout of infrastructure is more likely to be in metropolitan areas which may lead to an inequity of access in regional areas where uptake may be slower. Without a clear pathway to decarbonisation, grain growers and freight operators risk investing in trucks and infrastructure that will later become obsolete.

Autonomous technology

- Driverless autonomous heavy vehicles are expected to be initially adopted on long haul freight routes, to shuttle grain on geofenced routes from hub to hub such as silos to port, or as part of a convoy with traditional heavy vehicles, expanding to fully autonomous end to end trips by 2040.⁴¹
- Autonomous heavy vehicles can operate without the constraints of driver fatigue and skills shortages, which have traditionally impeded the freight industry, reducing operator error and allowing trucks to operate 24 hours a day. In addition to improving productivity, this could substantially improve safety: international evidence suggests that human error may be a factor in more than 90% of crashes, with driver distraction a significant contributor.⁴⁶
- Similarly, automation could play an important role in addressing rail driver shortages. The 2023 Rail Workforce – An Analytical Overview report, prepared by the UK's National Skills Academy for Rail for the Australasian Railway Association, highlights approximately 35% of the current rail workforce is projected to retire by 2035, with nearly one-third of train drivers already over the age of 50.⁴⁷

Sorghum action - Matthew Burkitt (NSW)





4 **AUSTRALIAN GRAIN MARKETS**

Australia grows much more grain than it consumes each year. With grain products part of staple diets for humans and animals around the world, this makes the Australian grain industry a major contributor to domestic and regional food security.

The Australian grain industry is a customer-focused industry with a complex and sophisticated structure to provide high quality food and fuel inputs, tailored to multiple specifications, for customers in markets around the world.

Australia exports grain to over 50 countries. This diverse mix of customers is an important element of navigating an increasingly complex and volatile global trading environment, where uncertainty is the new normal.

STATE OF THE INDUSTRY IN 2026

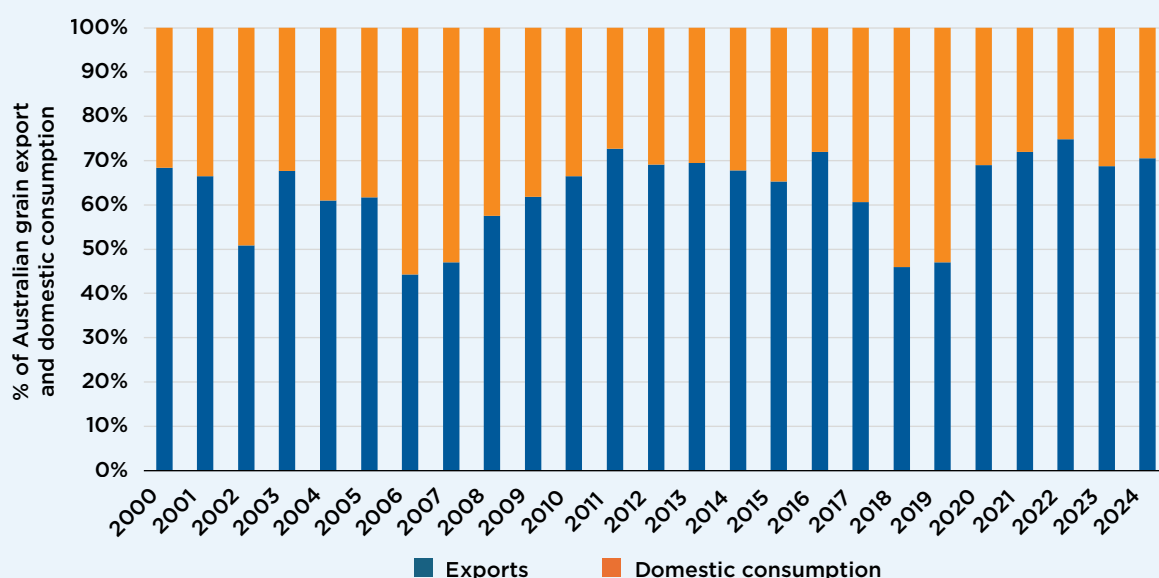
The five years to 2026 have been characterised by an increasingly complex and uncertain trading environment for Australian grain.

Global markets have been shaped by heightened geopolitical tensions, ongoing supply chain disruptions, and a renewed rise in protectionist and interventionist trade policies. Together, these

are challenging the stability and predictability that grain exporters have historically relied upon.

This period has underscored both the resilience of the Australian grain industry and the growing importance of adaptable trade and supply chain settings to manage volatility and maintain competitiveness.

Australian grain supplies a diverse range of domestic and international markets



Source: USDA

Throughout this period, Australian growers and their supply chain have continued to service a diverse mix of domestic and export markets, supplying grain to local feed, food, and processing sectors while maintaining Australia's position as a reliable supplier to international customers.

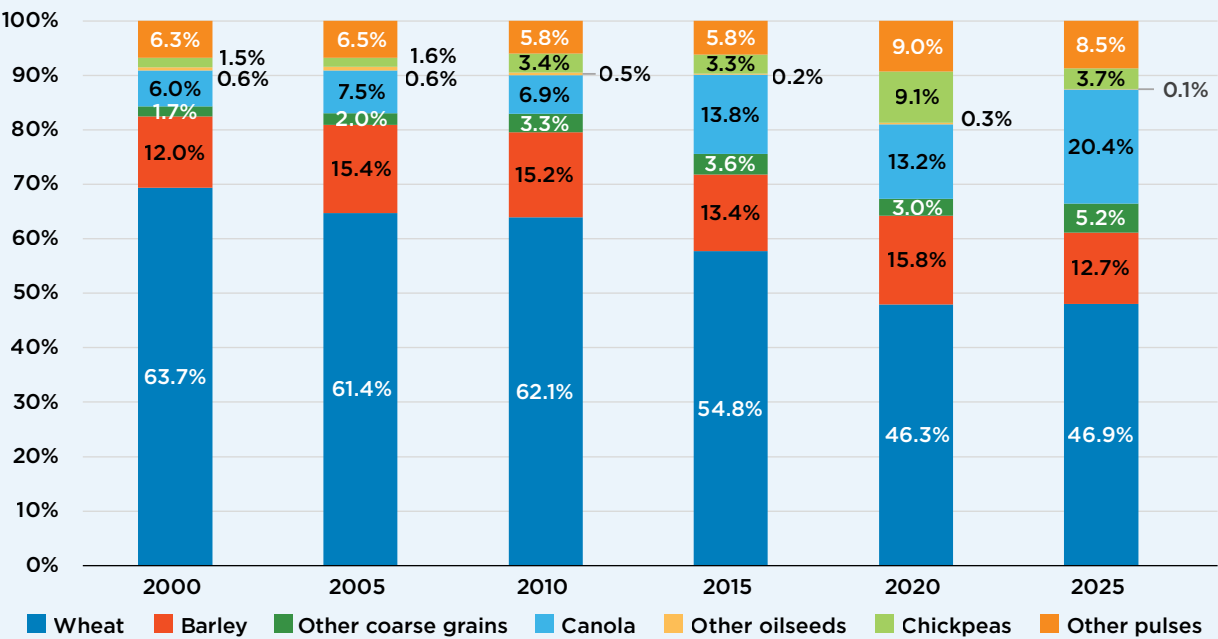
Grain exports grew at an average annual rate of 9% in real value terms between 2004-05 and 2023-24, making it Australia's fastest-growing agriculture export segment.¹¹

Australia's grain exports have increased steadily since 2000, rising from approximately 15-20 million metric tonnes in the 1990s to an estimated 39.6 million metric tonnes in 2024-25.

The proportion of Australia's production that is exported, and its contribution to global trade, varies depending on seasonal production dynamics and international trade. On average, Australia supplies about 10% of global wheat exports, and around 20% of barley and canola exports. Australia's share of global trade in pulses is relatively high due to Australia's low domestic consumption and competing international producers focused on servicing their own domestic markets.⁴⁸



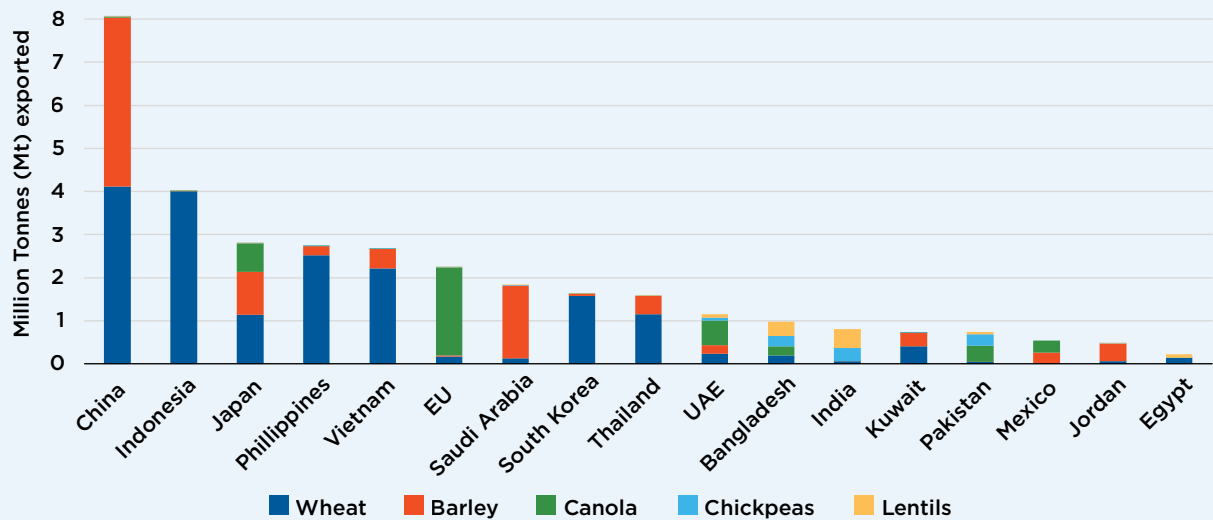
Composition of Australian grain exports (5 year average values)



ABARES Agricultural Commodities Report

Market diversification remains a key strategy for managing risk associated with shifting demand. While China remains Australia’s largest export market, the grain industry has significantly diversified its markets in recent years and now sells grains to over 50 countries.⁴⁹

China remains Australia’s largest export market, while grain exports now reach over 50 countries (5 year average, 2020-2024)

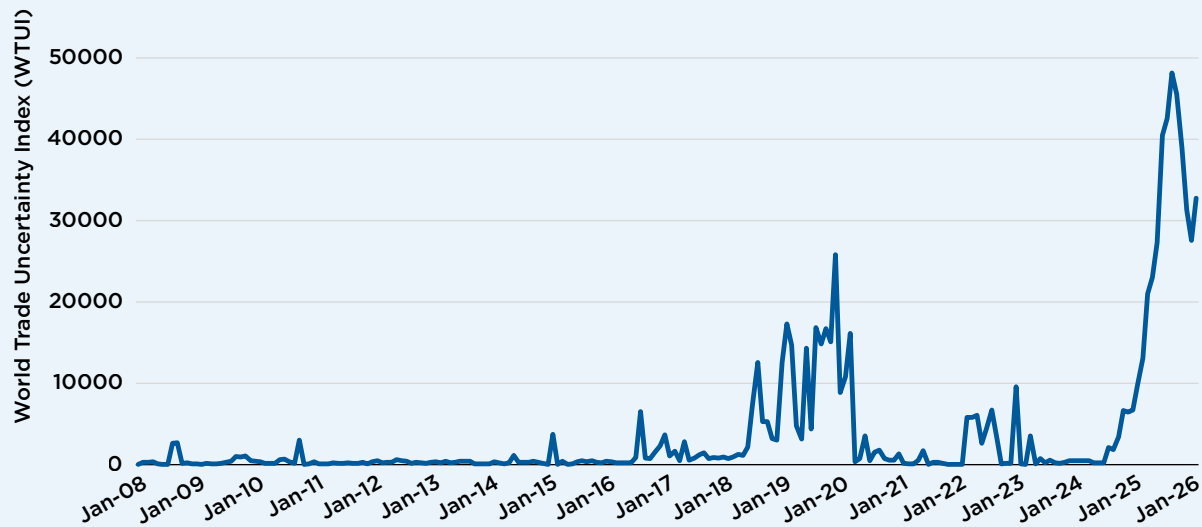


ABARES Trade dashboard

TREND: Sharply increased global volatility

The World Trade Uncertainty Index shows trade-related uncertainty rose sharply in 2025. A series of unpredictable United States (US) policy decisions, together with other factors, have pushed trade uncertainty to historic highs, creating significant challenges for international commerce.

Policy decisions by the US, along with other factors, have pushed the World Trade Uncertainty Index to historic highs



Source: WTUI

US tariffs

Since 2025, the US has significantly expanded tariffs, introducing a baseline tariff of around 10% on all imports and substantially higher duties on targeted partners and products.

Although the US is not a major direct market for Australian grain exports, its new tariffs have reshaped global grain flows. For example, the US raised tariffs as high as 145% on China, which resulted in retaliatory tariffs imposed by China on US farm products, which redirected large volumes of US grain from China into alternative destinations, particularly across Southeast Asia.

This increased competition in Australia's key export markets has been further intensified by new trade agreements. For example, several Southeast Asian nations including Indonesia, Thailand and the Philippines have committed to purchasing additional US agricultural commodities to reduce tariffs imposed on them by the US.

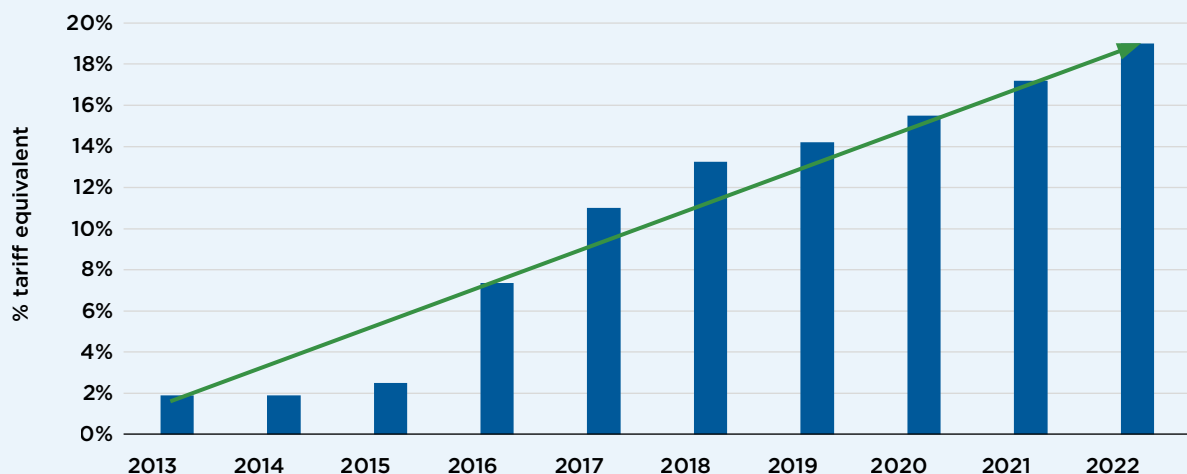
Non-tariff measures

Non-tariff measures (NTMs) continue to act as a major constraint on trade. The Grain Trade Australia Grains NTMs Project identified 90 barriers across 17 markets in 2021, including restrictive labelling, testing, and phytosanitary requirements that can delay or block market access.⁵⁰

ABARES estimates NTMs imposed costs on Australian agricultural exports equivalent to a 19% tariff in 2022. These impacts have increased almost tenfold over the previous decade.

While sustainability is being increasingly integrated into the marketing and procurement practices of global grain supply chain actors, the opportunities for Australian growers to directly capitalise on these trends are currently limited in scope and scale.

The average tariff equivalent of NTMs for Australian agricultural exporters has increased almost tenfold over the past decade



Source: ABARES Insights

TREND: Sustainability reporting by global grain supply chains

This heightened sustainability focus is driven by growing transparency expectations around attributes like low-emissions production, reduced environmental impact, and evidence of human rights safeguards. These requirements are often formalised through reporting mechanisms such as the International Sustainability and Carbon Certification (ISCC) program.

Beyond ISCC certification, the last five years have seen many large multinational grain buyers and processors develop their own bespoke sustainability frameworks and sourcing policies. Examples include Cargill's SustainConnect program and GrainCorp's Next program, both of which launched in 2024 and are focused on canola.

The ability of Australian growers to secure sustainability-linked premiums is typically constrained to select crops like canola, with smaller, direct supply chain programs emerging for other commodities such as barley. In these cases, corporate buyers engage directly with growers to market the sustainability credentials of the grain, though tangible price premiums are not always achieved.

Another driver of increased sustainability reporting has been the introduction of mandatory climate-related financial disclosure requirements for large companies in Australia, including major grain supply chain stakeholders such as banks and bulk handlers. This will indirectly affect growers as these downstream organisations must now report on the sustainability credentials of their inputs, including grain. These requirements came into effect in 2025 and the impact on growers is yet to be quantified.

As focus on sustainability attributes continues to grow, improving international market access for Australian agricultural products will require credible, industry driven sustainability credentials. The Grain Sustainability Framework (GSF) is a key initiative that supports this goal by providing a consistent and evidence-based approach to measuring and improving the sustainability performance of Australian grain.



Promise! - Harry Freeman (NSW)

Grain Sustainability Framework

The Grain Sustainability Framework (GSF) is an industry led initiative established by GrainGrowers and Grain Producers Australia to provide a consistent and credible approach to measuring and reporting sustainability performance across the Australian grains sector.

Its purpose is to support long-term industry sustainability by using robust data to track environmental, social and economic outcomes, demonstrate progress over time, and respond to evolving market and stakeholder expectations.

The GSF does not prescribe farming practices or advocate policy positions. It provides a transparent reporting mechanism to track progress over time, showcase strengths and identify areas for improvement. The GSF currently prioritises on-farm sustainability reporting, recognising that farm level practices underpin value chain performance, with a longer term intention to expand to whole of value chain reporting.

Governance

The GSF operates under a governance structure to ensure independence, rigour and industry alignment. Oversight is provided by the Grain Sustainability Framework Council, which holds overall accountability, supported by a skills based Steering Group responsible for GSF design and development. This structure is complemented by expert working groups as required, industry stakeholders and a dedicated secretariat function, delivering operational and strategic support. Together, these functions ensure the GSF reflects grower priorities, incorporates technical expertise, and aligns with sector sustainability issues.

Four operating principles underpin the GSF: integrity, relevance, accountability and continuous improvement, guiding both its development and reporting approach.

Material topics and structure

The GSF is structured around the four reporting themes of Planet, People, Product and Prosperity. Topic selection was informed by a comprehensive materiality assessment involving extensive stakeholder consultation

and evaluation of financial impact, regulatory relevance, public interest and industry influence.

In total, 21 topics have been identified, with current reporting against 12 topics. These include soil health, biodiversity, greenhouse gas emissions, workforce wellbeing, diversity, grain integrity, productivity and climate adaptation. Remaining topics such as waste, governance and biosecurity, have been identified for future development as data maturity improves.

Reporting

The 2026 inaugural GSF Annual Report establishes a baseline for sustainability performance. It consolidates data from multiple sources to provide a consistent view of industry performance over time. Reporting highlights strong performance in key areas. Adoption of a core soil health practice is widespread, with 87% of growers using zero or low tillage, while total net emissions and emissions intensity has declined from baseline levels. Grain integrity remains a strength, with 99.1% compliance with maximum residue limits, supporting Australia's reputation in global markets.

At the same time, the report identifies data gaps and improvement opportunities, particularly in areas such as soil carbon measures, waste management, workforce diversity and social metrics.

Next steps

The GSF will continue to evolve. Key priorities include progressing towards comprehensive reporting across all topics, strengthening and formalising data collection, and building confidence among stakeholders and customers through high-quality, evidence-based reporting.

Future development will also consider formal external assurance and progression toward full value chain reporting. Continued stakeholder engagement and periodic materiality reviews will ensure the GSF remains relevant, credible and responsive to industry and market needs.

ACKNOWLEDGEMENT: The descriptions of Australian grain attributes in this chapter are sourced from the Australian Export Grains Innovation Centre (AEGIC). AEGIC has since integrated with Grains Australia. For more information see www.grainsaustralia.com.au

Wheat markets

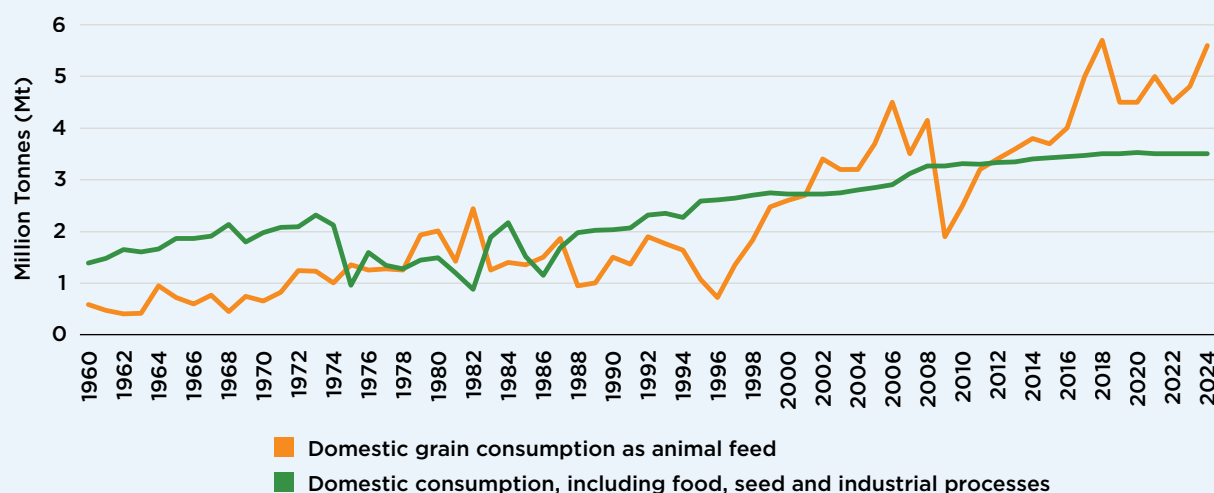
Australian wheat has continued to service a diverse mix of domestic and international end uses, reflecting both the versatility of the crop and the adaptability of the grain supply chain.

Domestically, most wheat used in Australia for human consumption is milled into flour for making bread and a wide range of food products including biscuits, cakes, pastries, noodles, and pasta. There are three main flour millers in Australia: Mauri, Allied Pinnacle and Manildra Group. Most of their operations are in eastern

Australia, where food products are manufactured for the major population centres.

Strong population growth, underpinned by elevated immigration, continues to support steady increases in domestic demand for milled wheat products.⁴⁹

Strong population growth continues to support increases in domestic food demand while the expansion of intensive livestock industries has increased demand for feed grain

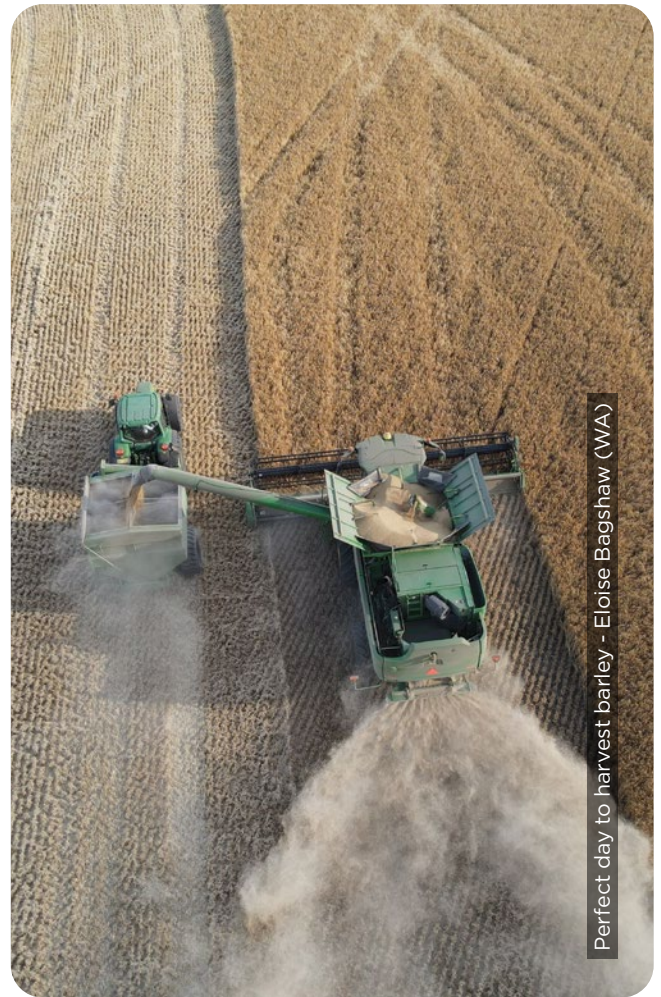


Source: USDA

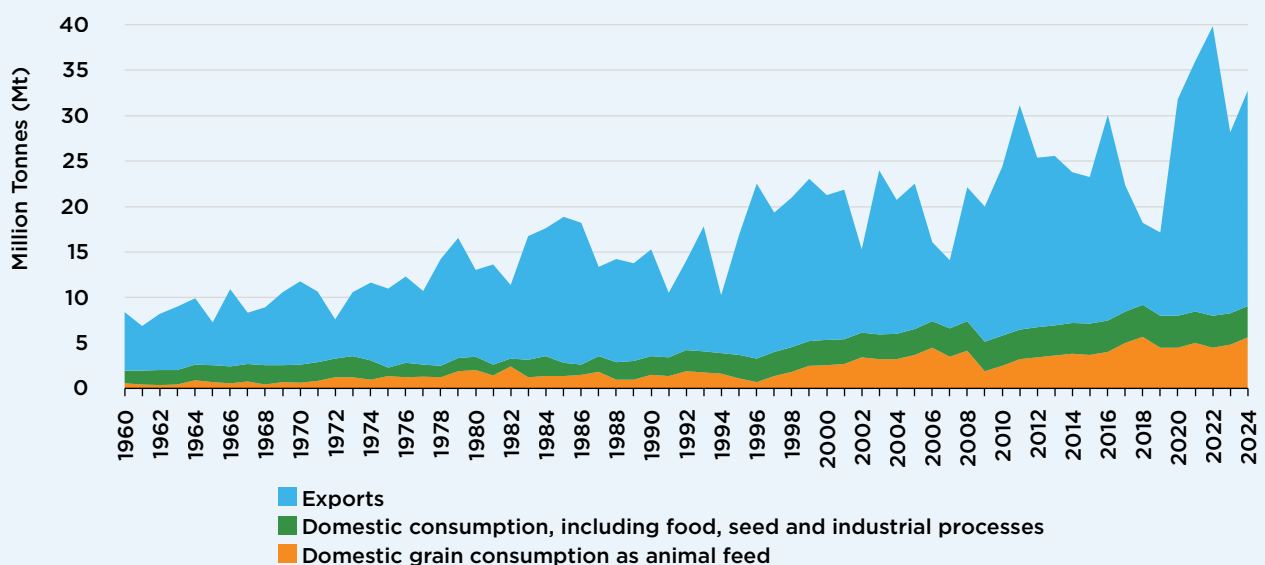
TREND: Growing domestic animal feed markets

The domestic animal feed sector is an increasingly important destination for Australian grain, driven by the continued expansion of intensive livestock industries. While traditional sectors such as beef and dairy cattle remain the largest consumers of feed grain, demand from poultry and pig production has grown strongly in recent decades, reflecting a broader shift toward more intensive and vertically integrated production systems. In particular, chicken consumption has more than doubled over the past 30 years, with Australians now consuming over 50 kilograms per person annually, making it the nation's most consumed meat protein.⁵¹ This structural shift has significantly increased demand for grain-based feed.

Demand for feed grain is also highly sensitive to seasonal conditions. During dry periods, reduced pasture availability forces graziers to rely more heavily on supplementary grain feeding or to move stock into feedlots, increasing demand for grain-based feed.



The domestic animal feed sector is an increasingly important destination for Australian grains

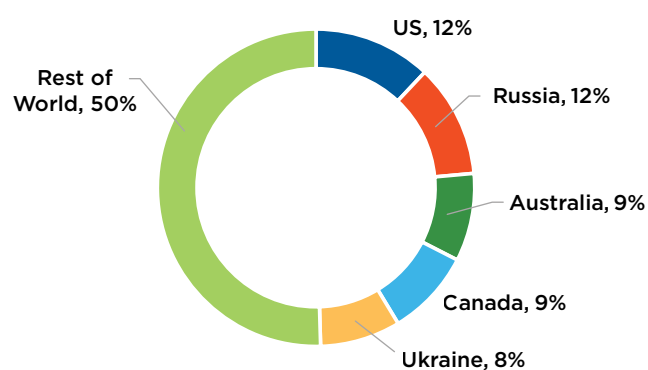


Source: USDA

Over the past decade, Australia has also consistently ranked among the world's leading wheat exporters, shipping an average of around 20 million tonnes per year which accounts for roughly 70% of national production. This makes Australia one of the top five global exporters and the largest in the Southern Hemisphere, highlighting the industry's strong export orientation and its critical role in supplying international markets.

Australia exports wheat to over 50 different nations,⁴⁹ however most Australian wheat exports are directed to Southeast and North Asia, where it is highly valued for its quality and suitability for noodle production. These markets continue to underpin Australia's export profile, supported by strong demand for wheat-based food products and established trading relationships.

Australia is among the world's top 5 wheat exporters (average 2015-2024)



Source: UN Comtrade, USDA



Pure gold - Stewart Hamilton (VIC)

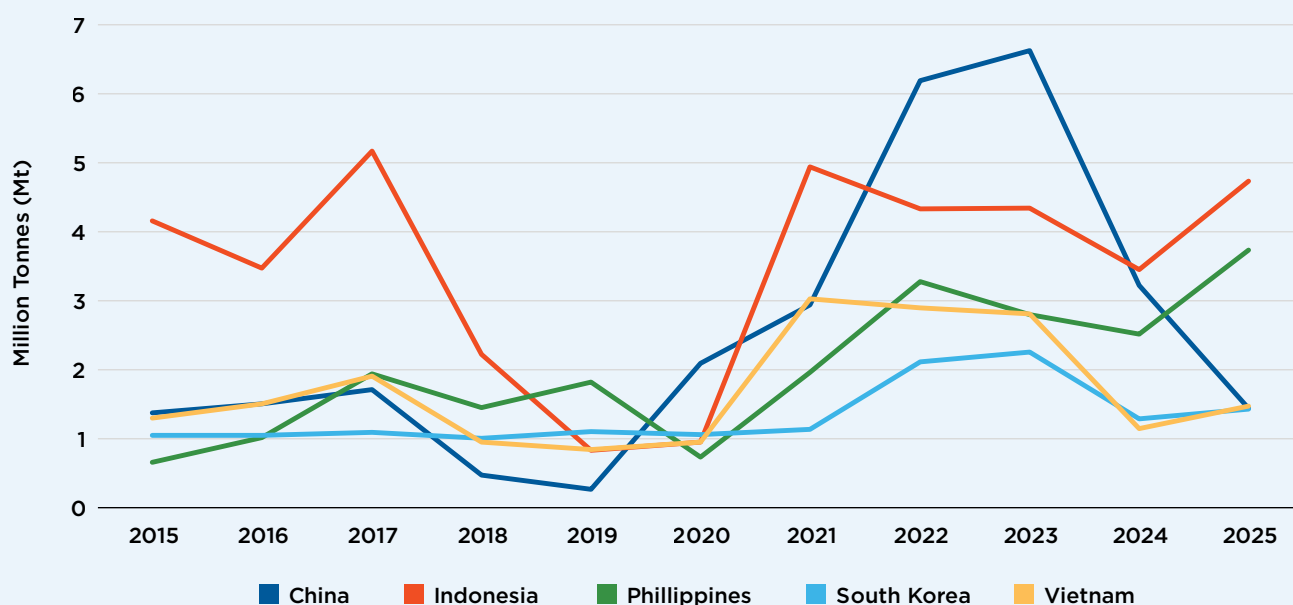
China has been a significant market in recent years, importing large volumes of Australian grain even during the period of barley tariffs. However, demand has softened more recently, with exports declining in 2024-25. This reflects a combination of record domestic production, slower economic growth and a policy shift toward greater grain self-sufficiency.

Indonesia remains a cornerstone of Australia's wheat exports and, following substantial

investment in domestic milling capacity, was the largest export destination in 2025.⁴⁹ Australian wheat is well suited to Indonesia's processing requirements, reinforcing its position in this key market.

The Philippines has emerged as a major growth market, ranking second in 2025. Australia supplied more than 99% of the Philippines' feed wheat imports in 2024-25.⁵²

Shifting demand reshapes Australia's top wheat export markets



Source: AEGIC



Golden hour over the lupins - Chelsea Gordon (NSW)

Australia as a trusted partner in food security in Southeast Asia

Australian grain plays a vital role in supporting food security across Southeast Asia. The region continues to face persistent food insecurity despite strong economic growth over the past two decades.

While undernourishment has significantly declined, micronutrient deficiencies continue to disproportionately impact vulnerable populations. Key demographics such as young children, adolescent girls and pregnant women often face significant barriers to accessing adequate and nutritious food. For instance, almost half of all children in Southeast Asia are affected by at least one form of micronutrient deficiency and over a quarter experience stunted growth.⁵³

Similarly, food affordability remains a critical issue. In the Philippines, households spend approximately 30% of their income on food,⁵⁴ while low-income families in Indonesia allocate as much as 64% of their household budgets to basic nutrition.⁵⁵ This high expenditure burden increases the risk of undernutrition, especially when supply disruptions or price spikes occur.

At the same time, the region is increasingly vulnerable to climate-related disruptions that further threaten domestic food production and availability. Many Southeast Asian nations are increasingly experiencing extreme weather events such as shifting rainfall patterns and flooding, which undermine agricultural production. The impact of climate volatility was highlighted in 2023, when a severe El Niño event coupled with record-high temperatures caused prolonged droughts, delayed harvests, and significantly reduced rice yields, resulting in shortages of rice.

Population growth will add further pressure to this already critical issue. Southeast Asia's

population is projected to increase from 670 million in 2020 to 750 million by 2035, with total food demand expected to increase by 40% by 2050.⁵⁶ Meeting this demand amid increasing climate volatility and resource constraints will require a coordinated approach to strengthen regional food systems.

Australian wheat is prized for its noodle-making qualities and is the preferred choice for flour millers across the region who use Australian grain to produce affordable, versatile, and culturally significant staples. From bánh mì in Vietnam to mee goreng in Indonesia, Australian wheat is a key ingredient in many of Southeast Asia's most iconic and widely consumed dishes.

Australian wheat also supports food affordability and accessibility. The majority of exports to Southeast Asia are used to produce noodles, a staple food that is both filling and low-cost, providing an essential source of energy for families on limited budgets. Instant noodles, in particular, offer a shelf-stable and easily prepared meal option, making them well-suited for food reserves and crisis response. The importance of strengthening food reserves was underscored in the 2023 ASEAN Leaders' Declaration on Food Security and Nutrition, which identified emergency preparedness as a key regional priority.⁵⁷

Through its grain exports, Australia contributes not only to everyday nutrition across Southeast Asia but also to broader efforts to build resilient food systems, improve public health outcomes, and promote long-term regional stability.

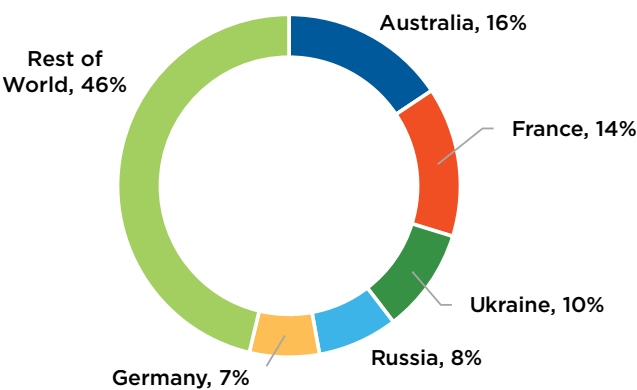
Barley markets

Barley plays an important dual role in Australia’s domestic market, supplying both the brewing and livestock sectors.

A significant share of production is used as feed grain, supporting Australia’s intensive livestock industries, including beef, dairy, pork and poultry, where it provides a reliable and cost-effective source of energy. At the same time, malting barley is a key input into Australia’s brewing industry, forming the backbone of beer production and contributing to a well-established malting and processing sector. Smaller volumes are also used in food products such as cereals and health foods.

Australia is also one of the world’s largest barley exporters.

Australia is among the world’s top 5 barley exporters (average 2015-2024)



Source: UN Comtrade

Depending on the year, Australian barley exports regularly exceed 50% of our annual production. Our contribution to global trade varies and is around 20% of the feed barley traded and 40% of malt barley.

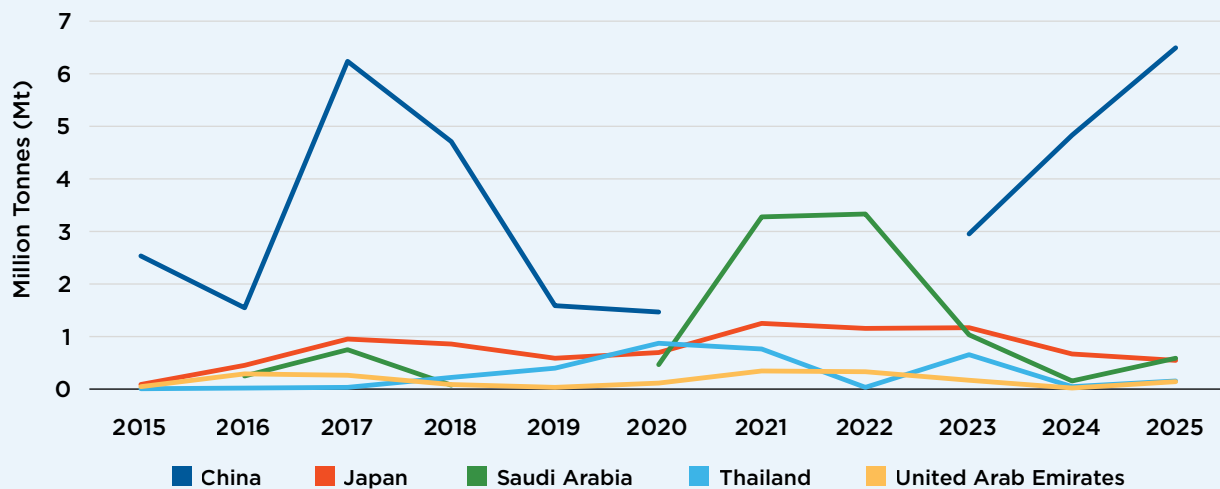
Growth in export malt demand has been moderated in recent years by a global downturn in beer consumption, which has affected brewing volumes and malt demand in key markets.

At the same time, feed barley demand has fluctuated in response to seasonal conditions, drought impacts, and changes in livestock production both domestically and offshore.

Over the past five years, the Australian barley industry has operated in a particularly complex and volatile market environment. The imposition of tariffs of around 80% by China in 2020 saw Australia temporarily lose its largest and most valuable export market, forcing a rapid, albeit temporary redirection of trade flows. While access to the Chinese market resumed in August 2023, this highlighted the industry’s exposure to geopolitical and trade policy risk.

During the period of restricted access to China, Saudi Arabia emerged as Australia’s largest barley export market. Australian feed-grade barley is used alongside locally grown green forage in intensive feeding systems. However, exports to Saudi Arabia have declined following the resumption of trade with China and the Saudi Government’s announcement that domestic green forage production will be phased out by 2027 as part of national water conservation efforts.

Australia's top export destinations for barley saw Saudi Arabia emerge as the largest market during a period of restricted access to China



Source: AEGIC



On the chew - Cleo Jefferis (WA)

Oilseed markets

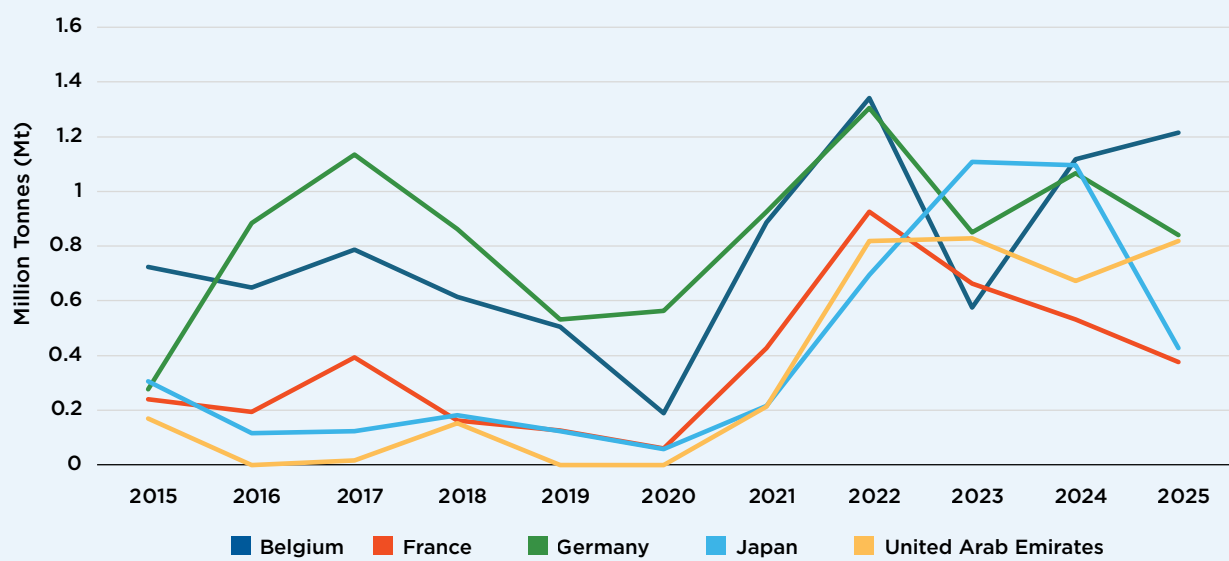
Canola is Australia’s primary oilseed crop, underpinning both domestic processing and export markets.

In addition to being used as a vegetable oil domestically, it is also increasingly in demand internationally as a feedstock for LCLF. The crushing process also produces canola meal, a valuable high-protein by-product widely used in animal feed.

About 85% of Australia’s canola production is exported.

The European Union (EU) is the largest export market, with demand driven by biofuel use as part of the EU Renewable Energy Directive. Australian canola is grown using sustainable farming systems and is certified as meeting sustainability criteria for EU biofuel requirements.

Top 5 export destinations for Australian canola, driven by demand for EU biofuel



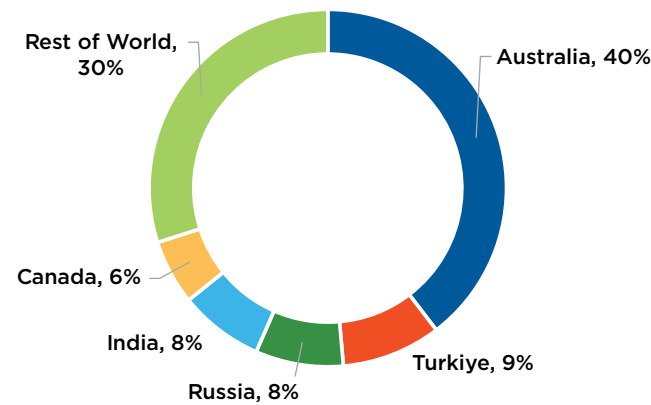
Source: AEGIC



Pulse markets

Around 90% of Australian pulses are exported, reflecting the sector’s strong orientation toward international markets.

Australia dominates global chickpea exports (average 2015-2024)



Source: UN Comtrade

The majority of these exports are destined for South Asia and the Middle East, where Australian pulses are highly valued for use in a wide range of food and food ingredient applications. Strong demand in these regions is underpinned by population growth and dietary preferences, with pulses serving as an affordable, accessible, and shelf-stable source of protein. Their long

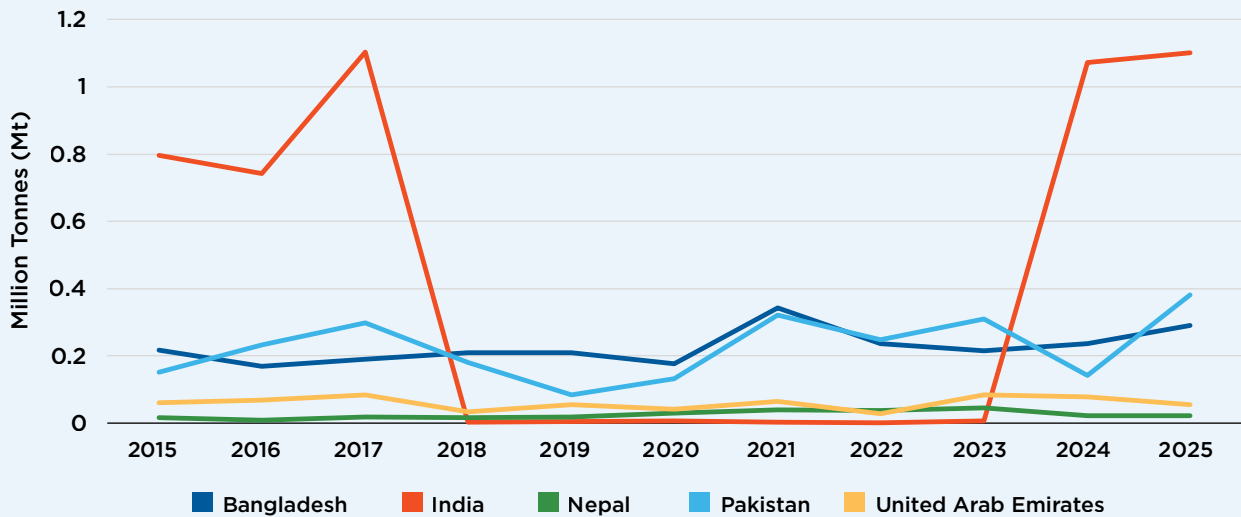
storage life, nutritional value, and versatility in traditional diets make them a critical staple in many households, particularly in regions where food security and price sensitivity are key considerations. In addition, pulses are increasingly being used in value-added products, including snacks and plant-based foods, reflecting evolving consumer preferences and expanding end-use markets.

Australia dominates global chickpea exports, providing about 40% of global supply. Australia exported a record 2.1 million tonnes of chickpeas in 2024-25, with 70% of the volume going to India.⁵⁸

However, Australian export growth has been particularly sensitive to fluctuations in Indian domestic production and tariff policy; the size of the Indian market is so large that changes to it have profound impacts on supply and demand elsewhere.

India has for many years been the largest export market for Australian chickpeas. That market disappeared with the introduction of 66% tariffs in 2018 and surged back when tariffs were temporarily lifted in 2024. The tariff-free period ended in March 2025 with the rate adjusted to 10%.⁵⁸

India is within the top 5 export destinations for Australian chickpeas, however it has been impacted by tariffs



Source: AEGIC

RISKS AND OPPORTUNITIES FOR SELLING AUSTRALIAN GRAIN

Uncertainty is the new normal

- US tariffs and growing protectionism in many markets are contributing to significant volatility, while new trading blocs are emerging between other markets.
- Continuing global geopolitical instability, conflicts and trade fragmentation continue to threaten market access for grain and supply chain predictability for critical grain inputs.

Increased domestic grain consumption

- Australia's domestic grain market is forecast to grow strongly in the years ahead, driven by changing diets and a rising population. Over the period to 2030 feed grain demand is projected to rise significantly, with an additional 2.24 to 2.48 million tonnes of grain required for livestock production alone (compared to 2018).
- Similarly, population growth and evolving consumption patterns are projected to result in increasing demand of 0.64 to 0.77 million metric tonnes of grain demand for grain-based food products.⁵⁹

Growth of plant protein market

- Currently valued at US\$24.1 billion in 2024, the global market for plant proteins will nearly triple by 2032, as demand for plant-based protein ingredients expands across food, feed and industrial uses.⁶⁰
- For Australian growers, this creates a pathway to capture greater value from crops that are traditionally exported in bulk, by supporting the development of domestic processing and ingredient manufacturing. This has the potential to deliver more diverse and stable demand, improve price certainty, and reduce exposure to global commodity volatility.

Growth of African market

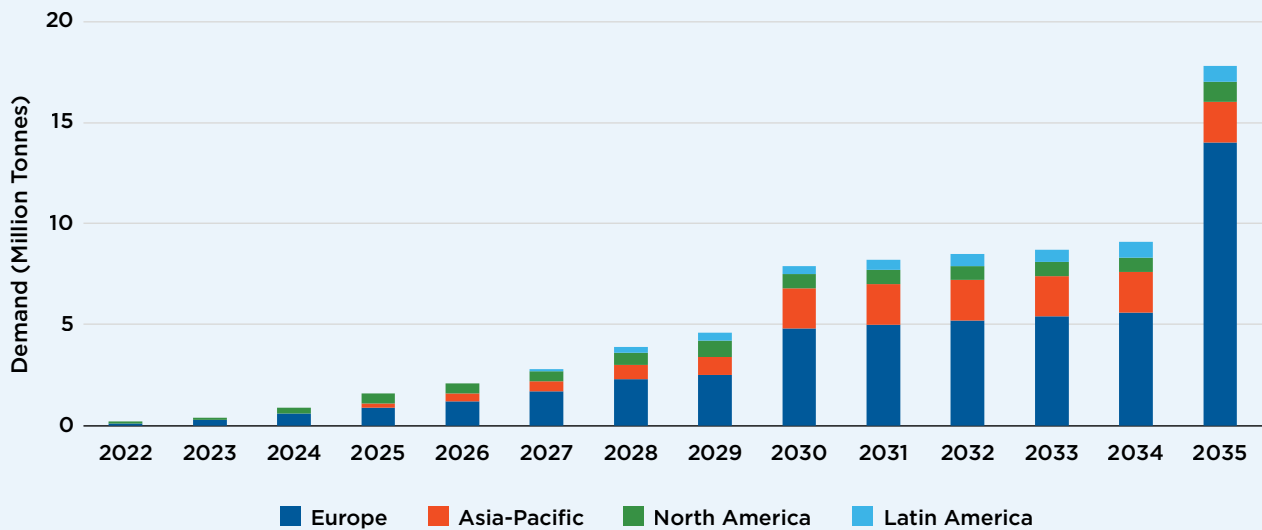
- By 2035, Africa's population is expected to increase by nearly 400 million people, accounting for around half of global population growth.

- Rapid urbanisation and rising incomes are also driving shifts in dietary patterns, increasing demand for grain-based foods such as bread, noodles and processed products.
- These trends are expected to outpace local production capacity in many regions, creating a growing need for reliable grain imports alongside improvements in domestic supply chains.
- East African markets have a geographic advantage for Australia due to relatively shorter shipping distances compared to other major exporters.⁶¹ Australia's reputation as a consistent supplier of high-quality grain, combined with its counter-cyclical production relative to the Northern Hemisphere, positions it well to service this growing demand.

Development of a domestic low carbon liquid fuel (LCLF) industry

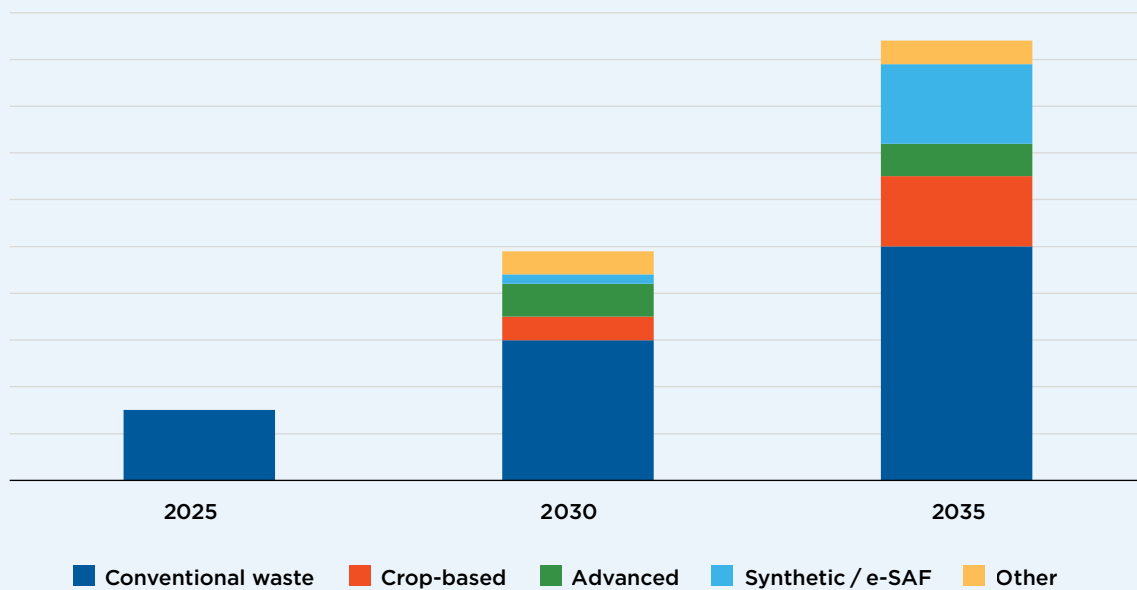
- The Australian Government has committed \$1.1 billion over 10 years to accelerate domestic production of LCLFs, including renewable diesel, sustainable aviation fuel, biodiesel, and e-fuels.
- Grain and oilseeds have been identified as potential feedstocks for LCLF production, as well as sugarcane, forestry residues, speciality crops, waste and other biomass sources.
- Commercial-scale LCLF production is expected by 2029, with about 2 billion litres of project capacity already in development. The Clean Energy Finance Corporation estimates the Australian LCLF industry could reach \$36 billion by 2050, driven by global and domestic decarbonisation targets.⁶²
- Global demand was expected to reach 1.9 million tonnes in 2025, 7.8 million tonnes by 2030, and more than double again to 17.6 million tonnes by 2035.⁶³
- This new LCLF industry should create a new market for Australian grain growers.

Global demand for LCLF is expected to more than double again by 2030,
primarily driven by the EU



Source: Argus Media

Crop-based feedstock will continue to increase to 2035,
creating a new market for Australian grain growers



Source: Argus Media

APPENDIX A

SUMMARY TRENDS, RISKS AND OPPORTUNITIES

Grains grown: Australia grows on average 60 million tonnes of wheat, barley, oilseeds, pulses and other grains valued at \$27 billion each year.

Trends	Risks and opportunities
• Volume of grain grown is increasing faster than area of grain grown • Increasing diversity of crop production • Exponential increase in canola production • Change in pulse mix: more lentils, chickpeas and faba beans; less lupins and field peas	• Evolving customer needs • Climate change and extreme weather • Biosecurity

Grain growers: 37,000 growers grow grain in Australia on 18,000 farms.

Trends	Risks and opportunities
• Consolidation of farms and fewer growers but increasing specialisation in grain production • Increasing numbers of injuries and fatalities	• Opportunity to increase grower knowledge of the value of their human resources and skills to manage them
• Long term growth in productivity, demonstrating adoption of technology and adaption to changes in an environment of increased climate challenges	• Encouraging access to technologies and on-farm innovation • Plant breeding advances • Mobile blackspots & internet connectivity
• More grain grown with every mm of rainfall • Increasing land use competition and diversified income	• Multiple evolving and emerging risks and opportunities
• Slowly increasing profit and rate of return, but with sharp downturns in 2024	• Input costs and availability • Volatile market prices

Grain supply chain: Getting Australia's high-quality grain efficiently to market is essential for the industry's competitiveness.

Trends	Risks and opportunities
• Continuing increase in on-farm storage capacity • Rising domestic container charges • Global volatility is leading to increased shipping costs	• Declining populations and the sustainability of rural road funding • Decarbonisation • Autonomous technology

Grain customers: Australia grows much more grain than it consumes each year. With grain products part of staple diets for humans and animals around the world, the Australian grain industry is a major contributor to domestic and international food security.

Trends	Risks and opportunities
• Sharply increased global volatility • Growing domestic animal feed markets • Increasing sustainability expectations and reporting requirements	• Domestic and international food security guarantor • Growing plant protein ingredient market • Emerging bio-products, bioenergy and grain-based manufacturing • Growing African market • Ongoing competition from other major grain exporters

APPENDIX

GRAIN INDUSTRY ACRONYM GUIDE

ABARES Australian Bureau of Agricultural and Resource Economics and Sciences
ABS Australian Bureau of Statistics
ACCC Australian Competition and Consumer Commission
ACCU Australian Carbon Credit Units
A-CEPA Indonesia-Australia Comprehensive Economic Partnership Agreement
AEGIC Australian Export Grains Innovation Centre
AgForce AgForce Queensland Farmers
AFIA Australian Fodder Industry Association
AGEC Australian Grain Exporters Council
AIA Agricultural Innovation Australia
ANAO Australian National Audit Office
ANZFTA Australia-New Zealand Free Trade Agreement
AOF Australian Oilseeds Federation
APVMA Australian Pesticide and Veterinary Medicines Authority
ASEAN Association of South-East Asian Nations
ASF Australian Seed Federation
ASX Australian Stock Exchange
BoM Bureau of Meteorology
CBH Co operative Bulk Handling Group
CER Clean Energy Regulator
ChAFTA China-Australia Free Trade Agreement
CIGI Canadian International Grains Institute

CPTPP Comprehensive and Progressive Agreement for the Trans Pacific Partnership
CRC Cooperative Research Centre
CRSPI Climate Research Strategy for Primary Industries
CSG Coal seam gas
CSIRO Commonwealth Scientific and Industrial Research Organisation
DAFF Department of Agriculture, Fisheries and Forestry
DFAT Department of Foreign Affairs and Trade
DTI Daily Target Intake
EPPR Emergency Plant Pest Response
ERF Emissions Reduction Fund
EU European Union
FAO Food and Agriculture Organization of the United Nations
FAS USDA Foreign Agricultural Service
FHA Farm Household Allowance
FIRB Foreign Investment Review Board
FMD Farm Management Deposits
FOB Free on Board
FSANZ Food Standards Australia New Zealand
GAL Grains Australia Limited
GCC Gulf Cooperation Council
GDP Gross domestic product
GFR Gross farm receipts
G-GAF Grains Greenhouse Gas Accounting Framework
GHG Greenhouse gas
GIMAF Grains Industry Market Access Forum

GIWA Grain Industry Association of Western Australia
GLNC Grains and Legumes Nutrition Council
GE Genetically edited
GM Genetically modified
GMO Genetically modified organism
GPA Grain Producers Australia
GPPEICC Grain and Plant Product Export Industry Consultative Committee
GPS Global Positioning System
GPSA Grain Producers South Australia
GRDC Grains Research and Development Corporation
GSF Grain Sustainability Framework
GSR Growing season rainfall
GTA Grain Trade Australia
GVP Gross value of production
HVNL Heavy Vehicle National Law
ICT Information and Communication Technologies
IMF International Monetary Fund
IoT Internet of Things
IQ In quota
ISCC International Sustainability and Carbon Certification
JAEPa Japan-Australia Economic Partnership Agreement
KAFTA Korea-Australia Free Trade Agreement
LCLF Low-carbon liquid fuel(s)
MENA Middle East and North Africa
MLA Meat and Livestock Australia
MPCI Multi peril crop insurance
NBN National Broadband Network
NFF National Farmers Federation

NHVR National Heavy Vehicle Regulator

NLTN National Land Transport Network

NRS National Residue Survey

NSW Farmers NSW Farmers Association

NTM Non-tariff measure(s)

NWPGP National Working Party on Grain Protection

OECD Organisation for Economic Co operation and Development

OGTR Office of the Gene Technology Regulator

OOQ Out of quota

PGA Pastoralists and Graziers Association of Western Australia

PHA Plant Health Australia

PIRD Act Primary Industries Research and Development Act 1989

PSE Producer support estimate

R&D Research and development

RCEP Regional Comprehensive Economic Partnership

RD&E Research, development and extension

RDC Research and Development Corporation

RGA Ricegrowers' Association of Australia

RIC Regional Investment Corporation

SAF Sustainable Aviation Fuel

SAGO Saudi Arabian Grains Organisation

SGA Sustainable Grains Australia

SFO State farming organisation

SPS Sanitary and Phytosanitary

Tas Farmers Tasmanian Farmers and Graziers Association

TFP Total factor productivity

TPP Trans Pacific Partnership

UAE United Arab Emirates

UK FTA United Kingdom–Australia Free Trade Agreement

UN United Nations

US United States

USDA United States Department of Agriculture

USG Universal service guarantee

USO Universal service obligation

VCU Verified Carbon Units

VER Voluntary Emissions Reductions

VFF Victorian Farmers Federation

VRT Variable Rate Technology

WAFarmers Western Australia Farmers Federation

WHO World Health Organization

WISA Wheat Industry Special Account

WTO World Trade Organization

WUE Water use efficiency

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 1800 620 519

 enquiry@graingrowers.com.au

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