



Australian Export Grains Innovation Centre



Anticipated
trends in global
consumption

BARLEY

2030

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Introduction

The Australian Export Grains Innovation Centre (AEGIC) has examined a range of Australia's barley markets to provide insights to Australian industry on their current and future barley needs. A summary of our key findings and recommendations to Australian industry stakeholders are documented in this report. We hope this will contribute to industry discussions and help guide Australian grower, trade, research, classification, and investment decisions.

This report has been prepared during a tumultuous time for the Australian barley industry. A number of significant events have impacted Australian barley trade.

Effective 19 May 2020, China imposed a dumping margin of up to 73.6% and a subsidy margin of up to 6.9% on all barley imported from Australia. Earlier this year the United States (US) and China signed a trade deal favouring the entry of a range of US goods, including grains, which will disadvantage Australian products. The frequency and longevity of these type of events eventually may necessitate change in some of the projections and recommendations in this report.



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Recommendations

Determine the value, volume and durability of alternate barley markets that can utilise all, or part of, the Australian barley export volume.

It is important that growers have access to a diversity of markets to reduce reliance on a single dominant buyer. The importance of this has been emphasised by the imposition of anti-dumping and countervailing duties on Australian barley exported to China. This is increasingly important longer term, particularly if barley production is greater than 6 million metric tonnes per annum.

An improved understanding of the size and requirements for potential new barley uses will benefit the Australian industry e.g. high beta glucan barley for human health, combination food uses such as barley and rice mixes and high beta glucan pet feed.

ACTION 1: The Australian industry, supported by government, should conduct a comprehensive review of alternative market opportunities. The review should include detailed market analysis including the value and volume of opportunity, the suitability of Australian barley for key end uses, and any market access constraints.

Continue technical engagement with Chinese maltsters and brewers.

Towards 2030, China will remain the largest malting barley importer globally by a large margin and Australian barley quality already is well suited to Chinese requirements. There is substantial mutual benefit for the Chinese to remain informed of Australia's barley offering and for the Australian industry to continue to understand the evolving Chinese malting and brewing needs. If current tariffs are removed or modified, users of barley in China will be more likely to quickly recommence purchase of Australian barley if they remain informed about new Australian barley characteristics, how best to use these new varieties, and the market opportunities to purchase from Australia. The Australian industry will also remain mindful of the needs of Chinese brewers and maltsters when making breeding and classification decisions.

ACTION 2: Develop a technical engagement strategy for China with involvement from participants at multiple levels within the Australian industry. The strategy should focus on regular and positive engagement that delivers against Chinese needs.

Conduct technical engagement with maltsters and brewers in the growing markets of India and Vietnam.

Australia will need to maintain and grow its presence in important markets outside China. Users of barley in these markets require information about Australian barley characteristics, functionality, and new varieties. The Australian industry will need to make breeding and classification decisions accounting for the needs of brewers and maltsters in these markets.

ACTION 3: Develop a technical engagement strategy for the Indian and Vietnam markets with involvement from participants at multiple levels within the Australian industry. The strategy should focus on regular and positive engagement that delivers against their needs.

Develop and extend information to target potential users of Australian feed barley in South East Asia at a regional level.

Develop and present information packages that suit specific regions and animal types that reinforce the quality, value and fit of Australian feed barley. This will support greater use of Australian barley in monogastric and ruminant rations.

Target markets include those with higher pig and poultry (including duck) populations and/or markets where distortionary domestic corn policies improve the competitiveness of barley. The Indonesian Australian – Comprehensive Economic Partnership Agreement (IA-CEPA) provides an immediate opportunity in Indonesia.

Information packages will inform South East Asian (SEA) industries about the quality and technical characteristics of Australian barley in a range of feed applications. The information exchanges could include:

- least cost ration formulation strategies;
- shadow pricing discovery;
- presentations at major technical conferences, round table discussions and workshops; and
- extension campaigns in SEA industry literature e.g. livestock feed journals and magazines.

ACTION 4: Develop information and extension strategies that demonstrate the quality and value of Australian barley in the manufacture of feed rations and thereby stimulate demand for Australian barley.





Opportunities for Australian barley towards 2030

China remains important to Australia's barley industry

- Once tariffs are reduced and/or trade access is restored, Australia will face increased pressure for a share of the Chinese malting market from other barley exporting countries, particularly Canada, Ukraine, Argentina and potentially Russia, as the volume of barley available for export from these countries grows.
- China will remain the dominant market for malting barley, with imports expected to remain at current levels within the range of 2 to 3mmt per annum.
- Over the next decade Chinese barley imports may increase by up to 2.1mmt but the increase will be mostly feed barley, highly variable, and strongly affected by government policies directed at other feed grains, particularly corn.

Japan's demand for high quality food and feed barley will remain

- Demand for malt in Japan is unlikely to change substantially from current demands over the next decade. Reducing per capita alcohol consumption will be countered to some degree by a change in tax law that will make full malt beer more affordable.
- Intense competition amongst Japanese breweries in the stagnant market is driving innovation in the sector to make more effective use of lower cost ingredients. This may provide opportunities for Australian and other cheaper origin malt to gain market share at the expense of higher priced Canadian alternatives.
- Increasing health-consciousness is a robust and durable trend in Japan. Australia's export grains sector could position itself to gain advantage from this trend. An example is the growing health interest in barley beta-glucan for its health benefits.
- Japan's requirement for a small amount of barley for specialised shōchū manufacture will continue to provide a high value opportunity.
- Australia's historic position of holding a high market share in Japan's feed barley imports will need to be supported through high quality and competitive pricing against EU (European Union) and Black Sea competitors.

Saudi Arabia's demand for feed barley is declining but remains significant

- The Saudi Arabian government continues its endeavours to increase the use of domestically processed compound feed instead of imported raw barley. However, there remains a degree of resistance to this change, particularly amongst politically influential Bedouin livestock users who maintain the historical practice of direct feeding unprocessed barley to their livestock.
- If China continues to impose high tariffs on Australian barley, then Saudi Arabia is the only destination capable of utilising the volume displaced by Chinese barriers.

Vietnam's growing beer consumption creates new opportunities

- Beer production will increase by a modest 2 to 3 per cent per annum to 2030. This will continue to create strong demand for imported malt and malting barley.
- A forecast increase of Vietnam's malting capacity towards 2030, will see malting barley imports increase to about 330,000mt, nearly double that required in 2019.
- Malt imports will be needed to supplement domestic malt production as it adjusts to keep pace with rising demand.
- Smaller opportunities may exist for feed barley, but this will be opportunistic and dependent on the price relativity against corn as the major feed ingredient.

Indian maltsters purchase more malting barley

- India is likely to continue to produce barley that is better suited to feed rather than malting use. India's downward trend in barley production is likely to continue, necessitating increased imports of malting barley.
- Beer will capture an increasing market share over time as consumers move away from higher alcohol beverages like spirits to lower alcohol beverages like beer.
- By 2030 India is likely to import 450,000 to 650,000mt of malting barley with the Australian industry well positioned to supply a significant share of the imports.

Malt is the main game in South Korea

- Towards 2030, South Korea provides more opportunity for Australian exports of malt than malting barley, but limited growth in Korean beer consumption constrains market prospects.
- Opportunities for Australian feed barley in the South Korean feed market are likely to remain limited. South Korean feed manufacturers favour wheat over barley as a cereal feed.

Other Middle East nations and Iran

- Other Middle East nations: including Kuwait, United Arab Emirates, Qatar, and Oman have historically used Australian barley for feeding livestock. Increasing demand across the Middle East and Iran will continue to be primarily serviced by Black Sea origins and Argentina. When Australian barley is cost competitive in the Saudi Arabian Government tender, it is generally cost competitive into many of these markets.

Thailand's feed barley use is an ongoing opportunity

- Thailand's feed industry is an ongoing opportunity for Australian feed barley, when it is price competitive against their domestic crops like corn, or when there is a gap between domestic corn production and animal feed requirements.

Indonesia and Philippines present new feed options

- As incomes and populations increase in Indonesia and the Philippines, feed demand will grow strongly to service growing meat consumption. Currently, government policies in both countries protect domestic corn producers against cheaper corn imports. Imported barley may be price competitive against higher priced domestic corn and could be an effective feed ingredient if local feed millers become familiar with its use.

South America

- Malting barley use and malting capacity in South America will continue to grow with barley sourced mainly from within the region (principally Argentina). Supply disruptions caused by adverse production conditions (floods and droughts) coupled with volatile government policies may shift production incentives away from barley, and so may offer occasional opportunities for Australian exports.

Sub-Saharan Africa

- Although South Africa is increasingly self-sufficient in barley, production volatility due to drought may provide occasional opportunities.
- Smaller opportunities may arise in countries such as Ethiopia. Some Australian malt is already being supplied to this market.



Barley on the world stage

Barley is losing ground compared with other grains and oilseeds

- Barley stands out amongst the major world cereals by having limited production growth over the past 20 years (Table 1). Total global barley production has remained flat and the total area harvested has declined by over 10 per cent.
- In contrast to the flat production of barley, total grain and oilseed production has increased steadily over the past 20 years and was 43 per cent higher in 2015-2019 compared with 2000-2004.
- Increased corn production over this period has made a large contribution to total grain and oilseed growth with production increasing by over 70 per cent. Corn area increased by nearly 40 per cent and total trade doubled.
- Despite flat production, barley trade has increased substantially. Barley trade is nearly 70 per cent higher in 2015-2019 compared with 2000-2004. However, even this impressive increase was less than the increase in total global grain and oilseeds trade and so barley's proportion of world trade has shrunk.

Table 1 Major movements in the production, area and trade in global grain and oilseeds over the past 20 years

Attribute	Five-year average		Total movement	Average annual growth	Proportional change
	2000-2004	2015-2019			
Barley					
Production (mmt)	141	147	6	0.3%	4.1%
Area harvested (m ha)	56	49	-6	-0.8%	-11.5%
Trade (mmt)	16	27	11	3.6%	67.7%
Grain and oilseeds*					
Production (mmt)	2,146	3,079	933	2.5%	43.5%
Area harvested (m ha)	789	895	106	0.8%	13.4%
Trade (mmt)	294	568	274	4.5%	93.1%
Wheat					
Production (mmt)	584	750	167	1.5%	28.6%
Area harvested (m ha)	213	220	6	0.2%	2.9%
Trade (mmt)	104	176	72	3.6%	69.0%
Corn					
Production (mmt)	628	1,091	463	3.8%	73.7%
Area harvested (m ha)	140	192	52	2.2%	37.3%
Trade (mmt)	75	151	76	4.7%	101.3%
Barley as proportion of world grain and oilseeds					
Production	6.6%	4.8%			
Area	7.1%	5.5%			
Trade	5.5%	4.8%			

*Grain and oilseeds include: wheat, corn, barley, sorghum, soybean, millet, mixed grain, oats, canola, sunflower, rice, rye.

Source USDA (United States Department of Agriculture) 2020

Chinese demand changed global barley production from 2013

- Prior to 2013 barley production in Canada, Russia, Ukraine and the European Union (EU) was undergoing a long-term decline (Figure 1). Reduced production was caused by a shrinking area (Table 2). Canada has seen the largest decrease in area of over 40%.

Table 2 Area of barley harvested in the main barley exporting countries*

Attribute	Australia	Canada	Russia	Ukraine	EU	Argentina
Average (m ha, 2000-2004)	4.0	4.0	9.3	4.2	14.0	0.3
Average (m ha, 2015-2019)	4.1	2.4	8.0	2.8	12.3	1.1
Total movement (m ha)	0.1	-1.7	-1.3	-1.4	-1.8	0.8
Average annual growth (% p.a.)	-0.1%	-3.6%	-1.0%	-2.8%	-1.0%	10.5%
Proportional change (%)	2.9%	-41.4%	-14.2%	-33.1%	-12.6%	299.2%

*Note: The six countries listed in the table accounted for 90 per cent of total world barley exports on average from 2000-2004 and 94 per cent from 2015-2019.

Source USDA 2020

- A significant rise in demand from China of over 5mmt after 2013 impacted long term production trends causing a slight upturn in production in Canada, Russia, Ukraine and the EU.
- Increased demand from China led to a period of higher global barley prices relative to other commodities. Barley prices had previously been on a long term decline (see Figure 2).
- Production trends for Australia and Argentina have been different to those of the other the major exporters:
 - Argentina’s production of barley increased 500 per cent, off a very low base (see Figure 1). An adjustment to export taxes and controls imposed by the Argentinian government changed the relative profitability of major crops produced in Argentina, first advantaging then disadvantaging barley.
 - Australian production increased 30 per cent after 2000. The increase in barley production in Australia occurred without an increase in the area harvested but seasonal conditions in some years particularly affected the volume of barley produced. After 2013, apart from the bumper year of 2016, barley production in Australia has been flat.

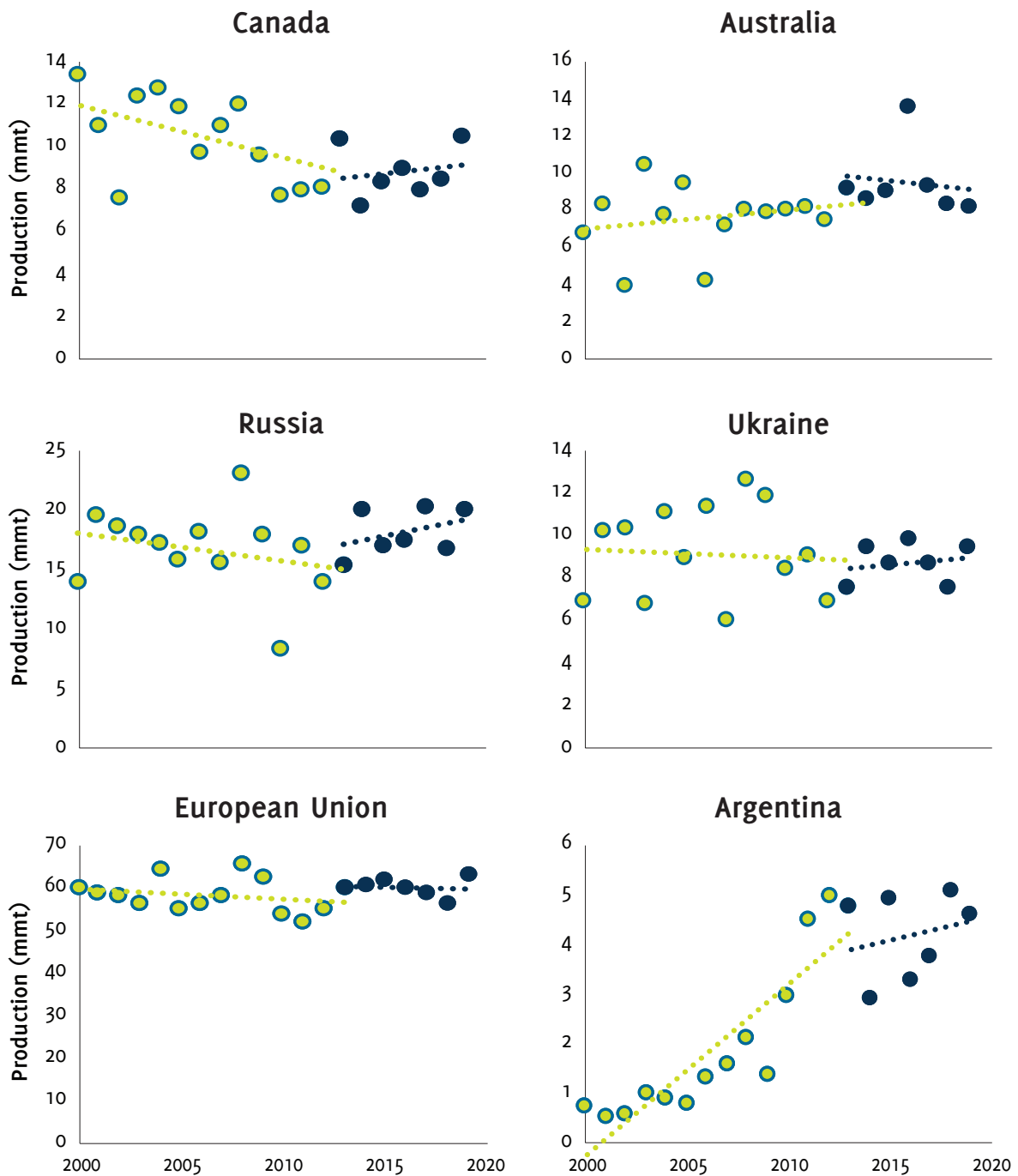


Figure 1 Trends in barley production for the six main barley exporting countries from 2000 to 2019. Lines fitted to the light-coloured dots represent production trend from 2000 to 2012. Lines fitted to the dark-coloured dots represents the trend from 2013 to 2019 when imports from China increased substantially.

Source: USDA 2020

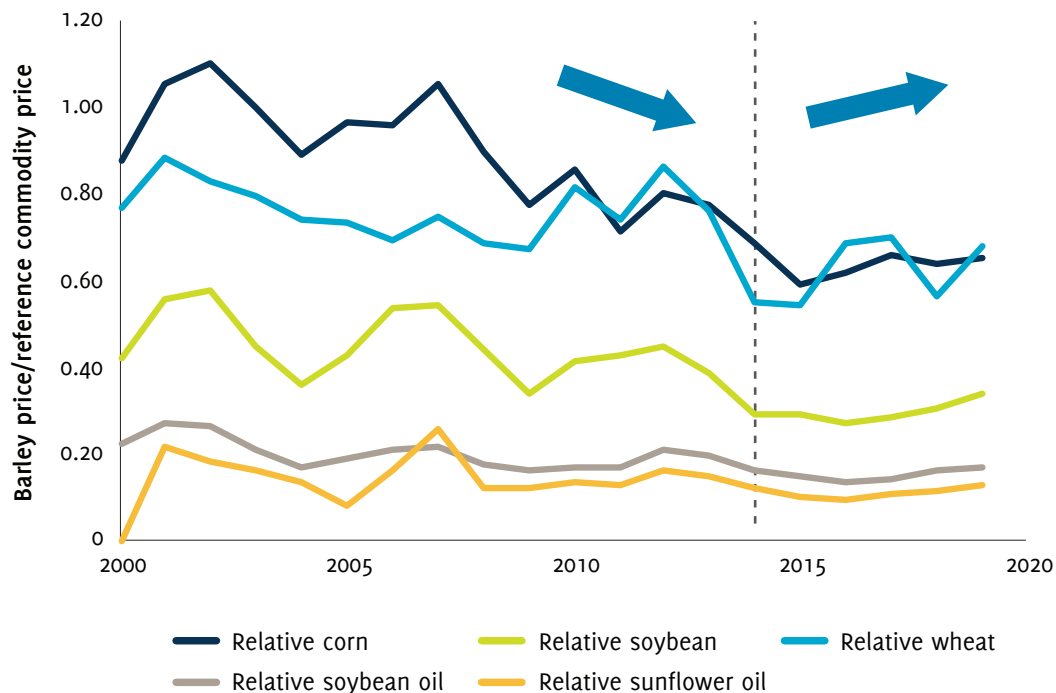


Figure 2 Average annual barley price relative to the price of other major grain and oilseed prices from 2000 to 2019

Canadian No.1 western barley, spot price.

US No.2 yellow corn, FOB (Free on Board) Gulf of Mexico, US price.

US soybeans, Chicago soybean futures contract (first contract forward) No. 2 yellow and par.

No.1 hard red winter wheat, ordinary protein, Kansas City.

Chicago soybean oil futures (first contract forward) exchange approved grades.

Sunflower oil, US export price from Gulf of Mexico.

Source: IMF (International Monetary Fund) 2020

- Barley prices will continue to be affected by Chinese government policy aimed at managing a range of domestic and international political concerns. Increased imports of corn and sorghum, as part of China’s Phase 1 trade deal with the United States that was ratified in 2020, is likely to lower demand for feed barley.
- Lower international demand for barley leading to lower prices may result in Australian growers, who depend on export markets, switching away from barley. This is also likely to occur in other exporting countries who may not benefit from the opportunity to sell more barley to China and where they already have profitable alternatives like sunflower, corn and canola. In these countries, a return to the long-term downward trend in barley area and production, seen prior to 2013, may occur.

Australia barley exports have increased, but its share of trade has fallen

- Domestic consumption of barley in Canada, Russia, Ukraine, and the EU is much less than their exports (10 to 50 per cent). This is also the case in Australia, although it is much more pronounced with exports being 140 per cent of domestic consumption.
- Given the relatively large domestic consumption in Canada, Russia, Ukraine and the EU, a small decrease in domestic consumption can have a magnified effect on exports (Table 3). For example, a relatively flat 5 per cent increase in production in Russia over the period 2000-2005 to 2015-2019, and an 11 per cent reduction in consumption led to a 140 per cent increase in exports.
- Over this same period (2000-2005 to 2015-2019), barley exports from Australia increased by 30 per cent, however, Australia's share of global trade in barley declined.
- Despite an overall decline in market share of total barley exports, Australia remains the largest malting barley exporter, accounting for more than 40 per cent of global exports (Figure 3).
- Australia exports twice as much feed barley than it does malting barley, and Australia accounts for about 20 per cent of total feed barley exports.

Table 3 Change in barley exports from major world barley exporting countries*

Attribute	Australia	Canada	Russia	Ukraine	EU	Argentina
Exports mmt (avg. 2000-2004)	4.3	1.3	1.9	2.5	4.5	0.2
Exports mmt (avg. 2015-2019)	5.6	1.9	4.7	4.5	6.8	2.9
Total movement mmt	1.4	0.6	2.7	2.0	2.3	2.7
Proportional change	32%	45%	141%	81%	51%	1492%
Share of exports (2000-2004)	29%	9%	13%	17%	31%	1%
Share of exports (2015-2019)	21%	7%	18%	17%	26%	11%
Direction of change in export share	↓	↓	↑	↔	↓	↑

*Note: The six countries listed in the table accounted for 90 per cent of total world barley exports on average from 2000-2004 and 94 per cent from 2015-2019.

Source USDA 2020

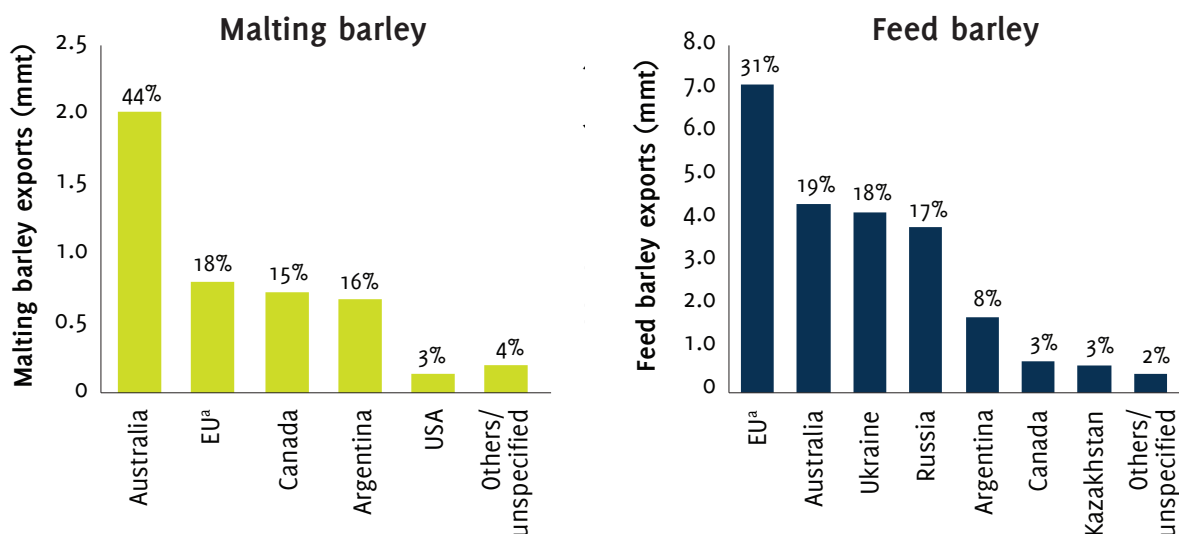


Figure 3 Average annual malting^b and feed^b barley exports by country (averaged from 2013/14 to 2016/17)

^a EU (28) including Croatia. Excludes intra-trade.

^b General purpose barley may sometimes be classified as either feed or malting (e.g. FAQ (Fair Average Quality) barley exported from Australia to China).

Source: IGC (International Grain Council)

Australian barley farmers are more exposed than their counterparts in other exporting countries

- Barley production and export markets are more important in Australia than in the other barley exporting countries, and the importance of exports has increased over the past 20 years, particularly in Western Australia.
- From 2000-2004 barley represented about 20 per cent of total grain and oilseed production in Australia, somewhat similar to most other barley exporting countries (Table 4). More recently (2015-2019) barley as a proportion of total grain and oilseed production in Australia increased to 25 per cent, but it has decreased in most other exporting countries.
- Similar trends have occurred in barley consumption and exports.

Table 4 The average percentage of barley relative to all other grain and oilseed crops* produced, consumed domestically, or exported for the six main barley exporting countries in two five-year periods from 2000 to 2019

Attribute	Production		Consumption		Export	
	2000-2004	2015-2019	2000-2004	2015-2019	2000-2004	2015-2019
Australia	21.3%	25.7%	21.3%	23.1%	19.8%	24.8%
Canada	19.4%	9.6%	24.9%	14.6%	5.4%	4.0%
Russia	22.0%	13.3%	21.3%	14.5%	25.4%	10.1%
Ukraine	25.0%	9.5%	22.8%	11.2%	30.1%	8.2%
EU	18.5%	16.3%	16.0%	13.5%	19.7%	16.6%
Argentina	0.7%	2.3%	1.3%	1.7%	0.3%	2.6%

*Grain and oilseeds include: wheat, corn, barley, sorghum, soybean, millet, mixed grain, oats, canola, sunflower, rice, rye.

Source USDA 2020

- Barley yields have increased at a slightly higher rate than wheat yields in Australia over the 40 years and barley has become a higher proportion of the harvested cereal area (Figure 4).

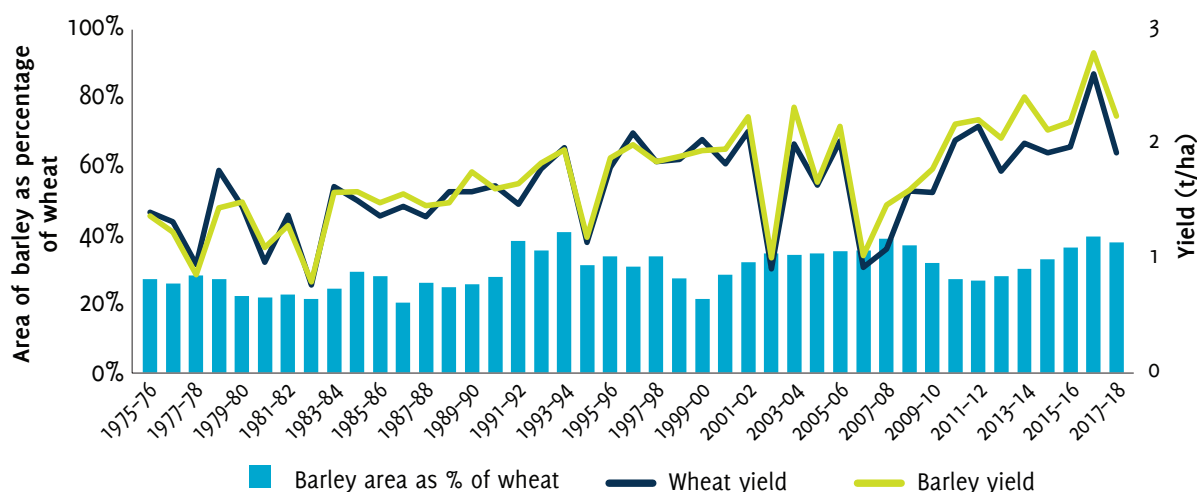


Figure 4 Area of barley as a percentage of wheat and yield by crop in Australia 1975-2018

Source: Source ABARES (Australian Bureau of Agricultural and Resource Economics and Sciences) 2020

Global barley buyers

Saudi Arabia and China account for over 40 per cent of world barley imports

- Most major importers (excluding trade within the EU) use barley as feed.
- China and Saudi Arabia dominate global barley imports, together accounting for 45 per cent of total world imports of barley (Figure 5).
- Since 2014 China has imported about 5-10 mmt of barley (Figure 6). It is the world's second largest importer, after Saudi Arabia (excluding intra-EU trade).
- The next largest barley importer, outside of EU, is Iran which imports just over 1 mmt (5 year average to 2018).

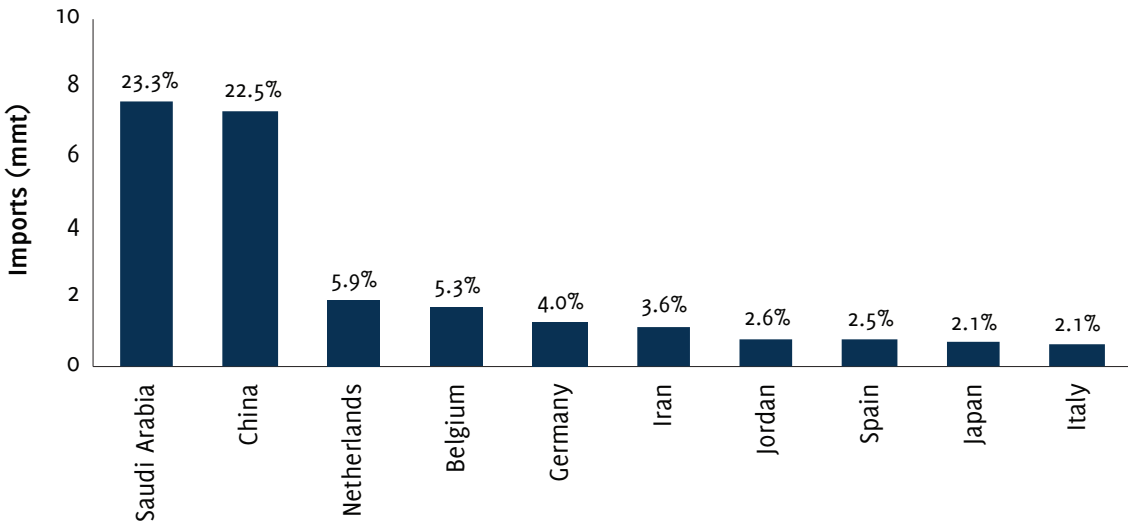


Figure 5 Annual barley imports (five-year average 2014-2018*) and percentage of total world imports for the top ten global barley importing countries

*Note differences are evident between Figure 5 and Figure 6. The data is from different sources and Saudi Arabia imported an unusually low amount of barley in 2018 (6.5mmt) which is not captured in Figure 6). Further, EU countries are specified separately in Figure 5 but collectively in Figure 6.

Source UN (United Nations) Comtrade, 2020

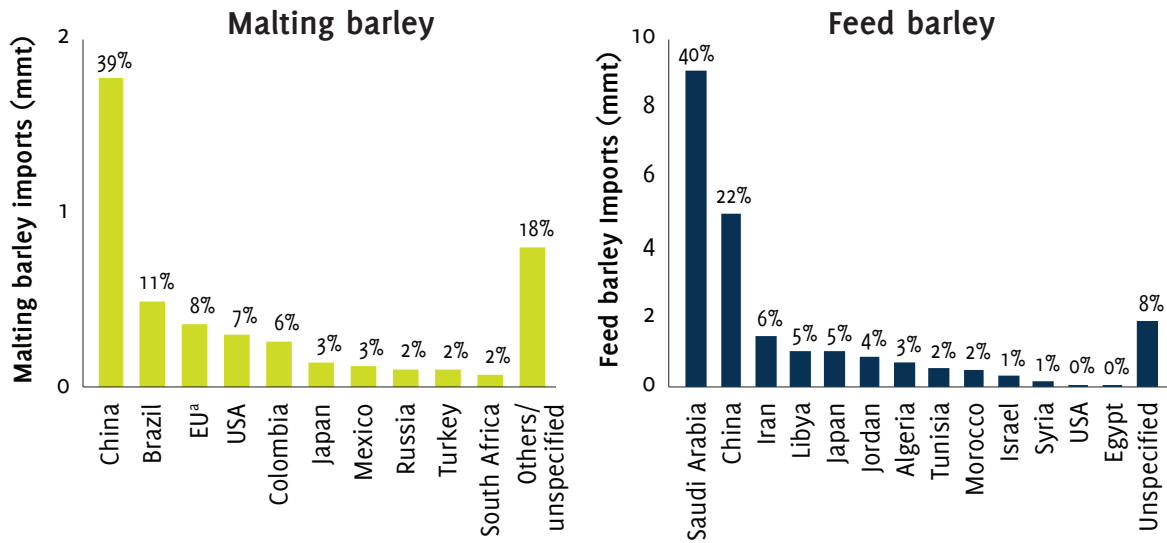


Figure 6 Average annual malting and feed barley imports by country (averaged from 2013/14 to 2016/17)^b

^a EU (28) including Croatia. Excludes intra-trade.

^b General purpose barley may sometimes be classified as either feed or malting (e.g. FAQ (Fair Average Quality) barley exported from Australia to China).

Source: IGC 2020

- Before 2013 China mostly imported barley for malting (Figure 7). After 2013, China's imports of barley more than doubled as purchases of barley for feed increased.

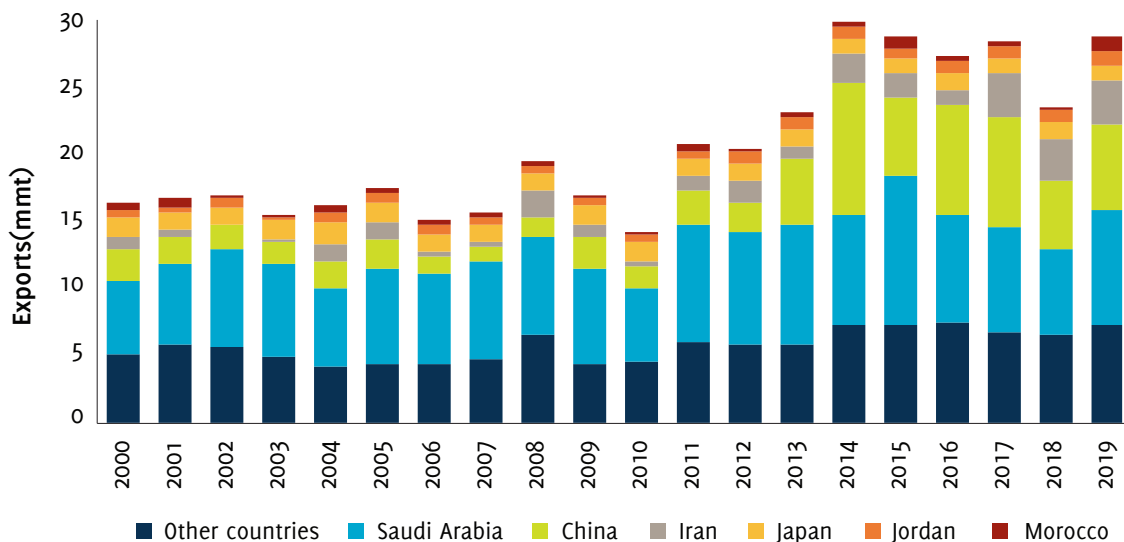


Figure 7 Quantity of barley imported by the major global importers from 2000 to 2019

Source USDA 2020

Global malt trade

China has become an important exporter of malt produced from imported malting barley

- The EU dominates malt exports (Figure 8).
- Brazil is the largest malt importer while Asia is the dominant malt importing region.
- China has emerged as an important malt exporter since 2007. Prior to this China was not a significant exporter of malt. Exports from China continue to grow and compete with Australian malt exports to Asia.
- Unlike other major exporters, malt in China is mainly produced from imported malting barley.

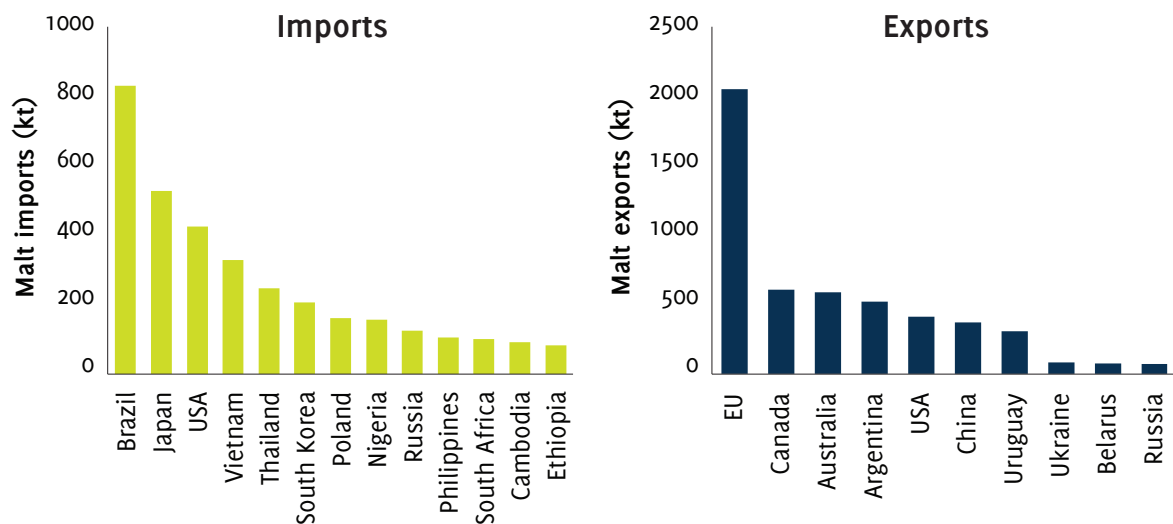


Figure 8 Major world importers and exporters of malted barley (excluding inter EU trade)

UN Comtrade 2020

Australian barley trade

China has been the biggest buyer of Australian barley since 2013

- Australia is the largest supplier of malting barley in the world, with most of Australia's malting barley being exported to China up until 2020. China has also been a major importer of Australian feed barley (Table 5).
- Most other markets primarily require feed barley, importing variable quantities.
- Japan has imported consistent quantities of malting and feed barley, with malting barley being used mostly for food.
- Indonesia has not been a significant importer of Australia barley, but the IA-CEPA provides an opportunity to use barley as an alternative feed grain in Indonesia's growing poultry industry.

Table 5 Australian feed and malting barley exports by destination from 2015 to 2019 (kt)^a

	2015		2016		2017		2018		2019	
	Feed	Malting	Feed	Malting	Feed	Malting	Feed	Malting	Feed	Malting
China	2169	1796	2131	1385	3705	2528	2832	1877	142	1445
Japan	196	51	968	90	860	92	723	125	466	110
Saudi Arabia	525	-	304	-	739	-	66	-	-	-
UAE	140	-	367	-	251	-	81	-	33	-
Kuwait	44	-	350	44	233	-	-	-	46	-
Thailand	17	1	11	8	19	3	151	61	382	8
Taiwan	31	4	39	1	49	2	29	-	31	-
Vietnam	14	9	18	17	31	66	3	108	34	97
South Korea	4	41	46	-	19	48	6	4	8	-
New Zealand	9	-	26	-	35	2	-	6	6	-
Other	51	82	51	1	98	47	31	1	63	-

^a Signify negligible quantities

Source ABS (Australian Bureau of Statistics) 2020



Australian barley suits a range of markets

- Towards 2030 the availability of large parcels of malting barley varieties with a varying quality profile range including fermentability (high and medium), malt extract (high), diastatic power and wort viscosity will be required to meet domestic and international market requirements.
- Australian barley is currently valued in a wide range of markets, often for different reasons. These include:
 - diversity of barley offerings (malting, Fair Average Quality (FAQ), feed) that suit different markets and functionality ranges;
 - a protein range that allows incorporation into a range of brewing streams;
 - an excellent safety record supported by strong regulation;
 - clean, bright and dry grain with low myco-toxicity that, when used whole or blended, improves food or feed safety;
 - Australia’s efficient and reliable supply pathways; and
 - a small but emerging phenomenon of barley in the health food market e.g. Australian BARLEYmax™ is a high fibre wholegrain with high levels of resistant starch.

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