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Australia

Grain and Feed Update

JULY 2014

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Report Highlights:
Australian grains production remains subject to seasonal uncertainties with an El Niño event and below average rainfall forecast for eastern Australia. The impact on grains production is considerable, with wheat production expected to fall by 9 per cent to 24.5 million tonnes, despite a two per cent expansion in the area harvested to 13.8 million hectares. Production of barley, sorghum and rice is similarly forecast to decline by 10 per cent, with the harvest area reduced for all three crops. However, better rains in late 2014 could improve the outlook for these crops. This report also surveys the use of grains as feed, the biofuels sector, regulation of GMO crops and recent developments in trade policy that will affect the Australian grains sector.

Post:
Canberra

Commodities:
Wheat

Barley

Sorghum

Rice, Milled

EXECUTIVE SUMMARY:

Australia is a relatively small producer of grains but a major exporter. Eastern Australia produces about 15 million tonnes of grain, with two thirds consumed domestically for livestock feed, human consumption and industrial uses, while the remaining one third is exported. Western Australia is the leading producer and typically exports 90 per cent of its grains production. Overall, Australia is a counter-cyclical grain producer with a natural freight advantage into the growing markets of Asia.

Australian grain production can be divided into winter crops such as wheat and barley, while summer crops include sorghum. These are grown over different climate zones and are subject to varying seasons and climate. Grains production in 2006-07 was almost 45 million tonnes, but widespread drought the following year reduced the crop to only 19 million tonnes. The outlook for 2014-15 is still unclear because the Bureau of Meteorology (BOM) has forecast a 70 per cent chance of an El Niño event in the second half of 2014, with resulting higher than average temperatures and low rainfall.

By July 2014, below average rainfall in northern NSW and Queensland had led to low upper layer soil moisture which would impact on grain supplies, At the same time, above average rainfall in southern Australia improved upper layer soil moisture and prospects in that region (Chart 1). The impact on grains production is still uncertain but wheat production is forecast to fall by 9 per cent to 24.5 million tonnes, despite a two per cent expansion in the area harvested to 13.8 million hectares. Production of barley, sorghum and rice is similarly forecast to decline by 10 per cent, with the harvest area reduced for all three crops. However, better rains in late 2014 could improve the outlook for these crops (Chart 2).

Wheat is the major grain crop in Australia and is generally used for human consumption, while coarse grains such as sorghum and barley are mainly used for livestock feed. Grain production underpins the domestic food processing sector, including the milling, malting, brewing and baking industries, while feed grains production supplies intensive beef, lamb, dairy, poultry and pork industries. In 2014, over 12 million tonnes of grain was consumed in the intensive livestock industries, which also exported to livestock industries in the region.

Over recent years the Australian grain industry has undergone significant changes including deregulation and ongoing consolidation across the supply chain from the farm sector to end users. There is no longer a central marketing body although regulations on storage, distribution and port access agreements are intended to ensure that grain growers face a competitive supply chain for their output. Australia is expected to move towards a Code of Conduct to govern grain distribution and away from mandatory access arrangements.

Further, over 2014, market access for Australian grain exports increased with the signing of free trade agreements with Korea and Japan, although much of the new market access will be phased in over a number of years, and considerable barriers still remain. A free trade agreement with China is still being negotiated and may be finalized by the end of the year. This report also briefly surveys the use of grains for animal feed, which accounts for over one third of total production, as well as for the biofuels sector. In addition, recent developments in research and development affecting the grains industry, as well as the current regulatory system for GMO crops are discussed.

Chart 1: Australian rainfall percentiles, three months to May 2014

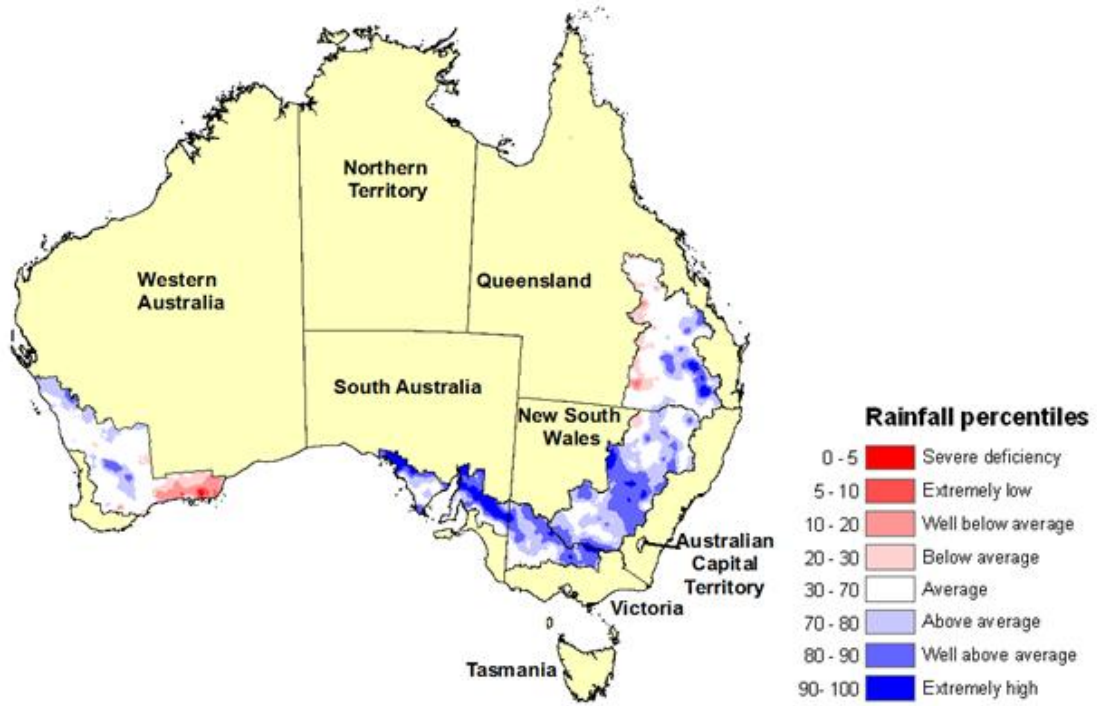
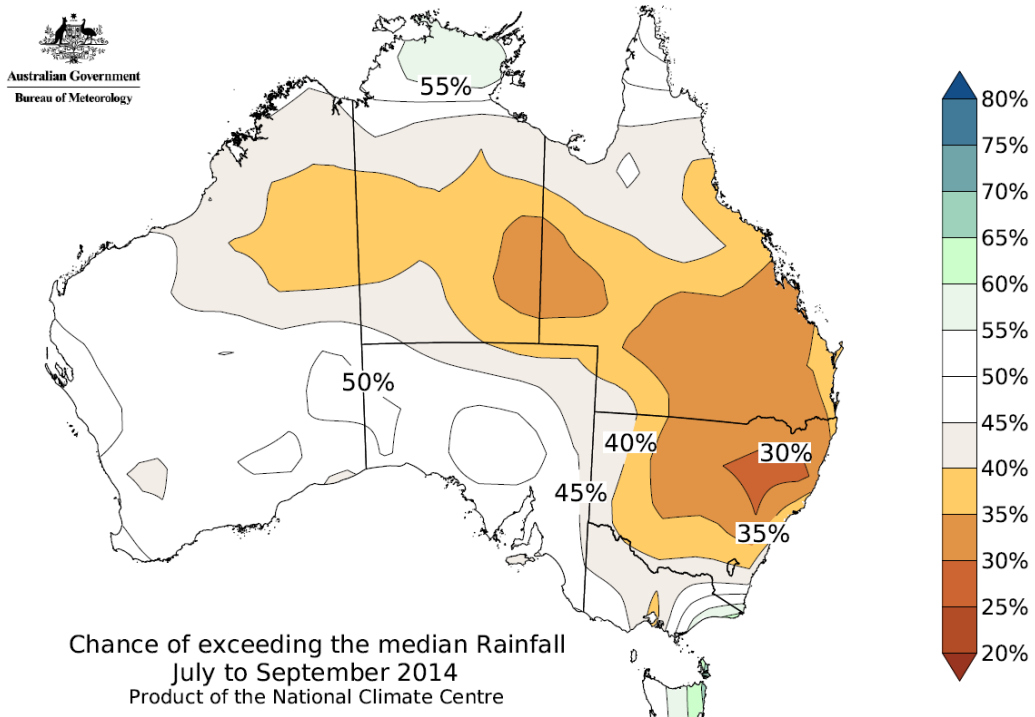
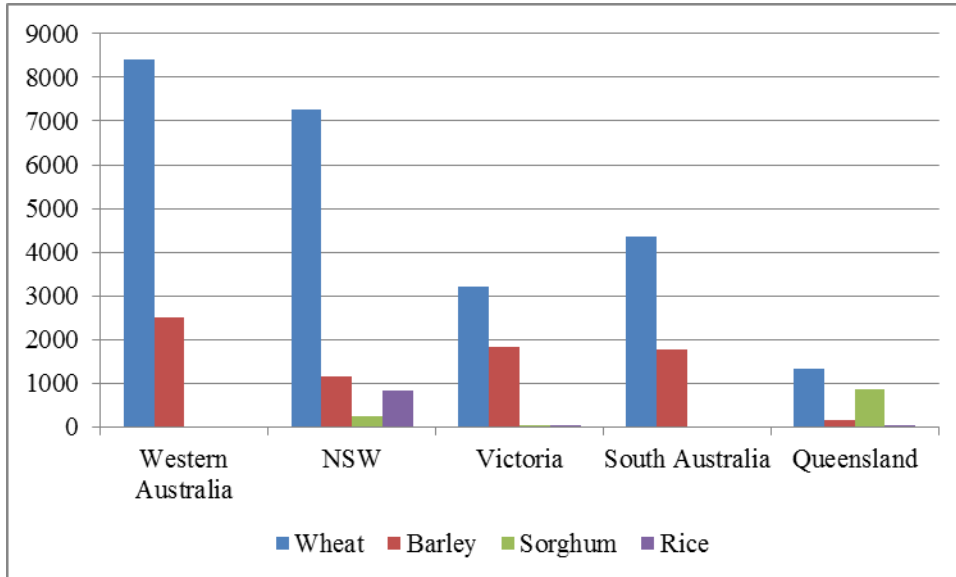


Chart 2: Rainfall forecasts for three months to September 2014



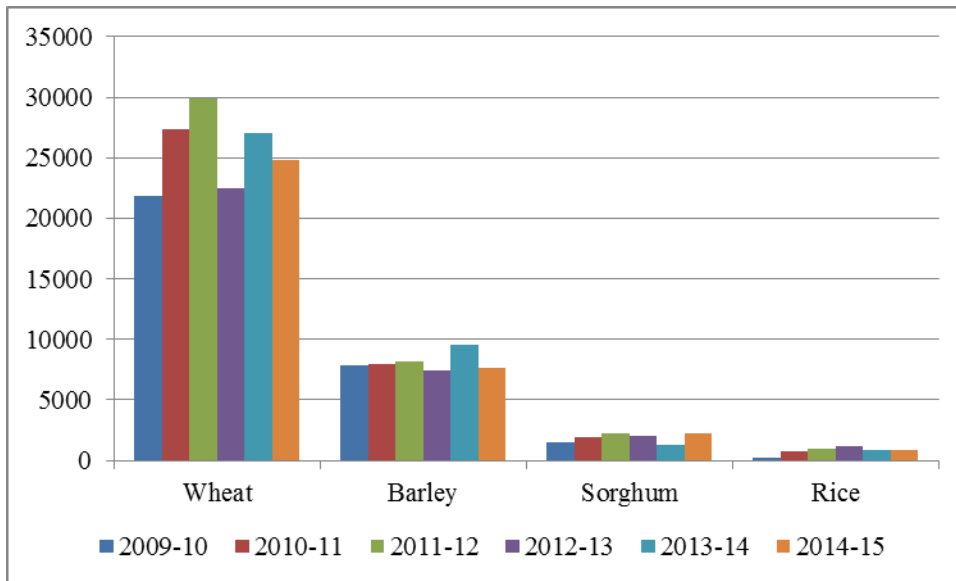
Source: BOM (2014).

Production of Australian grains by State. 2014-15 (000' tonnes)



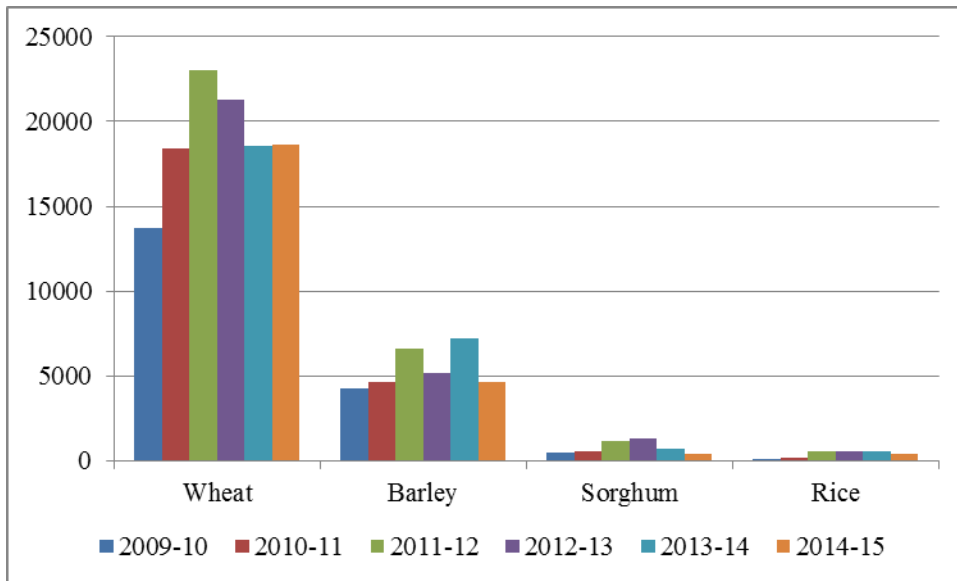
Source: ABARES and Post estimates

Production of Australian grains, 2009-10 to 2014-15 (000' tonnes)



Source: ABARES and Post estimates

Exports of Australian grains, 2009-10 to 2014-15 (000' tonnes)



Source: ABARES and Post estimates.

Average farm yields for Australian grains, 2009-2015 (tonnes/hectare)

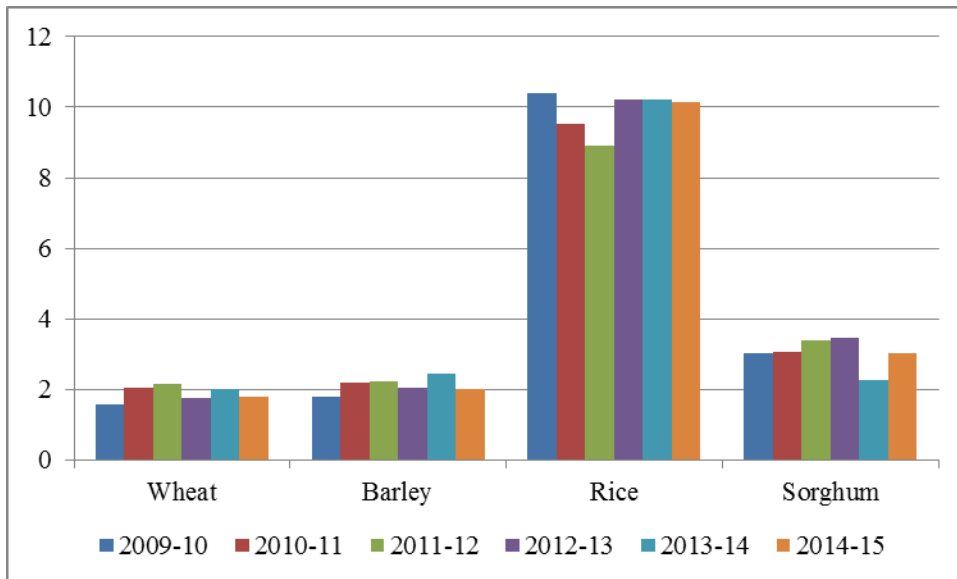


Table 1: Prices received by grains farmers in Australia, 2006-2014

	2006	2007	2008	2009	2010	2011	2012	2013
<i>Winter crops</i>								
Barley	94	153	197	145	108	136	132	168
Canola	87	103	141	142	114	141	133	142
Lupins	100	136	171	143	127	137	119	174
Oats	108	236	137	158	117	143	148	172
Wheat	103	122	197	142	110	130	115	158
<i>Summer crops</i>								
Grain sorghum	85	126	152	121	116	126	112	142
Total	97	129	178	138	109	126	116	147

Table 2: Australian average grains production and exports, 2010-13 (000' tonnes)

Grain	Production	Exports	Export Share (%)
Wheat	26724	20907	78
Barley	7896	5453	69
Rice	934	431	46
Grain sorghum	2134	985	46
Canola	3309	2427	73
Pulses	2445	1871	83
Other grains	1879	225	12
Other oilseeds	1608	563	23

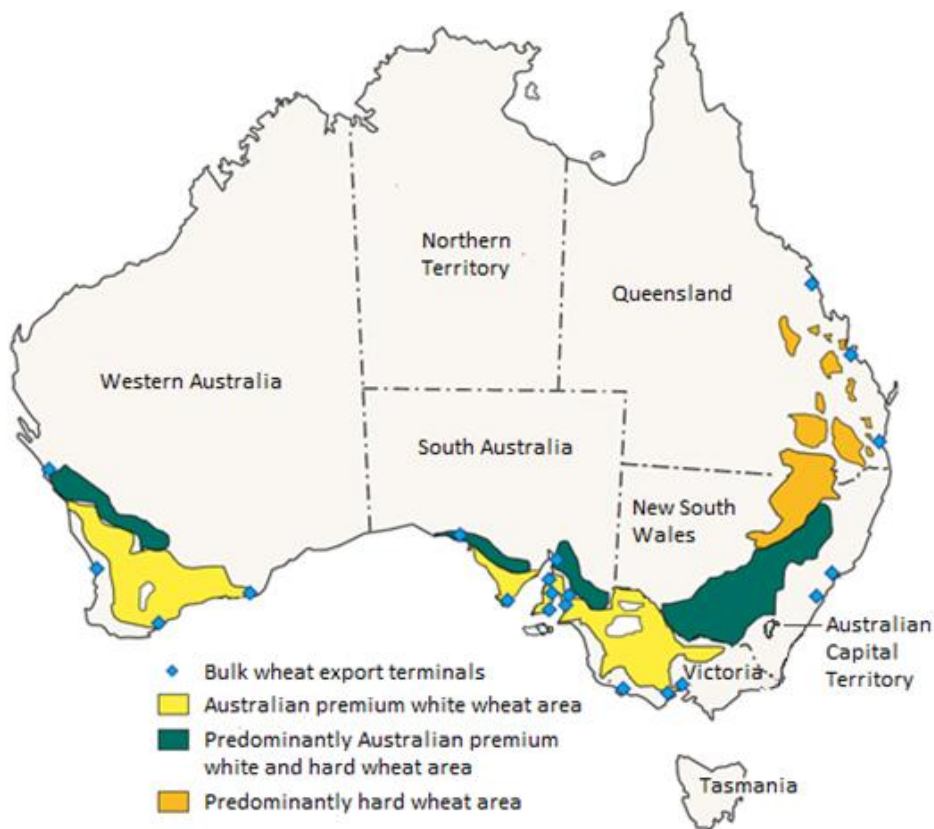
Source: ABARES (2014).

WHEAT

Overview

Australia produces around three per cent of the world's wheat but accounts for 10-15 per cent of the global wheat trade. Overall, nearly eighty per cent of production is exported. Wheat is the major winter crop in Australia, with sowing starting in autumn and harvesting, in spring and summer. Harvesting starts in central Queensland during August and progresses down the east coast to Victoria, finishing during January. On the west coast, the wheat harvest starts during October and is completed during January. The main producing states are Western Australia, NSW, South Australia, Victoria and Queensland. Major types of wheat include Prime Hard, Hard, Premium White, Standard, Soft and Durum, based on protein, grain size and moisture content and each grain has different end-uses.

Australia's wheat growing regions, 2014



Source: ABARES (2014), *Australian Crop Report*, June, Canberra.

Production

For 2014-15, there are two different weather outlooks. In northern NSW and southern Queensland, low rainfall in July 2014 means that crop outlook and yields are under pressure, while in Western Australia, southern NSW and Victoria, rainfall has approached long-term averages and production and yields could approach records. Generally, the outlook for the Australian wheat crop in 2014-15 has improved as the forecast El Niño weather pattern has moderated and a major decline in spring rainfall is less likely.

In 2014-15, wheat production is forecast to fall by nine per cent to 24.5 million tonnes, despite an increase in the harvested area of two per cent to 13.8 million hectares due to seasonal conditions and average yields. Recent crop reports also suggest that low soil moisture levels in northern NSW and Queensland will reduce yields and overall output. Increased rainfall over winter could boost wheat production beyond these forecasts.

Trade

Australia is the seventh largest wheat producer in the world and the fourth largest exporter. Around 80 per cent of Australian wheat production is exported, with WA the leading State. The major export markets are in the Asian and Middle East regions and include Indonesia, Japan, South Korea, Malaysia, Vietnam and Sudan. Japan purchases around 900,000 tonnes of ASW blend noodle wheat from Australia each year, mainly for the production of udon noodles. High wheat stocks from the previous season will offset the forecast decline in production and the volume of exports in 2014–15 is forecast at nineteen million tonnes.

Australia has the capacity to export wheat in the December to May marketing window when the northern hemisphere season is ending. During this period, seasonal demand for grain, rail and port services and shipping slots increases significantly and a queuing system has been used for bulk grain exporters. Around half of wheat grown in eastern Australia is consumed locally, while 90 per cent of grain produced in Western Australia and South Australia is exported. Australia is a strong supplier of noodle wheat into Asia, but is unable to compete with the US hard varieties in the production of Asian breads.

In mid-2014, the Agriculture Minister announced that some Australian wheat exporters would receive a return of export fees and charges for the 2012–13 financial year due to a higher than average industry reserve that had accrued from increased production and exports. In addition, export fees will be reduced by 25% from May 2014 to ensure that export charges remain on a sustainable footing. The Department of Agriculture is currently reviewing export certification fees and charges, through existing government-industry consultative committees. A new inspection [process](#) was approved for the Newcastle Agri Terminal in mid-2014 in order to cut unnecessary costs and delays for wheat exporters. The Agriculture Minister said the new Export Compliance Goods Storage (ECGS) allowed more flexibility in the storage, handling and shipment of wheat for export.

Storage, transport and port access for grain

Australia has the capacity to store the equivalent of two years' average wheat production and there is an increasing trend for on-farm storage. However, many storage facilities are comparatively small and are located far from ports and distribution facilities. The cost of rail, storage and handling of grain in Australia has become a key issue in the discussion about how to raise industry competitiveness as it can increase production costs by 30 per cent, according to some studies. Grain transport costs in eastern Australia are affected by small branch lines and speed limitations. A study by the Australian Export Grains Innovation Center (AEGIC) found that Australian regional trains could carry an average of only 2,000 tonnes of grain per train compared to 10,000 tonnes in Canada. [link](#)

In mid-2014, a major grains company announced that it would close over seventy of its storage silos and focus on 180 cores storage sites to lower costs. In recent years, however, a range of international companies have invested in the Australian grain storage, trading market and new investment has also occurred in port terminal facilities for grains exports, such as in the Newcastle Agri-Terminal in NSW, as well as the Bunbury and the Albany port terminals in Western Australia.

Since the end of the monopoly marketing approach of single wheat desk in 2006, the regional concentration of port ownership by wheat handlers has been a competition policy issue. Under the *Wheat Export Marketing Act 2008*, port terminal operators with a wheat exporting business need an access undertaking with the Australian Competition and Consumer Commission. In 2014, this arrangement is to be replaced by a port access code of conduct for bulk wheat exports. The Agriculture Minister noted in mid-2014 that the Code would “replace that requirement to give all exporters of bulk wheat fair and transparent access to port terminal services, regardless of who owns the terminal.” The Port Access Code has been released as a [draft](#) for public comment.

Competition policy issues were also important in the decision in late 2013 by the Australian Treasurer to reject a proposal by U.S. company Archer Daniel Midland to acquire the GrainCorp wheat trading company. The proposal was rejected partly because it held a significant proportion of Australia’s grain storage, distribution and marketing assets on the east coast. The Treasurer rejected a full takeover on the grounds of competition policy. However, he also allowed ADM to increase its 20 per cent stake in GrainCorp to 24.9 per cent in the future in order to “build stakeholder support”. Recently, competition in grains handling has increased with the entry of new companies such as Quattro Grain, a joint venture between Qube Holdings and the Noble Group of Hong Kong which will operate at Port Kembla while Sumitomo has announced that it will significantly expand its export facility in Melbourne.

Consumption

Wheat is Australia’s major grain crop and is used for human consumption in the production of breads, noodles and pastas. Lower quality wheat is used as stock feed while some waste wheat starch is used to manufacture biofuel. Australia typically consumes 5 million tonnes of wheat annually, with the remainder exported. Around 2.5 million tonnes are used to produce flour, whole grain products and beverages for human consumption, as well as to produce gluten and starch for industrial uses. A further 2.5 million to 3 million tonnes is used annually as stock feed. Half a million tonnes of wheat is used as seed.

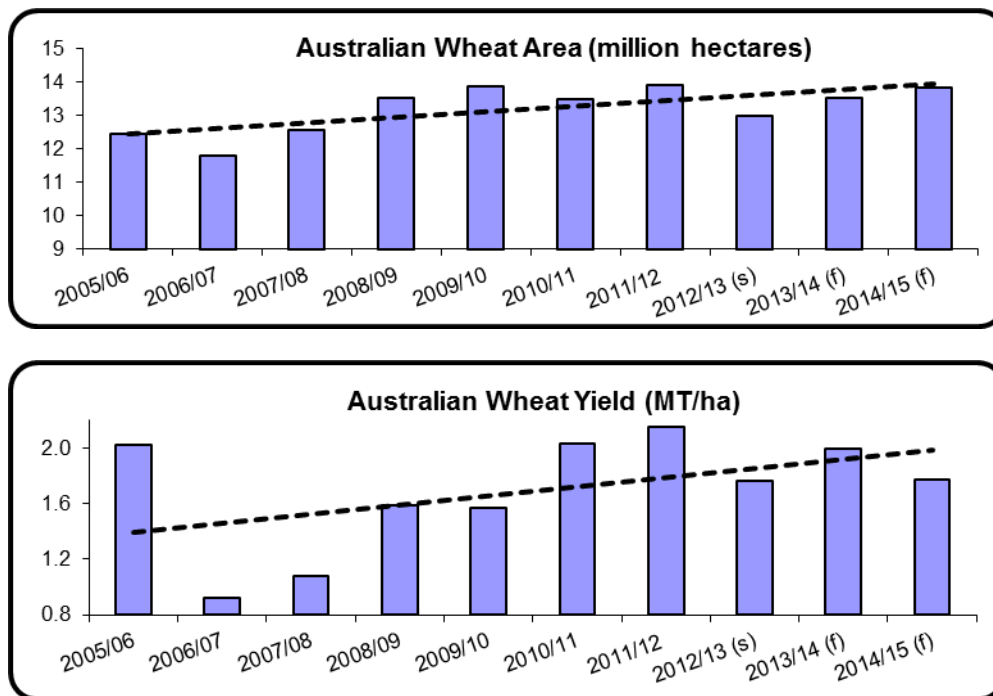
Table 3: Types of Australian wheat and major market applications

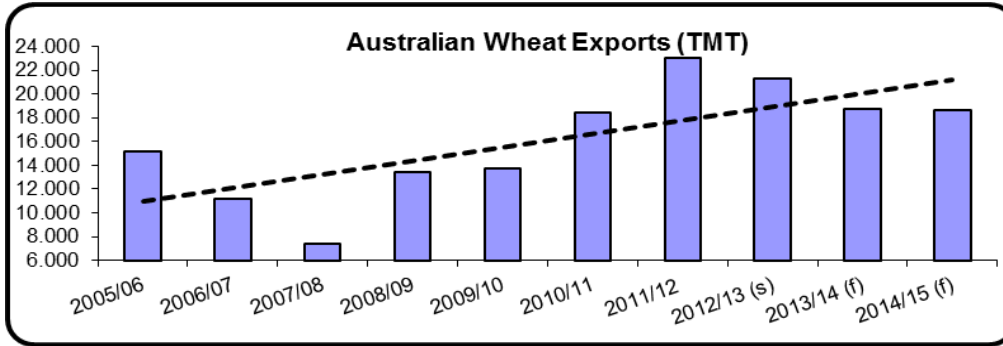
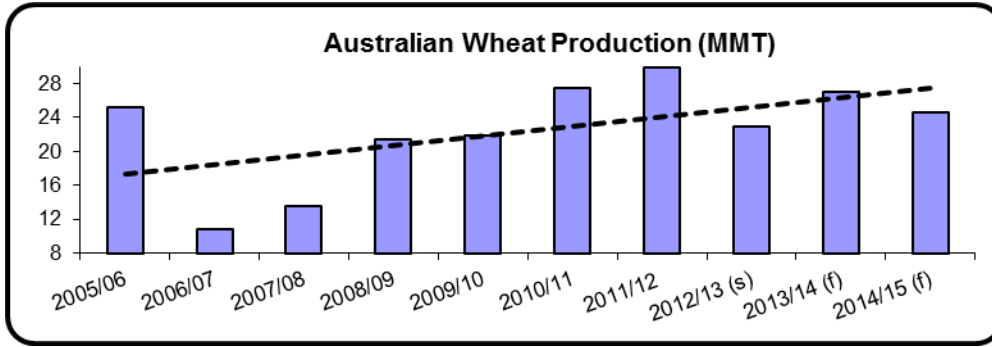
Category	Characteristics of wheat variety
Australian Prime Hard Wheat (APH)	Wheat high in protein (>13%) and suited for European breads and noodles. It can be blended with lower quality wheat to produce flour
Australian Hard (AH)	Wheat with relatively high protein (>11.5%) for pan and flat breads together with steam products.
Australian Premium White (APW)	Wheat with >10% protein used in Middle Eastern and Indian flat breads. It is also suited to Asian baked products and noodles.
Australian Durum Wheat	Wheat high in protein (>13%) which is suitable for pasta (ADR) products and couscous.

Source: Australian Grain Growers (2014).

Wheat consumption in Australia has been stable in recent years with around 70 kg of flour per capita consumed on average over the past decade. Flour producers face a mature domestic market with growth dependent on product innovations to supply market segments such as organic grains, or to meet dietary needs for gluten free and yeast free products. The biggest milling companies in Australia are Allied Mills, George Weston Foods and Manildra. The NSW complex of Manildra is one of the ten largest flour mills in the world and the leading Australian biofuels producer, using waste wheat starch for its feedstock.

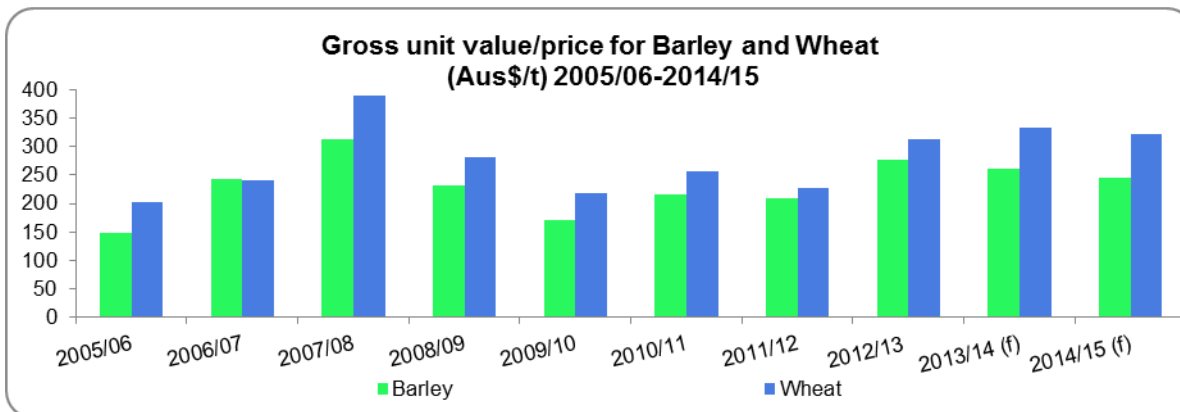
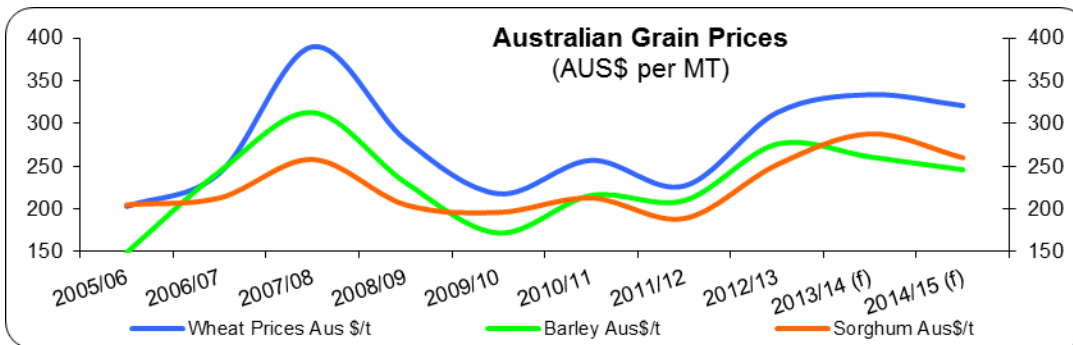
Charts on the Australian Wheat Industry, 2005 to 2015





Source: ABARES (2014).

Charts on the Australian Grains Industry, 2005 to 2015



Source: ABARES (2014).

Research and development

The main research agencies for the Australian grains industry are the Grains Research and Development Corporation (GRDC) and the Commonwealth Scientific and Industrial Research Organisation (CSIRO). The GRDC is responsible for research to increase the productivity, sustainability and profitability of grain farmers throughout Australia. GRDC is a statutory corporation and receives funding through levies paid by farmers. This levy is determined by the grains industry peak body and is then matched by government up to an agreed ceiling. This funding structure allows the GRDC to invest over A\$110 million annually over 700 projects funded by levies from the production of over 25 crops.

A recent GRDC funded research project found genes that make wheat tolerant to boron, a chemical element which, when present in soils, damages the quality of grain crops. The CSIRO has a wide research agenda for grains, including cereal diseases, water use efficiency, salt tolerance, drought resistance, dual purpose wheats and innovative gene technology. Recently the CSIRO recently developed and released wheat varieties with better water use efficiency and resistance to Barley Yellow Dwarf Virus.

Production, Supply and Demand Estimates: Wheat

Wheat Australia	2012/2013		2013/2014		2014/2015	
	Market Year Begin: Oct 2012		Market Year Begin: Oct 2013		Market Year Begin: Oct 2014	
	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Area Harvested	12,979	12,979	13,512	13,512	13,800	13,800
Beginning Stocks	7,051	7,051	4,654	4,654	5,367	5,367
Production	22,856	22,856	27,013	27,013	26,000	24,500
MY Imports	144	144	150	150	150	150
TY Imports	136	136	150	150	150	150
TY Imp. from U.S.	2	0	0	0	0	0
Total Supply	30,051	30,051	31,817	31,817	31,517	30,017
MY Exports	18,657	18,657	19,500	19,500	19,000	19,000
TY Exports	21,269	21,269	18,500	18,500	19,500	19,500
Feed and Residual	3,400	3,400	3,600	3,600	3,400	3,400
FSI Consumption	3,340	3,340	3,350	3,350	3,400	3,400
Total Consumption	6,740	6,740	6,950	6,950	6,800	6,800
Ending Stocks	4,654	4,654	5,367	5,367	5,717	4,217
Total Distribution	30,051	30,051	31,817	31,817	31,517	30,017

1000 HA, 1000 MT, MT/HA

BARLEY

Overview

Barley is Australia's second largest cereal crop, with two thirds crushed into meal for animal food while one third is used to produce malt for the brewing and food industries. The crop is generally harvested from October to late November. Barley is generally used as a feed grain in Queensland and northern NSW and demand has increased from the expanding beef feedlot industry and the pig and poultry industries. Higher quality malting barley is exported to supply the beer industries of China and Japan.

Production

In 2014-15, the area planted to barley is forecast to fall by four per cent to 3.8 million hectares, as some growers shift to wheat and canola crops. Barley production is forecast to decline by around one fifth to 7.5 million tonnes. Yields are expected to be lower in NSW, due to below average rainfall in the growing season. Australia's barley output in 2014-15 will be used as malting barley (about one third) and animal feed (about two thirds). The domestic market will account for around two million tonnes of feed grade barley and one million tonnes of malting grade barley, with the rest exported. Australia is one of the world's largest producers of malt for use in the brewing, distilling and food industries and accounts for one quarter of international trade in malting barley. In August 2013, Cargill acquired Joe White Maltings, making it the largest malt producer in Australia, with annual capacity of 550,000 tons and became the third largest malt producer in the world behind Malteurop and Soufflet.

Consumption

Malt barley is for human consumption, while feed barley is for animal feed. Malted barley is a key ingredient in beer production, but as consumption of beer in Australia has more than halved since the 1970s, barley producers have focused on markets in Asia where beer production is increasing. Apart from brewing, malt extract is widely used in baking, confectionery, breakfast cereals, malt beverages, dairy products, condiments and as a caramel substitute. Processed barley grain products are used as components of consumer products in the form of thickeners, binders or extenders. Examples are pearled barley, barley flakes and barley flour. Consumer products which would include these are malt drinks, malt chocolate confectionary, and various bakery items, soups, bread and cereals.

Trade

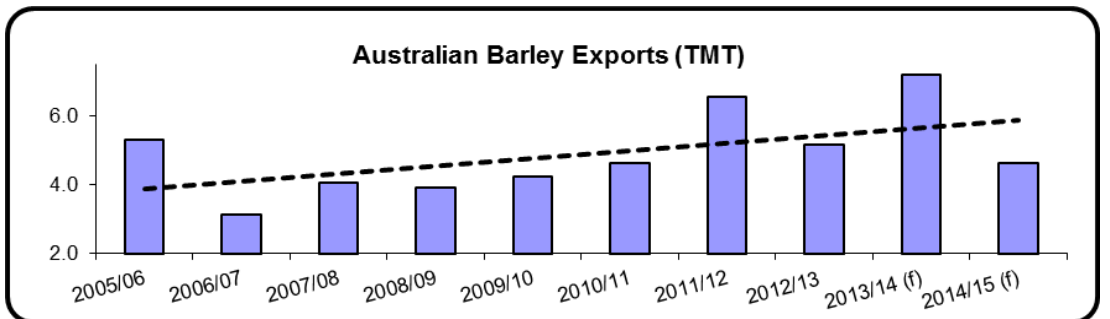
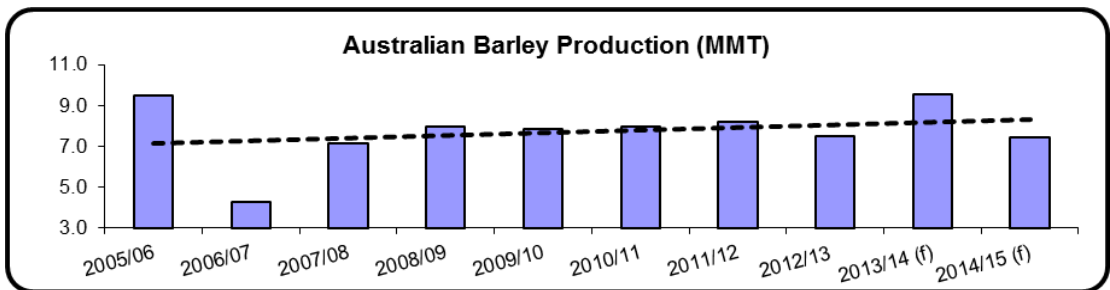
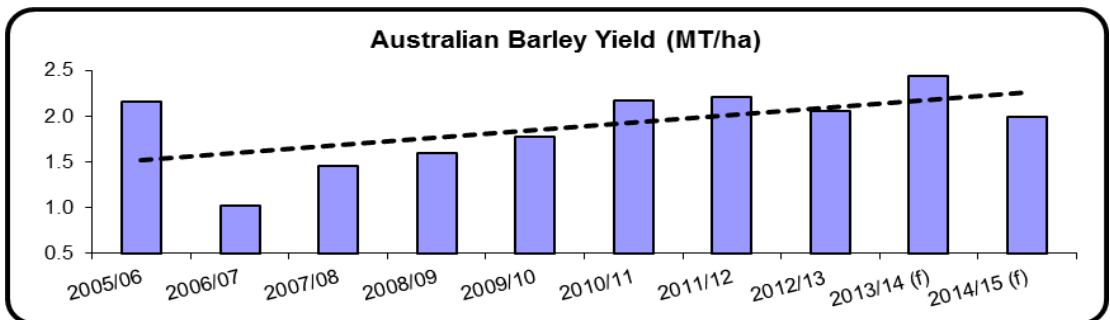
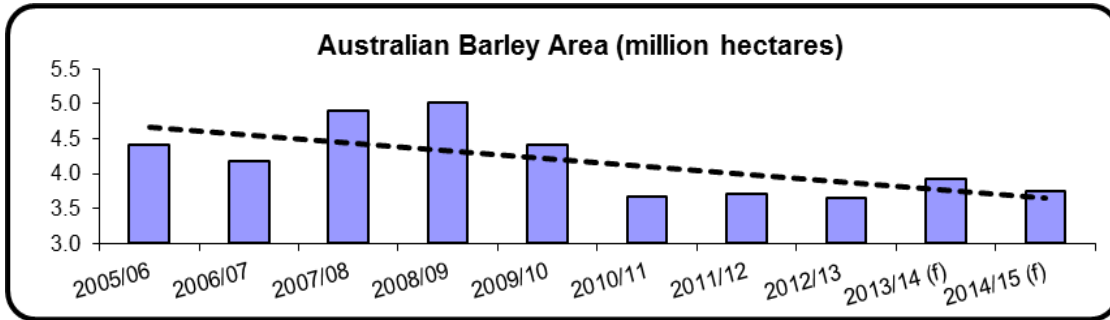
Australia is expected to export around 4.6 million tonnes of barley in 2014-15, comprised of both feed barley and malting barley. Over 800,000 tonnes of malting barley are produced annually, of which around three quarters is exported. China is the largest importer of Australian malting barley (which meets 60 per cent of the Chinese demand. Australia has become more important as a source for Asian breweries as international supplies of malting quality barley are declining. Around 200,000 tonnes of barley are exported annually to the Japanese market to be used in the manufacture of shochu, a distilled spirit.

Research and development

There have been a number of recent research achievements for barley growing and barley products. A recent innovation called 'enzyme brewing' makes it possible to brew beer with raw barley in a process that bypasses malting. A GRDC research project found that enzyme brewing could increase opportunities for Australian barley

growers by as crops below malting quality can now be used to manufacture beer products instead of being sold as animal feed. Another research project found a new variety of barley that extends the shelf life of beer by 50 per cent called Charger was developed by researchers from the University of Adelaide [link](#)

Charts on the Australian Barley Industry, 2005 to 2015



Source: ABARES (2014).

Production, Supply and Demand Estimates: Barley

Barley Australia	2012/2013		2013/2014		2014/2015	
	Market Year Begin: Nov 2012		Market Year Begin: Nov 2013		Market Year Begin: Nov 2014	
	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Area Harvested	3,644	3,644	3,920	3,920	3,800	3,700
Beginning Stocks	549	549	539	539	384	384
Production	7,472	7,472	9,545	9,545	8,100	7,500
MY Imports	0	0	0	0	0	0
TY Imports	0	0	0	0	0	0
TY Imp. from U.S.	0	0	0	0	0	0
Total Supply	8,021	8,021	10,084	10,084	8,484	7,884
MY Exports	4,482	4,482	6,000	6,000	4,700	4,600
TY Exports	4,621	4,621	6,000	6,000	4,700	4,600
Feed and Residual	1,800	1,800	2,400	2,400	2,000	1,800
FSI Consumption	1,200	1,200	1,300	1,300	1,300	1,300
Total Consumption	3,000	3,000	3,700	3,700	3,300	3,100
Ending Stocks	539	539	384	384	484	184
Total Distribution	8,021	8,021	10,084	10,084	8,484	7,884

1000 HA, 1000 MT, MT/HA

SORGHUM

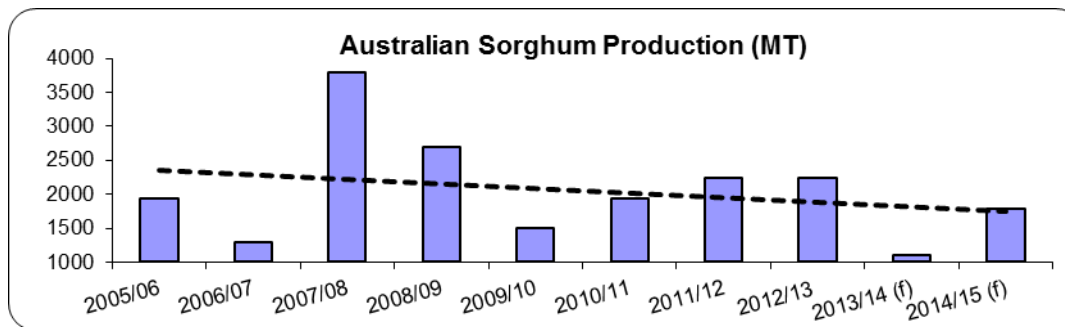
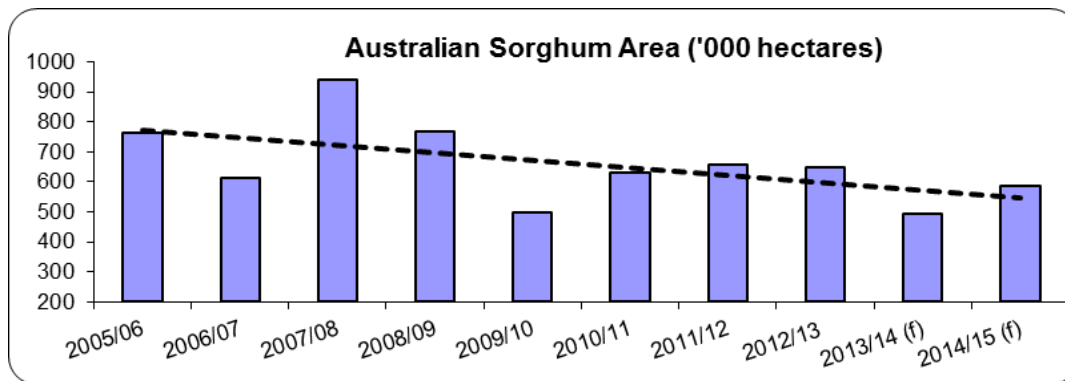
Overview

Sorghum is a summer crop used mainly for livestock feed. Australia produces around two to three per cent of global sorghum, but accounts for over five per cent of global exports. Approximately 60 per cent of the Australian crop is grown in Queensland and the remainder in northern NSW. Planting times are from September to January and sorghum is classified as either grain sorghum or forage sorghum according to the tannin content. Grain sorghum is often used for feed grain for the beef, dairy, pig and poultry industries and is the main summer grain crop in most regions of Queensland. The grain, stalks and leaves are all animal feeding products.

Production

Australian production of grain sorghum is forecast to increase by around sixty per cent in 2014-15 on the previous year after halving the previous year due to poor seasonal conditions and the planting of other crops. The area planted with sorghum is expected to increase by almost 20 per cent after shrinking by a quarter in the previous year. Sorghum yields are expected to recover from two to three tonnes per hectare if more normal seasonal rains occur over the growing period.

Charts on the Australian Sorghum Industry, 2005 to 2015



Source: ABARES (2014).

Production, Supply and Demand Estimates: Sorghum

Sorghum Australia	2012/2013		2013/2014		2014/2015	
	Market Year Begin: Mar 2013		Market Year Begin: Mar 2014		Market Year Begin: Mar 2015	
	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Area Harvested	648	648	493	493	670	600
Beginning Stocks	230	230	195	195	147	147
Production	2,230	2,230	1,107	1,107	2,050	1,800
MY Imports	0	0	0	0	0	0
TY Imports	0	0	0	0	0	0
TY Imp. from U.S.	0	0	0	0	0	0
Total Supply	2,460	2,460	1,302	1,302	2,197	1,947
MY Exports	1,160	1,160	350	350	800	600
TY Exports	1,425	1,425	400	400	800	600
Feed and Residual	1,100	1,100	800	800	1,200	1,100
FSI Consumption	5	5	5	5	5	5
Total Consumption	1,105	1,105	805	805	1,205	1,105
Ending Stocks	195	195	147	147	192	242
Total Distribution	2,460	2,460	1,302	1,302	2,197	1,947
1000 HA, 1000 MT, MT/HA						

RICE

Overview

Most of the rice grown in Australia is concentrated in the Murrumbidgee and Murray valleys of southern NSW although small areas of rice are grown in north-eastern Victoria. Rice production is concentrated in this area due to the availability of water and the development of storage and milling infrastructure in or near the regional towns. Rice grows through September until February and crops are grown in 5–25cm of water depending on growing conditions. Eighty per cent of rice produced in Australia is of medium grain Japonica varieties. The industry averages 9.7 tonnes per hectare with the 2013 crop averaging 10.3 tonnes per hectare, one of the highest yields in the world.

Production

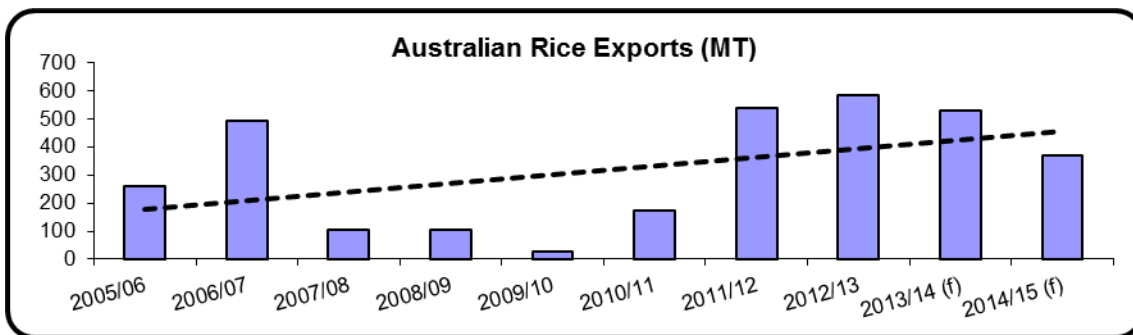
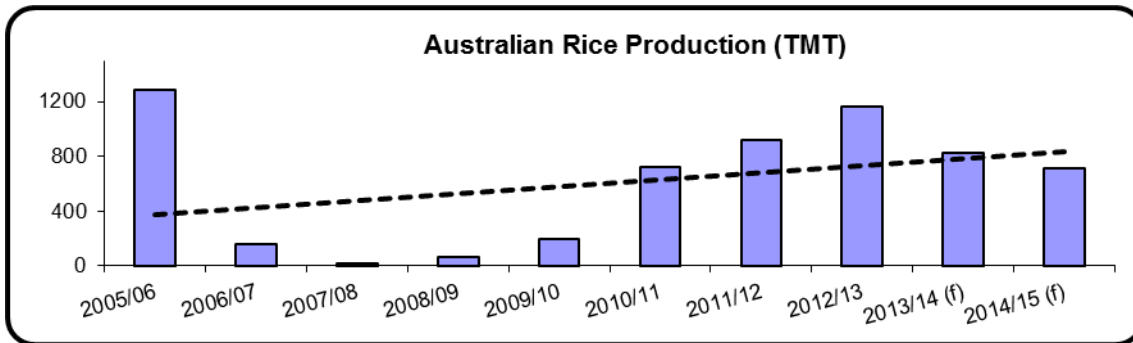
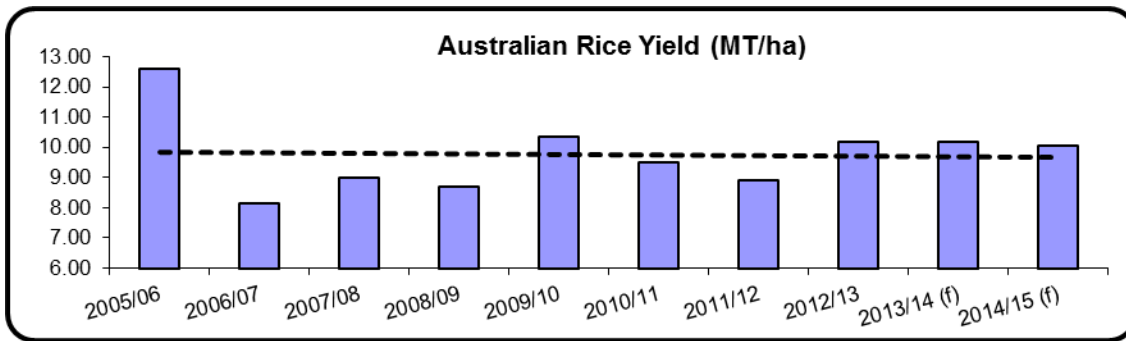
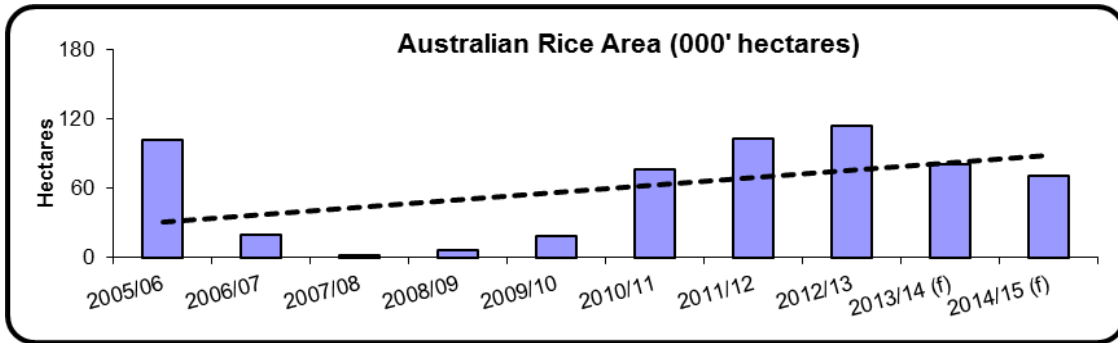
Australian farmers have traditionally produced around 1.2 million tonnes of rice each year but this has varied significantly according to water availability during drought. The 2008 rice crop of 19,400 tonnes was the lowest in the Australian rice sector's history, at only one per cent of normal production. In 2014, the rice crop fell 30 per cent to 825,000 tonnes in 2014 due to a decline in the supply of irrigation water. Allowable water consumption levels for rice growing are set by irrigation companies utilizing climatic data records by the CSIRO. Should these limits be exceeded, farmers may face fines, restrictions on the use of individual fields for rice in subsequent year, or the banning of rice production on those fields.

In Australia, rice is grown from October until March and in rotation with other crops such as wheat, barley and maize. Many of these crops grown in rotation with rice utilize the existing soil moisture from the harvested rice crops, so that further irrigation is not needed. About 98 per cent of Australia's rice is grown in NSW in the Murrumbidgee and Murray River valleys. The average size of an Australian rice farm is around 400 hectares and rice can only be grown on approved soils and is strictly regulated by the rice water use policies of the various irrigation corporations.

One company, Ricegrowers, is responsible for the production and marketing of rice and rice based food in Australia. Around 85 per cent of rice is exported, while the domestic market receives the 15 per cent. By-products from the growing and processing of rice include rice husks, rice stubble, rice bran, broken rice and rice straw which are used by the horticultural, livestock and building and food industries.

In mid-2014, the sole Australian producer indicated that it would increase production in 2015 by over 100,000 tonnes a year, following the federal government's decision to increase water allocations to farmers in the Murray Darling Basin. The industry is seeking to produce rice in areas outside of the Riverina, the main rice-growing region. One potential avenue for the expansion of rice production is the Ord River Irrigation Area in the remote Kimberley region of Western Australia.

Charts on the Australian Rice Industry, 2005 to 2015



Source: ABARES (2014).

Production, Supply and Demand Estimates: Rice

Rice, Milled Australia	2012/2013		2013/2014		2014/2015	
	Market Year Begin: Mar 2013		Market Year Begin: Mar 2014		Market Year Begin: Mar 2015	
	USDA Official	New Post	USDA Official	New Post	USDA Official	New Post
Area Harvested	114	114	81	81	80	70
Beginning Stocks	40	40	231	231	125	125
Milled Production	836	836	594	594	576	504
Rough Production	1,161	1,161	825	825	800	700
Milling Rate (.9999)	7,200	7,200	7,200	7,200	7,200	7,200
MY Imports	145	145	150	150	150	150
TY Imports	148	148	150	150	150	150
TY Imp. from U.S.	13	13	0	0	0	0
Total Supply	1,021	1,021	975	975	851	779
MY Exports	440	440	500	500	450	400
TY Exports	460	460	500	500	450	400
Consumption and Residual	350	350	350	350	350	350
Ending Stocks	231	231	125	125	51	29
Total Distribution	1,021	1,021	975	975	851	779
1000 HA, 1000 MT, MT/HA						

AUSTRALIAN GRAINS SUPPLY TO THE BIOFUELS INDUSTRY

The ethanol industry in Australia comprises three producers in New South Wales and Queensland, with an installed production capacity of 440 million liters (ML). In 2014, there were three ethanol fuel manufacturing plants, each distilling different feedstock. The largest ethanol producer in NSW uses wheat starch with capacity to make 300 million liters of ethanol. The second largest producer in Dalby, Queensland uses red sorghum with capacity to make 80 million liters of ethanol while the third largest at Sarina, Queensland uses molasses from sugar and has a capacity of 60 million liters of ethanol. The use of lower cost residue feedstock from other production processes such as flour milling or sugar refining can lower overall costs compared to commercially sold grain or other feedstock. Actual production is considerably below capacity but firm-specific output is not available.

Table 4: Capacity of the Australian Ethanol Industry, 2014 (million liters)

Ethanol plant	Location	Installed capacity	Feedstock
Producer A	NSW	300	Waste wheat starch
Producer B	Queensland	80	Red sorghum
Producer C	Queensland	60	Molasses
Total capacity	Australia	440	

Source: BREE (2014) and Biofuels Association of Australia.

Grain sorghum produces the same amount of ethanol per bushel as comparable feed grains and sorghum biomass is also used as a renewable feedstock for both the cellulosic and thermochemical process for conversion into biofuels. The more complete survey of the biofuels industry is available here: [link](#)

THE FODDER AND FEED INDUSTRY

Australia's intensive livestock producers consume about 12 million tonnes of stock feed each year, or about 30 per cent of the national grains production. Barley and wheat are the main grains for animal feed. Sorghum is a substitute if the price is lower, while triticale, oats and maize are also used. Drought has increased demand for grain feed in Australia, while overseas demand has also increased.

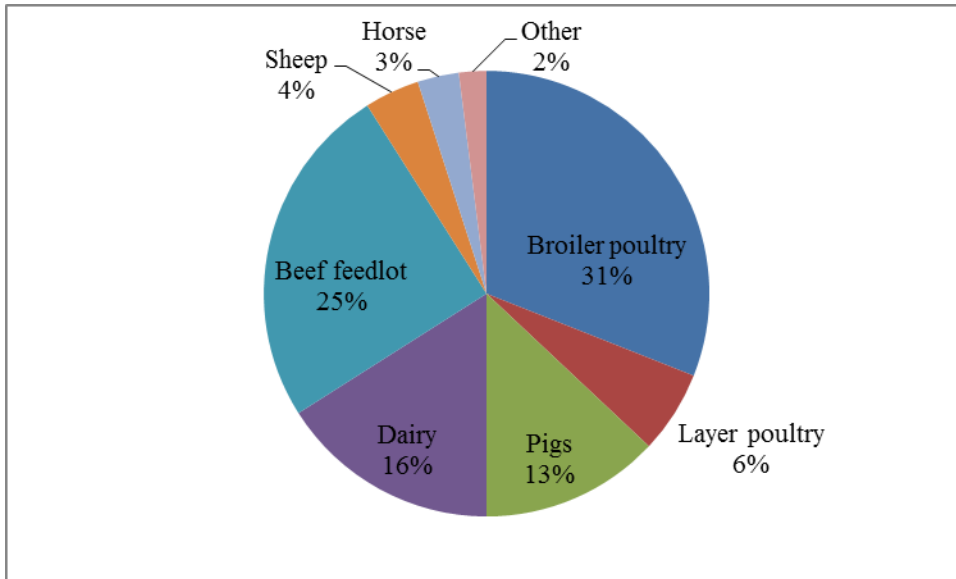
Increasingly, even milling quality wheat and malting barley has been used for stock feed because prices of premium and lower grade wheat, barley and other grains have converged because of rising demand for feed grain. Australian grain stocks have fallen due to the drought and a lack of reserves. In mid-2014, feedlots in eastern States had to bring in grain from Western Australia and South Australia as stocks had run down. More farms have also invested in on-farm storage of grain so as to be able seek higher prices.

There are around 450 feedlots in Australia located in areas close to cattle and grain supplies and the feedlot sector consumes around 3.7 million tonnes of grain annually. During drought periods this percentage increases greatly as exports diminish. The March quarter of 2014 saw the highest cattle numbers on feed since late 2006 as cattle numbers in feedlots rose 8 per cent by 63,000 head from December 2013 to end-March 2014 to 875,000.

Grain feeding has also become an integral part of dairy farming systems because of less reliable pasture and higher irrigation water costs. Barley and wheat are the major grains used for dairy feed lots and supplemental

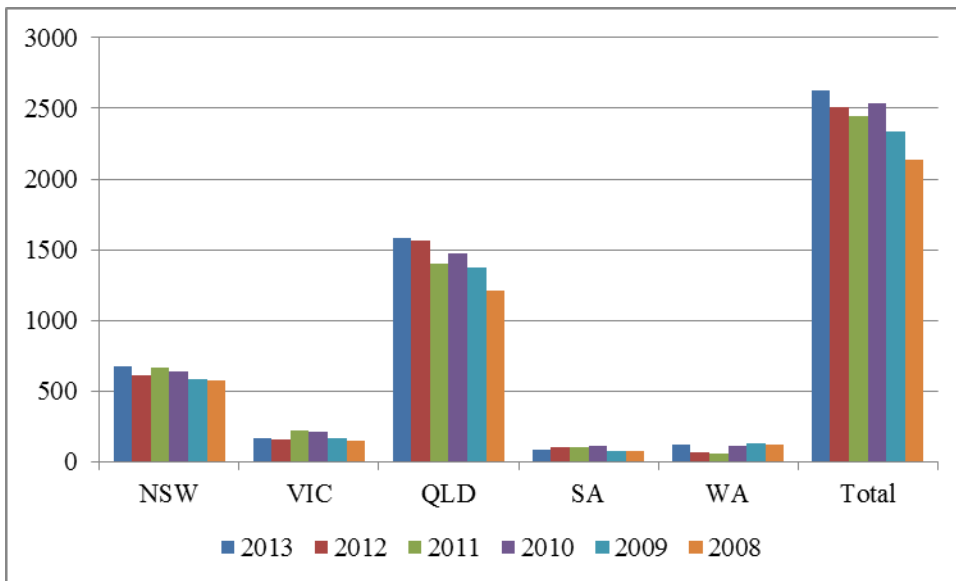
feeding. Grain feeding of poultry is also significant, as poultry is the most popular meat consumed in Australia and accounted for one quarter of all meat sales in 2013 – having grown at around 4 per cent over the previous decade. The chicken processing industry operates its own feed mills or has feed grown under contract. It relies on wheat grain feed in all regions and this is supplemented by sorghum in the eastern States.

Feed grain use in Australia, 2013 (share, %)



Source: Stock Feed Manufacturers Council of Australia (2014).

Number of Australian cattle turned off feedlots, 2008-2013 (000' head)



Source: Australian Lot Feeders' Association, See: [link](#)

TRADE POLICY ISSUES FOR GRAIN

Australia has actively sought to use trade policy to open up markets for grains exporters. There are seven free trade agreements (FTAs) currently in force with New Zealand, Singapore, Thailand, U.S., Chile, the Association of South East Asian Nations (ASEAN) (with New Zealand) and Malaysia. These countries account for 26 per cent of Australia's total trade. Australia signed an FTA with Korea (KAFTA) in April 2014 and an Economic Partnership Agreement (JAEPA) with Japan in July 2014. These agreements will enter into force when domestic processes have been completed. Korea and Japan respectively account for 5 and 11 per cent of Australia's total trade.

Access for Grains under the Australia-Korea FTA (KAFTA)

Australia's total agricultural exports to the Republic of Korea were valued at around A\$1.9 billion in 2013. The major exported commodities were beef (A\$733 million), wheat (A\$317 million) and cotton (A\$134 million). Under KAFTA, customs duties on most agricultural commodities imported from Australia will be progressively reduced to zero over periods of up to 20 years. The tariff on wheat (excluding seed) will be eliminated immediately. Rice has been excluded from the greater market access arrangements. KAFTA will also provide a duty-free quota for barley, as well as several other agricultural products. See table 5 below and [link](#).

Table 5: Greater market access for Australian grains exports under KAFTA

Grain product	Change to Market Access
Wheat	Removal of 1.8 per cent tariff on wheat on commencement of the agreement
Malt and malting barley	Korea will provide a growing duty-free quota for malt and malting barley and remove out-of-quota tariffs of 269 per cent on malt and 513 per cent on malting barley over 15 years. During that period, Australia will have access to a single tariff-free quota across both goods. The quota is 10 000 tonnes in the first year of the agreement and will increase to almost 13 000 tonnes by the end of the tariff phase-out period in 2029.

Source: Department of Foreign Affairs (2014) See: [link](#)

Tariffs will be eliminated on the major traded grain (wheat) enabling Australian growers to compete on a level playing field with the US who has enjoyed zero tariffs since the entry into force of the KORUS FTA on 1 January 2012. Other grains and oilseeds will enjoy a reduction and elimination of tariffs.

The Republic of Korea is Australia's largest export destination for unroasted malt, with this product accounting for 20 per cent of Australian export shipments in 2012. For malting barley, the Republic of Korea accounted for around three per cent of total Australian shipments. Australia is the major supplier of malting barley and unroasted malt to Korea, accounting for virtually all its malting barley imports and 70 per cent of its unroasted malt imports in 2013.

Access for Grains under the Japan-Australia Economic Partnership Agreement (JAEPA)

Australia and Japan concluded negotiations on the Japan-Australia Economic Partnership Agreement (JAEPA) on 7 April 2014. The agreement will increase access for agricultural exports by eliminating or reducing tariffs on grains as well as other agricultural commodities over timeframes of up to 15 years. JAEPA will reportedly provide for immediate duty-free and quota free access for wheat for feed and barley for feed as well as streamlined export arrangements for some Australian wheat varieties. Australia's grains trade to Japan was worth over \$770 million in 2013. Further details of JAEPA will become available following completion of necessary legal

processes. A summary of the agreement is available on the Department of Foreign Affairs and Trade website: [link](#) and also in more detail on the website of the Japanese Ministry of Foreign Affairs: [link](#).

Grains such as wheat, barley, and sorghum, and their milling products, are one of Australia's biggest agricultural exports to Japan, worth over \$770 million in 2013. Australia's wheat exports to Japan were worth \$356 million in 2013, making Japan our fourth-largest wheat market. Despite relatively low tariffs, Japan's grain trade is highly regulated, and includes WTO quotas, duties and other mark-ups, as well as complicated tendering arrangements. Outside the quota system, wheat (for food) and wheat (for feed) face prohibitive tariffs meaning hardly any wheat enters outside the quotas.

Under JAEPA Australia will be the only country that can export wheat and barley for feed duty-free outside of the existing quota system. It also secured elimination of the 21.3 per cent tariff on wheat gluten and milled corn products over the next five to 10 years. Australian rice producers received no concessions but will retain access to the Japanese market through the existing WTO tariff rate quota.

GMO GRAIN CROPS IN AUSTRALIA

There has been no commercial release of GMO wheat, barley, sorghum or rice in Australia. Since 2005, the Office of the Gene Technology Regulator has issued 14 licenses for small field trials of GM wheat and eleven of these licenses were still current in 2014. The field trials relate to early-stage research on GM wheat, modifying traits such as salt tolerance, drought tolerance, starch content or nutrient-use efficiency. GM wheat from these trials is not permitted to enter commercial human food or animal feed supplies [link](#).

The federal Office of Gene Technology Regulator (OFTR) issues GM trial licenses and decides where trials are grown. State and local governments have power to establish GM and GM-free zones within their jurisdictions. No GMO pastures or fodder crops have been approved for commercial production in Australia although research is continuing on the possible use of GMO varieties in the future.

The Australian regulatory scheme is science-based and uses robust risk analysis based on widely respected international standards. Before deciding to issue a license, the Regulator conducts a comprehensive risk assessment—considering the latest available scientific information—and extensive public and expert consultation. The Office of the Gene Technology Regulator (OGTR) also monitors scientific and other literature for any new information relevant to GM crops, and assesses that information in relation to existing licenses.

Australia has introduced mandatory labeling of food products for human consumption that contain approved GM materials in excess of specified thresholds. The threshold in Australia is 1 per cent. One of the key problems is the need to separate GM and non-GM crops to ensure their identities are preserved. This process already occurs with traditional crops such as with malting barley or durum wheat. The Australian [Department of Agriculture](#) considers that the use of GMO crops offers farmers the opportunity to boost productivity by reducing inputs and increasing yields. While there are no commercial GMO grain crops in Australia, GMO animal feed represents a minor but growing share of stock feed mix. The use of this type of feed has been increasing, due to the adoption of GMO cotton varieties by Australian farmers and the use of GMO varieties overseas.

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DEFINITIONS

Area Harvested	Land surface for crops (hectares)
Beginning stocks	Unprocessed grains in known storage facilities (metric tons)
Total supply	Beginning Stocks + Production + Total Imports
Consumption	Domestic consumption for wheat and coarse grains includes two components: (1) feed and residual; and (2) non-feed (food, seed and industrial: FSI). Feed and residual is the quantity of grains consumed by animals. FSI is the quantity of grain utilized for seed, industrial purposes (e.g. starch and ethanol) and for human consumption (metric tons)
Distribution	Total Distribution + Total Exports + Domestic Consumption + Ending Stocks