AUSTRALIAN GRAIN

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Section 1

Overview

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Australia area ('000 ha) and production ('000 tonnes) of major winter and summer crops planted for grain during 2011

	NSW		VIC		QLD		WA		SA		TAS		AUSTRALIA TOTAL	
2011–12	Area	Prodn	Area	Prodn	Area	Prodn	Area	Prodn	Area	Prodn	Area	Prodn	AREA	PROD'N
Wheat	4000	7920	1700	3630	1000	1780	5100	11,730	2250	4425	8	30	14,058	29,515
Barley	880	1690	860	1850	90	171	1050	2635	1150	2200	8	26	4038	8572
Oats (for grain)*													1003	1734
Triticale	102	230	106	173			35	59	85	112	2	6	330	580
Sorghum#	185	668	1	2	445	1660	1	1					632	2331
Maize#	27	220	1	6	48	192	1	4					77	422
Rice#	109	923											109	923
Canola	395	720	350	530			750	1130	210	395			1705	2775
Sunflowerseed#	20	25			20	22							40	47
Soybean#	25	45	1.1	2.1	12	24							38	71
Peanuts#	0.3	0.8			11	25							11	26
Cottonseed#	358	941			241	585	1	2					600	1528
Lupins	68	105	23	34			334	679	65	82			490	900
Field peas	41	62	38	60			55	32	110	150			244	304
Chickpeas	200	252	35	65	73	139	11	15	9	15			328	486
Faba beans	43	67	49	99	2	3	3	4	55	95			152	268
Mung beans#	22	20			33	35							55	55
Navy bean#					5	6							5	6
Lentils	1	1	77	125					95	162			173	288
TOTAL	6476	13,890	3241	6576	1980	4642	7341	16,291	4029	7636	18	63	23,537	46,588

Estimate for summer crop harvested in 2012 * State break-up data not yet available for the 2011–12 season. Principal source: ABARES.

Farmers' terms of trade from Australian grain production (base year is 1997–98 = 100)

	2006–07	2007–08	2008–09	2009–10	2010–11	2011–12	2012–13 (forecast)
PRICES RECEIVED							
Wheat	122.4	197.2	142.1	110.4	138.0	129.4	128.6
Barley	153.3	196.9	145.3	113.4	141.0	120.3	110.4
Canola	102.8	140.7	142.2	113.4	141.0	120.3	110.4
Lupins	135.7	171.0	142.9	127.0	137.1	95.8	101.0
Oats	235.8	136.9	158.3	116.9	139.9	141.1	133.6
Sorghum	126.1	152.4	121.3	115.9	128.2	114.0	120.5
Total grains	**128.5**	**178.3**	**137.4**	**108.3**	**130.5**	**120.5**	**118.3**
PRICES PAID							
Fuel & lubricants	208.3	243.7	211.0	191.7	211.3	226.5	207.9
Fertiliser	121.4	220.4	239.6	156.0	157.3	161.3	164.6
Chemicals	124.7	149.7	136.7	116.2	110.4	113.1	115.5
Seed	109.9	135.0	120.6	109.2	122.1	119.2	119.8
Labour	133.5	138.0	142.6	147.3	151.8	156.2	160.5
Marketing	129.1	143.2	137.1	133.9	144.7	154.2	151.8
Interest paid	127.8	142.6	116.7	111.1	122.3	114.8	116.7
Rates & taxes	132.7	137.3	141.6	144.8	149.3	153.6	157.9
Insurance	139.4	143.5	155.6	167.0	180.4	189.4	194.7
Capital items	132.3	136.8	141.1	144.7	149.3	153.7	158.2
Total prices paid*	**135.9**	**155.1**	**149.0**	**140.7**	**144.9**	**147.4**	**148.8**
TERMS OF TRADE	94.6	115.0	92.2	77.0	90.1	81.8	79.5

Note: Terms of trade is the ratio of the index of prices received and the index of prices paid by farmers. * Excludes livestock costs, fodder, breeding stock etc. Sources: ABARES, ABS

Domestic and global grains outlook

By Fiona Crawford, James Fell and David Mobsby, ABARES

Short-term outlook

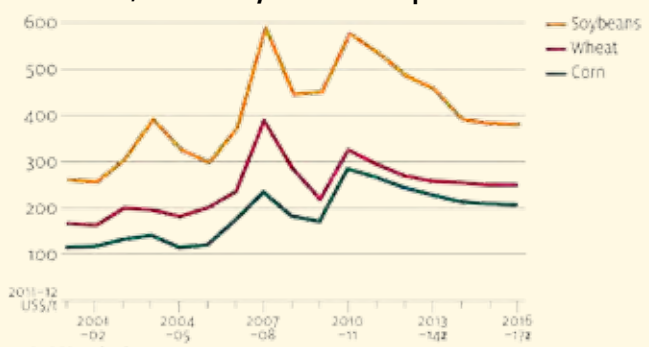
Prices to fall in 2012–13

The world wheat indicator price (US hard red winter, fob Gulf) is forecast to fall by 7 per cent in 2012–13 to average around US$275 a tonne, reflecting record world opening stocks and expected high global production for a second year. World supplies of higher protein wheat are forecast to increase in 2012–13, leading to a fall in the premium that US hard red winter wheat has held in 2011–12 over other wheat grades.

The world coarse grains indicator price (US corn, fob Gulf) is forecast to decrease by 7 per cent in 2012–13 to US$258 a tonne. The world indicator price for barley (French Rouen feed) is expected to fall by 10 per cent to US$248 a tonne. These price forecasts reflect expected increases in world coarse grain supplies.

The world oilseeds indicator price (soybeans, cif Rotterdam) is forecast to decrease by 7 per cent in 2012–13 to US$495 a tonne. The forecast decline reflects an increase in world soybean export supplies, driven by a forecast recovery of the United States soybean crop, and relatively high closing stocks from the 2011–12 season.

World wheat, corn and soybean indicator prices



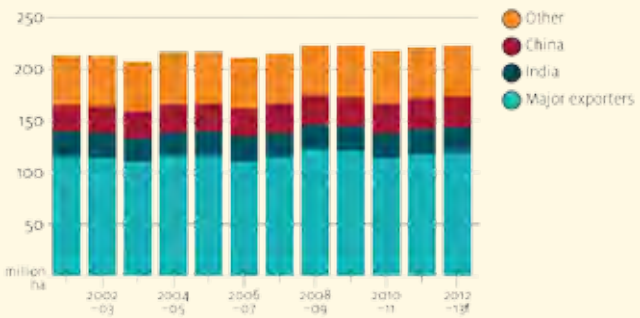
The world canola indicator price (cif Hamburg) is forecast to decrease by 8 per cent in 2012–13 to US$580 a tonne. A forecast recovery of the European rapeseed/canola crop combined with expected high production from Canada, are the factors driving the forecast price fall.

World production

Record world wheat area in 2012–13

Despite an expected rise in world wheat harvested area in 2012–13, world wheat production is forecast to fall by 2 per cent to around 682 million tonnes. This forecast reflects an assumed return to average yields following the record production achieved in the 2011–12 season. Planting of 2012–13 winter wheat took place from September to December 2011 in the northern hemisphere, with seasonal conditions and returns being relatively favourable for growers, leading to a rise in planted area.

World wheat area



In the United States, wheat production is forecast to rise by 6 per cent in 2012–13 to around 58 million tonnes as a result of larger areas harvested and a return to average yields following poor 2011–12 seasonal conditions. Total winter and spring wheat harvested area is forecast to rise by 6 per cent to around 20 million hectares. This largely reflects an assumed lower abandonment rate compared with the drought- affected 2011–12 season, and an estimated rise in winter wheat planted area.

US winter wheat planted area for the 2012–13 crop rose by 3 per cent, particularly in the southern hard red winter wheat areas, in response to favourable world prices for higher protein wheats. Forecast higher production from the southern US states is expected to lead to an increase in higher protein wheat supplies in 2012–13. Area harvested of spring wheat, which accounts for around one-third of US production, is also forecast to recover following the 17 per cent fall in 2011–12 as a consequence of rain-affected planting.

Wheat production in Canada in 2012–13 is forecast to rise by 2 per cent to around 26 million tonnes. An assumed improvement in planting conditions for spring wheat, which accounts for around 90 per cent of the Canadian crop, is forecast to lead to a rise in wheat planted area. Higher production in Canada is likely to contribute to an increase in world supplies of higher protein wheat in 2012–13.

In the European Union, wheat production in 2012–13 is forecast to rise by 2 per cent to around 140 million tonnes. Dry conditions in some regions led to a lower area planted to rapeseed, encouraging planting of winter wheat which is sown later. Seasonal conditions also improved when the winter wheat was being planted.

In China, total winter and spring wheat production is forecast to increase by 2 per cent to around 120 million tonnes in 2012–13.

In India, the world's third largest producer of wheat after the European Union and China, wheat production is forecast to fall by 4 per cent to around 83 million tonnes in 2012–13. This reflects a return to average yields despite an estimated 1 per cent rise in harvested area. In 2011–12, India's wheat producers achieved record yields, leading to a record crop.

In Argentina, production is forecast to be largely unchanged in

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2012–13 at around 13 million tonnes. Improved yields are forecast to offset a fall in harvested area.

In the Russian Federation, wheat production is forecast to increase by 5 per cent to around 59 million tonnes in 2012–13. This reflects generally sufficient rainfall at planting time; and sufficient snow cover over winter. In Ukraine, wheat production is forecast to fall as a result of dry conditions in early winter over the western half of the country, leading to a higher forecast abandonment rate.

In Kazakhstan, wheat production is forecast to fall by 31 per cent to around 16 million tonnes in 2012–13, as a result of a return to average yields. Seasonal conditions in the previous season were exceptionally favourable for wheat production, with growers achieving record yields which were almost 60 per cent above the previous 10-year average.

Corn to drive world coarse grains production in 2012–13

World coarse grain production is forecast to rise by 4 per cent in 2012–13 to a record of almost 1.2 billion tonnes. This reflects an expected increase in corn production in the United States and China, as well as an increase in barley production in major producing nations.

World corn production is forecast to increase by 3 per cent in 2012–13 to a record 887 million tonnes, reflecting an expected increase in harvested area in major producing nations.

In the United States, corn production is forecast to rise by 6 per cent in 2012–13 to 333 million tonnes, recovering from the decline in 2011–12 brought about by adverse seasonal conditions. If favourable seasonal

Table 1: World and Australia grains and oilseeds production, stocks and price forecasts

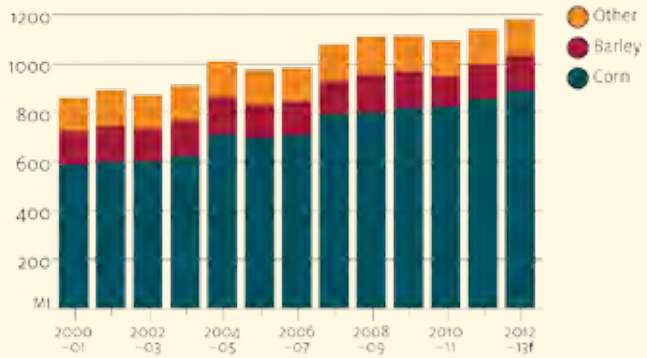
	Unit	2009–10	2010–11	2011–12	2012–13	2013–14	2014–15	2015–16
WHEAT								
World wheat								
Production	Mt	679	653	693	682	690	695	700
Closing stocks	Mt	199	195	209	210	213	215	217
Price* (US Hard red winter, Gulf)	US$/t	219	325	295	270	258	255	250
Australia wheat								
Production	kt	21,834	27,891	29,515	25,675	25,800	26,000	26,200
Price* (APW 10%, net pool)	A$/t	264	356	268	250	244	245	244
COARSE GRAINS								
World coarse grains								
Production	Mt	1114	1092	1140	1184	1210	1224	1248
Closing stocks	Mt	196	165	153	168	186	192	201
Price* (US corn, Gulf)	US$/t	171	285	276	253	232	224	214
Australia coarse grains								
Production	kt	11,408	12,391	13,639	13,868	13,961	14,253	14,557
Price*: Barley	A$/t	183	213	184	184	174	168	163
Grain sorghum	A$/t	208	223	193	198	189	180	172
OILSEEDS								
World oilseeds								
Production	Mt	442	452	448	467	481	493	505
Closing stocks	Mt	72	78	75	79	82	82	83
Price* (Soybean, Rotterdam)	US$/t	450	576	535	486	457	391	382
World protein meals								
Production	Mt	239	253	258	267	276	283	292
Price* (Soybean meal, Rotterdam)	US$/t	410	429	321	279	254	254	289
World vegetable oils								
Production	Mt	139	146	152	159	167	174	181
Price* (Soybean oil, Dutch)	US$/t	969	1335	1746	1683	1573	1442	1322
Australia oilseeds								
Total production	Kt	2609	3782	4459	4621	4722	4801	4898
Canola	Kt	1920	2382	2775	2925	3001	3077	3154
Canola price (Melb)*	A$/t	466	572	529	437	397	373	357
Sunflowers	kt	41	44	47	50	53	38	39
Sunflower price (Syd)*	A$/t	583	622	563	465	422	397	380

Sources: Australian Bureau of Statistics; International Grains Council; USDA; ABARES. (* Real prices are used in 2011–12 dollars)

conditions prevail, the harvested area for corn is forecast to rise by 1 per cent to 34 million hectares.

In China, corn production in 2012–13 is forecast to increase by 5 per cent to 194 million tonnes. The harvested area to corn is expected to increase marginally to 33 million hectares. Despite expected record production in 2011–12 of 184 million tonnes, domestic prices remain high as consumption is expected to continue to exceed production. In December 2011, the Chinese government raised the support price for corn by 10 per cent, to an average of 1980 yuan a tonne from 1800 yuan a tonne. But this support price remains below the average market price between July and December 2011. The expectation that the domestic corn price will continue to remain above the support price is likely to lead producers to plant more hectares to corn in 2012–13.

World coarse grain production



f ABARES forecast.

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Barley production globally is forecast to increase by 6 per cent in 2012–13 to 147 million tonnes, with increases expected from most major producing regions, including the European Union and the Black Sea region.

In the European Union, barley production is forecast to increase by 8 per cent in 2012–13 to 56 million tonnes. Producers are expected to respond to expected high premiums for malting barley, following the widescale downgrade of the barley crop in 2011–12, by increasing planted area. Assuming favourable seasonal conditions, the area harvested to barley is forecast to increase by 5 per cent to 13 million hectares.

In the Black Sea region, barley production is expected to increase by 9 per cent in 2012–13 to 32 million tonnes. Area harvested is forecast to increase by 8 per cent to 14 million hectares, as favourable returns for barley lead to increased planting area. In Ukraine, production is expected to reach 15 million tonnes, reflecting a 16 per cent increase in the area harvested.

In Canada, barley production is forecast to increase by 20 per cent in 2012–13 to 9.6 million tonnes as producers respond to high domestic prices. The harvested area to barley is expected to recover by 19 per cent to 3 million hectares, following the decline in 2011–12 which came as a result of wet spring planting conditions.

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Record oilseed production forecast in 2012–13

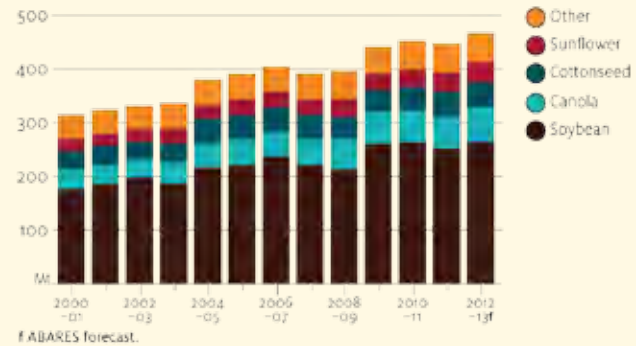
World oilseed production is forecast to increase by 4 per cent in 2012–13 to a record 467 million tonnes. A forecast recovery of the US soybean crop and continued high production of canola in Canada and sunflower in the Black Sea region are the main drivers of this forecast.

Canola

World canola production is forecast to increase by 7 per cent in 2012–13 to 64 million tonnes, reflecting a recovery in the European Union as a result of improved seasonal conditions.

In Canada, canola production is forecast to increase by 6 per cent in 2012–13 to a record 14.9 million tonnes. Adverse weather conditions last season limited the planting window and planting intentions were not fulfilled. It is forecast that the area planted to canola this season will increase by 12 per cent to 7.7 million hectares. This increase in area planted, combined with forecast favourable yields are expected to drive the increase in production this season.

World oilseed production



f ABARES forecast.

Rapeseed/canola production in the European Union is forecast to increase by 8 per cent in 2012–13 to 20.5 million tonnes. While some countries in the European Union are experiencing dry conditions, a return to more normal seasonal conditions in most countries is forecast to result in a 4 per cent increase in planted area to around 7 million hectares. The adverse seasonal conditions in 2011–12 resulted in yields reaching 10-year lows. In contrast, yields in the European Union this season are forecast to return to average.

Soybeans

World soybean production is forecast to increase by 5 per cent in 2012–13 to 264 million tonnes as production in the United States and China rebounds from last season.

In the United States, the world's largest soybean producer, soybean production is forecast to increase by 5 per cent in 2012–13 to 87 million tonnes. Unfavourable early spring weather during the planting period last season delayed plantings of soybeans and corn, while continued adverse conditions during key growing periods lowered soybean yields to 10-year lows. In contrast, area planted this season is forecast to increase by 3 per cent to 30.8 million hectares. Assuming normal seasonal conditions, yields are forecast to return to average which will increase production.

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In Argentina and Brazil, the soybean harvest for 2011–12 is currently underway, with total production forecast to decline by 4 per cent to 119 million tonnes. Long periods of hot dry weather caused by a La Niña event have adversely affected crops. Reduced subsoil moisture has caused some irreversible damage to crops in the Brazilian states of Paraná and Rio Grande do Sul. But even with a reduction of average yields in Brazil, production is still forecast to be 71 million tonnes; the second largest on record. In Argentina, planting intentions were not met as dry conditions shortened the planting window and later lowered yields. Production in 2011–12 is therefore forecast to fall by 2 per cent to 48 million tonnes. In 2012–13, the area planted to soybeans in Argentina and Brazil is forecast to increase by 2 per cent and 5 per cent, respectively, to 19 million hectares and 26 million hectares.

Yields are forecast to return to average following the La Niña affected yields of 2011–12 (in contrast to Australia, La Niña events are associated with dryer conditions in South America), with production forecast to increase by 6 per cent in Argentina to 51 million tonnes and 3 per cent in Brazil to 73.7 million tonnes.

Sunflower

World production of sunflower seed is forecast to increase by 2 per cent in 2012–13 to a record 36 million tonnes. This forecast is driven by record production in all major sunflower producing regions including Argentina, the European Union, the Russian Federation and Ukraine.

In the Black Sea region, record sunflower production is forecast in 2012–13 in the Russian Federation and Ukraine at around 9 million tonnes and 7.7 million tonnes, respectively. This forecast represents an increase of 3 per cent in both countries mainly as a result of expected higher than average yields following the 2010–11 drought.

In the European Union, sunflower seed production is forecast to increase by 2 per cent in 2012–13 to just over 8 million tonnes. Sunflower in the European Union is slowly becoming a more profitable crop for producers as sunflower crush margins have improved over the past two seasons. This has resulted in an increase of sunflower seed crushing at the expense of rapeseed and soybeans.

In Argentina, sunflower production is forecast to increase by 1 per cent in 2012–13 to 3.4 million tonnes. In 2011–12 sunflower yields and, ultimately, the crop were adversely affected by extended hot dry conditions associated with La Niña. In 2012–13 it is forecast that yields will recover and production will increase.

Crush

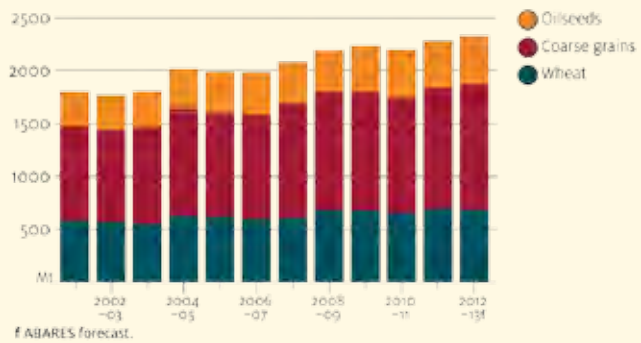
World total oilseed crush is forecast to increase by 3 per cent in 2012–13 to 399 million tonnes. The forecast increase in production of all major oilseeds as well as continued high prices for vegetable oils is supporting crush margins, driving this increase in crush. Sunflower seed crush is forecast to increase by 5 per cent this season, the highest growth rate of all the oilseeds. This increase is principally the result of the favourable crush margin for sunflowers relative to rapeseed and soybeans. Strong demand and record sunflower crops have also boosted sunflower seed crushing in Ukraine and the Russian Federation to record highs.

In India, soybean crush is forecast to increase by 4 per cent in 2012–13 to around 10.2 million tonnes. Over the past decade the profitability of the oilseed crushing sector in India has increased substantially, resulting in a 48 per cent increase in total oilseed crush between 2001–02 and 2011–12.

In the European Union, total oilseed crush is forecast to increase by around 4 per cent in 2012–13 to 42.5 million tonnes. A 3 per cent recovery in rapeseed/canola crush to 21 million tonnes following an improvement in rapeseed/canola production is one of the main

contributors of the forecast total crush increase. Another contributor is the continued high sunflower crush, which is forecast to increase by 7 per cent to 7.2 million tonnes in the European Union.

World grains and oilseed production



Consumption

Population growth driving wheat consumption higher

World consumption of wheat is forecast to increase marginally to 681 million tonnes in 2012–13. This increase is largely driven by growth in human consumption of wheat for food, in line with world population growth.

Consumption of feed wheat is forecast to remain high relative to recent years, but to fall from the record level of 2011–12. In 2011–12, feed wheat consumption rose in response to a rise in corn prices relative to feed wheat. Much of the increase in consumption in recent years has been in East Asia, where demand has been partially met by imports of Australian feed wheat from the rain-affected 2010–11 harvest.

World feed grain demand to increase in 2012–13

World consumption of coarse grains is forecast to increase by 2 per cent in 2012–13 to 1.2 billion tonnes. Use of coarse grains is expected to increase by 2 per cent to 680 million tonnes for feed use and by 2 per cent to 490 million tonnes for food and industrial use.

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Industrial and food use of corn in the United States is forecast to rise by 1 per cent in 2012–13 to 163 million tonnes, of which around 135 million tonnes will be used to produce ethanol. The Renewable Fuels Standard, created under the Energy Independence and Security Act of 2007, mandates incrementally higher use of biofuels to 2022.

In 2012 and 2013, the mandated requirement for biofuel production is 58 billion litres and 63 billion litres, respectively, of which the maximum amount of ethanol that can be derived from corn in 2012 and 2013 is 50 billion litres and 52 billion litres, respectively. The US Energy Information Administration forecasts continued high fuel prices over 2012–13, which is expected to support the United States ethanol industry. The United States is expected to produce beyond the Renewable Fuels Standard capped amount allocated to corn ethanol in 2012–13.

Industrial and food use for the rest of the world is expected to grow in 2012–13 but at a slower rate than the past several years. In China, industrial and food use in 2012–13 is forecast to grow by 3 per cent to 59 million tonnes, a decline from the five-year average growth rate of 7 per cent.

World feed demand for corn is expected to rise by 2 per cent in 2012–13 to 521 million tonnes. This reflects expected increases in livestock production in Asia and Brazil more than offsetting the expected cattle herd contraction in the United States. In the United States, lower cattle numbers are forecast to lead to a 2 per cent decline in feed consumption of corn in 2012–13 to 115 million tonnes. In contrast, feed consumption in China is forecast to increase by 4 per cent to 140 million tonnes, reflecting an increase in intensive livestock production.

Feed barley use is forecast to increase by 4 per cent in 2012–13 to 98 million tonnes. This is largely driven by higher domestic availability in major producing countries. In the Russian Federation, in particular, consumption of barley in 2012–13 is forecast to increase by 10 per cent

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to 11 million tonnes, reflecting greater domestic production as well as growing livestock numbers.

Sustained industrial demand driving oilseed consumption

World oilseed consumption is forecast to rise by 3 per cent in 2012–13 to 469 million tonnes. World vegetable oil consumption is forecast to increase by 3 per cent to 158 million tonnes. Population growth and rising incomes in developing countries (especially China and India) as well as sustained growth in industrial demand are driving this forecast increase.

World industrial use of vegetable oil is forecast to rise by 6 per cent in 2012–13 to around 36 million tonnes. The European Union is the largest consumer of vegetable oil for industrial use and consumption is forecast to increase by 2.5 per cent to 12.5 million tonnes because of higher mandates for biofuels. But European production of biodiesel is forecast to decrease in 2012–13 as a result of increased production costs relative to imported biodiesel from Latin America and Indonesia.

World biodiesel use

f ABARES forecast.

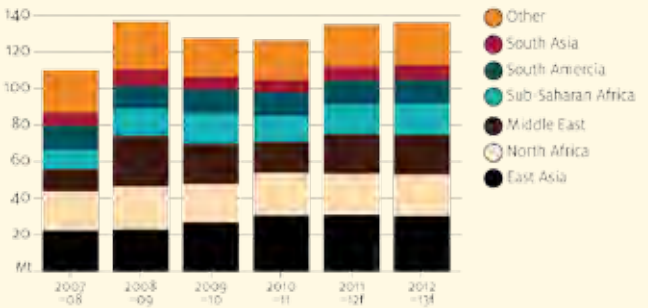
World consumption of protein meal is forecast to increase by 5 per cent in 2012–13 to 269 million tonnes. Growth in intensive livestock production, especially in developing countries, is driving this expected increase in demand. China remains the world's largest consumer of protein meal and is forecast to increase consumption by 8 per cent to 69 million tonnes in 2012–13 given the increased size of its pig herd. Similarly, India's consumption of protein meal is forecast to increase by 9 per cent to around 13 million tonnes.

Trade

Wheat trade to increase marginally

In 2012–13, trade in wheat is forecast to rise marginally to around 136 million tonnes, largely as a result of forecast record opening stocks and another year of relatively high forecast production in major exporting countries. Exports are forecast to be similar to 2011–12 in most major exporting countries except the United States, where they are forecast to rise by 4 per cent to around 25 million tonnes as a result of expected higher production. World imports of wheat are forecast to rise marginally in 2012–13, in line with exports. Quantities imported typically reflect patterns in each region's consumption, and this is forecast to continue in 2012–13.

World wheat imports by region



f ABARES forecast.

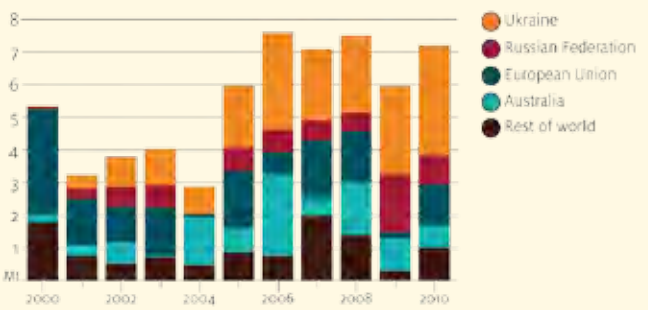
Record coarse grains production pushes trade higher

World trade in coarse grains is forecast to increase by 10 per cent in 2012–13 to 131 million tonnes. This reflects higher production in major exporting countries leading to greater tradable supplies. World trade in corn in 2012–13 is forecast to increase by 17 per cent to 103 million tonnes, driven predominantly by a recovery in US production. World barley trade in 2012–13 is forecast to increase by 5 per cent to 20 million tonnes given the expected production increase in the Black Sea region and Canada.

In China, corn imports are forecast to decrease by 11 per cent in 2012–13 to 4 million tonnes. Although corn consumption is expected to exceed production for a third consecutive year, the abundance of alternative, lower priced feeds such as wheat is forecast to lead to some substitution away from corn. Despite the forecast decline, imports will still be above the five-year average of 1.3 million tonnes.

Over the past decade Saudi Arabia has become an increasingly important market for barley. In recent years, Ukraine and the Russian Federation have dominated exports to this market. In 2012–13, Saudi Arabia is forecast to import around 7.7 million tonnes of barley; equivalent to around 39 per cent of world barley trade. Removal of an export tax on barley in Ukraine combined with a trade agreement between Ukraine and Saudi Arabia are expected to lead to an increase in Ukraine barley exports to Saudi Arabia in 2012–13.

Share of Saudi Arabia barley imports



World trade in oilseeds is forecast to increase by 4 per cent in 2012–13 to 115 million tonnes, reflecting increased trade of all three major oilseeds (soybeans, canola and sunflower seed). World trade in soybeans is forecast to increase by 5 per cent to 98.3 million tonnes, primarily because of the forecast rise in production in the United States and consequent increase in export supplies. World canola trade is forecast to increase by 1 per cent in 2012–13 to 10.8 million tonnes. The European

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Union is expected to import less rapeseed/canola in 2012–13 in response to higher domestic production following a recovery from the 2011–12 crop. World trade in sunflower seed is forecast to increase by 5 per cent to 2.3 million tonnes in 2012–13, largely as a result of continued high shipments from the Black Sea region.

Stocks

Stocks to increase

World wheat closing stocks in 2012–13 are forecast to increase by 1 per cent to around 210 million tonnes, as a result of production exceeding consumption. Stocks in most major exporters are forecast to remain largely unchanged in 2012–13, with the exception of the United States, where they are forecast to rise by 10 per cent to around 28 million tonnes, given the expected increase in production.

World closing stocks of coarse grains are forecast to increase by 10 per cent in 2012–13 to 168 million tonnes as world production is expected to exceed consumption. World corn stocks are forecast to increase by 7 per cent to 129 million tonnes. In the United States, corn stocks are expected to increase by 20 per cent to 26 million tonnes as production recovers and feed use declines. In China, corn stocks are expected to be relatively unchanged in 2012–13 at around 56 million tonnes, as the expected shortfall in domestic production is forecast to be filled by imports. World stocks of barley are forecast to increase by 15 per cent to 26 million tonnes, slightly below the long-term average of 27 million tonnes, as production in Canada and the European Union rises.

World closing oilseed stocks are forecast to increase by 4 per cent in 2012–13 to 79 million tonnes. This forecast reflects an expected 11 per cent rise in world canola stocks to 4.9 million tonnes and a 2 per cent rise in world soybean stocks to 64 million tonnes. Sunflower seed stocks are expected to grow the fastest, albeit from a low base, with a forecast 23 per cent increase in closing stocks to 3.3 million tonnes in 2012–13. This forecast increase in world oilseed stocks is a direct result of an expected increase in production following unfavourable seasonal conditions in many key oilseed growing regions in 2011–12.

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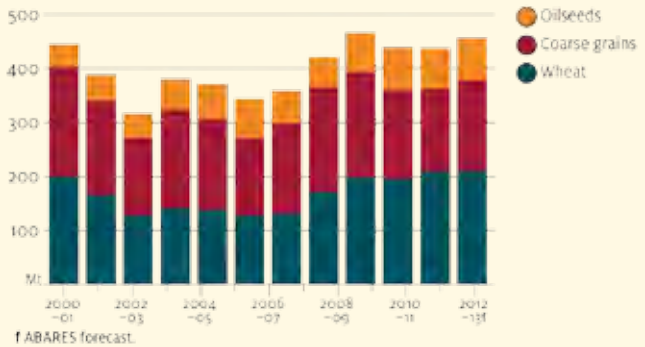
World wheat, coarse grains and oilseeds closing stocks



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Australian production and exports

Wheat production to fall in 2012–13

Australian wheat production is forecast to fall by 13 per cent to around 26 million tonnes in 2012–13, reflecting an assumption of a return to average yields and an expected smaller area planted. Area planted to wheat is forecast to fall by 3 per cent to 13.7 million hectares as the forecast prices for wheat, relative to other major crops, become less favourable.

Following relatively lower average protein levels in Australian wheat in both 2010–11 and 2011–12, the premium held by higher- protein wheat on world markets is likely to provide an incentive to growers to raise wheat protein levels in 2012–13; for example, through applying nitrogenous fertiliser, which can contribute to higher protein levels.

Australian wheat exports are forecast to remain largely unchanged at around 21 million tonnes in 2012–13. Despite this expected decline, the forecast remains relatively high compared with historical averages. Export value is forecast to fall by 9 per cent to around $5.6 billion in 2012–13, reflecting lower export shipments and world prices.

The area planted to canola is forecast to increase by 5 per cent in 2012–13 to 1.8 million hectares, reflecting favourable prices and strong global demand for high-bearing oilseeds. Production is forecast to be 5 per cent higher at around 2.9 million tonnes. This forecast is driven by continued high yields following the drought-affected crop in Western Australia in 2010–11. Export value is forecast to decrease to around $1.1 billion in 2012–13, reflecting an expected fall in prices more than offsetting a 1 per cent rise in export volume to 1.9 million tonnes.

The area planted to barley is forecast to increase by 3 per cent in 2012–13, reflecting relatively favourable prices and high world demand for feed grains. Assuming favourable seasonal conditions production is forecast to rise by 5 per cent to 9 million tonnes. Export value is forecast to decrease by 1 per cent to around

$1.7 billion in the 2012–13 marketing year (November–October), as an expected fall in prices more than offset a 4 per cent increase in export volume to 6 million tonnes.

Medium-term outlook

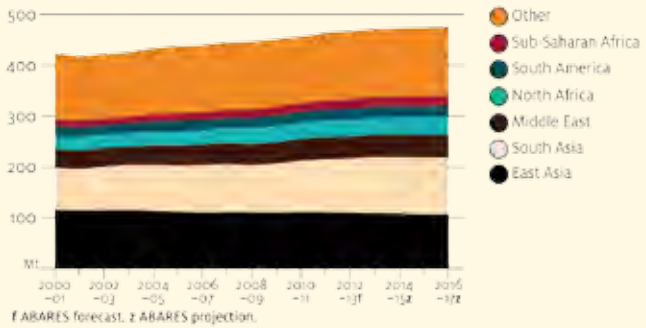
World grains and oilseeds prices are projected to trend downwards in real terms over the projection period from 2012–13 to 2016–17, while remaining above the averages observed in the early 2000s. Assuming favourable seasonal conditions, an increase in grains and oilseeds production over the medium-term is projected to arise from yield growth and increases in areas sown. Demand will be the key factor supporting prices over this projection period because of rising industrial use, continued rising incomes and population growth in key import markets.

Current supplies of wheat are relatively high compared with recent years, leading to a greater decline in wheat prices at the beginning of the projection period compared with coarse grains and oilseeds. But climate and soil in many of the major wheat exporters are typically not suited to corn and soybeans. As a consequence, large shifts out of wheat production and into coarse grains or oilseeds in those countries are unlikely.

World consumption

World wheat consumption is projected to rise by an average of 1 per cent a year to just under 705 million tonnes by 2016–17. This will be largely driven by increases in food use of wheat, which accounts for a little less than 70 per cent of total wheat use. Food consumption of wheat is projected to rise by an average of less than 1 per cent a year to around 475 million tonnes by 2016–17. While per person food consumption of wheat has been falling over the past decade, the effect of population growth has more than offset this trend in each region of the world, except East Asia. This is projected to continue over the medium-term.

World food use of wheat



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World coarse grains consumption is projected to rise by around 2 per cent a year to 1.3 billion tonnes by the end of the projection period. From 2004–05 to 2010–11 industrial and food use of corn (especially in ethanol production) were the major drivers of coarse grains consumption. But over the medium-term this is expected to change as expansion of the corn ethanol industry in the United States slows and increasing livestock numbers in Asia and Latin America strengthen demand for feed use.

World oilseed consumption is projected to rise by around 3 per cent a year to 525 million tonnes by 2016–17. The major drivers of oilseed consumption since the mid-2000s have been industrial use, primarily for biodiesel, and protein meal for animal feed. Most growth in protein meal for animal feed stems from increased demand in developing countries with higher intensive livestock production. Global consumption of vegetable oil is projected to increase by 21 per cent over the projection period to 185 million tonnes by 2016–17.

Rising incomes to drive feed demand

Growth in incomes around the world is projected to continue being a major driver of demand for feed grains and oilseeds over the medium-term. As incomes rise, consumer diets have diversified and there has been increasing substitution away from grains (such as wheat and rice) toward livestock products (such as meat and dairy). This trend is projected to continue.

World consumption of coarse grains for feed is projected to increase by an average of 2 per cent a year to 750 million tonnes by 2016–17. Oilseed meal is a significant source of protein in livestock feed. Consumption of oilseed meal is projected to rise by an average of around 5 per cent a year over the same period to 330 million tonnes by 2016–17. World wheat use for feed is forecast to increase on average by 1 per cent a year to around 130 million tonnes by the end of the projection period, largely as a result of relatively high coarse grains prices encouraging substitution toward wheat as a feed stock.

Industrial use

Production of ethanol was the major driver of corn consumption in the United States over the past decade. This growth was mainly the result of the Renewable Fuel Standard created under the US Energy Independence and Security Act of 2007, but was also assisted by an ethanol blender subsidy and an import tariff on foreign ethanol. On 31 December 2011 the blender's subsidy and the import tariff expired. This is expected to increase the cost of producing ethanol and open the

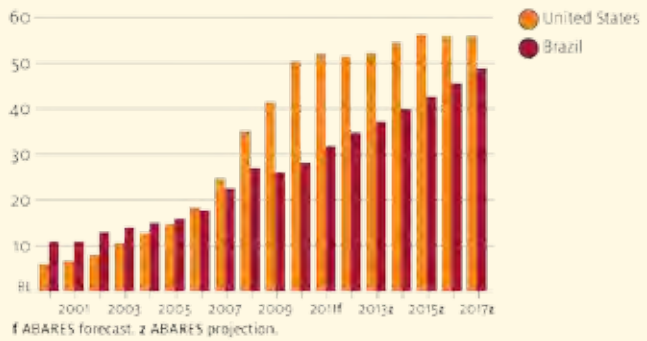
market to imported product, thereby putting downward pressure on demand for domestically produced ethanol.

Over the medium-term, production of ethanol from corn in the United States is projected to plateau at around 56 billion litres in 2015, before declining gradually as ethanol imported from Brazil begins to compete with domestically produced ethanol. Brazil, which produces ethanol from sugarcane, has a production cost advantage over the United States, which produces most of its ethanol from corn. Because Brazil has ample available land to increase its sugarcane production, it has the scope to markedly increase ethanol production and hence exports.

In the United States, a separate subsidy for producers of biodiesel from soyoil also expired on 31 December 2011. Termination of the subsidy is expected to increase the cost of producing biodiesel and trigger a decline in biodiesel production over the medium-term.

Currently the European Union is the largest producer of biodiesel in

Ethanol production in the United States and Brazil



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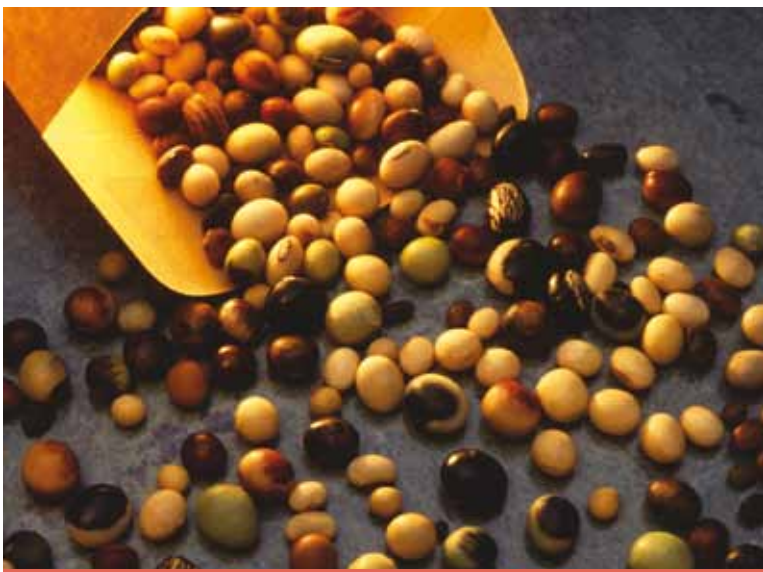

Termination of a US subsidy for biodiesel production from soyoil will lead to a medium term decline in US biodiesel production.

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the world followed by Brazil, the United States and Argentina. Over the medium-term, it is projected that the biodiesel mandates in Brazil and Argentina will increase from B5 to B10 and from B7 to B10, respectively, representing the proportion of biodiesel blended into fuel.

Given the relatively lower costs of biodiesel production in Argentina, it is projected that Argentina will become the third largest producer of biodiesel, surpassing the United States over the medium-term.

World production

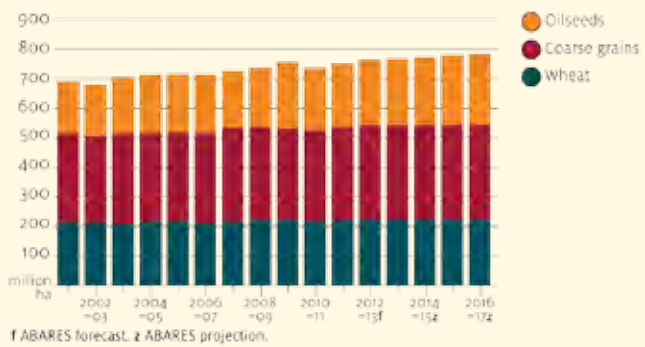
Although the global area planted to the major grains and oilseeds (wheat, barley, corn and soybeans) has grown slowly over the past 20 years, production has increased more significantly as a result of improvements in yields.

World wheat production is projected to increase by an average of 1 per cent a year over the medium-term to around 705 million tonnes by 2016–17. The global area planted to wheat is projected to rise marginally to around 224 million hectares by 2016–17. Most of this rise is expected to occur in the Black Sea region.

World production of coarse grains is projected to rise by 2 per cent a year to 1.3 billion tonnes by 2016–17. This increase is driven principally by an assumed improvement in yields in major production countries including China, Brazil and Argentina. With the decline in the prices of oilseeds and coarse grains projected to be less than for wheat, the area planted to coarse grains is projected to increase to 320 million hectares by the end of the projection period. Most of this projected rise is expected to occur in Latin America.

World oilseed production is projected to rise by around 3 per cent a year to 520 million tonnes by 2016–17. The global area planted to oilseeds is projected to rise by around 2 per cent a year to around 241 million hectares by 2016–17. Most of this increase is expected to occur in Argentina and Brazil for soybean production and the Black Sea region for sunflower seed production.

World grain and oilseeds area



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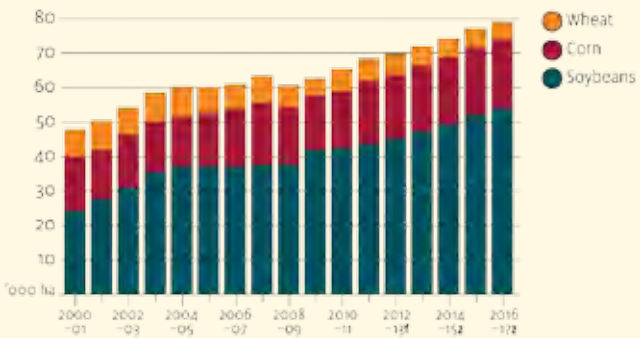
Competition for land in Latin America

Cropping areas in Brazil and Argentina have expanded rapidly over the past 10 years, increasing by 44 per cent between 2000–01 and 2011–12 to around 70 million hectares. The area planted to soybeans has dominated this rise, increasing by 125 per cent over the same period. Latin America has the potential to further expand its agricultural activities, particularly in the northern parts of Brazil, not including the Amazon Rainforest or protected areas. Land availability in Brazil, according to reports from the US Department of Agriculture and the Brazilian Agricultural Ministry, ranges between 50 and 200 million hectares. The cattle industry competes with the cropping sector for land in Brazil and Argentina, although over the past decade pasture area has decreased slightly.

Over the projection period, the area planted to soybeans is expected to reach 23.5 million hectares in Argentina and 31 million hectares in Brazil. Favourable returns, strong demand for vegetable oil in biodiesel production, and growth in feed consumption of protein meal are expected to drive this expected expansion. Production in Argentina and Brazil is projected to rise by around 2 per cent and 1 per cent a year to 57 million tonnes and 77 million tonnes, respectively, by 2016–17.

In comparison, corn plantings in Brazil and Argentina are projected to increase by 7 per cent by 2016–17 to 20 million hectares, reflecting strong global demand for livestock feed. The area planted to corn is projected to rise to 4.2 million hectares in Argentina and 15.7 million hectares in Brazil by the end of the projection period.

Wheat, corn and soybeans – Brazil and Argentina



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Exports from the Black Sea region to rise

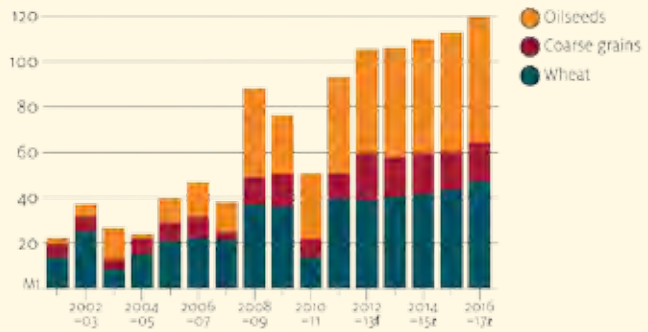
Over the medium-term, the area sown to wheat, coarse grains and oilseeds in the three Black Sea exporting countries (Kazakhstan, the Russian Federation and Ukraine) is projected to increase by an average of 2 per cent a year to around 90 million hectares. Between 11 and 13 million hectares of idle land suitable for cropping currently remains available for expansion. Production of grains and oilseeds is projected to increase on average by 2 per cent a year to just under 200 million tonnes by 2016–17.

Exports of wheat, coarse grains and oilseeds are projected to increase by an average of 6 per cent a year to around 120 million tonnes by 2016–17. The major crop produced in the region is wheat. Wheat

World oilseed production is expected to increase by 3 per cent a year for the next five years.

exports are projected to increase by an average of 4 per cent a year to just under 50 million tonnes by 2016–17. While the Black Sea region is forecast to be the world's largest wheat exporting region in 2011–12, the Russian Federation is projected to become the world's largest exporter of wheat over the medium-term.

Wheat, coarse grains and oilseeds exports from the Black Sea region



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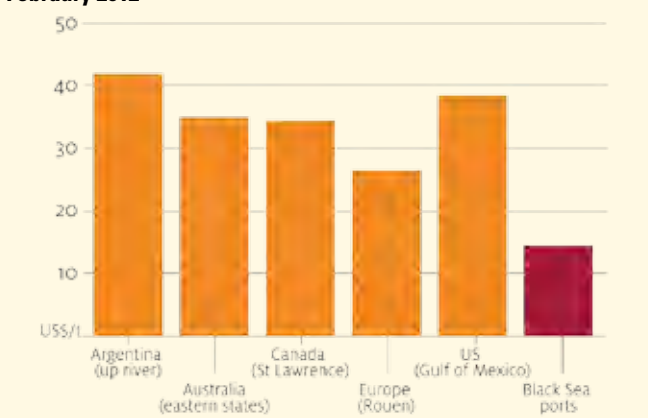
According to a United Nations Food and Agricultural Organization report, current annual grain export capacity of Black Sea ports is over 46 million tonnes. Actual exports in the Black Sea region have exceeded this figure as a result of exports from the Baltic Sea and shipments over land to nearby countries, which are major export destinations for grain from Kazakhstan, the Russian Federation and Ukraine. Over the medium-term, the Russian Federation's Black Sea port export capacity is expected to increase to over 28 million tonnes.

Black Sea exporters (except Kazakhstan, which faces the challenge of extensive land transport requirements, see Box) have a freight cost advantage over other major grain exporters to major markets in the Middle East and North Africa. This relative freight cost advantage is projected to continue over the medium-term and, as a consequence, Black Sea exporters' dominance in these major markets is projected to be maintained over the medium-term.

Indicative ocean grain freight rates to Alexandria, Egypt, early February 2012



Corn production to increase in China

China is currently the world's second largest producer of corn. In 2011–12, China harvested 33 million hectares, roughly the same area as the United States, the world's largest corn producer. But China is a relatively inefficient producer so lower yields resulted in a crop of 185 million tonnes; around 60 per cent the size of the United States. Because of constraints on the availability of arable land in China, the potential for production expansion through increased cropping area is limited. Further increases in production will need to be achieved through improvements in yields.

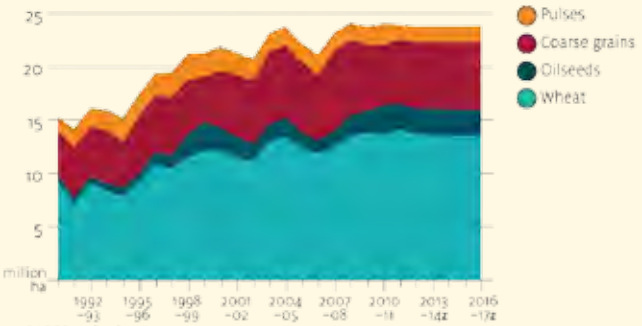
Corn production is projected to increase at a rate of 4 per cent a year to 225 million tonnes by 2016–17. The Chinese Government has made higher agricultural production a target in its 2011 five-year plan. To achieve this objective, government expenditure on agricultural research, development and implementation, water and logistics infrastructure, and investment in farm capital is expected to increase.

Australian medium-term outlook

The total area sown to grains and oilseeds in Australia is projected to average around 24 million hectares. This projection is consistent with historical land use and a small expansion of the sheep flock, which competes for land resources with grains and oilseeds. Changes in the wheat, coarse grains and oilseeds areas are projected

to reflect relative movements in world prices. Wheat area is projected to decline gradually over the projection period, while coarse grains and oilseeds areas are projected to rise.

Australian grains and oilseeds area



z ABARES projection.

Production of grains and oilseeds in Australia over the medium-term is projected to increase by an average of 1 per cent a year to reach 45 million tonnes by 2016–17. For wheat and coarse grains, this reflects an assumption of favourable seasonal conditions over the period and an assumed annual yield growth of under 2 per cent, consistent with observed productivity growth over the past 10 years.

Australian production of wheat is projected to rise by under 1 per cent a year between 2012–13 and 2016–17 to around 26 million tonnes, reflecting the effect of yield growth more than offsetting small decreases in area planted. Area planted to wheat is projected to fall by an average of under 1 per cent a year to 13.5 million hectares over the same period. Australian wheat exports are projected to remain around 20 million tonnes up to 2016–17, in line with production and relatively high stocks over the projection period. Although stocks are projected to remain relatively high, they are expected to decline as a result of greater domestic use and relatively high exports.

Barley production is projected to rise by 10 per cent by 2016–17 to 10 million tonnes. The area planted to barley is projected to rise by 6 per cent to 4.4 million hectares, largely reflecting a response to expected relatively high world feed grain prices. Over the medium-term, exports of feed barley are projected to increase, particularly to the Asian region, in line with expectations of continued high demand for feed grains.

Canola production is projected to increase by 12 per cent by 2016–17 to around 3.2 million tonnes. The area planted to canola is projected to rise by 12 per cent to almost 2 million hectares by the end of the projection period. Canola yields are projected to increase by 1 per cent a year over the outlook period, with the expected increase in adoption of genetically modified canola varieties. ■

Is rice the 'next big thing' for the Ord?

Dr Siva Sivapalan, Department of Agriculture and Food, Kununurra, WA

Rice was grown at commercial scale in the Ord Valley of Western Australia's far north from 1973 to 1983. Production peaked in 1982, with 3500 tonnes of rice paddy at an average yield of 7.1 tonnes per hectare in the dry season and 3.7 tonnes per hectare in the wet season.

Dr Siva Sivapalan.

But commercial rice production ceased in the Ord Valley in 1983 due to a number of reasons including:

- Damage to crops by ducks and magpie geese;
- Cold stress in June and July;
- Heat stress in October and November;
- Low returns to farmers;
- Declining demand in local markets;
- High recharge rates of Cununurra clay soils under flooded systems; and,
- Unavailability of locally adapted rice varieties with good mill-out rates.

Renewed interest

Suitable soil types, a warmer climate, and availability of irrigation water make the Ord Valley ideal for growing rice. Rice trials conducted at Frank Wise Institute of Tropical Agriculture in Kununurra in 2009 demonstrated the potential for high yields (up to 13.6 tonnes per hectare) in this environment. Another attraction was the record price of $450 per tonne of medium grain paddy paid to the NSW rice growers for their 2008–09 crop (and $550 per tonne for 2009–10 crop).

Currently there are opportunities to export rice from the region – through the upgraded and nearby Wyndham Port facility – leading to a higher return for local rice growers.

About 15,000 hectares of new lands suitable for irrigated agriculture became available in the Ord Valley (Stage II) in November 2011.

The two major soil types present in the Ord Valley – Cununurra clays and Aquitaine soils – have high clay content (49 57 per cent) and are ideally suited to rice cultivation.

Putting rice in the Ord to the test

Experimental trials – 2010 dry season

Trials conducted at Frank Wise Institute of Tropical Agriculture attempted to identify suitable locally adapted (temperate or tropical) rice varieties for both flooded and aerobic systems.

During the 2010 dry season, three temperate and two tropical varieties were evaluated under three irrigation methods for their yield potential (Figure 1). In another trial, five temperate and nine tropical rice varieties were evaluated for yield with two planting dates using a flooded irrigation system (Figure 2).

The results suggest that many varieties have potential for high and/or economical yield.

Commercial crop in 2010

About 240 hectares of commercial planting was undertaken in the Ord Valley by two growers during the 2010 dry season. Seed of three temperate rice varieties (Amaroo, Quest and Jarrah) were used for direct drilling and aerial sowing.

Despite some establishment problems, an average yield of 7.5 tonnes per hectare was achieved and Quest was the highest yielding variety. A farm gate price of $550 per tonne was paid for the medium grain rice produced by the Ord growers.

A gross margin analysis indicated that a 7.5 tonnes per hectare crop at $550 per tonne generated gross margins of $2442 per hectare which was very competitive compared with many other field crops in the Ord.

The 2010 commercial crop in the Ord Valley took just over three months to reach maturity which in turn reduced the amount of irrigation water usage by 3.5 megalitres per hectare.

Figure 1: Grain yield of five varieties under three irrigation systems

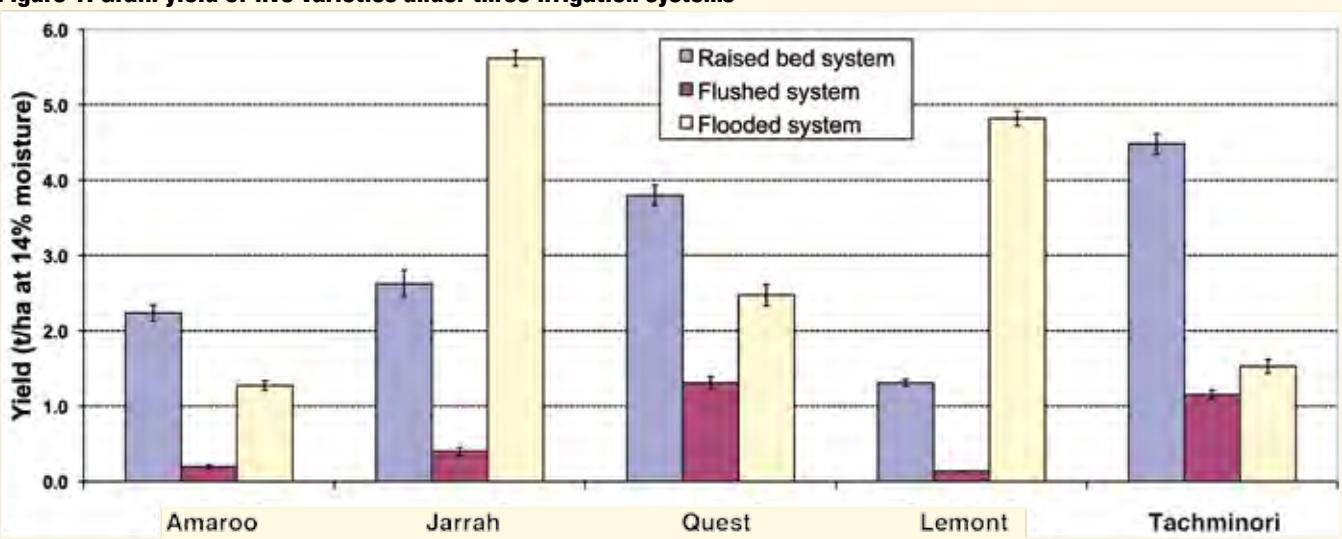
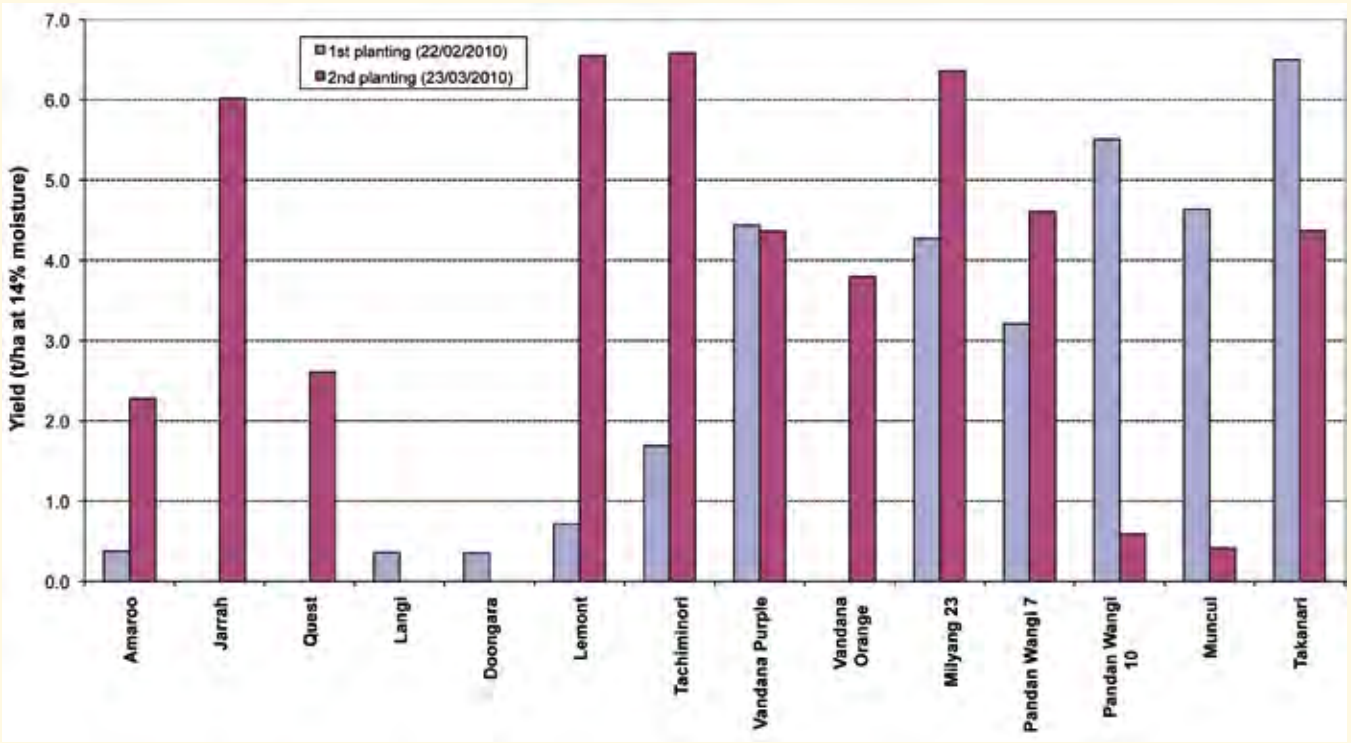


Figure 2: Grain yield of different varieties under two planting dates



Experimental trials – 2011 dry season

Yield potential of five temperate and 15 tropical rice varieties grown on raised-bed (aerobic) and flooded (paddy) conditions was evaluated during April to September 2011.

Cold night temperatures during the season had a widespread effect on grain yield of most varieties. Ponded water also failed to provide protection against low temperatures. But this trial enabled the identification of those varieties tolerant to cold. In terms of cold tolerance under aerobic conditions, the rank order is:

- Yunlu 29 (11.75 tonnes per hectare);
- B6144F-MR-6 (7.16 tonnes); and,
- Tachiminori (5.05 tonnes).

Planting a research trial area with a six-row seeder.

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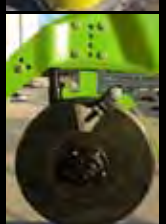

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Inspecting the variety trial in a flooded system.

The highest yielding varieties in the flooded systems were:

- NTR 426 (7.79 tonnes per hectare);
- Yunlu 29 (7.25 tonnes); and,
- ULP R17 (7.08 tonnes).

Commercial crop in 2011

After the successful cultivation of 240 hectares of rice in the Ord Valley in 2010, three growers established up to 650 hectares in May 2011. The rice variety chosen was Quest – a temperate variety – using a flooded (paddy) system.

For the first time in Western Australia, a rice grower in the Ord Valley discovered symptoms similar to blast disease in his crop on August 3, 2011. The crop stage was 10 days after panicle initiation.

Tests identified the disease as rice blast caused by the fungus *Magnaporthe grisea*. The pathogen infected all the above-ground parts of the rice plant. Cool night temperatures, high nitrogen, and leaf wetness by dew favoured the disease.

Rice blast is very destructive causing significant yield losses. The disease had spread to other rice crop areas in the Valley.

The cause of the initial infection is not known but migratory birds or wind could be an agent of disease spread. After the detection of the disease, the three growers took different management approaches (such as cutting for hay, spraying fungicide and no treatment) to their crops.

Identification of a blast tolerant variety is a priority research need for the emerging Ord rice industry.

The future

Among the new crops trialled in the Ord Valley, rice has been demonstrated as a potentially suitable high-return crop. A rotation system based on rice appears highly suitable and profitable for the soil

Harvesting trial plots using a Yanmar plot harvester.

types in this region and permanent raised-beds may provide a viable production system.

Grain from specialty rice varieties can supply niche markets and attract premium prices. Even with average yields, these can be highly profitable. High yielding good quality rice could significantly increase farm gross margins and viability.

The major market to be targeted is export to neighbouring countries such as Papua New Guinea. There is also opportunity for the domestic market – ideally for higher value human consumption.

Rice also provides another grain source for intensive livestock feed in the region – possibly at $200 to $300 per tonne. An opportunity has also arisen for baling rice stubble as cattle feed which brings extra dollars to growers in the Ord Valley. Rice produces about 12 tonnes per hectare of hay and prices of up to $150 per tonne were offered in 2011.

This market for rice stubble as stockfeed results in less stubble burning and reduced environmental pollution.

But many issues remain unresolved. More research is needed to:

- Identify a suitable variety for the local tropical environment;
- The ideal planting time for maximum yield;
- The sowing rate for optimum plant density; and,
- The nitrogen fertiliser requirements.

Research is continuing at Frank Wise Institute of Tropical Agriculture to address these issues.

The author, Dr Siva Sivapalan, is a Development Officer for the Department of Agriculture and Food (WA), based in Kununurra. ■

Rice blast disease infection at different stages of plant growth.

Section 2

The grain industry in figures

All figures and tables presented in this Yearbook have been derived from a combination of ABARES, ABS, International Grains Council, AWB and USDA sources. The crop year listed in figures and tables is the year in which the crop was planted.
2011 Australian summer crop figures are therefore forecasts for the harvest during 2012.
(Mt = 1,000,000 tonnes) (Kt = 1000 tonnes)

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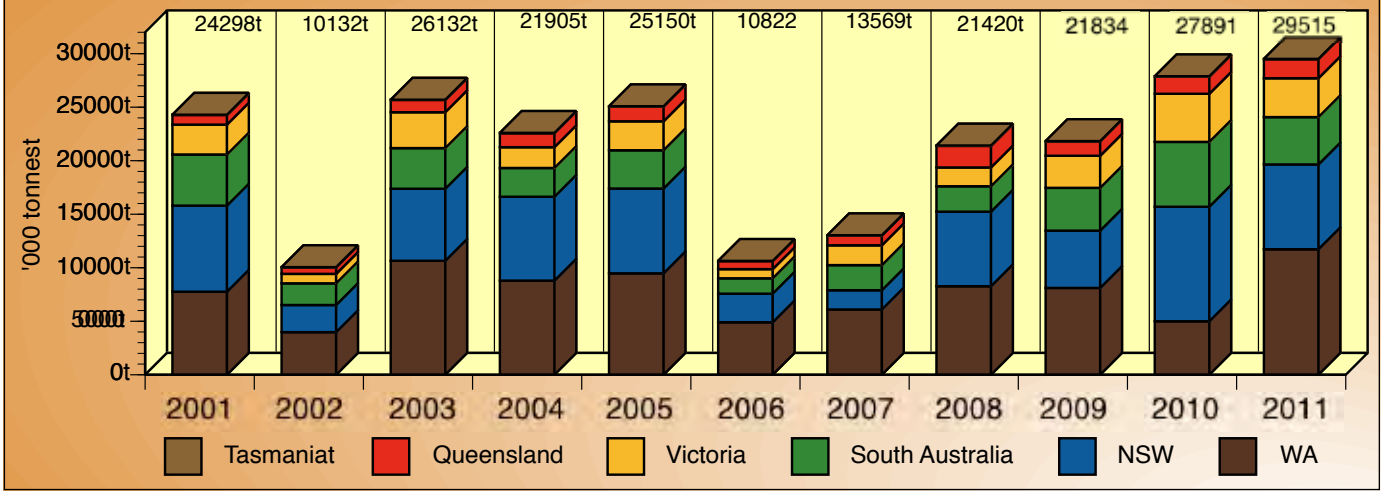
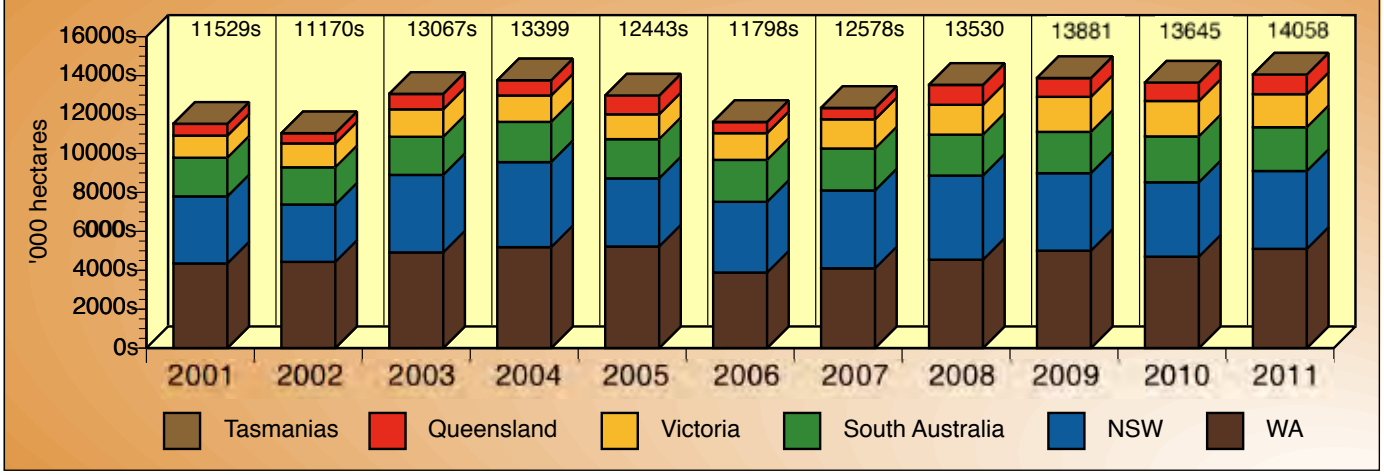
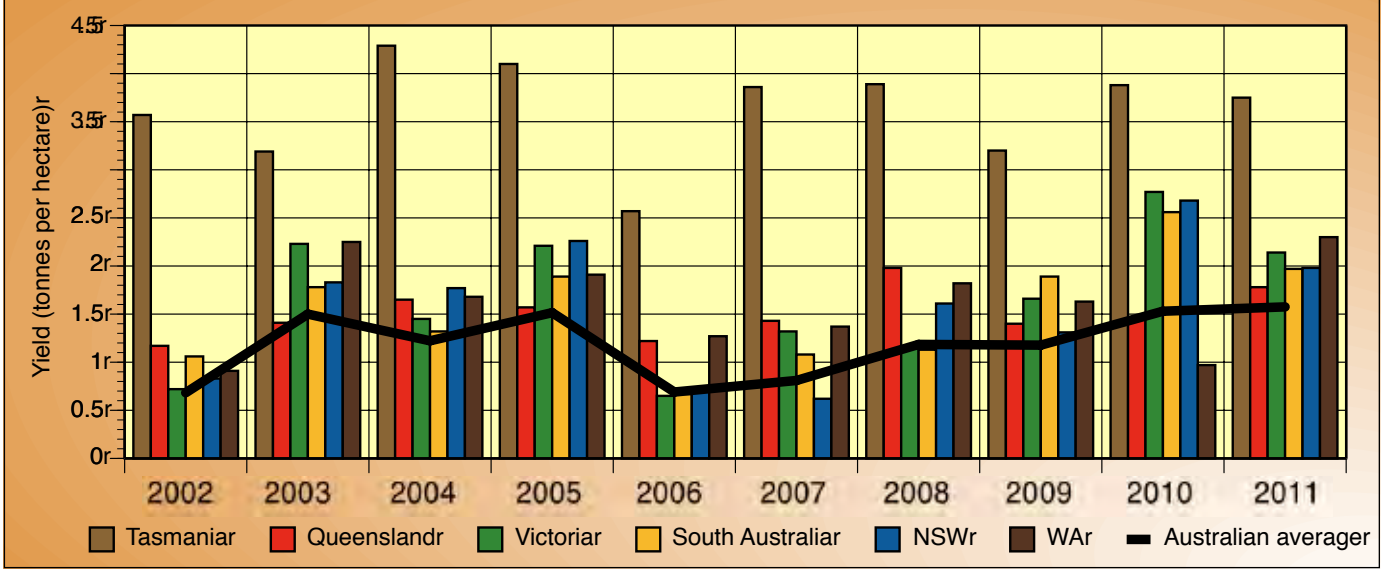
Australian wheat production



Total Australian wheat area



Average Australian wheat yields by state



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Australian wheat production, domestic disposal and exports (Kt)

	2007	2008	2009	2010	2011
Opening stocks	4705	3072	2479	4524	7687
Production	13569	21420	21834	27891	29515
Availability	18274	24492	24313	32415	37202
Domestic use	6517	7306	4999	6129	6215
Food/Industrial	2337	2470	2490	2510	2530
Feed	3503	4142	1826	2914	3000
Seed	677	694	682	705	685
EXPORTS					
Wheat (incl. grain & flour)	8685	14707	14790	18599	22300
MAJOR DESTINATIONS					
China	2	231	745	530	na
Japan	878	791	1110	1175	na
Korea, Rep. of	694	712	826	1197	na
Malaysia	623	793	756	928	na
Thailand	255	336	442	661	na
Indonesia	1608	2728	2854	3892	na
Egypt	284	449	501	730	na
Iran	0	1577	61	0	na
Iraq	198	531	635	906	na
United Arab Emirates	144	256	207	353	na
Yemen	408	714	648	779	na
Kuwait	233	251	338	372	na
Pakistan	0	0	1	0	na
Oceania (NZ, Fiji, PNG)	560	524	598	688	na
CLOSING STOCKS	**3072**	**2479**	**4524**	**7687**	**8687**

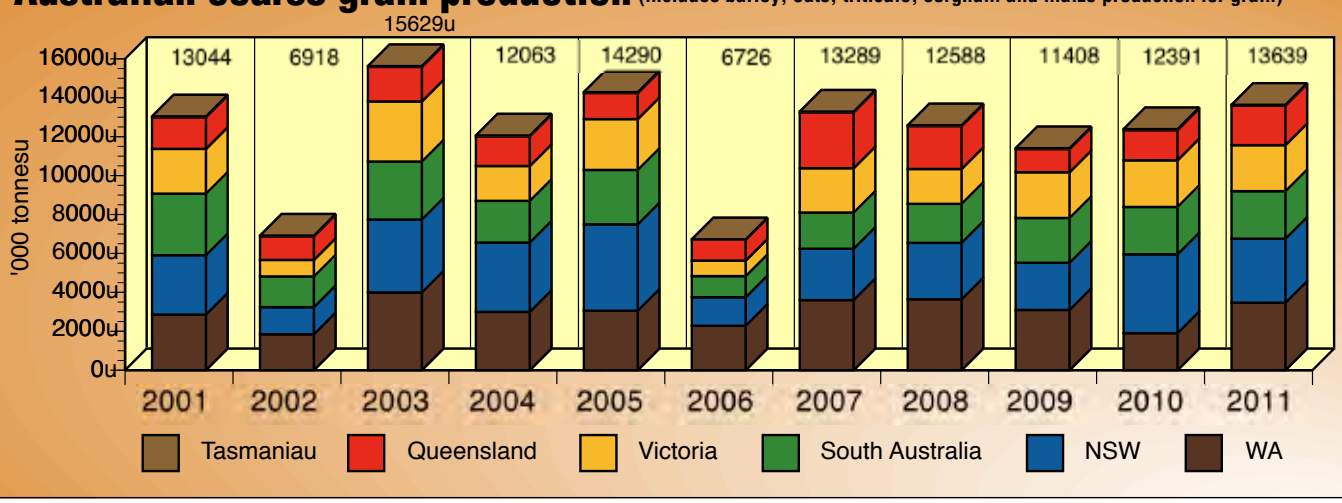
Wheat production & area by state

		2007	2008	2009	2010	2011
NSW:	Prod. (Kt)	2477	6963	5350	10700	7920
	Area ('000 ha)	4009	4322	3983	3823	4000
Vic:	Prod. (Kt)	1995	1756	2995	4493	3630
	Area ('000 ha)	1514	1534	1801	1821	1700
Qld:	Prod. (Kt)	954	2016	1346	1605	1780
	Area ('000 ha)	669	1020	962	937	1000
WA:	Prod. (Kt)	5820	8274	8114	4999	11730
	Area ('000 ha)	4258	4542	5006	4698	5100
SA:	Prod. (Kt)	2296	2376	4001	6060	4425
	Area ('000 ha)	2121	2104	2122	2357	2250
Tas:	Prod. (Kt)	27	35	27	34	30
	Area ('000 ha)	7	9	7	9	8

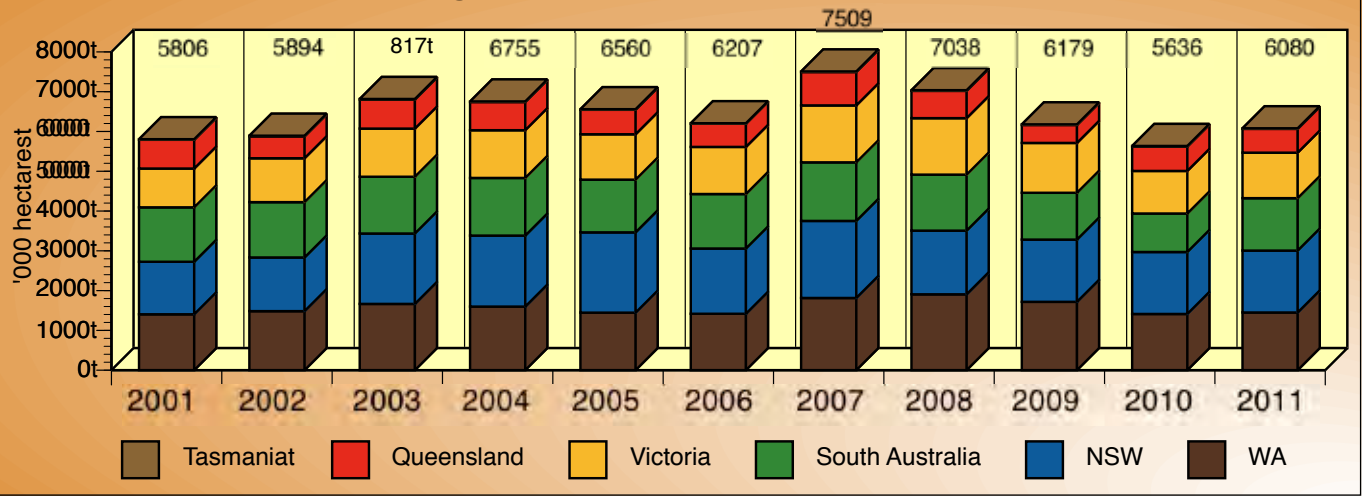
Barley production & area by state

		2007	2008	2009	2010	2011
NSW:	Prod. (Kt)	814	1449	1236	2249	1690
	Area ('000 ha)	1049	977	951	886	880
Vic:	Prod. (Kt)	1789	1461	1865	1954	1850
	Area ('000 ha)	1107	1136	976	806	860
Qld:	Prod. (Kt)	143	173	113	158	171
	Area ('000 ha)	113	92	69	105	90
WA:	Prod. (Kt)	2719	3007	2554	1589	2635
	Area ('000 ha)	1381	1559	1420	1124	1050
SA:	Prod. (Kt)	1672	1877	2068	2158	2200
	Area ('000 ha)	1244	1240	997	808	1150
Tas:	Prod. (Kt)	22	29	29	37	26
	Area ('000 ha)	8	11	9	10	8

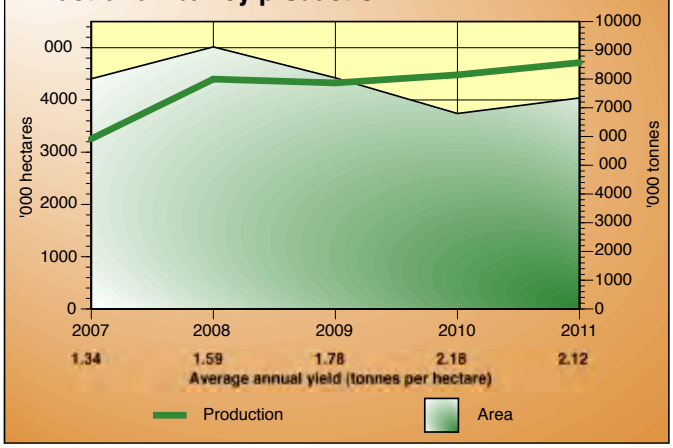
Australian coarse grain production (includes barley, oats, triticale, sorghum and maize production for grain)



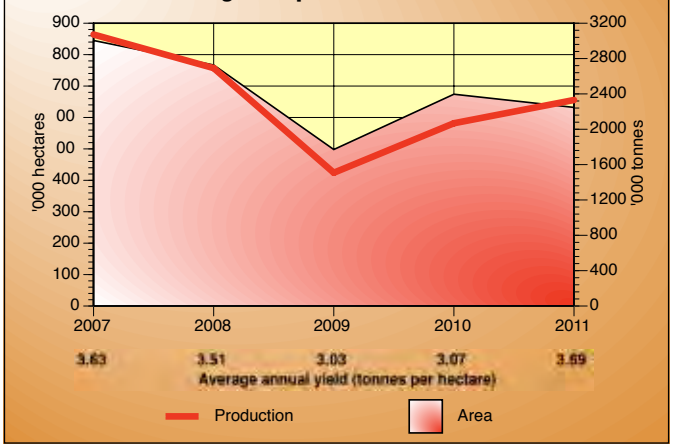
Total Australian coarse grains area (includes barley, oats, triticale, sorghum and maize production for grain)



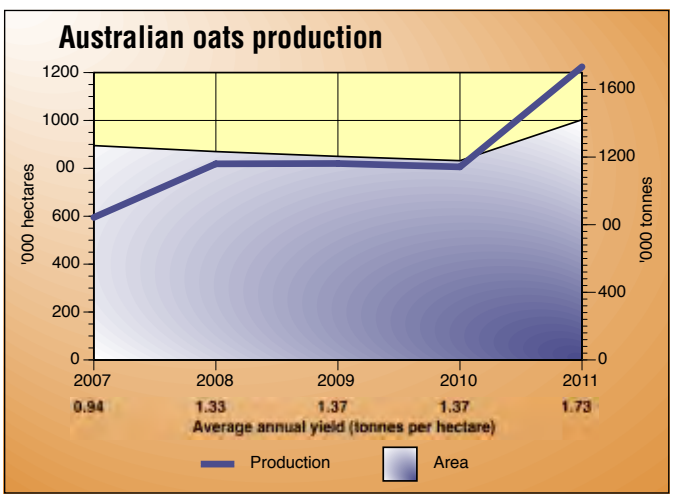
Australian barley production



Australian sorghum production



Australian oats production



Supply and disposal of Australian coarse grains [Kt]

	2007	2008	2009	2010	2011
BARLEY					
Production	7160	7997	7865	8145	8572
Domestic use	3106	4105	3165	2778	2770
Exports	4054	3891	4634	5363	5805
OATS					
Production	1502	1160	1162	1142	1734
Domestic use	1321	998	954	1021	1560
Exports	181	161	208	118	175
SORGHUM					
Production	3790	2692	1508	2068	2331
Domestic use	2833	1694	1167	1400	1609
Exports	110	957	998	341	668
MAIZE					
Production	387	376	328	351	422
Domestic use	340	340	301	320	384
Exports	11	48	36	29	59
TRITICALE					
Production	450	363	545	685	580
Domestic use	450	363	545	685	580
TOTAL (production)	**13289**	**12588**	**11408**	**12391**	**13639**

SECTION 2 THE GRAIN INDUSTRY IN FIGURES

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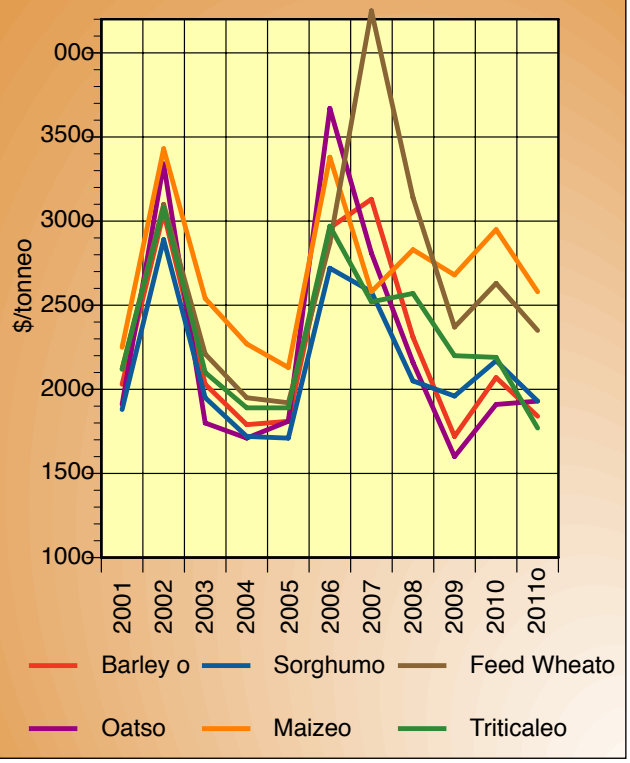
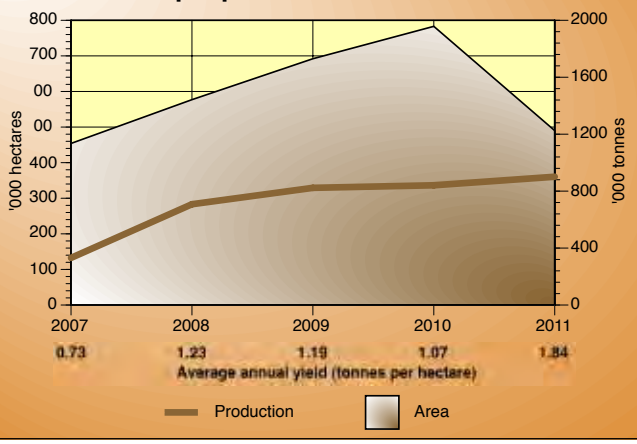
Australian coarse grains domestic feed prices ($/tonne delivered capital city)



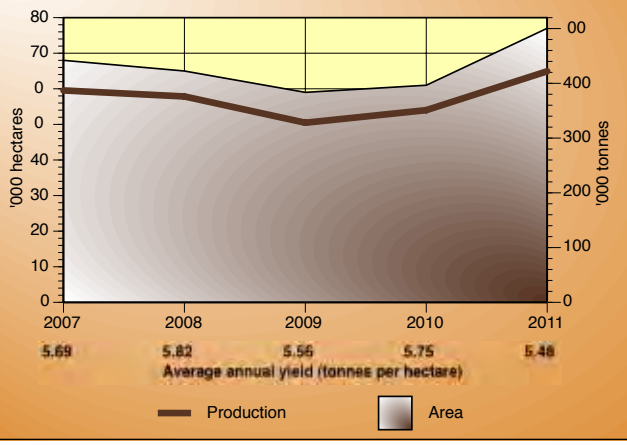
Supply and disposal of Australian pulses (Kt)

	2007	2008	2009	2010	2011
LUPINS					
Production	662	708	823	841	901
Domestic use	665	499	481	328	344
Exports	77	304	353	290	350
FIELD PEAS					
Production	268	238	356	434	304
Domestic use	49	204	226	166	157
Exports	141	137	162	302	240
CHICKPEAS					
Production	313	443	487	379	485
Domestic use	22	28	34	20	23
Exports	222	506	492	462	379

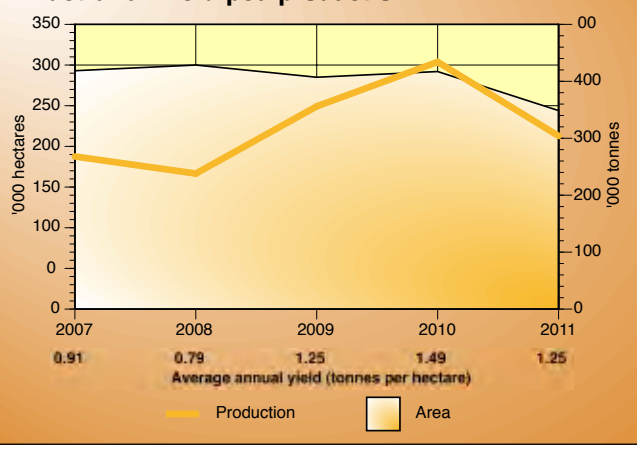
Australian lupin production



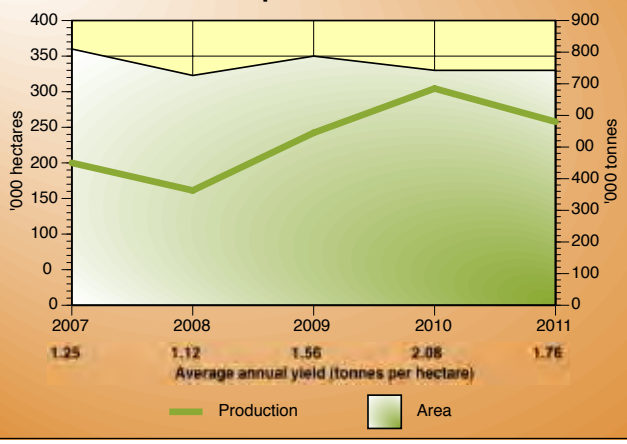
Australian maize production



Australian field pea production



Australian triticale production



SECTION 2 THE GRAIN INDUSTRY IN FIGURES

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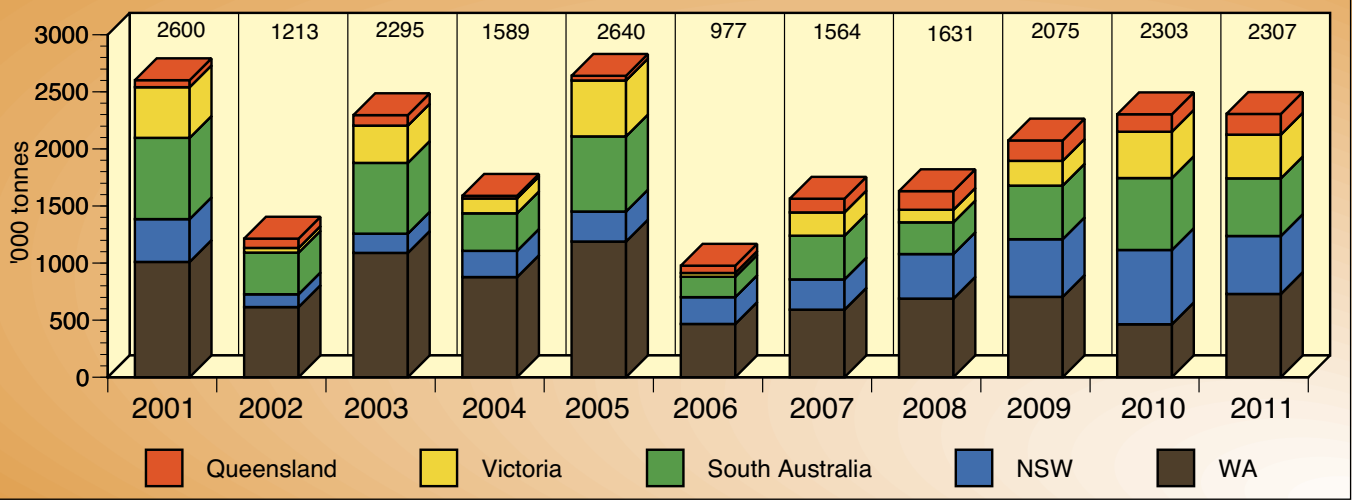
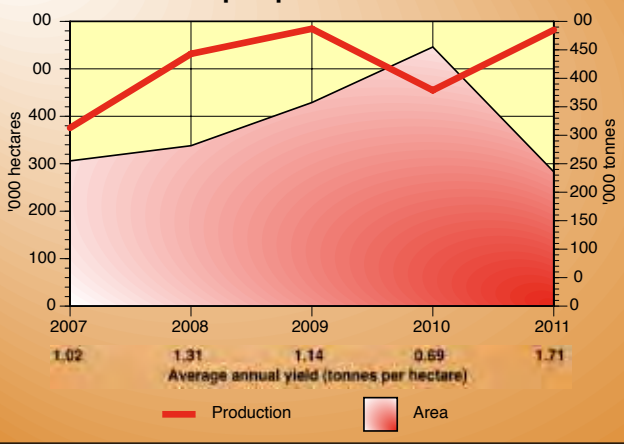
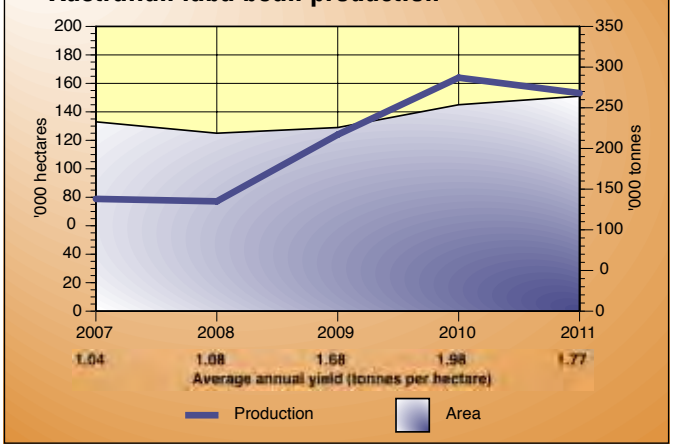
Australian pulse production



Australian chickpea production



Australian faba bean production



SECTION 2 THE GRAIN INDUSTRY IN FIGURES

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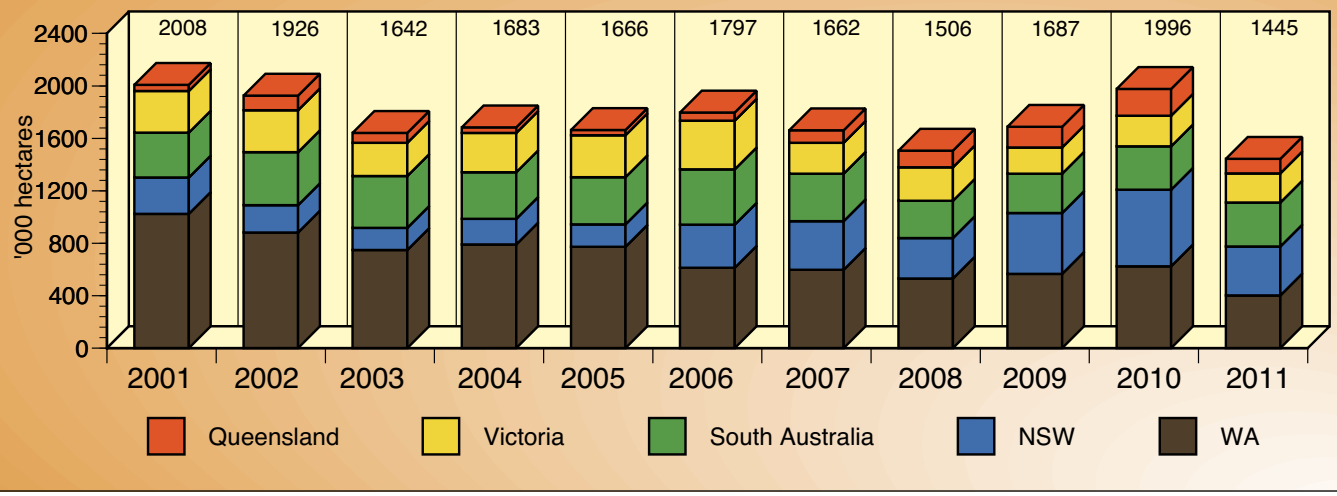
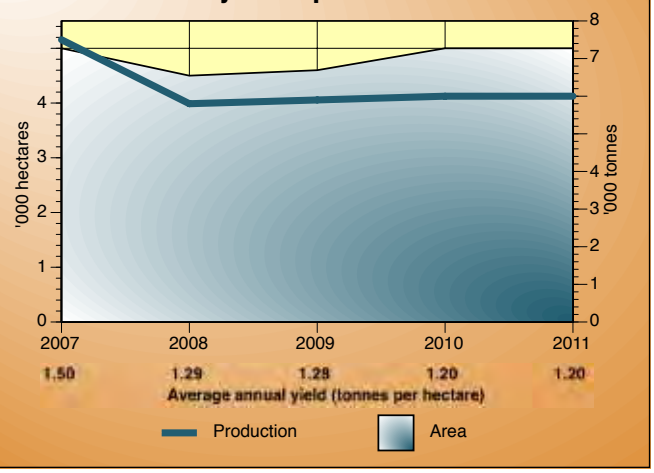
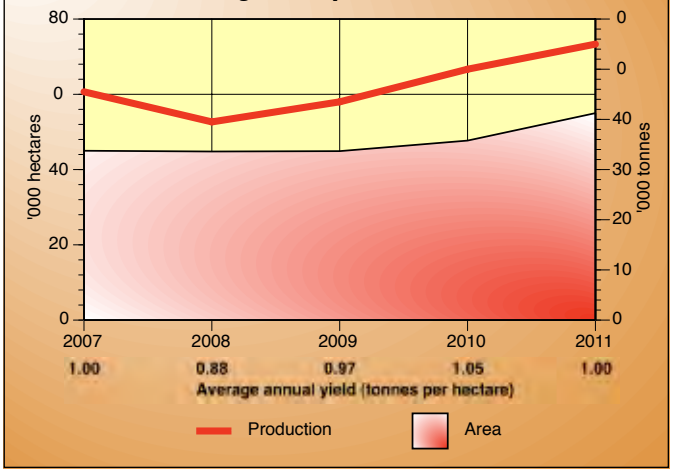
Total Australian pulse area



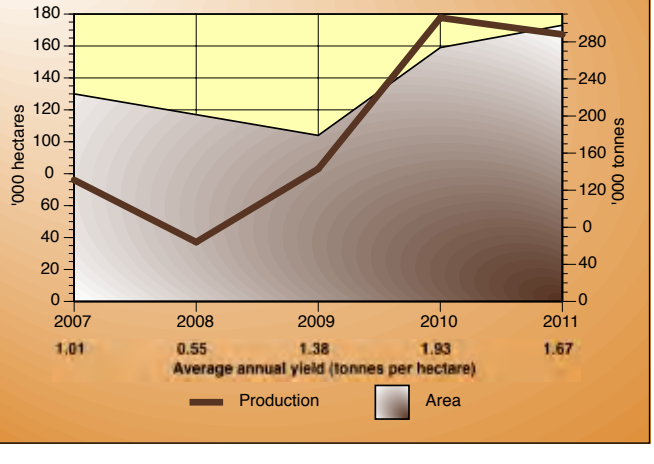
Australian navy bean production



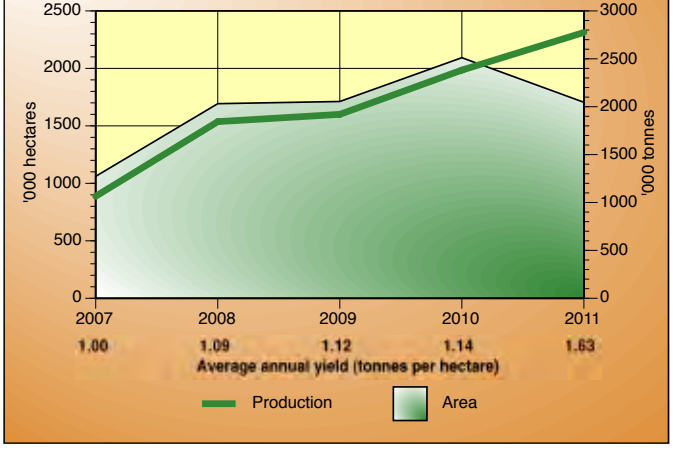
Australian mung bean production



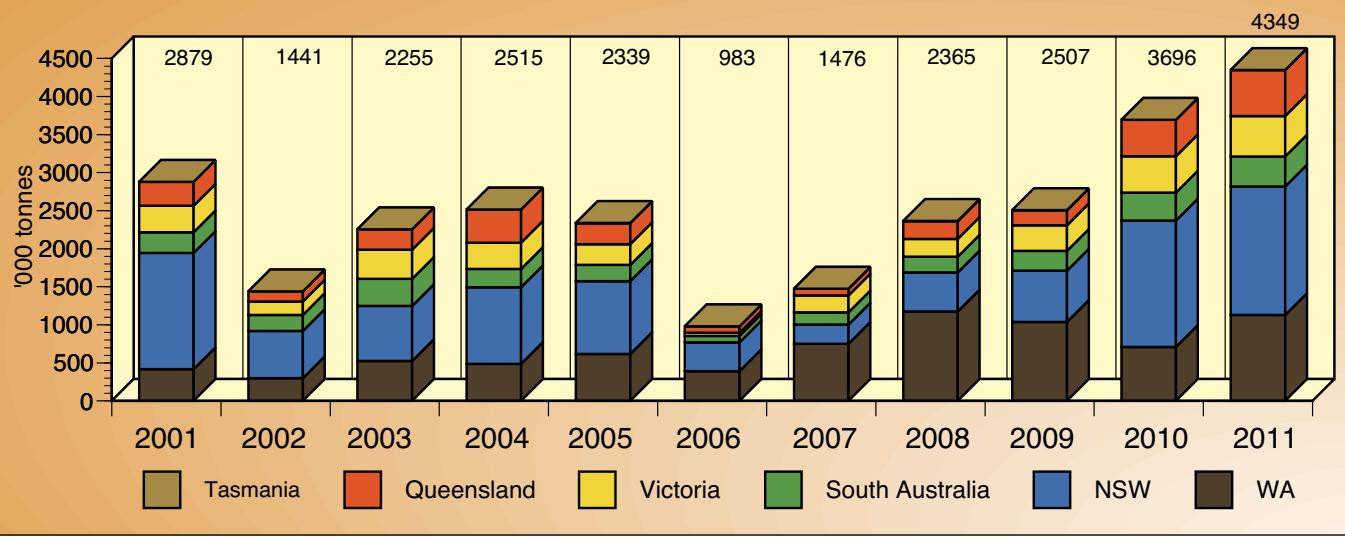
Australian lentil production



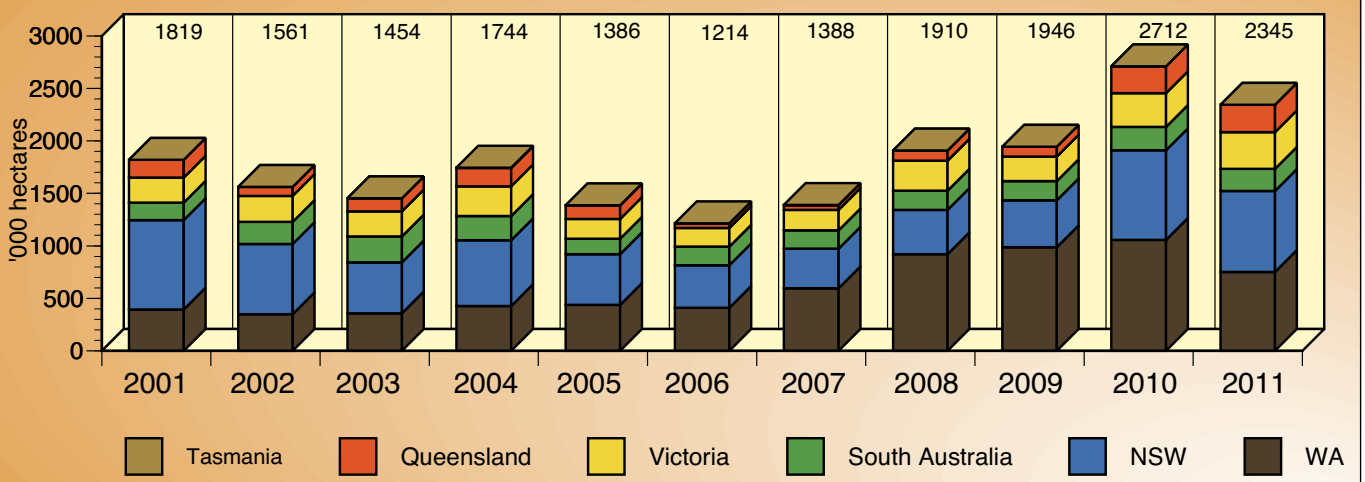
Australian canola production



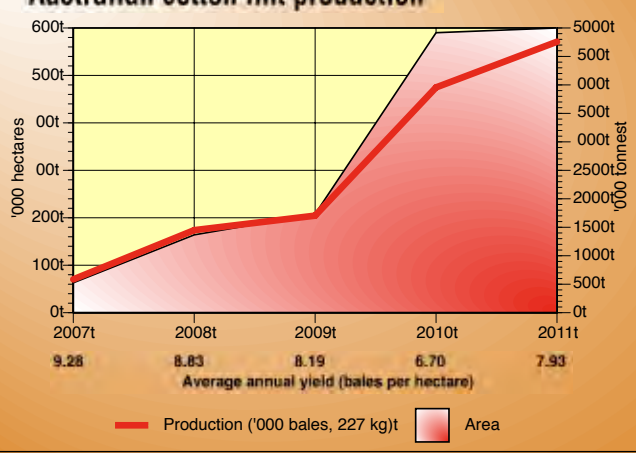
Australian oilseeds production



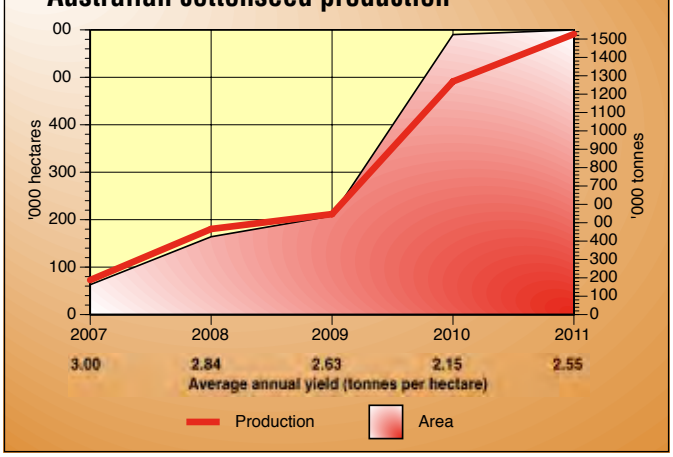
Total Australian oilseeds area

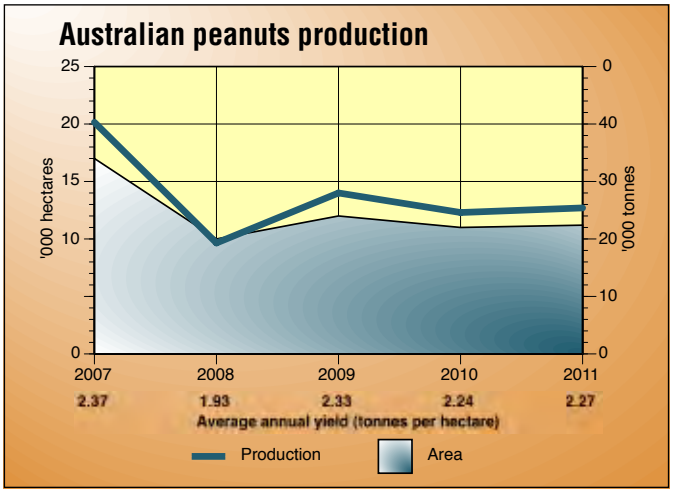


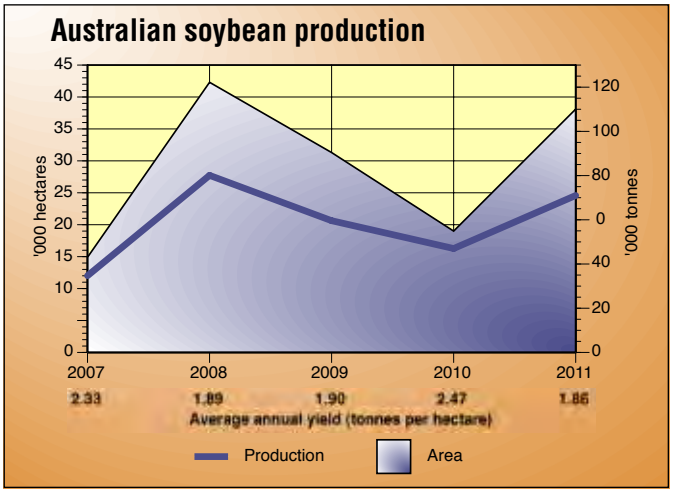
Australian cotton lint production

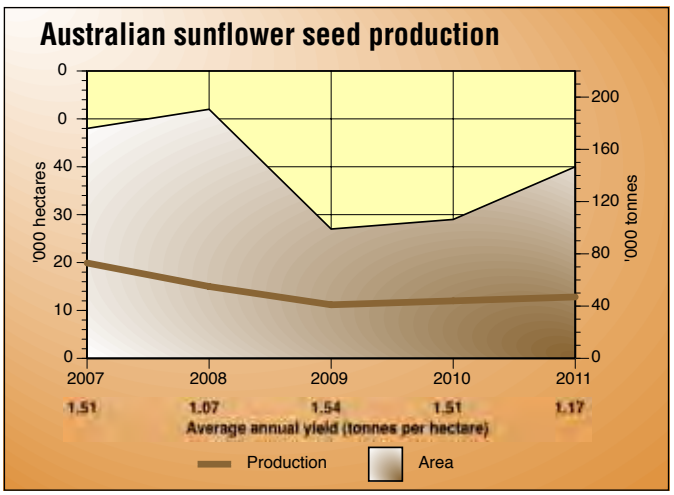


Australian cottonseed production









Australian canola production, domestic use, seed and oil exports (Kt)

	2007	2008	2009	2010	2011
Seed production	1214	1844	1920	2382	2775
DOMESTIC USE	692	660	708	744	779
Crushers	684	653	700	735	770
Seed	8	7	8	7	9
EXPORTS					
Seed	472	1067	1187	1530	1995
Oil	57	76	87	104	na

Australian exports of oilseeds, vegetable oils and meals, by type (Kt)

		2006	2007	2008	2009	2010	2011
OILSEEDS	**Canola**	237.6	519.14	972.98	1187	1530.02	1995
	Cottonseed	104.08	17.84	37.09	105.51	267.94	803
	Linseed	0.02	0	0.01	0.09	0.02	na
	Peanuts	3.8	5.83	5.41	4.88	3.46	na
	Safflowerseed	3.05	0.17	0.07	0.02	0.1	na
	Soybeans	3.36	1.92	1.91	6.75	2.09	na
	Sunflowerseed	2.52	2.76	2.46	1.63	0.94	4
	Total	**354.43**	**547.66**	**1019.92**	**1357.3**	**1728.01**	
OILS	**Canola**	28.33	56.82	76.33	87.13	104.21	na
	Cottonseed	4.66	5.62	9.98	5.53	18.24	na
	Peanut	0.57	0.11	0.13	0.93	0.04	na
	Safflowerseed	0	0	0	0	0	na
	Soybeans	1.65	0.96	2.19	3.27	0.97	na
	Sunflowerseed	5.58	1.76	1.86	0.04	0.2	na
	Olive	2.75	3.03	4.92	6.9	6.11	na
	Total	**59.71**	**93.37**	**112.01**	**117.65**	**146.71**	**na**
	Cottonseed & Sunflowerseed	9.04	9.15	10.72	12.7	33.49	na
OILSEED MEALS	**Soybeans**	3.97	2.98	1.38	2.19	3.51	na
	Canola	0.01	2.04	1.29	19.03	31.5	na
	Other	6.68	4.73	6.25	27.16	35.4	na
	Total	**19.7**	**18.9**	**19.64**	**61.08**	**103.9**	**na**

Australian gross grain prices [$A/tonne delivered to principal market/port, averaged across all grades]

	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12 f
Wheat	197	203	242	390	281	218	273	256
Barley (feed)	179	181	296	313	231	172	207	184
Oats	171	182	369	281	216	160	191	193
Triticale	189	189	297	252	257	220	219	177
Maize	227	213	339	258	283	268	295	258
Sorghum	172	171	272	258	205	196	217	193
Rice (Rice Marketing Board)	297	283	337	414	566	457	240	327
Lupins	206	195	266	335	280	248	268	187
Field peas	235	222	283	407	345	241	229	225
Chickpeas	310	461	658	622	450	398	479	490
Sunflowerseed (at crusher)	341	428	706	814	696	696	765	712
Soybeans	283	301	353	554	551	706	666	630
Canola	326	334	397	543	548	437	544	464

Gross value of Australian grain production [$A million]

	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12 f
Wheat	4317	5099	2619	5292	6021	4765	7611	7554
Barley	1233	1417	1039	2244	1850	1356	1684	1579
Oats	172	249	241	423	251	186	218	334
Triticale	93	119	44	113	93	120	150	102
Maize	81	71	60	100	106	88	104	109
Sorghum	270	276	274	977	553	296	449	450
Rice	101	284	55	7	34	90	174	302
Lupins	193	251	125	222	198	205	226	169
Field peas	68	130	40	109	82	86	99	68
Chickpeas	36	57	151	195	199	194	182	222
Canola	503	473	227	659	1011	840	1295	1288
Sunflowerseed	21	42	15	59	38	29	33	33
Soybeans	15	17	12	19	44	33	33	47
Peanuts, linseed, safflower seed	36	30	21	35	28	34	34	33
TOTAL	**7215**	**8824**	**5122**	**10803**	**10778**	**8645**	**12756**	**12682**

Value of major Australian grain exports [$A million, fob]

	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12 f
Wheat (incl. flour)	3488	3296	2765	2990	5028	3692	5516	6095
Barley (incl. malt)	1275	1108	833	1496	1321	1093	1295	1889
Oats	36	47	38	37	64	53	37	38
Sorghum	96	33	13	76	405	116	146	212
Rice	173	171	347	110	143	59	183	549
Lupins	89	99	38	31	61	115	89	83
Field peas + Cow peas	33	43	80	61	62	60	85	82
Chickpeas	65	106	168	139	275	255	213	277
Cottonseed	55	53	31	8	19	46	85	286
Canola	397	331	108	303	595	583	855	1140
Other oilseeds	33	21	22	27	27	24	14	32
TOTAL	**5739**	**5308**	**4426**	**5278**	**8001**	**6094**	**8517**	**10685**

Summary of world statistics for wheat

	Area million ha	Production (Mt)	Use (Mt)	CLOSING STOCKS		Stocks to use ratio (%)	Trade (imports) Mt	Price US$ (Hard Red Winter, Gulf)
				World (Mt)	Major exporters (Mt)			
2003	208	557	596	127	49	21	103	160
2004	217	628	613	141	67	23	110	154
2005	217	621	623	139	66	22	110	176
2006	211	597	609	127	48	21	111	212
2007	215	607	602	132	48	22	110	362
2008	223	685	645	172	69	27	137	271
2009	222	678	652	199	77	30	128	209
2010	218	653	656	196	70	30	126	317
2011	221	693	679	209	76	31	135	295

World wheat production, by country (Mt)

	EU 27	Ukraine	Russia	Kazak.	Other FSU 12	Turk.	Canada	US	Argen.	Iran	China	India	Pakis.	Africa	Aust.	TOTAL WORLD
2004	136.1	16.5	45.4	9.9	13	18.5	25.9	58.7	16	14	92	72.1	19.5	21.9	22.6	628
2005	122.7	18.7	47.7	11	14.8	18	26.8	57.2	12.6	14.5	97.5	68.6	21.7	20.3	25.1	621
2006	125.1	13.8	44.9	12.5	14.1	17.5	25.3	49.2	14.5	14.8	108.5	69.4	21.7	23.3	10.8	597
2007	118	13.9	49.4	16.5	13.9	15.5	20.1	55.8	16.4	15	109.3	75.8	23.3	18.8	13.6	607
2008	150.7	25.9	63.8	12.5	13.3	17	28.6	68	11	10	112.5	78.6	20.1	20.7	21.4	685
2009	138.3	20.9	61.8	17.1	14.2	18.5	26.8	60.4	11	12	115.1	80.7	24	25.7	21.9	678
2010	136.8	16.8	41.5	9.7	13.1	17.5	23.2	60.1	15	15	114.5	80.8	23.9	21.7	27.9	653
2011	137.5	22	56.23	22.73	13.4	19	25.3	54.4	14.5	13.8	117.9	114.4	24	24.2	29.5	693

TABLE NOTES...

European Union 27 (EU 27) consists of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany (originally West Germany), Great Britain, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden.

Former Soviet Union 12 (FSU 12) consists of Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

Near East Asia refers to Iran, Saudi Arabia, Syria and Turkey.

Far East Asia refers to China, Afghanistan, India and Pakistan.

Southeast Asia refers to Indonesia, Malaysia, Philippines, Thailand and Vietnam.

World wheat trade, by region [Mt]

	2007	2008	2009	2010	2011
IMPORTS					
Europe	7.9	9.2	6.5	6	8.8
FSU 12	5.9	6.4	5.5	5.4	6.2
Nth & Central America	9.4	10	9.1	9.3	10.8
South America	12.9	12.6	13.1	12.7	13.2
Near East Asia	11.8	27.5	21.8	16.1	19.8
Far East Asia	29.5	31.8	34.2	37.1	37.4
Africa	32.7	38.5	37.7	38.2	39.8
Oceania & Misc.	2.2	2.4	1.8	2.7	2.7
EXPORTS					
Argentina	10	8.5	5.1	7.6	9.3
Australia	8.7	14.7	14.8	18.6	22.3
Canada	16.4	18.3	18.2	16.4	17.6
EU 27	11.2	24.5	20.8	22.1	16.4
US	34.3	27.3	23.9	35.7	27.3
Russia	12.1	18.3	18.8	4	21
Ukraine	1.2	12.9	9.3	4.3	5
Others	16.4	12.3	16.8	17	17.9
Total	**110.3**	**136.8**	**127.7**	**125.7**	**136.8**

SECTION 2 THE GRAIN INDUSTRY IN FIGURES

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World durum wheat production and trade

	2007	2008	2009	2010	2011
PRODUCTION (Mt)					
EU 27	8.4	10.1	8.7	9.1	8
Kazakhstan	3	2.5	2.6	1.7	3
Canada	3.7	5.5	5.4	3	4.2
Mexico	1.8	2	2.2	2.2	2.2
US	2	2.3	3	2.9	1.4
Algeria	0.8	0.9	2.9	2.2	2.5
Syria	1.8	1.2	1.8	1.6	1.7
Turkey	2.7	3	3.1	2.9	3
India	1.1	1.1	1	1	1.1
Australia	0.3	0.5	0.5	0.5	0.6
Other	9.4	7.2	6.2	5.3	5.3
WORLD TOTAL (Mt)	**35.0**	**35.0**	**35.0**	**35.0**	**35.0**
MAJOR IMPORTERS (Kt)					
EU 27	1909	1585	2159	1900	2100
US	633	653	534	475	650
Venezuela	315	333	349	400	400
Japan	266	201	234	230	250
Morocco	724	563	548	775	600
Algeria	1979	2131	1534	1400	1300
Other	1374	2019	2195	2220	1600
MAJOR EXPORTERS (Kt)					
Canada	3364	3516	3675	3200	3550
EU 27	880	1726	1054	2060	1050
US	1400	510	1045	1050	600
Syria	158	na	na	na	na
Mexico	1127	1130	892	770	700
Turkey	10	na	428	20	50
Australia	31	296	246	230	450
WORLD TOTAL TRADE (Mt)	**7200**	**7485**	**7553**	**7400**	**6900**

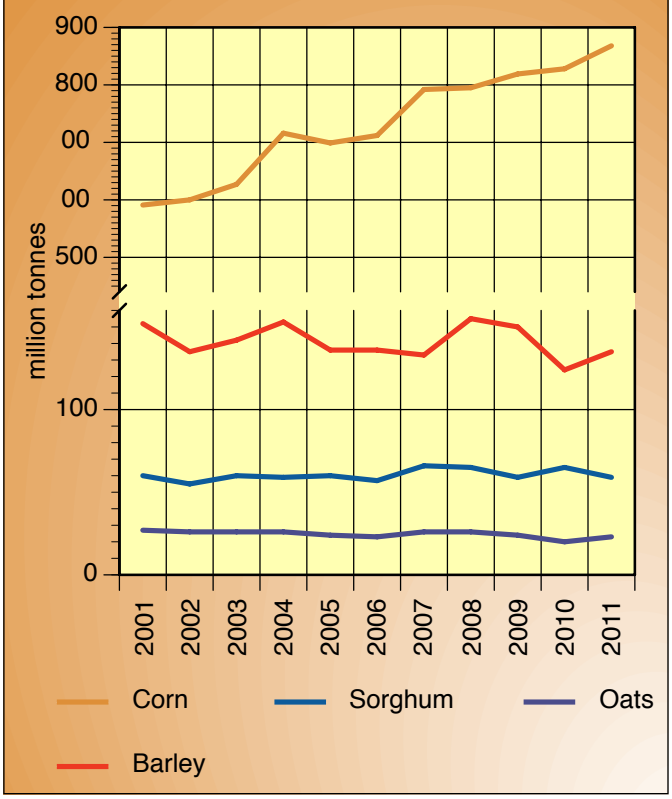
Summary of world statistics for coarse grains

	2007	2008	2009	2010	2011
Area (million ha)	318	313	309	307	315
Production (Mt)	1078	1110	1114	1092	1140
Total use (Mt)	1056	1079	1107	1126	1145
Closing stocks: World (Mt)	161	196	196	165	153
Closing stocks: US (Mt)	45.2	47.2	48.1	32.3	22.9
S.T.U.R. (%)	15	18	18	14	14
Trade (Mt)	127	113	123	114	115

World coarse grains production by region and country (Mt)

	2007	2008	2009	2010	2011
EU 27	135.9	161.6	155	139.5	147.2
Russia	29.3	40.7	31.8	16.4	32.8
Ukraine	14.6	26.2	24.1	21.4	32.9
Canada	27.8	27.2	22.5	22.3	21.9
Mexico	30.8	32.3	27.2	29.4	27.8
United States	349.9	325.9	348.8	330.2	323.7
Argentina	27	18.6	28.5	30.6	30.8
Brazil	61	53.6	58.4	60.5	63.8
Turkey	9.5	10.3	11.1	10.1	10.2
China	159.1	173.2	169.7	183.4	198
India	40.6	39	34.2	42	42.2
Southeast Asia	18.8	24.6	21.9	23.2	24.9
South Africa	13.7	13.1	14.5	12.2	13.1
Nigeria	24	26.7	28	28.7	28.5
Australia	13.3	12.6	11.4	12.4	13.6
Other	123.2	114.6	128.4	135.3	130.8
TOTAL	**1078.5**	**1100.2**	**1115.5**	**1097.6**	**1142.2**

World coarse grain production [Mt]



World coarse grains trade by region and country (Mt)

	2007	2008	2009	2010	2011
IMPORTS					
EU 27	19.9	3	3	8.5	4.5
United States	3.4	3	2.3	2.5	2.7
Mexico	10.7	10.5	11	10.7	11.5
Columbia	3.6	3.5	4.1	4.2	4.1
Malaysia	3.2	2.4	3.1	2.7	2.5
Japan	19.2	19.6	19.2	18.6	19
South Korea	9.3	7.2	8.5	8.2	8.1
Chinese Taipei	4.7	4.7	4.7	4.5	4.8
China	1.2	1.7	3.8	2.7	5.9
Saudi Arabia	9.4	8.7	9.2	7.4	9.2
Iran	3.2	5.5	5.1	3.9	3.8
Africa (Algeria, Egypt, Morocco)	8.8	9	10.7	10.5	10.3
Others	30.4	34.2	30.3	30.6	30.6
EXPORTS					
Argentina	16.9	13.5	18.8	18.4	19.2
Australia	4.4	5.6	5	5.3	7.2
Canada	6.6	3.9	3.1	4.5	3.2
China	0.8	0.2	0.2	0.2	0.3
EU 27	4.6	5.6	3	6.2	5.6
Ukraine & Russia	4.5	16.6	14.5	8.2	21.3
United States	69.9	51.2	54.7	50.7	45
Others	19.3	16.4	15.7	21.5	15.2
TOTAL TRADE	**127**	**113**	**115**	**115**	**117**

World barley trade by region (Mt)

	2007	2008	2009	2010	2011
IMPORTS					
Europe	0.5	0.6	0.4	0.4	0.7
FSU 12	0.3	0.2	0.1	0.6	0.4
Saudi Arabia	7.3	7.1	7.4	5.5	7.4
Other Near East Asia	1.8	5.7	3	2.4	2.7
United States	0.7	0.6	0.3	0.2	0.3
Brazil	0.3	0.3	0.4	0.3	0.4
Mexico	0.2	0.1	0.2	0.1	0.1
China	1.1	1.3	2.1	2	2
Japan	1.4	1.2	1.4	1.4	1.3
Others	1.9	2.4	1.6	2	2.5
EXPORTS					
Australia (feed & malting)	4.1	3.9	4.6	4.6	5.1
Canada	3	1.4	1.3	1.4	1.1
EU 27	3.8	3.5	1.1	4.6	3.3
United States	0.9	0.3	0.1	0.2	0.2
Ukraine	1	6.3	6.2	2.6	2.7
Russia	1	3.4	2.8	0.3	2.7
Argentina	0.8	0.9	0.6	1.1	2.5
Others	0.9	-0.2	0.2	0.1	0.2
TOTAL EXPORTS (Mt)	**15.5**	**19.5**	**16.9**	**14.9**	**17.8**

SECTION 2 THE GRAIN INDUSTRY IN FIGURES

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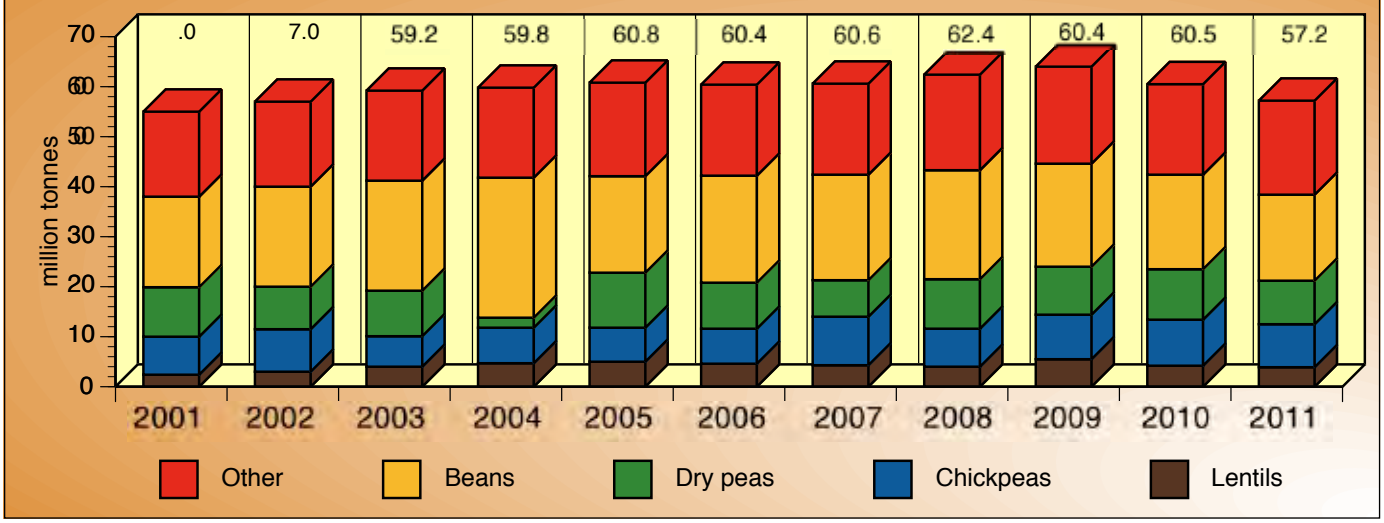
Major world oilseeds trade and production (Mt)

	2005	2006	2007	2008	2009	2010	2011
IMPORTS: Canola	6.71	6.92	8.51	11.23	11.11	10.41	11.12
Japan	2.28	2.20	2.3	2.15	2.31	2.32	2.31
Soybeans	63.75	71.50	79.43	76.84	86.83	88.83	90.76
China	27.51	28.73	36.5	41.10	50.34	52.34	55.50
EXPORTS: Canola	6.71	6.92	8.51	11.23	11.11	10.41	11.12
Australia	0.83	0.23	0.47	1.07	1.19	1.53	1.99
Canada	3.49	5.41	5.45	7.32	7.35	7.34	7.91
Soybeans	64.77	63.75	71.5	79.43	92.55	91.97	92.79
Brazil	20.14	25.91	23.49	25.36	28.58	29.95	37.81
United States	29.86	25.58	30.39	31.60	40.80	40.86	34.70
Sunflowerseed	1.22	1.94	1.33	2.16	1.680	1.74	2.51
Total world oilseeds trade	**74.41**	**75.80**	**93.23**	**93.91**	**111.42**	**106.32**	**109.21**
PRODUCTION: Canola	46.08	48.5	45.09	57.92	60.81	59.83	59.81
Australia	1.54	1.42	0.57	1.21	1.92	2.38	2.78
Canada	7.01	9.70	9.1	12.61	12.94	12.82	14.23
Soybean	215.72	220.54	237.44	221.14	260.85	264.18	251.47
Brazil	53.20	57.00	59.00	61.00	69.12	75.50	72.00
US	85.74	83.37	87	72.86	91.42	90.61	83.17
Sunflowerseed	25.44	30.09	29.26	34.75	32.12	33.45	38.07
Total world oilseeds production	**380.07**	**391.81**	**403.98**	**391.69**	**442.32**	**452.21**	**448.25**

World production of pulses



SECTION 2 THE GRAIN INDUSTRY IN FIGURES

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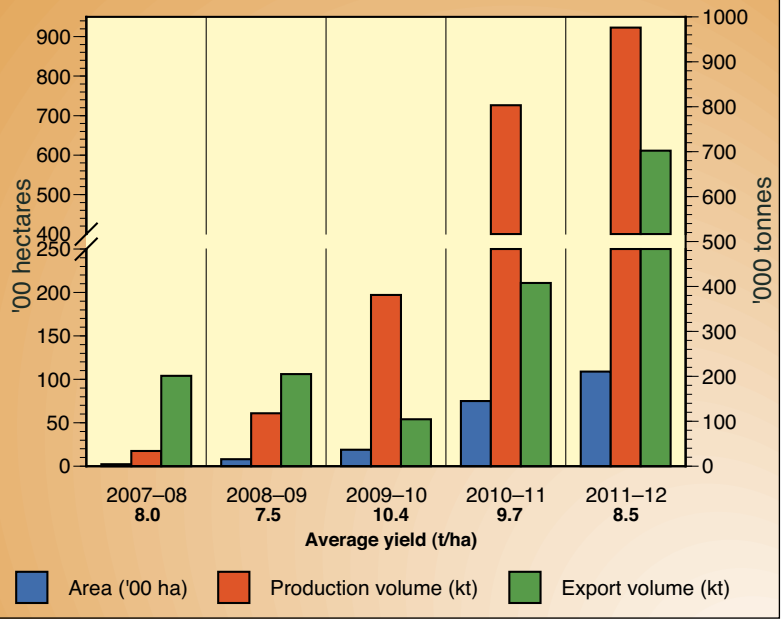
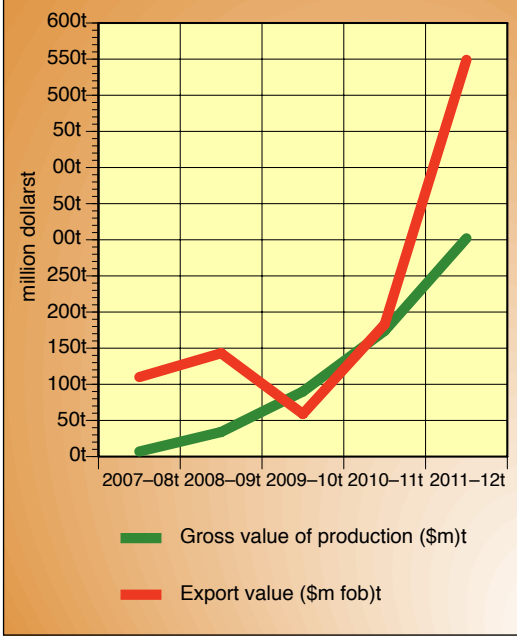
Summary of Australian rice statistics (paddy) by area and volume



Australian rice export value and gross value of production



Summary of world statistics for rice

	Area million ha	Production (Mt, milled)	Use (Mt)	Closing stocks (Mt)	Stocks to use ratio (%)	Trade Mt	Av. price US$/t (Thai 100%)
2006–07	154	421	418	75	18	30	320
2007–08	155	434	426	81	19	29	551
2008–09	160	448	435	92	21	30	609
2009–10	157	441	438	94	21	31	532
2010–11	162	451	448	97	22	34	530
2011–12	165	463	460	100	22	32	560

World rice production, by country [Mt, milled equivalent]

	Aust.	B-desh	Brazil	China	EU-27	India	Indon.	Japan	Myan.	Pakis.	Philip.	Thail.	US	Viet.	TOTAL
2006–07	0.11	29.8	7.7	128	1.7	91.2	33.3	7.8	10.6	5.2	10.1	18.3	6.2	22.7	**421**
2007–08	0.02	28.8	8.2	130.2	1.7	96.7	35.8	7.9	10.7	5.7	10.5	19.3	6.3	24.4	**434**
2008–09	0.04	31.2	8.6	134.3	1.6	99.2	38.3	8.1	10.2	6.9	10.2	19.9	6.5	24.4	**448**
2009–10	0.12	31.1	7.9	136.6	1.6	89.1	36.4	7.7	10.6	6.8	9.9	20.3	7.1	25.3	**441**
2010–11	0.72	33.2	9.3	137.2	1.9	96.3	35.5	7.7	10.7	4.8	10.5	20.3	7.6	25.9	**451**
2011–12	0.92	34.2	7.6	140.5	1.9	102.8	37.3	7.6	10.5	7.2	11.1	19.3	5.9	25.8	**463**

SECTION 2 THE GRAIN INDUSTRY IN FIGURES

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In this section the rice crop is the year of planting.
(The 2011 12 figure is therefore a forecast of the Australian rice harvest in March April 2012.)

Section 3

District Reports

Reviews of the 2011–12 season and plans for 2012–13

THIS SECTION BROUGHT TO YOU IN ASSOCIATION WITH:

Neil's Parts Australia

Your AG PARTS Specialists!

Western Australia

Northern

The 2011 season started with many growers getting onto the boom spray in the first few days of January. Heavy rain in the last couple of weeks of December 2010 had the fringing areas of the zone green with summer weeds and they needed spraying.

Button grass proved a problem to control and subsequent sprays in March were successful in getting on top of this weed.

Rain continued to fall right through autumn in the more easterly areas of the region. Western areas generally had much lower rainfall until the break in mid May.

Spur throated locust came into the region in late summer from the north and were a concern for some early crops and paddocks next to uncontrolled summer weeds. Thankfully, the locusts were not a major problem in-crop with very few paddocks needing to be sprayed.

Nitrogen application rates were increased by many growers as the winter progressed. But there were still many growers ending up with low grain protein meaning they could have applied even more N.

Fertiliser suppliers ran out of N in late June with urea being trucked in from further south. Granulated and liquid N supplies were very tight from this time on with suppliers running 'hand to mouth' with stock.

Warm conditions through winter had Diamond Back Moth at detectable levels in most canola crops. Good winter rains reduced the population and the damage. Only a couple of crops close to Geraldton were sprayed for DBM.

Well grown lupin crops started to lodge at the end of July and continued to go down as the season progressed. Very wet conditions resulted in disease buildup in these crops with subsequently lower yields. Mandelup appeared to be more prone than some other varieties. The lupin crops only had this issue because they were so well grown and were generally taller than usual.

Wet conditions continued over spring providing very good grain fill conditions. The exception was a hot week in early September that reduced potential in some crops. Some sand soils in coastal areas were washed out due to too much rain and lost some yield potential.

There were significant rainfall events in October and sprouting and falling numbers were a problem for some growers. Geraldton had 100 mm of rain in October which is Decile 9.

AVERAGE YIELD ESTIMATES FOR 2011

Crop	Western Zone	Central Zone	Eastern Zone
Wheat & barley	1.8–5.2 t/ha	2.5–5.0 t/ha	2.5–4.0 t/ha
Lupins	1.0–2.6 t/ha	1.2–2.6 t/ha	1.2–2.0 t/ha
Canola	0.9–2.1 t/ha	1.2–2.7 t/ha	0.6–1.6 t/ha
Rainfall April–Sept	400–500 mm	300–420 mm	250–320 mm
2010–11 summer rainfall	20–50 mm	75–150 mm	100–250 mm

SECTION 3 DISTRICT REPORTS
THIS SECTION BROUGHT TO YOU IN ASSOCIATION WITH
Nell's Parts Australia
Your AG PARTS Specialists!

The amount of downgraded wheat was around 10 per cent with more in the south and west of the region. Sprouting-susceptible varieties and washed out sandy coastal paddocks were the only bad news in the landscape. Quality was mixed in these coastal areas with up to four grades of wheat off the same paddock and downgrading due to three different problems.

Wheat and barley yields were equal to, or at record, yields across most of the region. Protein levels were low due to the extreme yields but most growers are more than happy with what they had.

Canola crops generally yielded fantastically well and GM and hybrid crops lead the charge. Yield and oil have generally been at record levels. One GM hybrid paddock averaged 2.6 tonnes per hectare at 49 per cent oil – this is the best I have heard in our region. It may not sound high to some southern growers but latitudinally speaking, this paddock is effectively 900 km north of Horsham!

The Geraldton port zone receivals were 3.538 million tonnes for 2011–12.

This is made up of (in tonnes):

- Wheat – 2,907,000;
- Lupins – 365,000;
- Canola – 174,000 (GM – 22,000, Non GM – 152,000);
- Barley – 92,000; and,
- Other grains making up the balance.

This is a record for the port zone and CBH needs to ship 360,000 per month to clear the system for next harvest! (Source: Bruce Heritage, CBH Geraldton).

Late season rain in 2011 meant that late weeds emerged through crops and the boom followed the header over many paddocks.

'Legs 11' was a fantastic year in our area and we will have another one anytime. The only way the season could have been improved was if there was a good rain in late April or early May and to have a cooler week in late September. If these happened it would have added another 200 kg per hectare to many crops that were already record breakers.

Trends

GM canola crop area in the region will steadily grow. Sheep numbers have stabilised and may possibly start to increase over coming years. Tree planting for carbon offset on grain growing land is still increasing.

Peter Norris
Agronomy For Profit and Synergy Consulting, Geraldton

South Coast

The 2011 season was very mixed for the South Coast – the region still managed to produce 1.5 million tonnes of grain, but the vast majority of this came from areas within 50 km of the coast. The further you moved away from the coast the worse the season and final yields became.

Areas north of Grass Patch and Beaumont experienced one of their worst years ever, many of these areas were only operating on Decile 1 and 2 rainfall for the growing season in conjunction with little to no stored soil moisture. For the higher yielding areas – which generally fall into the high rainfall zones – the season operated on a Decile 4 to 5, which was ideal for growing crops without the traditional water-logging issues.

Frost was also an issue across the district. Frost often goes hand in hand with a dry season and 2011 was no exception with several frosts during September and October causing considerable yield damage, particularly to field peas.

In late October it finally started to rain and hail. Salmon Gums received over 100 mm for October – this rain for most was too late for crops. Generally, it caused drought effected crops to re-shoot and further

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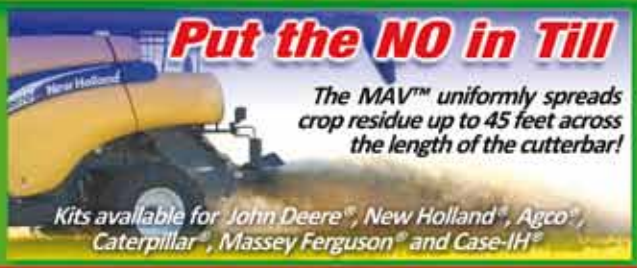

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delay harvest. For crops that were ready for harvest, this late spring rainfall, which also went into November and December, caused some damage to grain quality with barley staining and low falling numbers in wheat.

Hail damage was extensive across the region keeping insurance assessors extremely busy. There has been some very big claims, highlighting the importance of insuring crops adequately for yield and price.

In general 2011 was not a good year for the South Coast – the poor seasonal conditions in conjunction with big drops in grain prices has resulted in some very poor budget reviews and some difficulty in obtaining finance to fund the 2012 crop.

Wheat

Wheat yields varied from 0.3 to over 4.5 tonnes per hectare. In general, quality and protein was good. Any varieties that were susceptible to pre-harvest sprouting were exposed by the late spring rainfall. But the rainfall also enabled many new varieties to be put to the test, Mace has been a very consistent yielder over the past few seasons but had question marks about its sprouting tolerance. Fortunately, Mace held up very well and looks to be the most widely grown variety for 2012.

There will also be a big swing away from APW varieties to AH varieties – the price differential over the past two seasons is having a big impact on wheat gross margins.

Barley

The major issue with barley for the 2011 season was the rapid development of fungicide resistant powdery mildew, particularly in the dominant malt barley variety, Baudin. Powdery mildew has become resistant to the older generation foliar triazole (DMI) fungicides and seed dressings. As a consequence, this disease has become very difficult and expensive to control. In areas where mildew established early many growers had to spray crops with two and up to three applications of new generation triazole or strobilurin fungicides. This often resulted in fungicide costs of over $35–$40 per hectare plus application costs.

Many growers are now weighing up their options on which malt variety to grow for 2012 or swing into higher yielding feed/food varieties such as Hindmarsh. Barley was also the crop that suffered the most with the dry winter and spring conditions. On many soils types with limited plant available water, barley almost died and if it did survive it did not grow high enough to harvest. Barley yields varied from 0.1 to 5 tonnes per hectare – quality was variable due to high screening, high protein and fungal staining.

Canola

Canola generally performed very well across the region – yields varied from 0.3 to 3 tonnes per hectare with the better yields coming from areas closer to the coast. Canola yields were surprisingly good in the dry regions with yields of around 0.5 tonnes per hectare where barley and wheat yields were around 0.8 to 1.0 tonnes per hectare as a comparison.

The area sown to Roundup Ready canola increased for 2011. But this looks like stabilising for 2012 mainly due to the discount being received for GM canola. DBM were a problem across the district with many growers having to spray one or two insecticide applications to bring these grubs under control. Thankfully, the permit to use Affirm was granted, Affirm did an exception job on bringing the DBM under control.

Blackleg was a big problem, particularly in Cobbler canola with yield losses of between 20–40 per cent. Many growers are not replacing canola varieties quickly enough to introduce new blackleg resistance into their canola programs.

Field peas

Peas were generally disappointing – their yield potential was reduced by the dry spring but, more importantly, frost. Many peas were sown early as a dry sowing option to get seeding underway. This put the peas at risk of frost damage due to earlier flowering and grain fill – particularly with frosts during September. The new pea varieties Gunyah and Twilight seem to have performed well. Pea yields were in the order of 0.2 to 1.8 tonnes per hectare.

Lupins

Lupins generally performed well – most lupins are now only grown on good sandplain country which has improved average yields and reliability of yields. Lupin yields ranged from 1.5 to 3.5 tonnes per hectare. The big issue with lupins is price. CBH cash price during harvest was only $160 per tonne. As a consequence, most growers stored lupins on farm and are selling privately for $230–$250 per tonne.

Cropping trends

Most growers will embark on a similar program to 2011 – the main limitations will be finance. Some growers will be forced to scale back programs. As a result there will be a reduction in broadleaf crops sown and we might even see a return to chemical fallow on some marginal paddocks. Soil renovation with clay delving/spreading, spading along with deep ripping is increasing where the budget allows. Soil amelioration is also continuing to gain momentum with lime on acid and high aluminium soils and gypsum on sodic clay soils. There is also a continued move to controlled traffic to reduce soil compaction.

Trends in property values

There has been more property listed for sale than in previous seasons as some growers consider retirement and others wanting to exit the industry for other reasons. Property sales have been slow but there has been some corporate activity in the market place as they increase their investment into the grains industry. Land values have remained flat with very little upwards movement.

Seasonal conditions to March 2012

February and March have remained quite dry with limited rainfall. Most growers have now completed summer weed spraying programs and are now concentrating on lime and gypsum spreading, burning chaff cart dumps and windrows while getting machinery ready for seeding.

Quenten Knight
Precision Agronomics Australia

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Overview of the 2011–12 season

The 2011–12 harvest was completed in all districts by mid January. The final crop production estimate is 7.94 million tonnes (see Table), which makes 2011–12 the third largest crop on record for South Australia.

Wheat production was well above the long term average for SA, while the total barley tonnage was near the long term average. These good yields were achieved despite well below average growing season rainfall.

Within districts – and even between individual properties – there was considerable yield variation, due mainly to the amount of soil moisture that had been stored from summer and autumn rains.

A significant tonnage of grain, particularly wheat, is being warehoused by growers who are not prepared to sell at the current low prices.

There were some areas with grain quality issues where low protein, fungal staining and sprouting resulted in down-grading, but overall, wheat and barley quality was good.

Both canola area, yields and oil content were well above average, resulting in record canola production for SA.

There was some mould development on field pea grain following damage from frost and hail. There was also some weather damage to a number of bean crops, resulting in down-grading and rejection of loads.

But pulse diseases were generally at low levels thanks to low disease pressure and good fungicide management.

Annual ryegrass populations were high following seed build-up in 2010. This reduced crop yields and contaminated grain samples.

SOUTH AUSTRALIA 2011–12 WINTER CROP PRODUCTION (tonnes) AND AREA (hectares) AGAINST THE 5 YEAR AVERAGE

		5 year average	2011-12
Wheat	Area	2,105,600	2,226,100
	Prod'n	3,186,200	4,444,800
Durum	Area	58,800	74,600
	Prod'n	121,500	223,950
Barley	Area	1,141,400	987,700
	Prod'n	1,996,800	2,031,800
Oats	Area	79,000	75,800
	Prod'n	101,800	117,400
Rye	Area	9,500	9,500
	Prod'n	6,900	7,900
Triticale	Area	88,200	80,200
	Prod'n	104,500	117,500
Peas	Area	134,900	109,900
	Prod'n	158,500	144,400
Lupins	Area	74,700	64,900
	Prod'n	82,300	78,900
Beans	Area	71,900	72,200
	Prod'n	108,100	121,220
Chickpeas	Area	9,200	12,200
	Prod'n	9,900	19,950
Lentils	Area	61,700	106,100
	Prod'n	76,000	181,600
Vetch	Area	14,800	13,100
	Prod'n	8,200	11,120
Canola	Area	175,700	269,500
	Prod'n	219,500	435,700
Total SA crop	**Area**	**4,025,500**	**4,101,800**
Total SA crop	**Prod'n**	**6,180,300**	**7,935,800**

Current season summary

Rainfall in the northern agricultural districts of the state was above average during January and February 2012, but other regions were not as fortunate. Then on the last day of February, most of the state received heavy falls.

Wheat area in the coming season is likely to remain relatively stable with a reduction in area sown to pulse crops. But the canola area is likely to increase further.

Snails are becoming an increasing problem in most districts and growers need to manage numbers through stubble management and baiting to avoid crop losses. Mouse populations have also started to increase and numbers will need to be carefully monitored.

Locusts hatched in the Upper and Mid North districts in early

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January and have caused severe damage to lucerne and other summer feed in isolated areas. The rains in late February will now provide locusts with sufficient green feed to mature and lay eggs.

Farmers have been busy controlling summer weeds in the Upper North, Yorke Peninsula, Upper Eyre Peninsula and the Mallee to conserve stored soil moisture.

The heavy stubble loads from last season, particularly in the high rainfall districts, could make crop establishment difficult with some growers opting to harvest straw, while others may need to burn.

The widespread rainfall in late February has increased stored soil moisture and should provide good yield potential for the coming season.

PIRSA Rural Solutions contributors

Victoria

Victorian Mallee

Overview

The 2011 cropping season was really a continuation of the previous season's harvest. Due to record summer rains, the 2010–11 harvest stretched out to January and even February for some. This stimulated the need to spray summer weeds, while still harvesting.

Growers negotiated the puddles, bogged some machinery, and after careful planning, hopped straight on the seeder and got the crop sown. This didn't come without its challenges.

But after all the summer rain, the following five months were quite dry. This meant that shallow-sown crops were not in moisture and emergence was staggered.

Mouse numbers were on the incline due to the enormous feed source and they took advantage of emerging crops, mainly canola and legumes.

Stored moisture was at field capacity in most areas with November 2010 to February 2011 rainfall totalling up to 400 mm. Following this very encouraging wet period, there was almost a growing season drought with only 150 mm in total from April to October. But this was just enough rain to still capitalise on the stored moisture with a good fall in August making the difference.

Frosts in September caused more damage in canola than initially realised. Early sown crops were the worst affected, with some crops yielding only half of what their potential was. In spite of these issues, most were more than happy with the results despite the hard work, stress and heartache required to get the result.

The previous season was fresh in many people's minds, and careful planning saw the crops come off quicker with additional resources such as contract headers, trucks, windrowers and the use of chaser bins.

But no two seasons are ever the same, and the looming threat of weather damage lead growers to choose their varieties carefully, favouring good sprouting tolerance.

The end result was a successful wheat harvest with yields up and prices lean – which had an impact on net returns. While grain was downgraded in the 2010 harvest, the downgraded grain still brought a reasonable price.

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Many growers who opted for canola found benefits in terms of cash flow and operational management. There is also the break-crop benefit of grass control and the disease break. More break crops are becoming a priority in future cropping plans and rotations. Legumes will play a part in these future plans as many growers struggled to apply adequate nitrogen in the high yield potential season 2011 turned out to be.

This saw many potential yields not realised because nitrogen and moisture supplies were not matched.

These are difficult decisions to make during the season – and two cool springs in a row is rare in the Mallee.

Cereals

Wheat and barley yielded well at around 2.5 to 3.5 tonnes per hectare on legume stubbles. Managing rust is a priority in wheat, with some taking a hit with stem rust in Yitpi. The real concern is the unknown loss of yield caused in susceptible varieties.

When choosing varieties, the memory of the sprouted grain in 2010 prompted many growers to manage their program so that they would not have more than one sprouting-prone variety.

Barley yielded well and the year reinforced that growing a high yielding feed variety like Hindmarsh will often win over aiming for malt. It does have a limited fit, but did return a solid margin where yields were surpassing 3.0 tonnes per hectare.

Canola

Results were varied with frost causing exceptional crops to be average and moisture causing average looking crops to be pleasantly surprising. Yields of 1.0 to 1.2 tonnes per hectare netted a reasonable return. Cereals grown on canola stubble highlighted the fit for this crop in our rotation – yielding half a tonne higher than cereals on cereal stubble.

Legumes

A mixed bag with very little hay produced. Vetch was sprayed-out as it's an excellent crop for cleaning up grass and growing your own nitrogen. Peas yielded well. Like most legumes, 2.0 tonnes per hectare was common. This made chickpeas very profitable.

Lupins struggled more with yield and price. Like vetch, it was still a good grass break and nitrogen boost, but came at more of a cost.

The season ahead

The 2012 season started out very dry with only 15 mm of rain in total for January and February. March rains of 40 to 80 mm restored confidence and there will be a good area of canola sown again.

Lessons learned – which are not new – is that there are some key principles when farming in the Mallee:

- Success is determined by how much you make, not how much you spend. Those who had a good year last year controlled summer weeds on time, used adequate nutrition and gave careful thought to the rotation.
- Timely operations of sowing, spraying and harvesting give the highest returns.

This year has seen less land on the market, but there is a demand for lease country. Land prices still vary from $600 to $1500 per hectare with a preference for sand over clay. Red rising soil types still dominate.

Lease prices are around $85 to $100 per hectare.

The year ahead is now set up with the opportunity to capitalise on some excellent moisture. Vetch and canola will go in early with the aim of having all crops sown by mid June.

Simon Severin
Dodgshun Medlin Agricultural Management

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Wimmera

Looking back is always easier than predicting the future so here goes.

The cropping year of 2011 will be remembered by Wimmera growers as one where much was produced from minimal growing season rainfall. Thanks to the devastating floods of last summer, crops were able to use stored moisture to produce some impressive yields.

A swift harvest with few weather delays, ensured high quality grain from most crops.

Canola was first to be harvested with many growers reporting yields in excess of the benchmark one tonne per acre or 2.5 tonnes per hectare. In the past this has been unattainable due to dry finishes. But growers have hit the jackpot in the past two years as new hybrid varieties show their value.

Good prices early in the harvest period, coupled with good yields, made canola the highest gross margin crop for the 2011–12 season.

Cereals too yielded well with good quality grain. For the first time in many years, of the barley delivered to Donald receival sites, the vast majority was classified as Malt 1. Consequently, premiums for malt quality fell away as markets became filled with ample supplies. Feed barley prices drifted lower at the peak of harvest forcing many growers to warehouse or store grain at home for future marketing.

Cereal growers have now come to know the benefit of an in-furrow treatment of flutriafol on both wheat and barley. Untreated crops were very obvious when stripe rust hit susceptible varieties in September. Treated crops were well protected requiring only one spray late in the season as the flutriafol ran out. Leaf rust in barley was also a problem in untreated crops causing a complete kill of flag leaves in severe cases.

Also being stored due to unsatisfactory prices, was the season's lentil harvest. Lentil crops also responded well to soil moisture and a timely rain at pod fill. Yields in excess of 2.5 tonnes per hectare were recorded in most areas, and the quality was No.1 in most cases. The use of pre-harvest dessication proved valuable ensuring minimal weather damage.

Chickpea sowing were down on the previous year but it was another crop which made good use of a late rain. Yields were 2.5 tonnes per hectare plus and prices quite reasonable thanks to an early frost in Canada.

Faba bean yields were also good with most crops returning over 2.0 tonnes per hectare of No.1 grade beans.

When we do the sums, 2011 will go down as the highest production season in terms of growing season rainfall, in the Wimmera. The benefit of summer rain – and the subsequent benefit of summer weed control – were pronounced and will be remembered for a long time.

Mike Laidlaw
Harberger Farm Supplies, Donald Vic.

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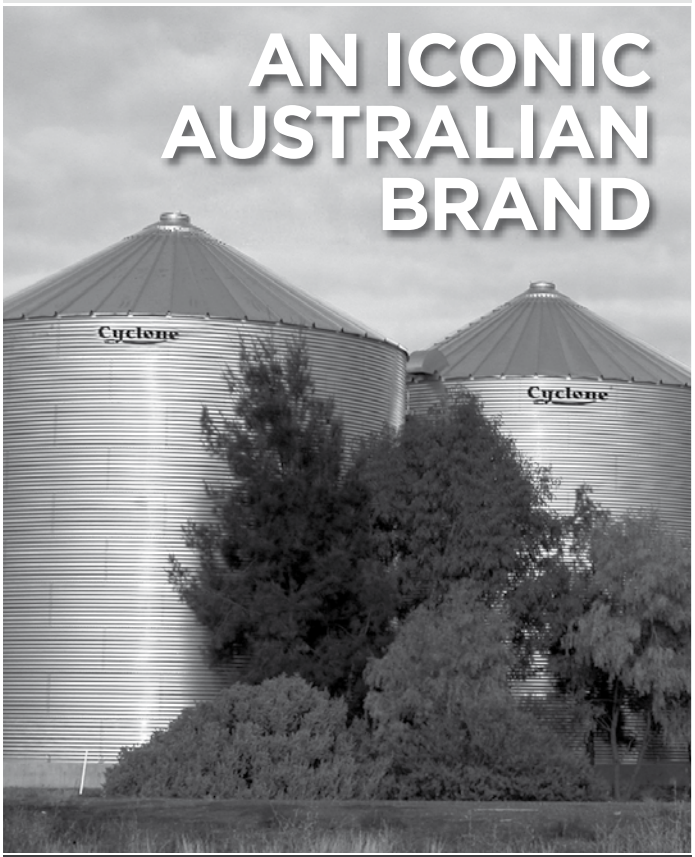

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New South Wales

Liverpool Plains

The Liverpool Plains for the 2011 calendar year to the current time of writing was a period of mixed fortunes. To look at the end of year rainfall you would say it was only slightly below average, but, up until mid October 2011 a lot of growers had not received 220 mm of rainfall (in a region where we should have received double that amount). As for a lot of the state, the season ended with a flourish of rainfall that continued right through harvest and into the New Year. It was a disappointing finish with the crop suffering huge levels of weather damage.

While most of the winter cereal crop established well, variable soil moisture profiles saw mixed results generated at the end of the year. It was a season where stored soil moisture had a huge influence on the end result. Double crop cereals, planted on 30–50 cm of moisture, almost died before saving rains in September and only went on to achieve a modest 1.8 to 2.5 tonnes per hectare. But any crop planted onto full or nearly full profiles saw very impressive yields produced, ranging from 5.5 to 7 tonnes per hectare. Some individual crops of wheat and triticale achieved very impressive yields of 8 and 8.2 tonnes per hectare respectively. Unfortunately the weather arrived and relatively high yielding crops were devastated and much of the grain fell into 70:10 feed markets.

Canola planting date played a massive role this season in the fate of the crop. Crops planted seemingly late were able to capitalise on late rains and produce solid 2.5 tonnes per hectare crops with relatively good oil content. The earlier planted crops suffered lack of moisture, struggled to achieve 1.8 tonnes per hectare and were down on oil as well.

The total area of chickpeas was down due to an amazing failure of crops in the previous season and the relatively attractive gross margins of oilseed crops such as canola. Downgrading at harvest also took its toll on the crop.

Picture of joy or foreboding depending on your perspective as a summer storm looms on the Liverpool Plains.

Early in the 2011 12 summer, prospects for Liverpool Plains summer crops such as cotton, were favourable.

Summer crop

Both dry conditions and later wet weather saw a frustrating and disjointed summer crop planting. Water-logging during sorghum plant

This Zulu wheat crop yielded about 7.3 tonnes per hectare.

This Liverpool Plains crop of sunnies went on to yield 2.5 to 2.75 tonnes per hectare.

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on the southern part of the plains, saw several paddocks resown once and even twice due to water inundation while hail badly affected some cotton crops in the Goran Lake area.

Despite the difficult start and cooler than average summer, the prospects of the summer crop look quite good at present. The result of early sunflower and sorghum crops will be known shortly, as headers start to roll with some much sort after, drier weather at the time of writing.

The upcoming winter crop is currently being planned, with much thought going into the prospect of a dollar return based on stored soil moisture, crop selection, winter crop disease logistics and lower than desired grain prices.

Wishing everyone an easy, fault free and fruitful season.

Peter McKenzie
Agronomist, AgVance Farming, Quirindi

Central West

The 2011 crop – another character building year? Begs the question, can one have too much character?

The start

The season started with a full profile of moisture – courtesy of the floods that decimated the 2010 crop. Then the rain dried up making planting a long, drawn out affair with variable results. Early sown crops were planted in quite warm conditions, soils dried out a bit and some patchy stands resulted. These crops were able to get their secondary roots kicking, tap into the moisture and then nearly delivered the goods in November.

At the other end of the planting window, some sowings resulted in dry seed sitting out in paddocks until August.

Paddocks that had been visited by the 'devils tools' (read disc ploughs and Kelly implements), fared worse and those paddocks

Gregory wheat at 'Quandong Park', Collie in the NSW Central West.

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mechanically manipulated on heavy soils sown late, were basket cases, especially in the area north of Collie.

So, to the next pestilence we encountered. Vermin – it was trench warfare out there. The pigs were digging up the mice, the mice were in hand to hand combat with the cockatoos and ducks acting like excavators with the seed. Some farmers had to sow paddocks three times and baited for mice a similar number of times. Mickey and Minnie seemed to love

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pulse stubble or cereal stubble where the crop fell over prior to harvest. They were far worse in the southern part of the region but started to slow down when temperatures dropped. Again, thin plant stands were the consequence.

The middle

The crop mix reflected the erratic start to the season with canola plantings reduced from the planned, wheat was of course the dominant grain and chickpea plantings down a bit after 2010's headaches. The lupin area was back by up to 70 per cent due to lack of markets and carryover stocks from 2010 – anyone want to buy some? Barley and field pea areas were consistent with previous years.

Diseases were prevalent at the start of the season with yellow leaf spot the main culprit in wheat crops due to the huge innoculum loading from 2010. The dry conditions that persisted in early winter were actually a positive for keeping this disease under control. Crown rot showed up in spring in some paddocks. 'Asco' in the chickpeas was really a non-event, and even though rainfall levels were low at the start of the season, this was surprising considering the huge levels in 2010.

Nutrition was a concern throughout the season, N levels being the main issue after the huge crops of 2012. The lack of rainfall events made top dressing a tricky exercise. There was a swing towards liquids on many farms – one that will continue. Zinc deficiency was common throughout the region on the heavier soils that were cold and not very wet and had a low zinc status to begin with. I think this really played against us with a lack of early vigour and general ill-thrift in these soils.

The rains started in August and have stuck with us like herpes till now.

The end

Well we got the canola off, most of it anyway, before the rain started. Yields on average were great, many hitting that magical one tonne per acre mark for the second year in a row. Oil was exceptional – a result of the mild finish perhaps? Then the rains were here. The quantity of the rain was not the issue, it was the duration and cold temps that went with it – seven days plus of it. The grain quality was not that great to start with, with protein levels low on average due in part to the soft finish, so quality at harvest was horrible. This was coupled with low commodity prices, loss of grain weight and another year of low income.

Gregory wheat at Tobymorey , Armatree. The winter crops in the Central West waged an ongoing battle with weather, pests and poor prices.

Summer crop

For the first time since 1992, the Macquarie Valley has had a full cotton plant. The cotton is late and has no doubt hated the recent deluges and cold summer temperatures. With Burrendong Dam currently at 140 per cent, another big cotton planting is expected in 2012–13. There is also the odd dryland sorghum and cotton crop around which have loved this wet summer we have encountered.

Local trial work

GOA (Grain Orana Alliance), continued to conduct relevant and regionally specific trials in the region throughout 2011. These trials have investigated yellow leaf spot, the effect of grazing on stripe rust, sulfur nutrition in canola, windrow timing in canola and so on. Their summer program has been focusing on weed control options to manage fleabane and windmill grass.

Property sales

A number of iconic properties have been sold in the Central West in the last 12 months. The Clyde dispersal saw their Coonamble/ Quambone farms split between Burrabogie Pastoral Co and the Maquarie Bank's Paraway Pastoral Group. Raby Merino stud at Warren was purchased by the Hassad Group from Qatar. Hassad also acquired Bundemar Park and Old Bundemar at Trangie. The US Westchester Group has also been active in the region.

Outlook for 2012

Floodwise, the Macquarie Valley has been lucky, with just localised water and minor flooding. Our southern cousins on the Lachlan are seeing the force of Mother Nature at her most destructive as I write this – the full damage yet to be ascertained.

The summer has been one of constant fallow spraying. Some paddocks have had four sprays, with another two required at least before sowing. This does not include the 'double knock' sprays, tackling our arch nemeses of fleabane and windmill grass.

Canola at Meramie , Warren. Canola was the standout crop for the Central West in 2011 and the area will see a bigger area planted in 2012.

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Crop-mix this season will see a big swing towards rotation crops due to the poor outlook for wheat prices. Canola will be the big winner, with a real swing towards the TT varieties as growers look towards a more whole-system approach and the associated weed control advantages. Chickpeas will increase again in area. As they say, time is a great healer (and good commodity prices) as the memory of the pain of 2010 with this crop diminishes. Sourcing seed that has good germ and vigour could limit some production.

Penny Heuston
Heuston Agronomy Services

Queensland

Darling Downs

Overview of 2011–12

The Downs had one of its best winter seasons in many years with good growing conditions leading to excellent yields and good weather for harvest. The only downside was that quality was down and with the rainfall damage in NSW leading to a glut of feed wheat, prices were reduced. But overall, gross margins were good.

The La Niña has continued into a second summer, but the rainfall pattern has been very different from last summer. When combined with good subsoil moisture, the rainfall has been sufficient for good yields from the early sown crops, but some double cropped paddocks are short of moisture for the crop.

Winter 2011

The Western Downs had an early start to winter crop planting and got their crops away, before a wet spell set in which hampered the Eastern Downs planting. This was followed by a long dry period which reduced tillering in the cereal crops.

By September the cereals had a fair yield potential, particularly after August provided rainfalls over twice the average. These rains arrived at a critical time, and although disease appeared in the form of stripe rust, yellow spot and leaf blotches, the fungicides worked effectively. There were some white heads which made growers very concerned that we were about to have a repeat of the fusarium problems. But the white heads were isolated and were caused by a combination of mouse damage, crown rot and botryosphaeria, rather than the devastating fusarium.

Cereal yields varied with Western Downs crops producing 2.5–3.5 tonnes per hectare. The Central and Eastern Downs produced one of their best results with yields between three and seven tonnes per hectare, and the odd crop exceeding 7.5 tonnes per hectare. Something had to suffer though, and it was protein, as few crops were fertilised for such a high yield. There were also some quality issues with black point and disease.

Chickpeas did not have such a favourable season, despite good disease prevention from a thorough fungicide program. The long dry spell affected the crops and high heliothis pressure caused some damage, so that the yields were solid rather than outstanding.

Overall, it was a good winter season with strong gross margin results paving the way for summer. Many growers stored grain in the hope of better prices, but the abundance of feed quality grain and overseas factors have seen prices stagnant and some winter grain is still in storage.

Summer 2011–12

The late August rain was ideal for the spring planting and good areas of maize and sorghum went in early, along with an increase in sunflowers. This also allowed irrigated crops to be planted on rainfall but dry and cool conditions in September slowed growth.

The pattern for this summer then became established – rain followed by a long dry spell. The next rain was in early to mid November then a dry spell, then mid December rain was followed by a six week dry spell until late January and early February rain. But this has been storm rain and therefore not general. While overall it is holding up as an above average rainfall summer, there are pockets well below their expected rainfall and these crops are suffering.

The early crops are being harvested in February, and thanks to the very good stored soil moisture are yielding very well. Early reports of sorghum yields are between 5.0 and 8.5 tonnes per hectare with quality holding up with low screenings and good test weight. Silage maize yields though have been below expectations, and this seems to be for a variety of reasons, including rainfall and nutrition.

A major issue is soil nutrition partly due to the heavy rain in 2011 leaching the mobile nutrients, and combined with the high yields, nitrogen levels are low and other elements such as sulphur are needing attention. There should be a lot of soil testing before the next crop.

The lack of rain meant that the summer planting was late, occurring in January, and these crops have struggled to establish well and are looking for rain, apart from isolated areas such as the far Eastern Downs.

A large area of mungbeans have been planted along with an increase in dryland soybeans, the earliest of which are pod filling now.

Insect pressure this summer has been unusually low, with heliothis in particular being well below thresholds. The only pests causing any need for control are sucking pests such as mirids, mites and green vege bugs.

This has helped the large area of cotton planted. The irrigated crop looks good with average to above average yields expected, but the dryland is more of a mixed bag depending on stored soil moisture – long fallow ground should produce an average yield, but cotton on cotton crops are suffering.

Winter outlook for 2012

There will be a fair interest in winter cereals and chickpeas this year, particularly with the good falls of late summer rain providing enough soil moisture to double crop paddocks into winter crops on the Eastern Downs. Fallow stored moisture levels on the Western Downs are excellent and will support a fair winter crop area.

As mentioned before, nutrition and especially nitrogen nutrition, will need attention for the winter crop to produce the desired quality along with yield, and Landmark is encouraging growers to soil test.

Hugh Reardon-Smith, Agronomist
Landmark, Pittsworth

Maranoa

A wet winter in 2010 saw many big crops abandoned that season due to weather damage. This provided an excellent feed source for mice coming into the 2010–11 summer season.

The area planted to mungbean, sorghum and sunflower in the 2010–11 summer was up on the district average thanks to favourable soil

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moisture conditions. The subsequent summer crop yields were variable due to the impacts from mice and heat stress.

The 2011–12 winter crop

The roll on effects from the previous disease-riddled winter saw a decline in the chickpea planted area in 2011. The wheat area remained about the same.

As with many areas last season, yields were high but protein was down.

The 2011–12 summer crop

Lower than expected lead-in rainfall for the planting window, reduced the originally planned area of mungbean. But the sorghum area remained about the same as previous years.

March saw summer crop harvest underway in the Maranoa with sorghum yields coming in generally above average. Good yields are needed to offset the currently poor prices on offer for sorghum.

Kirsty Wild
Account Manager Agronomy – Landmark, Roma

Central Queensland

Grass weeds are the dominant management issue: The continuing spread onto more farms and across more paddocks and inability to control feather top Rhodes grass (*Chloris virgata*) especially in zero till farming systems is currently the biggest management issues for all Central Queensland grain farmers. Sweet summer grass (*Brachiaria eruciformis*) is frequently a problem for farmers on downs soils especially when sorghum on sorghum is planted. Fleabane is everywhere and is a major emerging weed for CQ farmers and is especially evident in areas where glyphosate has been sprayed.

Increased testing needed to better understand and manage soil fertility: Extremely low proteins in the 2011 wheat crop signalled a new era for CQ grain farmers where more soil testing in more paddocks on more farms will be needed to ensure appropriate rates of N fertiliser are applied. Further research is needed to better understand where and how much phosphorus fertiliser is appropriate across many CQ paddocks. Potassium and sulphur are emerging as potential limitations on some farms but exactly where and how much to apply will need to be determined.

Low prices and high costs equal a tough outlook for CQ grain farmers: A more affluent Asia, especially China and India, is the basis for the prediction of a brighter future for Australian farmers. This is currently a long way from the reality with current low commodity prices and high input costs.

Rainfall

Winter 2011: Rainfall during March to May 2011 was variable across CQ but generally it was generally very wet for everyone with some districts receiving two to three times their long term average for this time of the year. Natural springs occurred in many paddocks mostly on open downs soils and become a major nuisance to many farmers with one farmer from Capella losing 450 hectares of his cultivation to springs.

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Light frosts occurred across CQ in mid May but only in low lying areas. It was not until the third week in June that extensive frost occurred in most districts. Chickpeas crops suffered some frost damage. Frost occurred in some districts as late as mid-September 2011, which is unusual although late frost caused little or no crop damage.

Given the wet harvest and major crop losses experience by almost all grain farmers during the 2010 winter crop, every cloud and weather change created a nervous moment for CQ grain farmers.

Summer 2011–12: Rainfall for CQ for summer 2011–12 was patchy and all from storm rain. It has been highly variable from farm to farm and district to district. Early summer was dry and then most areas received good rain in January but average or below average for February 2012.

In summary, rainfall for this summer has been good for growing pastures grass and weeds but generally too little too late to get the best from summer crops.

Wheat

A very wet autumn in 2011 enabled a large area to be planted to wheat (about 300,000 hectares). Some farmers double cropped by planting wheat into sorghum stubble as it was harvested. The majority of wheat was planted early (April–mid May) and did well whereas later planted crops (mid May–early July), especially those that were double cropped into recently harvested sorghum stubble, struggled.

Stripe rust occurred in some crops from Gindie to Jambin. This will cause some farmers to rethink which varieties to plant next year.

The wheat harvest finished later then normal for most CQ farmers fortunately without the wet weather harvest dramas of the 2010 season. Cooler temperatures caused slower ripening and dry down which was frustrating for all – and particularly for header operators keen to move on.

Farmers were generally pleased with grain yields given that most paddocks received very little in-crop rain. The majority of the crop yielded in the 2.0–2.5 tonnes per hectare range with better paddocks and farms averaging 2.5–3 tonnes per hectare and a few reporting higher yields of 3.6. Some Callide Valleys crops lucky enough to get rain in early September, averaged 3.7 tonnes per hectare and achieved paddock yields up to 4.5–5 tonnes.

Extraordinarily low (especially for CQ) grain proteins both devastated and confused farmers with much of the crop on the Central Highlands in the 8 to 10 per cent protein range, some even lower. Even scrub soil paddocks in the Dawson had protein levels of 9–12 per cent. Some depots could almost count on one hand the number of loads achieving Prime Hard. Paddocks that had previously been planted to mungbeans generally did better. The big wet of the previous summer caused large scale de-nitrification. This, along with fertility decline that has occurred over time, signals 'it's time' for better monitoring of N levels (more paddock soil sampled) and use of higher rates of N fertiliser.

Wheat prices were extremely disappointing with poor quality weather damaged wheat selling for a higher price in 2010 than better quality wheat in 2011. A lot of grain was stored on-farm or warehoused in the hope of better prices. Delivering to public storage was a headache for many farmers who lack significant on-farm storage. Depot closures created major problem at harvest.

Chickpeas

The area planted to chickpea in 2011 was probably less than 30,000 hectares – well down from the 60–70,000 hectares in 2010. Poor quality chickpea seed was a result of poor harvest conditions in 2010. Poor quality seed caused very low or slow germination in many paddocks. Some crops were frosted during the season but most appeared to recover.

Feather top Rhodes grass is the major weed of Central Queensland cropping land. Darren Aisthorpe, Extension Officer, DEEDI Biloela explains treatments to a group of Callide and Dawson Valley farmers on a recent farm walk at Muller s farm.

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Chickpea harvest occurred later than wheat and yields of 1.7–2.2 tonnes per hectare were common.

Lots of standing stubble and fallow paddocks across CQ suggest a larger than average area will be planted to winter crop – particularly chickpeas. My guess is 250–300,000 hectares of wheat and 50–80,000 hectares of chickpeas. Last season the area planted to chickpeas was restricted because local CQ grown seed was exhausted. This should not be a problem in 2012.

Sorghum

The extended wet of the 2010–11 summer resulted in low soil nitrogen levels to grow the sorghum crop. As a result most farmers only achieved average yields.

Only a small area was planted to spring sorghum – mostly in the Callide Valley in 2011 – due to dry conditions. The main sorghum crop (probably about 150,000 hectares) was not planted until late January. Very hot weather was experienced as much of this crop was emerging and this along with poor seed quality, resulted in low populations in many sorghum crops. Ergot may be a significant issue for late planted crops especially if we experience a cooler autumn.

Mungbeans

For the 2010–11 season I estimate about 10,000 hectares of spring mungbeans were grown and another 10–15,000 hectares of summer mungbeans were harvested. The yield was generally above average (1.2–2 tonnes per hectare) in 2011. Quality varied greatly from poor to good with much of the crop suffering some weather damage. The best quality most farmers achieved was 'cookers'.

In 2011–12 the area planted to spring mungbeans was low (perhaps less than 5000 hectares). Most spring mungbeans were planted in the Callide and lower Dawson. Yields were generally low reflecting hot dry conditions prior to Christmas. A much larger area (20–25,000 hectares) was planted in summer, some of it quite late into February. Most summer mungbean crops are looking good.

A major benefit of mungbeans in the rotation in this region is that it allows the use of Group A herbicides in-crop to control feathertop Rhodes grass.

Dryland cotton

All the moons came together for a small number of dryland cotton growers, mostly in the Clermont district, in 2010–11. High cotton prices and a full soil moisture profile early in summer allowed a significant area to be planted to dryland cotton. Farmers were generally pleased with yields of 2.5–3.7 bales per hectare. There were a couple of 5.0 bales per hectare dryland crops which yielded better than many irrigated crops that suffered from poor growing conditions throughout the season – lots of rain, floods for some and lack of sunshine and heat.

A much smaller area was planted to dryland cotton in 2011–12 and this crop looks good.

Sunflower and maize

A recent push by marketers has seen increased interest in sunflower – but most interest is still among current or past growers – not newcomers. In previous years late summer rain often resulted in a big increase in the area planted to sunflowers instead of sorghum. The current price for mono sunflowers, and the cost of transport to the crushing plant at Newcastle, are significant restraints to the area planted. There is reportedly 10–15,000 hectares on the Central Highlands.

Only farmers with a contract are likely to plant maize in the current market. There is a small area planted (under 5000 hectares).

Weeds

Many former committed zero till farmers will now tell you they are 'minimal till' farmers these days. This is because of the ongoing problem of controlling feathertop Rhodes grass, especially on Brigalow scrub soil and sweet summer grass mostly on open downs soils. Flaxleaf fleabane is common in many paddocks and is the next major weed on the horizon.

A dry 2011 winter assisted farmers to regain control of badly infested feathertop Rhodes grass paddocks using the double knock technique (robust rates of glyphosate followed seven to 14 days later with a Gramoxone spray). This system is not bullet proof as it appears if you get rain and the plant starts to recover before the double knock is applied, then weed control can be poor. In-crop use of group A herbicides was generally successful.

In 2011 wheat paddocks mostly finished fairly clean of weeds whereas most chickpea crops had lots of broadleaf weeds present despite residual herbicides being applied at planting. Some paddocks were ploughed to control weeds and to level wheel tracks.

In early summer most farmers thought they were on top of their fallow grass weeds. A few weeks of wet weather during December were enough for many paddocks to again be covered in weeds. An increased use of metolachlor – with or without atrazine – has occurred to add a residual herbicide to the management system.

Livestock and pastures

Pastures on the Central Highlands, Dawson and Callide Valley are excellent – as good as I have seen for a while. Cattle condition reflects good, well grown pastures still growing but not yet mature or rank.

Cows are fat and weaners are shiny and well-grown and bullocks are in top order.

Maurie Conway, Principal Technical Officer
Central Queensland Farming Systems, DEEDI, Emerald

South Burnett

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Key points

- Wet weather interrupted the 2011 summer crop harvest.
- Repairs to paddocks carried out following the extreme wet and floods earlier in the 2011 summer.
- Winter crop planting was average with good yields and low protein.
- Summer crop planting of mainly peanuts and corn.
- Peanut prices good, unlike most grains.

Overview

The South Burnett, like most areas in the northern region, suffered lingering effects from the extreme wet of the 2011–12 summer.

Physical damage to paddocks and infrastructure, wet spots in paddocks that continued for months, weed problems that could not be tackled due to the wet conditions, all created real problems that lingered for months.

The wet conditions continued into the summer crop harvest adding to farmers' frustrations.

Many paddocks that had been planned for winter crop were not planted due to repairs needed or too many wet spots to make planting practical.

Winter crop yields were generally quite good but proteins were low.

Grain prices projected for the 2011–12 summer were low so growers were looking for alternatives. Unfortunately mung bean prices had also dropped significantly from the previous couple of years.

On the up-side peanuts prices were up due to a worldwide shortage and navy beans prices were also good.

But after early rains, with peanuts planted in November and mid December, the rains dried up through late December and early January so that not all paddocks planned for peanuts could be planted. These paddocks went into very late corn or mungbeans.

It has been a good year for peanut leaf diseases, particularly net blotch. Most crops have been sprayed at least twice and a number three times.

Insect pressure has been moderate to high in bean crops. Loopers in soybeans and pod borers and pod sucking bugs in mungbeans have been high priority.

Crops are looking good in early March with good potential. Just hope there are no early frosts due to the number of vulnerable late crops.

Ian Crossthwaite
BGA AgriServices, Kingaroy

Seasonal rainfall across the grain regions – 25 year averages and year to date

Brought to you in association with JOHN DEERE	25yr Annual Average (mm)	2012 rainfall to date (mm)	Summer 25yr Annual Average (mm)	Summer 2011–12	Autumn 25yr Annual Average (mm)	Autumn 2012 to date	Winter 25yr Annual Average (mm)	Winter 2011	Spring 25yr Annual Average (mm)	Spring 2011
Emerald Qld	559	226	247	350	114	89	66	21	120	81
Toowoomba Qld	670	250	265	330	140	45	86	91	176	186
Roma Qld	594	331	238	550	133	9	75	38	139	143
Goondiwindi Qld	630	201	242	360	140	21	101	82	141	251
Narrabri NSW	661	156	235	197	130	7	132	68	163	329
Gunnedah NSW	682	274	232	371	132	0	128	44	184	321
Dubbo NSW	621	338	196	291	136	122	129	79	157	239
West Wyalong NSW	450	138	112	149	92	23	118	76	127	196
Wagga Wagga NSW	547	315	129	193	117	190	154	108	146	211
Swan Hill Vic	335	100	74	82	70	50	94	64	98	91
Bendigo Vic	543	186	114	140	112	81	176	147	142	146
Horsham Vic	385	40	86	42	77	28	133	101	110	95
Lake Bolac Vic	562	44	129	48	104	19	160	102	154	112
Murray Bridge SA	367	89	65	93	75	55	124	96	102	86
Kadina SA	344	56	56	79	78	28	117	102	91	62
Cummins SA	391	20	50	45	84	5	173	116	83	80
Esperance WA	613	88	76	107	141	43	254	230	140	186
Wagin WA	409	9	43	115	95	0	180	183	86	167
Northam WA	405	39	41	55	87	0	195	225	81	129
Mingenew WA	368	39	31	22	93	0	181	205	63	88
Moora WA	393	87	40	104	94	0	187	155	71	102
Mullewa WA	330	12	50	13	96	0	138	174	46	60

Last rainfall reading March 20, 2012.

Section 4

Changing Face of Farming

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Carbon markets and future on-farm opportunities for added income

As governments and private companies explore policies to reduce greenhouse gas emissions, carbon markets worldwide present opportunities for rural landholders to generate revenue from land sector abatement. Australian farmers undertaking eligible land sector abatement activities can generate and sell carbon credits into national and international carbon markets via the Australian Government's Carbon Farming Initiative.

What are carbon markets?

The term 'carbon market' refers to the buying and selling of carbon credits generated from recognised offset projects. The carbon market operates in much the same way as markets for shares and property, with the prevailing carbon price determined by supply and demand.

Complex rules and regulations determine the activities that are eligible to earn carbon credits, the type of credits they can receive (that is, whether Kyoto compliant or not), and the type of carbon market in which they can be traded. These rules ensure, amongst other things, that any claimed emissions are real and verifiable.

There are two main types of carbon market:

- Mandatory; and,
- Voluntary.

In mandatory carbon markets, buyers have some legal or regulatory obligation to purchase credits. Examples of buyers include companies with a liability under an existing emissions trading scheme, or a national government with an emissions liability under an international climate change agreement. Mandatory carbon markets exist in a number of economies around the world including the European Union and New Zealand.

Direct emissions from the farm sector are excluded from the new carbon pricing scheme but landholders can generate tradeable carbon credits through activities such as reforestation and regrowth management.

Under the Australian Government's Carbon Farming Initiative, farmers who participate in recognised abatement activities such as reduced soil carbon loss or increased sequestration, can generate tradeable carbon credits.

In contrast, voluntary carbon markets are driven by organisations or individuals who voluntarily purchase carbon credits to offset the greenhouse impact of their activities.

The carbon market in Australia

Like the EU and New Zealand, Australia is establishing a mandatory carbon market. In November 2011, the Australian Parliament passed legislation to introduce a national emissions trading scheme from July 2012, commencing with a three-year fixed price on carbon of $23 per tonne.

Importantly for farmers, the scheme's design allows all emitters to buy carbon credits generated through the CFI to reduce the amount of carbon they are liable to pay for. This is expected to increase opportunities for land sector abatement by stimulating new demand for carbon credits and offset projects.

The Australian Government has excluded direct emissions from the land sector from the carbon pricing scheme, whilst allowing it to generate tradeable carbon credits under the CFI.

In this way agricultural producers will be able to benefit from abatement without liability for their direct emissions.

Until commencement of the Australian Government's carbon pricing scheme, the carbon market in Australia relies on companies, governments or individuals to voluntarily offset their emissions. According to Ecofund Qld, the Australian voluntary carbon market is valued at approximately $150 million per annum with approximately 6 million units traded in 2011. In 2011, Ecofund sold over 1.1 million units in the voluntary and renewable energy markets.

Ecofund Qld was established in 2010 as part of a suite of Queensland Government climate change initiatives. It is a standalone commercial entity and one of Australia's biggest providers of carbon offsets for both private sector and government clients in the national market.

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For Australian farmers to become involved in the carbon market, the complex domestic and international rules and definitions involved, must be clearly explained by the government.

The voluntary market has grown considerably over recent years, and according to Ecofund, buyers are becoming increasingly sophisticated and seeking specific information on standards, project types and locations.

International accounting rules

Almost all domestic carbon markets are linked to complex international rules that govern the eligibility of activities as carbon offset projects. These rules are determined by the United Nations Framework Convention on Climate Change (UNFCCC), and enshrined in key international treaties such as the Kyoto Protocol, which is due to expire at the end of 2012.

International accounting rules ensure that the international community can be confident that carbon credits traded between economies are comparable and represent permanent, additional and verifiable removals of carbon.

It is important for governments to explain what these complex national and international rules actually mean for rural landholders on a practical level and how to become involved in carbon markets.

The Carbon Farming Initiative (CFI)

The CFI is the Australian Government's framework for accrediting land sector abatement. Under the CFI, rural landholders that participate in recognised abatement activities can generate tradeable carbon credits. The scheme commenced in December 2011.

What activities are included in the CFI?

The CFI will enable carbon credits to be generated from a wide range of biosequestration and emission avoidance activities. Such activities may include:

- Reforestation and managed regrowth (collectively referred to as carbon forestry);
- Soil carbon (reducing carbon loss or increasing sequestration);
- Reduced methane emissions from livestock;
- Reduced fertiliser emissions;
- Manure management;
- Savanna fire management;
- Avoided deforestation;
- Burning of stubble/crop residue; and,
- Reduced emissions from landfill waste.

Before an activity is eligible to generate credits under the CFI, it requires an approved method for counting and verifying abatement.

The Australian Government is actively developing such methods for a number of activities, and the market will be encouraged to develop new and improved methods, allowing additional activities to be added to the scheme over time.

For example, Queensland is active in the development of methods for activities with strong potential in that state such as managed regrowth. Once this methodology is finalised by the Australian Government, it will be a low cost option for landholders to create CFI units.

What are the requirements for participating?

CFI activities involving biosequestration will require a project proponent to demonstrate a legal carbon right. This ensures obligations to maintain carbon can be enforced on the project proponent. These carbon rights vary across the states.

For example, carbon stored in trees is already recognised under existing Queensland state law. The Qld Forestry Act 1959 allows landholders and lessees to enter into contracts about the ownership, use and economic benefit of natural resource products, including carbon.

This provides the legal framework for Queensland landholders to establish and own carbon reforestation projects and then sell the carbon offsets they generate.

Under the Qld Forestry Act, landholders of freehold tenure are eligible to voluntarily participate in the CFI as they own the carbon rights on their land. But the legal entitlement to carbon rights on leasehold land in Queensland has been less clear given that the state owns the trees and vegetation.

In addition to having the legal carbon right, the project proponent must demonstrate they have obtained the consent of all persons who have an interest in the area of land where the biosequestration project will be carried out.

Examples include registered interests, mortgagees, easement holders, owners of leased land and holders of a mining lease. As with the carbon right holder, an obligation to maintain carbon may also affect these other interest holders. So it is important they too are made fully aware of the scheme requirements and obligations.

The CFI also requires project proponents to have obtained the necessary state water, planning and environmental approvals, including taking account of regional Natural Resource Management plans.

What credits can landholders generate?

Under the CFI, the Australian Government will issue different credits depending on the activity. Eligible land sector abatement activities will receive either Kyoto CFI credits or non-Kyoto CFI credits depending on whether the greenhouse gas abatement activity is recognised internationally (see Kyoto Protocol box story opposite).

From *Carbon Farming in Rural Queensland, 2011*, published by Department of Environment and Resource Management (Qld). Email: enquiries@derm.qld.gov.au

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THE KYOTO PROTOCOL

The Kyoto Protocol is the primary international agreement that outlines measures for reducing carbon emissions, including land sector abatement activities that can be counted toward a country s emission reduction target. Under the Kyoto Protocol, developed nations are required to cut overall greenhouse gas emissions by an average of 5.2 per cent below 1990 levels over the period 2008 2012.

The activities accounted for by Australia against its target will determine whether that activity is eligible to earn Kyoto or non Kyoto carbon credits under the CFI.

The Kyoto Protocol requires its signatories to account for emissions and sequestration from:

- Afforestation (converting land cleared for more than 50 years to forests);
- Reforestation (converting land cleared as at 1990 to forests); and,
- Deforestation (clearing of forests resulting in land use change after 1990).

Australia also accounts for the following agricultural emissions in its national accounts:

- Emissions from livestock (such as cattle and sheep);
- Emissions from manure;
- Soil emissions from the use of fertiliser or the burning of residues;
- Emissions from savanna burning.

Australia does not include in its current carbon accounting:

- Cropland management (including reduced fertiliser use and minimum tilling);
- Revegetation (that does not meet the criteria for afforestation or reforestation above);
- Forest management (managing existing forests, for example by changing logging rates); and,
- Grazing land management (through practices that increase carbon stored in vegetation and soil, such as reducing stocks of cattle and sheep or rotational grazing).

Other activities such as harvested wood products and biochar are not currently recognised under the Kyoto Protocol due to difficulties with measurement and verification.

The first commitment period of the Kyoto Protocol expires at the end of 2012, and activities that are currently not covered may be covered in the future. Updated rules for land sector greenhouse gas abatement continue to be negotiated internationally, either as part of a new commitment period under Kyoto or as part of a new international agreement.

What is the difference between 'Kyoto' and 'non-Kyoto' CFI credits?

The CFI provides two classes of carbon credits to differentiate between activities that are covered by the Kyoto Protocol and those that are not.

Whether an activity is eligible under Kyoto or not will influence who will buy the credits and how much they will pay for them. Generally, Kyoto CFI credits are expected to have a higher value than non Kyoto CFI credits.

CFI credits generated from activities that are (or that come to be) recognised internationally, such as under the Kyoto Protocol (Kyoto CFI credits) can generally be traded on mandatory carbon markets.

Potential buyers for Kyoto CFI credits include companies with a liability under the Australian Government s carbon pricing scheme, international governments with obligations under the Kyoto Protocol and foreign companies with compliance obligations under a national emissions trading scheme (such as the EU and New Zealand emissions trading schemes).

CFI credits generated from activities that are not recognised under the Kyoto Protocol (non Kyoto CFI credits) can generally only be traded in voluntary carbon markets.

Potential buyers for non Kyoto CFI credits include companies with offsetting obligations under state government regulations (including development approval conditions) and companies, organisations and individuals voluntarily offsetting their emissions.

To support investment in the voluntary offset market, the Australian Government is providing $250 million over the first six years under the non Kyoto Carbon Fund to purchase non Kyoto carbon credits for activities such as soil carbon sequestration and revegetation.

The Australian Government is providing $250 million over six years under the non-Kyoto Carbon Fund to purchase non-Kyoto carbon credits for activities such as soil carbon sequestration and revegetation

Farm workforce supply and demand: Going to school on agriculture's future

By Jim Pratley, Australian Council of Deans of Agriculture

Agriculture has always been a complex business. But in the 21st century, the degree of complexity has intensified. Not only do farmers and their advisers need to contend with the usual production issues, they also need to be increasingly self-reliant in the marketing of their products, ensuring market quality and supply. There has always been a need to deal with climate variability but predictions indicate that this variability will increase and there is increased expectation for farmers to manage the risk of drought.

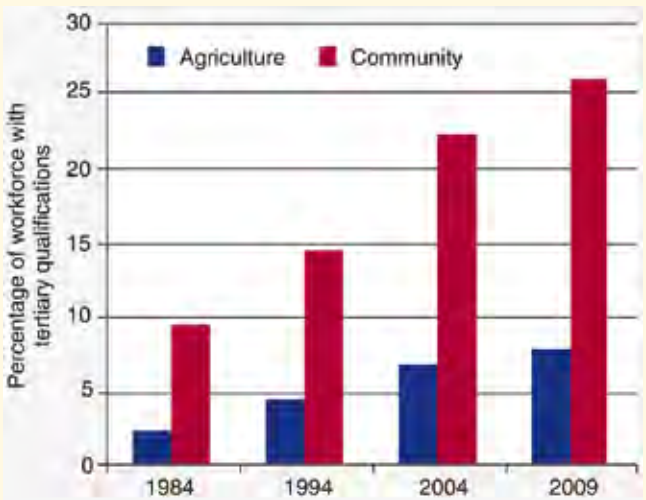
Technologies such as Global Positioning System (GPS), precision agriculture and remote sensing are now widely used and there is increasing expectation on agriculture to address carbon emissions and play its part in the carbon economy. The compliance aspects of the farm workplace are also becoming more complex with increasing occupational health and safety provisions, pesticide management regulations to follow through to the licenced stewardship of genetically modified crops.

At the same time agriculture manages over 60 per cent of the Australian landscape with the industry largely assuming the responsibility for landscape sustainability, biodiversity and so on of this huge area.

Farmers need to increase their own personal capacity but this in turn means greater reliance on expert advice from outside the farm.

Research and development will continue to be needed to develop systems and technologies that allow productivity gains. These gains are essential to maintain farm profitability and to address the needs and opportunities in food security nationally and globally. The industry – from the farm, the service and post-farmgate sectors and in R&D – requires a workforce which is highly educated, highly skilled and with an image and reputation that is attractive to the best and brightest.

Figure 1: Relative proportions of the agricultural sector and the Australian community with tertiary qualifications, 1984–2009



Source: Australian Bureau of Statistics.

AT A GLANCE...

The agricultural industry is at the crossroads in terms of workforce capacity. And this capacity looms as agriculture s most significant issue. The challenge is to make prospective students aware that careers in agriculture are at least as interesting, rewarding and challenging as in most other industries.

This article is based on an Occasional Paper by Pratley, J, (2012) *Professional agriculture, a case of supply and demand* published by the Australian Farm Institute.

Australian Farm Institute

Benchmarking education in agriculture

On any analysis, the educational standards of the agricultural industry do not stand up well to scrutiny (Figure 1). Over the past quarter of a century the proportion of the Australian community with tertiary qualifications has increased from just below 10 per cent of the workforce to more than 25 per cent. In contrast, in the agricultural sector, only 4 per cent were degree holders in 1984 and in 2009 that proportion has risen to only around 7 per cent. The gap is widening, yet food production would seem to be an essential service industry where standards should be unquestionably high.

The comparisons are also stark if the relative proportions of the workforce without post-school qualifications are considered. Whereas the Australian community at large has reduced the proportion from 54 per cent in 1984 to around 33 per cent in 2009, the agricultural industry has achieved a reduction from 73 per cent to only 58 per cent in the same time – that gap also continues to widen.

It is clear from these statistics that education of its workforce has not been a high priority for the agricultural industry. Yet this did become a concern for the Heads of Agriculture Schools within universities where declining enrolments were being experienced while at the same time, industry employers were complaining about the lack of graduates.

To address this issue, the Australian Council of Deans of Agriculture (ACDA) was formed in 2007. Further investigation by the ACDA revealed the government policy position at the time was that graduate supply was plentiful but that job prospects were poor. This conflicted

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with the experience of the ACDA members who embarked on a data gathering exercise to get to the bottom of this conflict.

We discovered that graduate numbers used by government included all environmental science and management graduates and that the job market projections were based on advertisements placed only in selected metropolitan newspapers.

Graduate supply in agriculture

To get a clearer picture, up-to-date data were collected from all universities with undergraduate courses in agriculture and in related areas. Clear trend lines were established.

In the late 1980s there was a marked increase in the number of graduates with agriculture degrees, due largely to the conversion from diploma qualifications to degrees in the Colleges of Advanced Education sector. Diploma qualifications have largely disappeared from tertiary education institutions since then – as have 2-year associate degrees.

Together, degrees and associate degrees in agriculture delivered to industry around 800 graduates in the late 1980s.

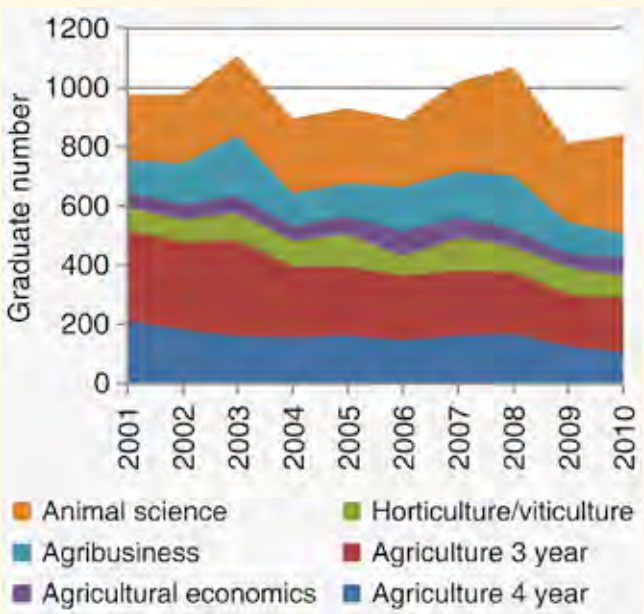
But in the 21st century, numbers had declined to around 500 in 2001 and that decline has continued such that only 300 degree graduates in agriculture entered the workforce at the end of 2010 – a 40 per cent decline in just the past 10 years.

But the agricultural industry also receives value from graduates in related degrees such as horticulture, agribusiness, animal science and agricultural economics (Figure 2). Whereas the total graduation cohort from agriculture and agricultural-related degrees was around 1000 per year in the early part of the recent decade, the number has declined to around 800 in 2010 – a 20 per cent decline.

It should be noted that a sizeable proportion of these are animal science graduates, only some of whom (probably fewer than half) are interested in livestock production with the remainder focused on wildlife and companion animals. The total available to the agricultural workforce then is closer to 700.

In more recent times there has also been a proliferation of university courses in animal science to capitalise on high student demand and,

Figure 2: Graduate completions in 3 and 4 year courses in agricultural and related areas from Australian universities for the period 2001–10 inclusive



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in many cases, to capitalise on the overflow of high quality students unsuccessful in their attempts to gain entry into veterinary science.

The data in horticulture reveal a substantial decline as well. This sector during the 1980s was characterised by a relatively small cohort of degree graduates and a high associate degree activity. These consolidated into degrees and at the turn of the century there were about 120 graduates per year. This reflected the buoyant position of viticulture at that time but there has been a decline in the number of providers related to the downturn in the grape industry.

This means the production horticulture industry will be dependant on agriculture graduates for its professional workforce, as before, and so will have to compete with the rest of the agricultural industry for employees.

Degree completions in agricultural economics in the 1980s were around 80 to 90 per year but in the recent decade is now around 50 per year. Only three universities provide graduates in this area and student demand suggests that there will be no new providers in the market any time soon.

In agribusiness/agricultural commerce, the main qualification in the 1980s was the associate degree being around 80 per cent of the market.

The agricultural sector requires a workforce ready, willing and able to manage the increasing complexity and new technologies of modern farming.

Together with degrees, these awards provided more than 200 graduates per year. In the evolution to degree-only awards in the past two decades there has been considerable fluctuation around 150 graduates per year declining to fewer than 100 in 2010.

Workforce demand

The job market in agriculture is based on the monitoring of job advertisements in state rural and metropolitan newspapers and on the internet over a four year period, 2007–10, presented quarterly.

It is recognised that there is the likelihood of an advertisement being placed both in print and on the web and subsampling suggests that this is of the order of 20 per cent for agribusiness and conclusions have been adjusted accordingly.

It is also recognised that there is the potential for 'churn' where one advertisement is generated by the filling of another vacancy but this is balanced by jobs in local media, by 'word of mouth' and direct targeting of employees, none of which is considered here.

Data are provided for agribusiness and production for the four years of study (Figure 3). Total job numbers are consistently around 4000 – or 3600 per quarter after adjustment for advertising overlap in agribusiness.

Despite the drought, which was very severe in 2008 and 2009, the number of jobs was not affected to a large extent although a rise is evident towards the end of 2010 as confidence returned with the breaking of the drought in eastern Australia.

For 2009 and 2010, production advertisements have been categorised into management and non-management (Figures 4a, b and c) to enable a better understanding of the required workforce.

In the production sector, there was a consistent demand for some 2000 non-management employees per quarter and at least 300 managers per quarter. Also evident in the data is the differing role played by the internet in advertising jobs.

In agribusiness, the ratio of paper to internet advertising is around 5:4 whereas for on-farm management roles the ratio is 3:1 and for non-management jobs it is more than 10:1.

Figure 5 shows the categories of jobs per quarter for the agribusiness sector. Particularly strong were the livestock and cropping categories but there were at least 100 advertisements per quarter for all categories.

Figure 3: Number of job advertisements per quarter in agribusiness and in agricultural production for the period 2007–10 inclusive

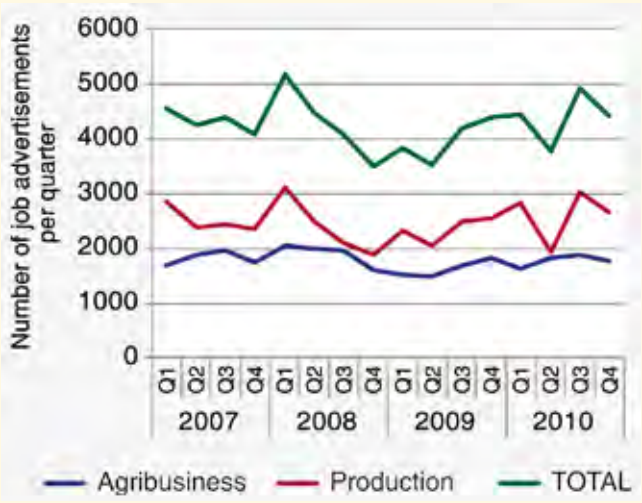

Figure 4: Influence of the internet in job advertisements by quarter in:
(a) agribusiness in 2007–10;
(b) management in production in 2009–10; and,
(c) production non-management in 2009–10

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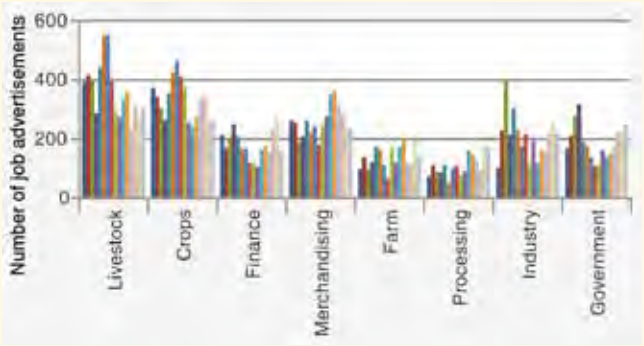
Figure 5: Number of job advertisements per quarter in various sectors of agribusiness for the period 2007–10 inclusive



What does all this tell us?

Regardless of the needs of the industry, the level of educational attainment in the agricultural industry is unacceptable in a community which has education as a high priority.

It is clear that there has been much complacency towards the improvement of skills and knowledge of its workforce at a time when the rest of the community has embraced the opportunities and moved well ahead. So it is not surprising that the image of the industry is not seen as progressive and the younger generations have not seen the opportunities for careers in agriculture that are seen in other industries.

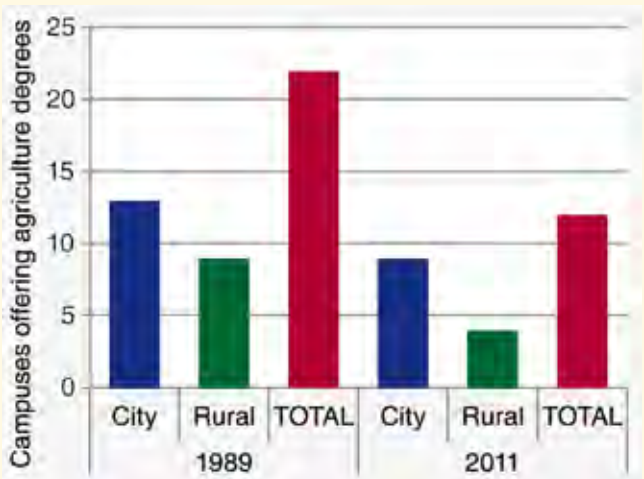
But the reality is that the greater expectations placed on producers and the associated services requires a highly educated and skilled workforce and there are opportunities for exciting and rewarding careers.

There is a job market of about 1600 per quarter in agribusiness. If it is assumed that 70 per cent have a need or desire for graduates to fill those positions then there is a demand for around 4500 graduates per year. To this should be added the 1200 or so production management positions annually.

The universities are nowhere near satisfying the current market. The data show that only around 300 agricultural graduates per year are now produced. This number grows to over 700 per year when related courses are considered. These numbers assume that there is no leakage of these graduates out of agriculture – this leakage can be significant.

This means, at best, the universities are producing only 700 or so graduates for a job market of more than 4000. Further, the universities would need to produce about 2300 graduates just to maintain the current (7–8 per cent) graduate level of education qualifications and that is nowhere near being achieved.

Figure 6: University campuses offering an undergraduate agriculture degree, 1989 and 2011



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How does the industry respond?

Industry responds to this current dilemma in many ways:

- The workload builds on existing staff;
- Staff are 'stolen' from competitors but the expertise base is not increased; and,
- Less qualified people are employed thereby reducing the quality of service to clients and for the business.

Anecdotal evidence from industry is that qualified people are leaving the industry due to the work demands being placed upon them, thereby exacerbating the problem.

A consequence of the decline in student numbers is the inevitable decline in the number of educational providers. The McColl Report in 1991 recommended that there be a consolidation of providers, on the pretext that the resultant providers would be more multidisciplinary and stronger than many of the earlier era.

Whilst the rationalisation has occurred and almost all are part of multidisciplinary organisations, the low student numbers have not provided the strength in many campuses that would have been expected.

Providers of undergraduate agriculture courses have almost halved in number (Figure 6) fulfilling the recommendations of McColl and colleagues. Of greatest concern is the decline by about two thirds in country campuses offering agriculture. This means access by rural students to agriculture has become highly limited – yet it is rural-based graduate jobs which are the most difficult for employers to fill.

Facing immense challenges

By any measure, the agricultural industry faces immense challenges in capacity. Prospective students and their mentors do not see agriculture as a potential career path. Students are not entering relevant university courses in sufficient numbers even to maintain the current levels of workforce education.

The issue is not that there are no exciting and rewarding careers in agriculture – it is that the emerging workforce generation does not perceive those opportunities in agriculture and is attracted to the more positive images portrayed in other employment settings.

The agricultural industry as a whole seems reluctant to embrace education as an essential plank of its future sustainability and seems unwilling to work together to promote both a positive image and worthwhile careers for prospective participants. There also seems to be a reluctance to put pressure on the political system to lead the image repositioning and career promotion.

The numbers and trends show that the capacity challenge is real and will only intensify unless there is a concerted effort for change.

Acknowledgements: From an Occasional Paper (No. 12.01 February 2012) published by the Australian Farm Institute. Please see: www.farminstitute.org.au
The personnel at Rimfire Resources are gratefully acknowledged for their contribution to the collation of all the advertisement data used in this paper.
More information: Jim Pratley, Australian Council of Deans of Agriculture, Charles Sturt University, Wagga Wagga. Email: jpratley@csu.edu.au

Emerging markets and farmland value

By GlobalGreenAgriculture[1]

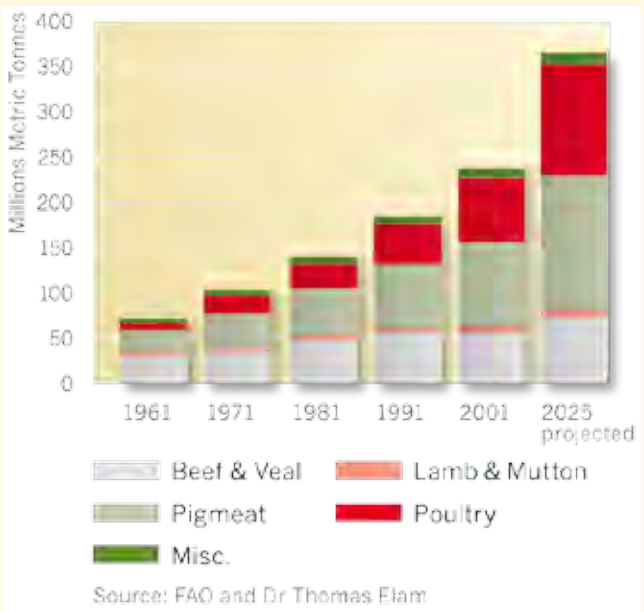
Around the world, new markets are emerging at an extraordinary pace. More and more countries are offering their citizens the chance to live a middle class life. This is clearly a positive step in terms of well-being, but does come with some consequences. There is suddenly an increase in not only demand for quantity of food, but also for its higher quality. As income increases, there is a clear tendency to consume less carbohydrates and more protein. Hence, the demand for grain as feed will skyrocket as, on average, over 8 kg of grain are needed to produce only 1 kg of meat. And world meat consumption is expected to double over the next 50 years.

Further complicating food supply is overall world population growth, which estimates that the world population will rise from around 6.9 billion people currently to between 9 and 10 billion people by 2050.

The food predicament – prices and production

In order to sustain this elevated population, it will become necessary to produce twice as much grain as is currently being grown – clearly a difficult challenge to be faced in the near future. Whether its final destination is as food for direct human consumption or as feed for livestock – and assuming optimal agricultural production at or above average levels – it will clearly be difficult to maintain a sufficient supply of cereals for future population levels. In fact, over the last 30 years, production has not been able to keep up with population as the ratio of kg of grain per year per person has begun to decrease.

Global meat consumption by type



FAO food price index

These are not the only factors that are complicating, and will continue to complicate, the world food supply situation. Global food prices have been increasing at an exponential rate in recent years. By mid-2008, international food prices had skyrocketed to their highest levels in 30 years. In December 2010, the Food and Agriculture Organization of the United Nations (FAO) food price index rose above its 2008 peak.

Concerns regarding climate change and fossil fuel dependency have led to a significant focus on renewable fuels. Crops that would otherwise be used for food are now being used to produce fuel, further diminishing global food production and causing an increase in the international price of food commodities.

Urban drift and loss of arable land

In 1900, worldwide, there were 6.7 rural dwellers to each urban dweller – now there is less than one and projections suggest there will be nearly three urban dwellers to two rural dwellers by 2025.

Cities of the world have continued to grow until urbanisation has begun threatening the very food supply that enabled their existence in the first place. This has been underpinned by the rapid growth in the world economy and in the proportion of gross world product and of the economically active population working in industry and services.

The FAO reports that already close to 200,000 square km of fertile soil have been destroyed by urbanisation. This will cause further increases in food prices, and farmland will become more valuable.

Land appreciation

In most countries the price of farmland has been rising. Europe has seen prices double, triple, and even quadruple per hectare of farmland since 2004. The price of productive agricultural land – wherever in the world you look – has, over time, outperformed CPI inflation.

In recent years, lavish lending practices and over leveraging has led the global economy into financial crisis. Part of the solution to this crisis has been for governments around the world to increase the supply of money. Additionally, interest rates in most developed countries have been lowered to near zero. Because of these monetary and fiscal policies the near future will most likely bring higher inflation.

And around the world, farmland pricing has performed extraordinarily well during high inflationary periods.

1. GlobalGreenAgriculture PLC is a UK-based investment company solely investing in agriculture and farmland. For more information see: www.ggagriculture.com ■

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Section 5

Industry Agencies

For complimentary inclusion in the 2013 edition of the *Grain Yearbook* please contact *Australian Grain* on 07 4659 3555 or Email: grain@greenmountpress.com.au

National Bodies

National Farmers' Federation

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PO Box E10, KINGSTON ACT 2604
Ph: 02 6269 5666 – Fax: 02 6273 2331
Email: nff@nff.org.au
President: Jock Laurie
Chief Executive Officer: Matt Linnegar

Grain Producers Australia

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GPA Board of Directors
Northern Region: Pete Mailler
Mob: 0427 265 707
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Western Region: Barry Large
Mob: 0427 549 023
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Mob: 0428 504 544
Email: andrew.weidemann@grainproducers.com.au
Southern Region: Michael Schaefer
Mob: 0428 274 031
Email: michael.schaefer@grainproducers.com.au

State Bodies

Queensland

AgForce Queensland

Level 1, Primary Producers' House
183 North Quay, BRISBANE Qld 4000
Ph: 07 3236 3100 – Fax: 07 3236 3077
Email: agforce@agforceqld.org.au – Web: www.agforceqld.org.au
State President: Brent Finlay
Chief Executive Officer: Robert Walker
Grains President: Wayne Newton
Grains Policy Director: Nina Murray

Western Australia

Council of Grain Grower Organisations (COGGO)

26 Winthrop Drive, WINTHROP WA 6150
Ph: (61 8) 9363 3400 – Fax: (61 8) 9363 3451
Email: enquiries@coggo.net.au
Independent Chairman: Bruce Piper
Company Secretary: Hugh Lennerts

Grain Industry Association of Western Australia (GIWA)

PO Box 7097, CLOISTERS SQUARE PO WA 6850
Ph: 08 6189 2457 – Fax: 08 6272 4555
Email: info@giwa.org.auu
Executive Officer: Johanna Gastevich

Pastoralists' & Graziers' Association of WA (PGA)

1st Floor, Pastoral House, 277–279 Great Eastern Highway
BELMONT WA 6104
Ph: 08 9479 4599 – Fax: 08 9277 7311
Email: grains@pgaofwa.org.au – Web: www.pgaofwa.org.au
Policy Director: Sheldon Mumby
PGA Western Graingrowers Chairman: John Snooke
PGA Western Graingrowers Vice Chairman: Barry Large

Western Australian Farmers Federation (WAFarmers)

PO Box 6291, EAST PERTH WA 6892
Ph: 08 9486 2100
Email: wafarmers@wafarmers.org.au
Chief Executive Officer: Andy McMillan

WA Grains Group (WAGG)

C/- PO, LAKE GRACE WA 6353
Ph: 0428 654032
Email: wagrainsgroup1@bigpond.com – Web: www.wagg.com.au
Chairman: Doug Clarke

South Australia

South Australian Farmers' Federation (SAFF)

Level 1, 67 South Terrace, ADELAIDE
PO Box 6014, Halifax Street, ADELAIDE SA 5000
Ph: 08 8410 7233 – Fax: 08 8211 7303
Email: info@saff.com.au – Web: www.saff.com.au
President: Peter White
SAFF Grains Chairman: Michael Schaefer
SAFF Grains Deputy Chairman: Philip Wilsdon
SAFF Grains Executive Officer: Deane Crabb

Victoria

Victorian Farmers Federation (VFF)

Farrer House, 24–28 Collins Street, MELBOURNE VIC 3000
Ph: 03 9207 5555 – Fax: 03 9207 5539
Email: vff@vff.org.au – Web: www.vff.org.au
President: Andrew Broad
Chief Executive Officer: Graeme Ford
President Grains Group: Andrew Weidemann
Grains Manager: Stephen Sheridan

Tasmania

Tasmanian Farmers & Graziers Association (TFGA)

Cnr Charles and Cimitiere Streets, LAUNCESTON TAS 7250
PO Box 193, Launceston TAS 7250
President: David Gatenby
Chief Executive Officer: Jan Davis
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NSW Farmers Association

GPO Box 1068, SYDNEY NSW 2001
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Email: emailus@nswfarmers.org.au – Web: www.nswfarmers.org.au
Chief Executive Officer: Matt Brand
Grains Committee: Mark Hoskinson

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Parliament House, CANBERRA ACT 2600
Ph: 02 6277 7520 – Fax: 02 6273 4120
Email: Joe.Ludwig.MP@aph.gov.au

Minister for Sustainability, Environment, Water, Population and Communities – The Hon. Tony Burke MP

Parliament House, CANBERRA ACT 2600
Ph: 02 6277 7640 – Fax: 02 6273 4120
Email: Tony.Burke.MP@aph.gov.au

Shadow Minister for Agriculture, Food Security – The Hon. John Cobb MP

Parliament House, CANBERRA ACT 2600
Ph: 02 6277 4721 – Fax: 02 6277 8543
Email: John.Cobb.MP@aph.gov.au

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18 Marcus Clarke Street, Canberra City
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Ph: 02 6272 2000 – Fax: 02 6272 2001
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Executive Director: Paul Morris

AusIndustry

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Email: hotline@ausindustry.gov.au – Web: www.ausindustry.gov.au

Australian Pesticides and Veterinary Medicines Authority (APVMA)

18 Wormald Street, Symonston, ACT, 2609
PO Box 6182, KINGSTON ACT 2604
Ph: 02 6210 4701 – Fax: 02 6210 4813
Email: contact@apvma.gov.au – Web: www.apvma.gov.au
Chief Executive Officer: Dr Eva Bennet-Jenkins

Australian Plague Locust Commission

Unit 7, 50 Collie St, Fyshwick ACT 2609
GPO Box 858, CANBERRA ACT 2601
APLC Commissioners' Chairperson: Dr Colin Grant
Toll Free (within Australia): 1800 635 962 – Fax: 02 6272 5074
Email: aplc@daff.gov.au – Web: www.daff.gov.au/aplc

Australian Quarantine and Inspection Service

7 London Circuit, Canberra City ACT 2601
GPO Box 858, Canberra ACT 2601
Phone: +61 2 6272 3933 – Freecall: 1800 020 504
Grain and Seed Exports Program Manager: David Heinrich
Email: grain.export@aqis.gov.au – Web: www.aqis.gov.au

Biosecurity Australia

7 London Circuit, Canberra City
GPO Box 858, CANBERRA ACT 2601
Ph: 02 6272 3933 – Fax: 02 6272 4333
Email: ba@biosecurity.gov.au – Web: www.BiosecurityAustralia.gov.au
Chief Executive: Dr Colin Grant
Principal Scientist: Dr Mike Nunn (Animal)

Biosecurity Services Group – Plant Division

Executive Manager: Dr Colin Grant
Ph: 02 6272 4004

Crops, Horticulture and Wine Branch

18 Marcus Clarke Street, Canberra City
GPO Box 858, CANBERRA ACT 2601
Ph: 02 6272 3933 – Fax: 02 6272 4246
General Manager: Peter Ottesen
Ph: 02 6272 3060 – Web: www.daff.gov.au

Department of Foreign Affairs and Trade

R G Casey Building, John McEwen Crescent, BARTON ACT 0221
Ph: 02 6261 1111 – Fax: 02 6261 3111
Web: www.dfat.gov.au
Secretary: Dennis Richardson
Deputy Secretary, Office of Trade Negotiations: Bruce Gosper

Food Branch

18 Marcus Clarke Street, Canberra City
GPO Box 858, CANBERRA ACT 2601
Ph: 02 6272 4899 – Fax: 02 6272 3025
General Manager: Richard Souness
Web: www.daff.gov.au/agriculture-food/food

Levies Revenue Service

18 Marcus Clarke Street, Canberra City
Locked Bag 4488, KINGSTON ACT 2604
Ph: 1800 022 384 – Fax: 1800 609 150
General Manager: Lisa Hind
Email: leviesonline@daff.gov.au

National Residue Survey

Australian Government Department of Agriculture Fisheries and Forestry
7 London Circuit, Canberra City
GPO Box 858, CANBERRA ACT 2601
Ph: 02 6272 5668 – Fax: 02 6272 4023
Director National Residue Survey: Ian Reichstein
Email: ian.reichstein@daff.gov.au – Web: www.daff.gov.au/nrs

Office of the Gene Technology Regulator

(MDP 54)
GPO Box 9848, CANBERRA ACT 2601
Ph: 1800 181 030 – Fax: 02 6271 4202
Email: ogtr@health.gov.au – Web: www.ogtr.gov.au
Gene Technology Regulator: Dr Joe Smith

Office of Rural Financial Counselling

GPO Box 858, CANBERRA ACT 2601
Ph: 1800 686 175 – Fax: (02) 6272 4414
FreeCall: 1800 686 175 – Web: www.rfcs.gov.au

Plant Breeder's Rights Office
(located within IP Australia)

Discovery House
47 Bowes Street, Phillip
PO Box 200, WODEN ACT 2606
Ph: 1300 651 010 – Fax: 02 6283 7999
Registrar: Fatima Beattie
Email: assist@ipaustralia.gov.au – Web: www.ipaustralia.gov.au

Product Integrity, Animal and Plant Health

18 Marcus Clarke Street, Canberra City
GPO Box 858, CANBERRA ACT 2601
Ph: 02 6272 3933 – Fax: 02 6272 5697
Email: piah@daff.gov.au – Web: www.daff.gov.au/animal-plant-health
Executive Manager: Dr Colin Grant

Wheat Exports Australia

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Email: secretariat@wea.gov.au – Web: www.wea.gov.au
Chair: Ted Woodley
CEO: Peter Woods

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Crop Pathology: Dr Kathy Ophel Keller, Ph: 08 8303 9368
Entomology: Greg Baker, Ph: 08 8303 9544
Farming Systems: Roy Latta, Ph: 08 8680 6211
Grains Research: Dr Phil Davies, Ph: 08 8303 9494
Food Safety: Dr Andreas Kiermeier, Ph: 08 8303 9400
National Brassica Trials: Trent Potter, Ph: 08 8762 9132
National Variety Trials: Rob Wheeler, Ph: 08 8303 9480
Pastures: Alan Humphries, Ph: 08 8303 9651
Email: pirsa.sardi@sa.gov.au – Web: www.sardi.sa.gov.au

Department of Agriculture and Food, WA

3 Baron-Hay Court, South Perth
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Email: enquiries@agric.wa.gov.au – Web: www.agric.wa.gov.au

Tasmanian Department of Primary Industries, Parks, Water and Environment

1 Franklin Wharf Hobart
GPO Box 44, HOBART TAS 7001
Ph: 1300 368 550 – Fax: 03 6344 9814
General enquiries: Agricultural Policy Group
Email: AgriculturalPolicy.Administration@dpipwe.tas.gov.au
Web: www.dpipwe.tas.gov.au

Northern Territory Department of Resources – Primary Industry, Fisheries and Minerals and Energy

General enquiries
Phone 08 8999 5511
GPO Box 3000, DARWIN NT 0801
Email: info.dor@nt.gov.au – Web: www.nt.gov.au/d/

Research & Development

Research and Development Corporations

Grains Research & Development Corporation

1st Floor, 40 Blackall Street, Barton
PO Box 5367, KINGSTON ACT 2604
Ph: 02 6166 4500 – Fax: 02 6166 4599
Chairman: Keith Perrett
Managing Director: John Harvey
Email: grdc@grdc.com.au – Web: www.grdc.com.au

Rural Industries Research & Development Corporation

Level 2, 15 National Circuit, Barton
PO Box 4776, KINGSTON ACT 2604
Ph: 02 6271 4100 – Fax: 02 6271 4199
Email: rirdc@rirdc.gov.au – Web: www.rirdc.gov.au
Managing Director: Craig Burns

Cotton Research & Development Corporation

2 Lloyd Street, Narrabri NSW 2390
PO Box 282, NARRABRI NSW 2390
Ph: 02 6792 4088 – Fax: 02 6792 4400
Email: crdc@crdc.com.au – Web: www.crdc.com.au
Chair: Mike Logan
Executive Director: Bruce Finney

Dairy Australia

Level 5, IBM Centre, 60 City Road, Southbank, Victoria 3006
Locked Bag 104, FLINDERS LANE VIC 8009
Ph: 03 9694 3777 – Fax: 03 9694 3733 – Web: www.dairyaustralia.com.au
Farm Productivity & Delivery: Chris Murphy

Meat & Livestock Australia (MLA)

Level 1, 165 Walker Street, North Sydney NSW 2060
Locked Bag 991, NORTH SYDNEY NSW 2059
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Email: info@mla.com.au – Web: www.mla.com.au
Managing Director: Scott Hansen

Australian Pork Limited

Level 2, 2 Brisbane Avenue Barton ACT 2600
PO Box 4746 KINGSTON ACT 2604
Ph: 1800 789 099 – Fax: 02 6285 2288
Email: apl@australianpork.com.au – Web: www.australianpork.com.au
Chief Executive Officer: Andrew Spencer

Sugar Research & Development Corporation

Level 16, T&G building, 141 Queen Street, Brisbane Qld 4000
PO Box 12050, George Street, BRISBANE Qld 4003
Ph: 07 3210 0495 – Fax: 07 3210 0506
Email: srdc@srdc.gov.au – Web: www.srdc.gov.au
Executive Director: Annette Sugden

Australian Wool Innovation Limited

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GPO Box 4177, SYDNEY NSW 2001
Ph: 02 8295 3100 – Fax: 02 8295 4100
Email: info@wool.com – Web: www.wool.com
Chief Executive Officer: Stuart McCullough

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CSIRO Plant Industry

GPO Box 1600, Canberra ACT 2601
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Chief of the Division: Dr Jeremy Burdon

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Food Futures, Director – Bruce Lee Ph: 02 9490 8490
Sustainable Agriculture, Director – Brian Keating Ph: 07 3214 2261
Water for a Healthy Country, Director – Bill Young Ph: 02 6246 5645
Climate Adaptation, Director – Andrew Ash Ph: 07 3214 2346

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Future Farm Industries CRC

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35 Stirling Highway, CRAWLEY WA 6009
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Web: www.futurefarmonline.com.au
Chair: Andrew Inglis
Chief Executive Officer: Peter Zurzolo

CRC for National Plant Biosecurity (Plant Biosecurity CRC from July 1, 2012)

Level 2, Building 22, Innovation Centre
University Drive, University of Canberra, BRUCE ACT 2617
LPO Box 5012, BRUCE ACT 2617
Ph: 02 6201 2882 – Fax: 02 6201 5067
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Cotton Catchment Communities CRC
(Until June 30, 2012)

Locked Bag 1001, NARRABRI NSW 2390
Ph: 02 6799 2471 – Fax: 02 6793 1171
Email: philiparmytage@cottoncrc.org.au – Web: www.cottoncrc.org.au
Chief Executive Officer: Philip Armytage

CRC for High Integrity Australian Pork

PO Box 466, Willaston, SA 5118
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Australian Centre for International Agricultural Research (ACIAR)

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International Center for Agricultural Research in the Dry Areas (ICARDA)

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Associated Industry

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Australian Herbicide Resistance Initiative

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Australian Lot Feeders' Association

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Australian Oilseeds Federation

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Executive Officer: John Temperley
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Qld	Ph: 07 4774 0522	Fax: 07 4774 0289
WA	Ph: 08 9359 4118	Fax: 08 9359 3468
VIC	Ph: 03 9207 5511	Fax: 03 9207 5500
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Chairman: Darryl Dent
Executive Manager: Nick Drew

Grains and Legumes Nutrition Council

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Ph: 02 8877 7877 – Fax: 02 9888 5821
Email: contactus@glnc.org.au – Web: www.glnc.org.au
CEO: Robyn Murray

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Email: admin@grf.org.au – Web: www.grf.org.au
Company Secretary: Michael Burgis

Landcare and Sustainable Agriculture

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Nuffield Australia

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Managing Director: Craig Mills

Plant Health Australia

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Executive Director and CEO: Greg Fraser
Toll Free Exotic Plant Pest Hotline 1800 084 881

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Email: pulse.gordon@bigpond.com
Pulse Development Officer (South Australia): Wayne Hawthorne
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PO Box 6363, NORTH RYDE NSW 2113
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Ricegrowers' Association of Australia

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PO Box 706, LEETON NSW 2705
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Email: rga@rga.org.au – Web: www.rga.org.au
President: Les Gordon
Executive Director: Ruth Wade

Ricegrowers' Limited – trading as SunRice

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Chairman: Gerry Lawson
Chief Executive Officer: Rob Gordon

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GPO Box 858 CANBERRA ACT 2601
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Manager: Jason Major

Tractor and Machinery Association of Australia

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Singapore
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Tokyo
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Chairman: Don Taylor
Managing Director and Chief Executive Officer: Alison Watkins

Viterra Ltd

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FreeCall: 1800 018 205
Email: viterra.aus@viterra.com – Web: www.viterra.com.au

Australian Grain Exporters Association (AGEA)

PO Box R1826, Royal Exchange NSW 1225
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Email: agea@agea.com.au
President: Chris Aucote

Cooperative Bulk Handling Limited (WA)

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GPO Box L886, PERTH WA 6842
Ph: 08 9237 9600 – Fax: 08 9322 3942
Email: info@cbh.com.au – Web: www.cbh.com.au
Chairman: Neil Wandel
Deputy Chairman: Wally Newman

Australian Securities Exchange (ASX) Limited

20 Bridge Street, Sydney
PO Box H224, AUSTRALIA SQUARE NSW 1215
Ph: 02 9227 0197 – Fax: 02 9227 0667
Email: grainfutures@asx.com.au – Web: www.asx.com.au/grainfutures
Enquiries: Dougal Hunter, Business Development

Namoi Cotton Commodities Pty Ltd

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Ph: 07 4631 6100 – Fax: 07 4631 6184
Grains Manager: Doug Saunders
49 Greenbah Road Moree NSW 2400
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Web: www.namoicotton.com.au

Grain standards/rules/contracts

Grain Trade Australia Ltd

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Grower Groups

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BCG (Birchip Cropping Group)

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Corrigin Farm Improvement Group Inc. (CFIG)

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Hart Field Site Group Inc.

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Liebe Group

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South East Premium Wheat Growers Association (SEPWA)

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23 High Street, INVERLEIGH, VIC 3321
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SPAA Precision Agriculture Australia

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Victorian No-Till Farmers Association (VNTFA)

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WANTFA

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Executive Officer: David Minkey – Mob: 0417 999 304
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Government Grants

For special circumstances assistance administered by DAFF go to:

Web: www.daff.gov.au/agriculture-food/drought

GrantsLINK (for assistance with federal grants for community projects) see:

Web: www.grantslink.gov.au
Ph: 1800 026 222
Web: www.business.gov.au

Section 6

Education

"Go confidently in the direction of your dreams. Live the life you have imagined." – Henry David Thoreau

Scholarship plants seed for career path choice

By Lachlan Hunter

The quote above best expresses my views about the 2011–12 Primary Industry Centre for Science Education Industry Placement Scholarships (PICSE IPS) I attended during the December school holiday break. I identify with this quote as I believe that this scholarship has been beneficial to my personal growth and my future education in practical and theoretical agricultural fields. Everyone has a dream – my dream is to have a career in the primary industry of agricultural science.

I am currently a Year 12 student at Cunderdin Agricultural College, located in the wheatbelt of Western Australia and come from a farming family. I was fortunate to be one of 25 students selected from 87 applicants for a WA IPS. The scholarship week was held at various locations in Perth, but mainly at the prestigious University of Western Australia which, for me, was a privilege. As part of the week-long camp we visited DAFWA, CSIRO and the Chem Centre where the staff rarely call their careers 'jobs' but have a real a passion in what they are doing.

This made me even more excited about doing my industry placement as I would be working with people like myself – passionate about what they are doing.

The Industry Placement Scholarships help to put aspiring primary scientists like Lachlan Hunter, into the driver's seat.

Career options

The purpose of the camp week was to look at the range of career options available in the primary science. The highlight for me was learning about food and fibre security with Winthrop Professor Kadambot Siddique. This presentation gave me an insight to where the agriculture industry will be heading into the near future.

Cameron Williams, Young Farmer of the Year 2006, and Brydie Creagh, 2011–12 PICSE ambassador, gave impressive presentations. Tye Pope who is a senior marine environment advisor with KJV Gorgon and UWA graduate, shared his unique story about his passion and his 'underwater journey' with current and environmental issues. I believe that these sessions were very important for our personal growth and development and to aspire to achieve like these people.

Coming from a farming family I have broadened my horizons with the influence of some of the presentations, especially on the current hot topic of genetic modification.

On the PICSE scholarship camp I not only met some amazing people but people who have the same interest as I do in creating a career from our passions. The evening activities such as rock climbing and the Karakamia bush walk made this Camp all the more enjoyable.

After visiting InterGrain's site during the industry placement camp I was intent that it was going to be the choice for my week long placement.

InterGrain is a private company that breeds wheat and barley varieties suited to the current climatic and agricultural conditions across Australia. InterGrain is a national and international company with regional hubs at Wongan Hills (WA) and Horsham (Victoria) and a business partner in Saint Louis, US.

The breeding objectives of this company are to optimise yield and quality of the grain through selecting for plant adaptation, disease resistance and tolerances to abiotic stresses within the soils. InterGrain

Lachlan threshing the harvested trials at InterGrain with a 'mini' header.

was a great place for me to carry out my industry placement as it showed me what the career of a plant breeder could entail. It demonstrated to me the commitment this company has to the future of Australian farming. It also made me aware that much of the work is outdoors which is a big attraction for me.

On the job experience

During my week at InterGrain I worked alongside a team of plant breeders and I was a participant in a number of the regular duties of a barley plant breeder/technician. The highlight of my week was molecular marker sampling. This task involved collecting a snippet of a hundred or so barley plants' leafs. We then put them into a well in a punnet plate then sent it off to the lab at Murdoch University where a gel electrophoresis test is carried out to determine the DNA of the particular barley plant.

InterGrain performs extensive procedures to get the most accurate result in the breeding of a barley suitable for Australian farmers.

I also carried out threshing of the grain after the barley had been harvested. This machine carries out on a smaller scale the function of a commercial header.

At InterGrain, plants grown from individual seed produced from a cross that do not possess the required traits (genes) as detected by DNA markers or specific assays, are thrown out. One of my other tasks was to transplant those plants from crosses possessing particular traits based on these assays. I spent a lot of my time in the research lab entering in data and performing quality sample tests on barley, testing the barley on hectolitre weights and screening. From there they went to the Near Infra-Red lab where testing for protein, malt extract, grain brightness, hardness, moisture and husk content was carried out.

The ultimate goal was for good malting barley with a nice plump grain. I spent quite some time in the glass houses transplanting and viewing new barley plants.

Whilst I was at InterGrain I was able to discuss with the barley breeders and CEO the university path that should be pursued to become a plant breeder.

Prior to my IPS I had a developing passion for science and agriculture. PICSE has broadened my options and opportunities and has let me experience a potential career of which I was not aware. InterGrain has given me a head start in selecting my career path, as well a clear direction while completing year 12 this year – it was an awesome and outstanding experience!

For more information on PICSE WA contact Belinda Pope phone (08) 6488 1646
E: belinda.pope@uwa.edu.au ■

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Bunbury Cathedral Grammar School	5 Allen Road GELORUP WA 6230	08 9722 6000	08 9722 6191	Kathy Schulze
Cabra Dominican College	PO Box 57 MELROSE PARK SA 5039	08 8179 2400	08 8272 9810	Helen Telford
Clayfield College	23 Gregory Street CLAYFIELD QLD 4011	07 3262 0220	07 3262 0225	Ross Thomson
Concordia Lutheran College	154 Stephen Street TOOWOOMBA QLD 4350	07 4688 2700	07 4688 2799	Anne Antonio
Dalby Christian College	2A Mary Street DALBY QLD 4405	07 4672 4222	07 4672 4250	Melissa Burt
Downlands College	72 Ruthven Street TOOWOOMBA QLD 4350	07 4690 9609	07 4690 9610	Debbie Carpenter
Gippsland Grammar	PO Box 465 SALE VIC 3853	03 5143 6388	03 5143 6347	Marji Craven
Great Southern Grammar	244 Nanarup Road LOWER KALGAN WA 6330	08 9844 0300	08 9844 0380	Jane Rushton
Guildford Grammar School	11 Terrace Road GUILDFORD WA 6055	08 9377 9247	08 9377 3140	Geoffrey Hickling
Hills College	Lot 1 Johanna Street JIMBOOMBA QLD 4280	07 5546 0667	07 5547 9677	Paul Warfield
Monivae College	PO Box 423 HAMILTON VIC 3300	03 5551 1200	03 5571 1074	Kaylene Mailes
Red Bend Catholic College	PO Box 312 FORBES NSW 2871	02 6852 2000	02 6852 3768	Toni Lennane
Scotch College Adelaide	PO Box 271 MITCHAM SA 5061	08 8274 4209	08 8274 4346	Jane Bourne
Snowy Mountains Grammar School	6339 Kosciuszko Road JINDABYNE ACT 2627	02 6457 1022	02 6457 1023	Joan Herringer
The Rockhampton Grammar School	Archer Street ROCKHAMPTON QLD 4700	07 4936 0700	07 4922 1552	Debra Sullivan
The Scots PGC College	60 Oxenham Street WARWICK QLD 4370	07 4666 9808	07 4666 9812	Wendy Persse
The Toowoomba Prepartory School	2 Campbell Street TOOWOOMBA QLD 4350	07 4639 8111	07 4639 8100	Jacintha Wilson
Yanco Agricultural High School	259 Euroley Road YANCO NSW 2703	02 6951 1500	02 6955 7180	Student services
GIRLS' SCHOOLS				
Canberra Girls' Grammar School	Melbourne Avenue DEAKIN ACT 2600	02 6202 6420	02 6273 2554	Barbara Connoly
Calrossy Anglican School	140 Brisbane Street TAMWORTH NSW 2340	02 6766 2965	02 6766 2438	Miriam Knight
Loreto Normanhurst	91–93 Pennant Hills Road NORMANHURST NSW 2076	02 9487 3488	02 9489 2348	Annabelle Regina
Penrhos College	6 Morrison Street COMO WA 6152	08 9368 9508	08 9368 9677	Sue McCulloch
PLC Armidale	Crest Road ARMIDALE NSW 2350	02 6770 1727	02 6772 5697	Fiona Mullen
Pymble Ladies College	Avon Road PYMBLE NSW 2073	02 9855 7799	02 9855 7766	Vickii Scott
Somerville House	17 Graham Street SOUTH BRISBANE QLD 4101	07 3248 9200	07 3846 5553	Diana Chaundy
St Ursula's College Yeppoon	Queen Street LMB 600 YEPPOON QLD 4703	07 4939 9600	07 4939 9610	Gina Loader
The Glennie School	246A Herries Street TOOWOOMBA QLD 4350	07 4688 8807	07 4688 8847	Annie Muller
BOYS' SCHOOLS				
Calrossy Anglican School	140 Brisbane Street TAMWORTH NSW 2340	02 6766 2965	02 6766 2438	Miriam Knight
Christ Church Grammar School	Queenslea Drive CLAREMONT PERTH WA 6010	08 9442 1555	08 9442 1690	Registrar
Farrer Memorial Agricultural High School	585 Calala Lane TAMWORTH 2840	02 6764 8607	02 6764 8648	Kerry Hussey
Guildford Grammar School	11 Terrace Road GUILDFORD WA 6055	08 9377 9247	08 9377 3140	Geoffrey Hickling
Ipswich Grammar School	Darling Street IPSWICH QLD 4305	07 3813 9600	07 3280 1311	Lesley Abra
St Brendan's College	139 Adelaide Park Road YEPPOON QLD 4703	07 4939 9485	07 4939 5273	Kylie Hedges
St Joseph's College Hunters Hill	Mark Street HUNTERS HILL NSW 2110	02 9816 0900	02 9879 6804	Stephen Litherland
St Joseph's Nudgee College	2199 Sandgate Road, BOONDALL QLD 4034	07 3865 0555	07 3865 0500	Enrolments office
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Toowoomba Grammar School	PO Box 2900 TOOWOOMBA QLD 4350	07 4687 2519	07 4687 2582	Ben Foley
Tudor House	6480 Illawarra Highway MOSSVALE NSW 2577	02 4868 0008	02 4868 0003	Registrar
Wesley College	40 Coode Street SOUTH PERTH WA 6151	08 9368 8000	08 9368 8127	Celli Milton/Kelli Henning

Religious affiliation	Day/ Boarding enrolments	Boarding years/ Courses	Tuition fees *Denotes sibling discounts	Boarding fees *Denotes sibling discounts	Website
Uniting Church	1100/150	7–12	$10,000–$15,000*	$9,000–$14,000*	www.clarendon.vic.edu.au
Anglican	1300/250	7–12	Yr 7 $10,820*	Yr 7 $7200* PA	www.bgs.vic.edu.au
Anglican	880/110	7–12	$13,592–$15,864*	$17,072	www.bcgs.wa.edu.au
Catholic	1080	No boarders	$5000–$8500*	—	www.cabra.catholic.edu.au
Uniting & Presbyterian	838/102	Pre-Prep–12	$13,620*	$18,107*	www.clayfield.qld.edu.au
Lutheran (but all welcome)	480 total		Starts at $4650*	$16,960* PA	www.concordia.qld.edu.au
Non-denominational	240/13	8–12	$3865–$4425*	$9100–$11,150*	www.dalbycc.qld.edu.au
Catholic	420/265	7–12	$8200–$8800*	$15,800–$16,200	www.downlands.qld.edu.au
Anglican	1000/50	7–12	$11,450*	$15,530*	www.gippslandgs.vic.edu.au
A christian school	664/91	7–12	$3880–$10,400*	$17,820	www.gsg.wa.edu.au
Anglican	650/125	7–12	See website*	See website*	www.ggs.wa.edu.au
None	400/75	7–12	Approx $5000*	$9000* PA	www.hills.qld.edu.au
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Catholic	630/150	7–12	$3050–$3410*	$10,125–13,950*	www.redbendcc.nsw.edu.au
Uniting Church	840/106	7–12	$18,200–$21,480*	$17,720*	www.scotch.sa.edu.au
Anglican	180/52	7–12	$9030–$10,238*	$15,385*	www.smgs.nsw.edu.au
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Uniting Church	314/158	6–12	$3388–$10,254*	$15,772*	www.scotspgc.qld.edu.au
Anglican	353/105	1–7	$2660–$9374	$17,800	www.tmbaprep.qld.edu.au
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Anglican	1505/95	7–12	Refer website	Refer website	www.cggs.act.edu.au
Anglican	420/220	7–12	$7140–$12,615*	$16,148*	www.calrossy.nsw.edu.au
Catholic	700/215	7–12	$16.930–$19,170*	$19,215*	www.loretonh.nsw.edu.au
Uniting Church	1100/100	7–12	na	na	www.penrhos.wa.edu.au
Presbyterian	260/70	5–12	—	—	www.plcarmidale.nsw.edu.au
Uniting Church	2030/130	7–12	$14,000–$23,700*	$19,720* PA	www.pymblelc.nsw.edu.au
Uniting Church	1135/110	7–12	$16,612*	$17,984* PA	www.somerville.qld.edu.au
Catholic	308/76	8–12	$4327–$4499*	$12,970*	www.stursulas.qld.edu.au
Anglican	600/180	7–12	See website*	See website*	www.glennie.qld.edu.au
Anglican	420/220	7–12	$7140–$12,615*	$16,148*	www.calrossy.nsw.edu.au
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Anglican	650/125	7–12	See website*	See website*	www.ggs.wa.edu.au
Not affiliated	1040/120	7–12	$8900–$13,300*	$15,230	www.ipswichgrammar.com
Catholic	370/290	8–12	$4435*	$12,770*	www.sbc.qld.edu.au
Catholic	442/587	7–12	$34,632* inclusive		www.joeys.org
Catholic	1200/300	6–12	$10,440–$12,280*	$14,660–$18,030*	www.nudgee.com
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Anglican	100/45	3–6	$16,000–$18,000*	$15,500* PA	www.tudorhouse.nsw.edu.au
Uniting Church	1250/158	7–12	$19,707	$19,887	www.wesley.wa.edu.au

PICSE: Nurturing primary scientists

By Sue Knights

As yet another cohort of bright young students graduated from the Primary Industry Centre for Science Education's (PICSE) University of Western Australian (UWA) Industry Placement Scholarships (IPS) in February of this year, it was infectious to hear their new-found enthusiasm for potential careers in Primary Industry science.

PICSE was established in 1998, based on the Russell Model – the brain child of Associate Professor David Russell based at the School of Agricultural Science, University of Tasmania. It is a network that has been devised to bridge the demand need for graduates in agricultural and related science fields. Its success relies on galvanising the collective expertise across secondary and tertiary education together with industry partners in the primary sector to inspire the next generation of scientists.

The Centre employs 11 Science Education Officers (SEO) at various tertiary institutions across Australia and these SEOs are integral in conducting four large-scale activities each year:

- SEOs visit secondary schools within each state to engage with Year 11 and 12 students and inform them about opportunities in primary industries;
- SEOs run a Science Investigation Award program in each state in which secondary, and some with primary students, investigate a topic of their own choice with great incentives for researching agrifood topics;
- They deliver industry or science-based professional development sessions to Year 8 to 12 science teachers; and,
- They provide an Industry Placement Scholarship opportunity to merit-selected Year 11 and 12 students in each state. Each PICSE activity centre holds an IPS program for year 11 and 12 students during the summer holidays. The scholarship consists of a one week residential camp and one week of industry placement where students work as a scientist alongside researchers. All of this culminates in a presentation evening and a scholarship cheque for $300!

How the IPS works

To illustrate the success of the program, I use the example of the IPS. The residential camp is held by the partner university for each activity centre. Students are engaged in activities at the university and have the opportunity to interact with lecturers and post graduate students during the camp. In addition, students visit many research and industry organisations during the week, hearing about current research being conducted and touring the facilities available to researchers at the cutting edge of science.

David Russell with graduates of the latest WA IPS.

The Industry Placement occurs in January and is organised at a time appropriate for both the student and the industry partner. For one week students experience working with a research scientist, aiding in the current research work of their mentor scientist. This is a great opportunity for students to gain a deeper knowledge of what is involved in working in a field that takes their interest, and to develop some new skills in the field or in the laboratory.

At the end of January, when all of the scholarship students have completed their industry placements, a Reporting Back Session is held. This is an opportunity for students to give a short presentation about their experiences of the camp and placement in front of their friends and parents, industry partners and university representatives.

Western Australia faces additional challenges in attracting young people into agricultural careers as it competes with the more lucrative opportunities within the state's mining sectors. PICSE therefore plays a vital role in raising the profile of the opportunities in agriculture.

The PICSE activity centre based at The University of Western Australia has worked closely with industry partners since its inception in 2003. The many industry partners include Kings Park Botanical Gardens and Parks Authority, the Centre for Integrated Bee Research, Department of Agriculture and Food Western Australia and more recently, InterGrain Pty Ltd.

More industry partners

Belinda Pope, the SEO at UWA points out that PICSE is continually on the look out for further industry partners to extend the scope of the students' exposure to potential primary science careers.

Attending the recent Perth reporting back session was an eye opener to learn about the lack of awareness by this generation of the level of science involved in the food production sector and the poor image of agriculture. One of PICSE's notable successes is the opportunity it provides for metropolitan based students to experience agricultural industries and realise the opportunities in this sector.

To date PICSE can boast of many achievements:

- SEOs have spoken to 50,000+ Year 11/12 science students in class;
- Put in excess of 900 Year 11/12 science students through the Industry Placement Scholarship program;
- Trained 1150 Year 11/12 science teachers during two day professional development courses;
- Produced nine CDs as classroom resources and distributed 4300 CDs; and,
- Since 2009, has engaged 5700 middle school students in their Science Investigation Awards.

Associate Professor David Russell says that "relationship building is key to the success of PICSE and the future of the students entering into careers in the agricultural sector."

For more information on PICSE WA contact Belinda Pope phone (08) 6488 1646
E: belinda.pope@uwa.edu.au ■

Section 7 Suppliers' Directory

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Chesterfield: www.chesterfieldaustralia.com.au
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Nodulator – Becker Underwood: www.beckerunderwood.com.au
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Roundup Ready Canola – Monsanto: www.monsanto.com.au

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Hardi: www.hardi.com.au
Integrated Transfer Solutions: www.its-aust.net
John Deere: www.johndeere.com.au

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Flexicoil: www.flexicoil.com.au
Gessner Industries: www.gessner.com.au
John Deere: www.johndeere.com.au
K-Line: www.k-line.net.au
Manutec: www.manutec.com.au
Serafin: www.serafinmachinery.com.au

TANK CLEANERS

All Clear – Agnova: www.agnova.com.au

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