

IRRIGATION IN AUSTRALIA

FACTS AND FIGURES

Irrigated food and fibre production

A vital industry for Australia

Irrigation occupies a very small portion of Australia – 5% of tilled agricultural lands – but produces 30% of all agricultural production.

Agriculture uses 50-70% of the water consumed in Australia per annum and irrigation uses 90% of that. The vast majority of irrigated water use is controlled by regulations and licences. Irrigators need an authorised allocation to extract specified amounts of water from rivers or bores (groundwater) or from irrigation supply systems.

The irrigated production of food and natural fibre is a great stimulus to regional economies:

- irrigated farms tend to have relatively high levels of labour per hectare
- engineering and technical support is needed for irrigation delivery and drainage systems
- local processing, packaging and transport generate more jobs and maintain communities
- local produce (fruit, nuts, wine and cheese) complements tourism and dining experiences.

Irrigation in the Murray Darling basin has an economic multiplier of 3.5, indicating that for every \$1,000 of farm gate revenue generated there is an additional \$3,500 of dependent economic activity.

Source: Meyer, WS (2005). The Irrigation Industry in the Murray and Murrumbidgee Basins. CRC For Irrigation Futures Technical Report No. 03/05.

In a nutshell

- There are 40,000 irrigators in Australia
- They farm 5% of tilled agricultural lands (<1% of Australia)
- Irrigation accounts for 50-70% of water withdrawn for human consumption
- Irrigators produce 30% of all agricultural value and half the profit within agriculture
- Irrigated production is valued at \$9-11.5 billion/yr
- Irrigation is a driver of regional economies.



The future

Since the 1880s when large-scale irrigation began at Renmark and Mildura, governments have stimulated the development of water delivery schemes. The Murray Darling Basin is now considered over-allocated and water is being re-allocated to the environment to strengthen the ecological functioning of the river system.

The relatively untapped waters of northern Australia's tropics may come under increased scrutiny as a potential source of water for irrigation and urban use, as may urban stormwater and sewage. Alternatively, Australia will have to accept that there are no additional untapped water sources available for irrigation or urban growth.

Without new water sources, all water users must become more efficient and that will require more research, innovative solutions and their broad adoption.





Major water users

Cities and major irrigation schemes are Australia's biggest water users.



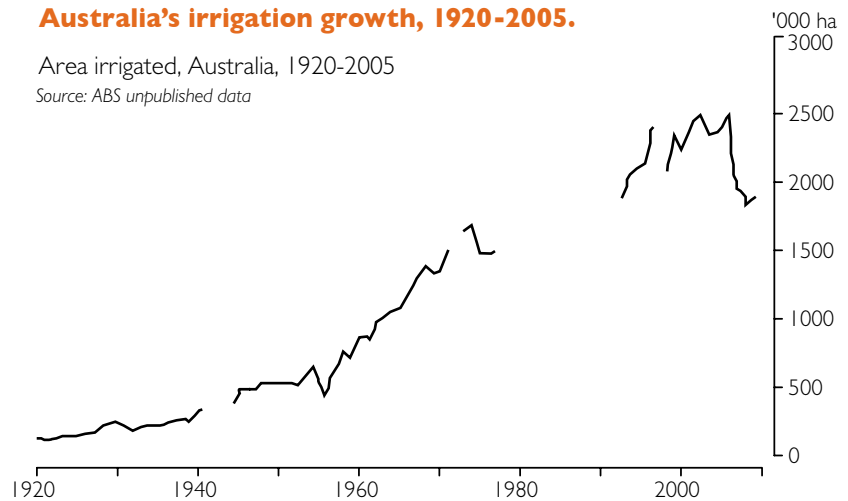
Irrigation in Australia

Large-scale irrigation began in Australia in the late 1880s. The area irrigated grew steadily from the 1920s until the mid 1950s, then increased dramatically until the mid-1990s. Since then it has fluctuated between 2.0 and 2.5 million ha, influenced by seasonal water availability. In 1995, a 'Cap' was introduced for diversions in the Murray Darling Basin. Irrigation declined during droughts in the 2000's.

Australia's irrigation growth, 1920-2005.

Area irrigated, Australia, 1920-2005

Source: ABS unpublished data



ABS, Water Account 2009-10 4610.0. Gaps in the graph are due to a lack of comparable data for those periods.

Australian irrigated produce

In 2005/06 there were 44,800 irrigators in Australia, according to ABS statistics. They applied 10,737 GL to 2.54 million hectares. A year later, 41,787 irrigators applied 7,636 GL to 1.92 million hectares.

Variations like these arise because of annual and seasonal changes in rainfall, water availability, production and commodity prices. Viewing data from a single year can be misleading so, although data is hard to come by, it is best to look at statistics from a series of years whenever possible.

- Irrigation produces \$9-11.5 billion of food and natural fibre in Australia per annum.
- Irrigation produces around 30% of all agricultural production.

Value of Australian agricultural production (\$m)

Year	Total \$m	Irrigated \$m	Irrigation as % of total
1991/92	\$20,847	\$5,085	28%
1992/93	\$21,827	\$5,975	27%
1993/94	\$23,479	\$6,481	28%
1994/95	\$23,754	\$6,953	29%
1995/96	\$27,369	\$7,766	28%
1996/97	\$28,154	\$8,256	29%
1997/98	\$28,013	\$8,656	31%
1998/99	\$28,847	\$9,366	32%
1999/2000	\$30,220	\$9,333	31%
2000/01	\$34,236	\$9,669	28%
2001/02	\$39,587	\$10,690	27%
2002/03	\$32,563	\$9,323	29%
2003/04	\$36,927	\$10,435	28%
2004/05	\$35,554	\$10,570	30%
2005/06	\$38,527	\$12,257	32%
2006/07	\$36,059	\$12,487	25%
2007/08	\$43,270	\$12,311	28%
2008/09	\$41,848	\$11,952	29%
2009/10	\$39,707	\$11,484	29%

NSW Irrigators Council, ABS (2008) Information Paper 4610.0.55.006, ABS (2012) Information Paper 4610.0.55.008

Australia's water budget

Agriculture accounts for over 50% of water consumed in Australia

It is estimated that, on average, Australia receives 2,789,400 GL of rainfall per year. Of that, 8% (242,800 GL) runs off as surface water and 2% (49,200 GL) recharges groundwater. The rest evaporates or is used by plants.

National water budgets show that agriculture accounts for 50-70% of Australia's water consumption, depending on the season.

In drought years, agriculture reduces its consumption by a greater proportion than other users. It is expected that consumption for irrigation will increase again in times of improved water availability.



Water use	2004/05		2008/09	
Total water use (extraction) in Australia (includes water returned to the environment and in-stream use)	79,784 GL		59,839 GL	
Water consumption	18,767 GL		14,101 GL	
<i>Agriculture</i>	12,191 GL	(65%)	6,996 GL	(50%)
<i>Households (averaging 103kL/capita)</i>	2,108 GL	(11%)	1,768 GL	(13%)
<i>Water Supply industry (sewage, drainage, losses)</i>	2,083 GL	(11%)	2,396 GL	(17%)
<i>Other industries, manufacturing and mining</i>	2,332 GL	(12%)	2,443 GL	(17%)

Water use: water extracted for distribution (e.g. by water suppliers) and for self-use, plus recycled water.

Water consumption: water use LESS water supplied to others, in-stream use and distribution losses to the environment.

Water use	2004/05		2008/09	
Water consumption by agriculture	12,191 GL		6,996 GL	
Source – Surface Water	9,022 GL	74%	4,442 GL	(63.5%)
Source – Groundwater	2,804 GL	23%	2,449 GL	(35%)
Source – Re-use or reticulated supply	366 GL	3%	105 GL	(1.5%)

Groundwater has been more reliable in years of reduced water availability.

ABS (2006) Information Paper 4610.0, *Water Account Australia 2004-05*,
ABS (2012) Information Paper 4610.0 - *Water Account Australia 2008-09*.

Kilolitre (kL) =

1,000 litres
(i.e. one cubic metre)

Megalitre (ML) =

One million litres
(i.e. 1,000 kilolitres)

Gigalitre (GL) =

1,000 million litres
(i.e. 1,000 megalitres)





Water consumption

Many agricultural commodities are highly reliant on irrigation, e.g. horticulture (fruit, nuts, vegetables and nursery), grapes, rice and cotton. Others, such as dairy and sugar, are highly reliant in some districts or seasons.

The amount of water available for irrigation varies from year to year, as do the crops that use it.

In the recent drought, Australian rice production virtually ceased, cotton production declined and dairy farmers offset lower production by substituting purchased feeds for irrigated pastures.

Volume of water applied (GL)

	1996/97	2004/05	2006/07	2008/09
Pasture	3,121	5,239	2,802	2,067
Dairy	NA	2,276	1,163	774
Beef	NA	1,035	513	456
Other Grazing	NA	1,928	331	289
Hay	NA	NA	795	548
Cereal	1,505	1,162	825	1,012
Rice	NA	631	239	101
Sugar	666	1,269	978	761
Cotton	NA	1,821	868	880
Fruit and nuts	512	648	649	635
Vegetables	207	455	414	457
Nurseries	NA	72	NA	69
Grapes	377	717	638	575
Other	1,923	249	109	972
Summary	8,310	12,191	7,595	7,529

Sources: NLWR Audit (2002) Australians & NRM; ABS Water Account Australia 2004/05; ABS Water Use on Australian Farms 2006/07. ABS (2012) Information Paper 4610.0 - Water Account, Australia, 2008-09.



Irrigation techniques

The type of irrigation system used is linked to the security of water available, the way it is delivered (e.g. piped or by channel), crop types, soils and landform. Financial and operational matters are also at play.

Irrigation techniques

Methods	Area irrigated (%) 2004/05	No. of farms 2004/05	Area irrigated (%) 2008/09
Surface	68%	20%	44%
Drip or trickle			
Above ground	7%	22%	12%
Subsurface	1%	2%	1%
Sprinkler			
Large mobile	11%	6%	14%
Portable irrigators	4%	8%	4%
Hose irrigators	5%	12%	12%
Solid set	1%	8%	3%
Microspray	2%	19%	5%
Other	0%	2%	5%

ABS Water Use on Australian Farms 2006/07. ABS (2012) Information Paper 4610.0 - Water Account, Australia, 2008-09.

New Ideas for Irrigation – www.npsi.gov.au

Knowledge Harvest project www.npsi.gov.au/projects/3295

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NPSI Knowledge Harvest/PR Day et al 2012

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