NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Irrigation Profile - Readers' Note

This document is part of a larger publication. The remaining parts and full version of the publication can be found at:

http://www.dpi.nsw.gov.au/agriculture/resources/water/irrigation/regions

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Border Rivers (NSW) Catchment Irrigation Profile

compiled by Meredith Hope and Robert Bennett
for the Water Use Efficiency Advisory Unit, Dubbo

The Water Use Efficiency Advisory Unit is a NSW Government joint initiative between NSW Agriculture and the Department of Sustainable Natural Resources.

This Irrigation Profile is one of a series for NSW catchments and regions. It was written and compiled by Meredith Hope and Robert Bennett, NSW Agriculture, for the Water Use Efficiency Advisory Unit, 37 Carrington Street, Dubbo, NSW, 2830.

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Mapping assistance, Udai Pradhan.
Editorial assistance: Helen Gosper;
Cover design: Nicky Parker;
Desktop publishing assistance, Helen Burn, Penny Marr.

NSW Agriculture, Locked Bag 21, ORANGE NSW 2800 AUSTRALIA
http://www.agric.nsw.gov.au/

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1. EXECUTIVE SUMMARY

The *Border Rivers (NSW) Catchment Irrigation Profile* was developed from a study to obtain regional and industry-based assessments of water use efficiency (WUE)[1] and irrigation efficiency (IE)[2]. Readily accessible irrigation data were collected from State and Commonwealth sources, from published research and industry reports and from unpublished reports. These data were assigned a reliability rating using a system developed by the NLWRA (National Land and Water Resources Audit 1999).

The Profile details by catchment and, where possible, by water source, what is known about:

- the number of irrigators
- the number of licences
- the entitled volume or area authorised for irrigation
- the area irrigated and water used in total and by crop type
- irrigation methods
- irrigated crop yields
- the value of irrigated agriculture in the Border Rivers catchment.

This Profile does not attempt to calculate WUE and IE from these data. This will be carried out in a subsequent report.

Users of this document are advised to proceed with caution. The data presented in this report should be treated carefully and with respect for the various collection, storage and retrieval processes that can impact on information reliability.

1.1 Overview of irrigation in the Border Rivers catchment

The Border Rivers catchment lies west of the Great Dividing Range and straddles the New South Wales and Queensland border. The total catchment area, including the NSW and Qld sections, is 49,500 km^2. The NSW section alone is 25,580 km^2.

The catchment has summer-dominant rainfall with high variability, which markedly affects river flow from season to season. The construction of storage facilities has reduced the impact of this variability and the existence of a relatively secure supply of water has enabled the irrigation industry to thrive in the catchment.

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[1] WUE refers to the volume of crop produced (harvested dry matter) per unit of water delivered to the crop. This is usually expressed as tonnes per megalitre (t/ML) (Alexander & Foley 1998).

[2] IE is a measure, expressed as a percentage, of the volume of water used or delivered by a system relative to the total volume of water entering the system (Alexander & Foley 1998).

EXECUTIVE SUMMARY

The catchment is heavily dependent on income from agriculture, specifically from dryland livestock (beef cattle), dryland and irrigated cereals and irrigated cotton.

Total agricultural output of the entire Border Rivers catchment (NSW and Qld) was $824 million in 1996–97. Of this, irrigated agriculture contributed $271 million (around 30%) and irrigated cotton (as estimated from the 'other crops' category) was $168 million (Table 1). Output figures for the NSW section alone were not available, but since roughly 60% of the catchment's water is used in NSW, around 60% of the total value can be attributed to irrigation in this section.

Table 1. Overview of irrigation in the Border Rivers (NSW) catchment in 1996–97

Source of water	Total irrigated area (ha)	Total water used by irrigated agriculture (ML)	Number irrigation licences	Number enterprises irrigating	Yield of major irrigated crop (t/ha)	Value of irrigation ($ million)
NSW total	1,150,000	7,700,000	24,000	7,850	Cotton 1.8	2,500
All sources	37,000 90% area is cotton.	No data *Est. 175,000 – 180,000*	445	151	Cotton 1.6	271 (NSW plus Qld) 62% cotton.
Regulated	34,400 92% area is cotton.	169,500 Most water used on cotton.	150	no data *325 from surface supplies (1993–94)*	Cotton 1.6	No data Most of total value attributable to regulated supplies.
Unregulated	3,300 30% irrigated area is lucerne.	no data *2,000 to 5,000 used each year between 1989–90 & 1994–95*	280		no data	no data
Groundwater	no data *Around 6,828 (1993–94)*	no data *5,000 (1993–94)*	65 - 46 are conjunctive	no data *30 (1993–94)*	no data	no data
Farm dams	no data *539 (1993–94)*	no data	NA	no data *28 (1993–94)*	NA	no data
Reticulated supplies	no data *2 (1993–94)*	no data	NA	no data *1 (1993–94)*	NA	no data

NA - not applicable. 1996–97 was the most recent year with the greatest amount of data. Where data were unavailable, other years were used. This sometimes resulted in the inclusion of data.

There are 445 irrigation licences in the NSW section of the catchment, representing roughly 2% of the State total. In 1996–97 only 2% of enterprises irrigating in NSW, or 151, were in this catchment (see Table 1).

Between 15,000 and 40,000 ha are irrigated in the Border Rivers (NSW) catchment. In 1996–97, the area was 37,000 ha (Table 1). Most of this irrigation used water from the regulated system, with smaller areas irrigated from unregulated rivers and groundwater supplies.

The volume of water used by irrigated agriculture in the catchment is not accurately known. Data were scant on sources of water other than regulated supplies. The total volume is likely to be between 175,000 and 180,000 ML, which is the sum of the volume extracted from regulated, unregulated, groundwater, farm dams and reticulated supplies (Table 1). (Where possible, data from 1996-97, that is, data on regulated supplies, were used to calculate this total. For the other water sources, data from years prior to 1996-97 were used.)

Cotton grown on the riverine plains uses a significant proportion of the total water extracted for irrigation on the NSW side of the catchment. Approximately 33,000 ha of cotton were grown using water from all sources in the Border Rivers (NSW) catchment in 1996–97.

Cotton, which is heavily dependent on regulated water, is irrigated mostly by surface methods, although some drip and centre pivot systems are also used. Lucerne, grown on the tablelands along the small but fertile river flats, is spray-irrigated. Wine grapes, also grown in the tablelands region, are generally irrigated with drip systems.

1.2 Data issues

Issues raised in the Border Rivers (NSW) catchment relate to the general scarcity and reliability of irrigation data and the scarcity of data at useful scales.

- Information on crop areas and water use, yields, irrigation methods and the value of irrigation is needed to assist in the development of these agreements. However, in many cases such data are often either scant or have never been collected.
- Point-scale data collected by the ABS and ABARE are confidential and have been reported at SLA, catchment or Agro-Ecological Region (AER) scales. These scales limit the usefulness of data to natural resource managers who are often working at much finer scales and need information at subcatchment or river-reach scale.
- The reliability of data varied according to water source. For example, regulated supplies provided more reliable data than unregulated or groundwater supplies.

1.3 Conclusion

A more comprehensive and consistent approach to the collection of irrigation statistics is needed. Such an approach would help to ensure that data are comparable across different water sources and industries. The following are needed to improve the situation.

- Collection of crop data, for example, water use, irrigated area, yields and value. These data would assist water management planning processes.
- Protocols similar to those used by the National Land and Water Resources Audit are needed for the provision of data to the public by State agencies and private authorities.
- Two-way flow of information between agencies and irrigators needs to be fostered. Data need to flow back to irrigators in forms that might potentially assist them make better water management decisions.
- Data need to be collected at scales that are large enough to ensure confidentiality of individual enterprises but small enough to allow users to aggregate useful information.

This comprehensive approach can only be developed with the full involvement and support of the many agencies and irrigator groups that require these data.