

WATER USE ON AUSTRALIAN FARMS

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For further information about these and related statistics, contact the National Information and Referral Service on 1300 135 070.

NOTES

BACKGROUND

This publication presents estimates of agricultural water use, including pastures and crops irrigated, irrigation water sources, irrigation water management and water related responses to adverse seasonal conditions. Data are available for a range of sub-state geographic levels, including Natural Resource Management (NRM) region, Statistical Division (SD) and Murray–Darling Basin (MDB) in July 2011. The data are based on a response rate of 87% from a sample of approximately 38,000 agricultural businesses selected for the 2009–10 Agricultural Resource Management Survey (ARMS).

Climatic conditions affect both the availability of water for irrigation and the need to irrigate in order to supplement rainfall. Information from the Bureau of Meteorology outlining climatic conditions over the period July 2009 to June 2010 is presented as an appendix to assist in interpreting the data in this publication.

Further data from the 2009–10 ARMS collection are available in *Agricultural Commodities, Australia* (cat. no. 7121.0) released in April 2011, *Value of Agricultural Commodities Produced* (cat. no 7503.0) later in May 2011 and *Land Management and Farming in Australia* (cat. no. 4627.0) released in June 2011.

CHANGES IN THIS ISSUE

The ARMS produces less detailed data on irrigation practices and irrigation expenditure in comparison to the Agricultural Survey and the Agricultural Census. For further details refer to the Explanatory Notes.

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ABBREVIATIONS

\$'000	thousand dollars
ABN	Australian Business Number
ABR	Australian Business Register
ABS	Australian Bureau of Statistics
ABSBR	Australian Bureau of Statistics Business Register
ACT	Australian Capital Territory
ARMS	Agricultural Resource Management Survey
ATO	Australian Taxation Office
Aust.	Australia
BAS	Business Activity Statement
EVAO	Estimated Value of Agricultural Operations
ha	hectare
MDB	Murray-Darling Basin
ML	megalitre
ML/ha	megalitres per hectare
no.	number
NRM	natural resource management
NSW	New South Wales
NT	Northern Territory
Qld	Queensland
RSE	relative standard error
SA	South Australia
SD	statistical division
SE	standard error
Tas.	Tasmania
Vic.	Victoria
WA	Western Australia
°C	degrees Celsius

AGRICULTURAL WATER USE

The agriculture industry remained a major consumer of water in the Australian economy in 2009–10.

Australia's total agricultural water use in 2009–10 rose slightly by 1% to 7,359 gigalitres. Increased water use in New South Wales (up by 5%) and Victoria (up by 23%) was partially balanced by decreased water use in Queensland (down by 11%) and South Australia (down by 14%).

1.1 AGRICULTURAL WATER USE, by State—2009–2010

WATER USE

	<i>Agricultural businesses</i>	<i>Irrigation</i>	<i>Other agricultural uses</i>	<i>Total water use</i>
	no.	ML	ML	ML
NSW(a)	43 228	2 002 797	202 052	2 204 850
Vic.	32 741	1 504 742	139 366	1 644 108
Qld	27 578	1 823 870	213 380	2 037 251
SA	14 097	711 991	60 291	772 283
WA	12 465	252 058	88 207	340 265
Tas.	3 935	281 953	23 413	305 366
NT	510	18 628	36 006	54 634
Aust.	134 553	6 596 040	762 716	7 358 756
MDB	53 681	3 564 481	272 417	3 836 899
Non-MDB	80 872	3 031 558	490 299	3 521 857

(a) Includes ACT.

IRRIGATION WATER USE

Of the 399 million hectares of agricultural land in Australia in 2009–10, less than 1% was irrigated. However, 30% of all agricultural businesses undertook irrigation during 2009–10.

The amount of irrigation water used by Australia's 41,000 irrigating agricultural businesses increased slightly by 1% to 6,596 gigalitres in 2009–10. New South Wales overtook Queensland as the state using the most water for irrigation applying 2,003 gigalitres of water for irrigation in 2009–10. Notably, Victoria increased its water used for irrigation by 26% to 1,505 gigalitres in 2009-10. Western Australia had the highest application rate at 5.0 ML/ha of irrigated land. Nationally, the application rate decreased slightly to 3.6 ML/ha from 3.7 ML/ha in 2008–09.

Of the states and territories, Victoria and New South Wales had the greatest number of irrigating agricultural businesses in 2009–10, accounting for 51% of all of Australia's irrigating businesses. Tasmania had the highest proportion of irrigated agricultural land (6%) and the highest proportion of irrigators (52%).

IRRIGATION WATER USE
continued

The area of irrigated agricultural land increased in most states/territories with the exception of South Australia (down 5%) and the Northern Territory (down 19%). The largest decrease in the area irrigated was in Queensland, down 8% to 503,000 hectares.

1.2 IRRIGATION ACTIVITY, by State—2005–06 to 2009–10

	<i>Agricultural businesses</i>	<i>Agricultural businesses irrigating</i>	<i>Area of agricultural holding</i>	<i>Area irrigated</i>	<i>Volume applied</i>	<i>Application rate</i>
	no.	no.	ha	ha	ML	ML/ha
AUSTRALIA						
2005–06	154 681	44 826	434 924 814	2 546 318	10 737 364	4.2
2006–07	150 817	41 787	425 449 341	1 922 982	7 636 194	4.0
2007–08	140 704	39 637	417 287 562	1 850 937	6 284 799	3.4
2008–09	135 996	39 940	409 028 747	1 760 758	6 500 577	3.7
2009–10	134 553	40 816	398 580 223	1 840 610	6 596 040	3.6
2009–10						
NSW(a)	43 228	10 070	58 588 455	550 158	2 002 797	3.6
Vic.	32 741	10 579	12 851 527	440 719	1 504 742	3.4
Qld	27 578	9 402	129 667 586	502 600	1 823 870	3.6
SA	14 097	5 624	45 746 996	186 494	711 991	3.8
WA	12 465	2 881	94 391 470	50 815	252 058	5.0
Tas.	3 935	2 027	1 647 437	104 803	281 953	2.7
NT	510	234	55 686 751	5 021	18 628	3.7

(a) Includes ACT.

Almost a quarter (24%) of all agricultural land in Australia is located in the Murray-Darling Basin (MDB). In 2009–10 the MDB accounted for 37% of Australia's irrigating agricultural businesses, 53% of all irrigated agricultural land and 54% of irrigation water applied.

New South Wales MDB's volumes of irrigation water applied in 2009–10 increased by 5%. Victoria MDB was up by 31%, reflecting the large increase of agricultural water use in that state. Queensland MDB (down by 38%) and South Australia MDB (down by 3%) showed decreases in the volume of irrigation water applied.

1.3 IRRIGATION ACTIVITY(a), Murray–Darling Basin—2009—2010

	<i>Agricultural businesses</i>	<i>Agricultural businesses irrigating</i>	<i>Area of agricultural holding</i>	<i>Area irrigated</i>	<i>Volume applied</i>	<i>Application rate</i>
	no.	no.	ha	ha	ML	ML/ha
NSW MDB(b)	26 529	5 456	54 611 599	491 177	1 820 496	3.7
Vic. MDB	16 627	6 312	8 213 467	320 428	1 042 018	3.3
Qld MDB	6 730	1 541	28 464 193	108 760	414 441	3.8
SA MDB	3 795	1 811	3 905 592	55 296	287 527	5.2
MDB	53 681	15 120	95 194 851	975 660	3 564 481	3.7
Non-MDB	80 872	25 696	303 385 373	864 950	3 031 558	3.5
Aust.	134 553	40 816	398 580 223	1 840 610	6 596 040	3.6

(a) Based on NRM regions. Refer to the Explanatory Notes for further information. (b) Includes ACT.

PASTURES AND CROPS
IRRIGATED

Australia

Australian agricultural businesses applied 1% more irrigation water to agricultural land in 2009–10 than in the previous year. However, the area irrigated also increased, by 5%, to 1.8 million hectares. As a result, the application rate decreased from 3.7 ML/ha to 3.6 ML/ha.

Pasture for grazing accounted for the greatest amount of irrigated land (542,000 hectares) in Australia in 2009–10, with the volume of irrigation water applied representing 26% of the national total.

All crop types recorded increases in area watered except cereal crops for grain or seed, and grapevines. Pasture and cereal crops for grazing, hay and silage rose by 33% for area and 26% for volume applied, from the historic low of 2008-09. Increased water availability saw the area of rice watered increase by 163%, but still well down on the high of 2005-06.

State/Territory

Cotton and cereal crops for grain or seed were the main users of irrigation water in New South Wales in 2009–10, accounting for 863 gigalitres of irrigation water, or 43% of all irrigation water in the state.

In Victoria, the main use of irrigation water was pasture for grazing (798 gigalitres), using over half (53%) of all irrigation water used in the state. Other major irrigation water uses were fruit trees, nut trees, plantation or berry fruits (260 gigalitres), and grapevines (155 gigalitres).

In Queensland, the use of irrigation water for cotton, the most heavily irrigated crop, decreased by 8% between 2008-09 and 2009-10, to 883 gigalitres. The area of pastures and crops irrigated, however, increased by 2% to 73,000 gigalitres. The application rate during this time declined from 5.8 ML/ha to 5.2 ML/ha.

Pasture for grazing (214 gigalitres) replaced grapevines for the largest irrigation water use in South Australia in 2009–10 (30% of irrigation water in the state). Approximately 46,000 hectares of pasture for grazing were irrigated at 4.7 ML/ha.

In Western Australia, pasture for grazing used over 89 gigalitres, or 35% of all irrigation water in the state. Vegetables for human consumption used another 20%, and fruit trees, nut trees, plantation or berry fruits consumed a further 14%.

In 2009-10, 59% of irrigation water in Tasmania was used on pasture for grazing, accounting for 165 gigalitres. Vegetables and broadacre crops were also primary uses for irrigation.

Irrigation of fruit trees, nut trees, plantation fruit or berries, the main crop irrigated in the Northern Territory, decreased from 10 gigalitres in 2008–09, to 8 gigalitres in 2009–10, a decline of 16%.

Murray–Darling Basin

In 2009–10 the volume of water applied to agricultural land in the Murray–Darling Basin increased by 2% on 2008–09 levels. The area of agricultural land irrigated in the Basin also increased, to 976,000 hectares, up 5% from 2008–09. This is the first increase in area of agricultural land irrigated in the Murray–Darling basin since 2005–06.

Approximately 90% of Australia's cotton growers were located in the Murray–Darling Basin in 2009–10, irrigating 10,000 hectares less land than in 2008–09 (down by 7%). In 2009–10, cotton accounted for the highest proportion of irrigation water used in the Murray–Darling Basin (764 gigalitres or 21%) down by 4% since 2008–09. Other primary uses for irrigation water in the Murray–Darling Basin were pasture for grazing (20%) and other cereals for grain or seed (13%).

Irrigation water use outside the Murray–Darling Basin remained steady in 2009–10, with the area irrigated increasing 4%. During the period 2005–06 to 2009–10, irrigation water use outside the Murray–Darling Basin fell by 10% and the area irrigated fell by 3%.

2.1 PASTURES AND CROPS IRRIGATED(a), Australia—2005–06 to 2009–10

	<i>Agricultural businesses</i>	<i>Agricultural businesses irrigating</i>	<i>Area under pasture or crop(b)</i>	<i>Area irrigated</i>	<i>Volume applied</i>	<i>Application rate</i>
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2005–06	154 681	44 826	434 924 814	2 546 318	10 737 364	4.2
2006–07	150 817	41 787	425 449 341	1 922 982	7 636 194	4.0
2007–08	140 704	39 637	417 287 562	1 850 937	6 284 799	3.4
2008–09	135 996	39 940	409 028 747	1 760 758	6 500 577	3.7
2009–10(c)	(d) 134 553	(d) 40 816	398 580 223	1 840 610	6 596 040	3.6
2009–10						
Pasture for grazing	86 253	14 826	60 495 196	542 121	1 721 602	3.2
Pasture for hay	35 985	5 046	1 498 025	138 940	432 833	3.1
Pasture for silage	8 667	^ 1 417	349 027	53 307	118 336	2.2
Rice	314	314	18 931	18 931	246 909	13.0
Other cereals for grain or seed	33 058	2 224	20 000 022	217 632	567 821	2.6
Cotton	457	457	153 189	153 189	851 950	5.6
Sugar cane	3 988	1 982	389 471	212 615	756 317	3.6
Other broadacre crops	16 329	910	3 877 193	59 055	^ 139 292	2.4
Fruit trees, nut trees, plantation or berry fruits	9 276	6 083	^ 329 678	134 221	654 663	4.9
Vegetables for human consumption	5 956	4 719	121 696	104 324	419 229	4.0
Nurseries, cut flowers and cultivated turf	3 086	2 609	16 958	13 143	63 483	4.8
Grapevines	7 565	7 183	171 132	162 602	515 484	3.2

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Annual totals include area of agricultural land. This does not equal the sum of area under pasture or crop as not all land on agricultural holdings is under pasture or crop. Also, pasture for grazing refers to improved pasture only.

(c) Totals include other pastures or crops not elsewhere classified.

(d) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

2.2 PASTURES AND CROPS IRRIGATED(a), New South Wales(b)—2005–06 to 2009–10

	<i>Agricultural businesses</i>	<i>Agricultural businesses irrigating</i>	<i>Area under pasture or crop(c)</i>	<i>Area irrigated</i>	<i>Volume applied</i>	<i>Application rate</i>
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2005–06	48 937	11 604	62 164 155	994 199	4 534 109	4.6
2006–07	47 869	10 689	58 660 611	680 011	2 605 019	3.8
2007–08	44 521	8 974	58 154 425	525 021	1 677 083	3.2
2008–09	43 212	10 128	57 309 461	503 630	1 910 033	3.8
2009–10(d)	(e) 43 228	(e) 10 070	58 588 455	550 158	2 002 797	3.6
2009–10						
Pasture for grazing	28 587	3 350	14 060 441	133 035	299 901	2.3
Pasture for hay	7 428	1 411	309 325	39 719	^ 141 445	3.6
Pasture for silage	1 944	np	73 319	^ 18 465	^ 41 787	^ 2.3
Rice	298	298	np	np	np	np
Other cereals for grain or seed	11 153	1 173	5 515 780	151 487	393 866	2.6
Cotton	201	201	80 075	80 075	468 843	5.9
Sugar cane	417	np	^ 18 977	np	np	np
Other broadacre crops	4 633	^ 274	859 646	^ 21 100	* 42 314	^ 2.0
Fruit trees, nut trees, plantation or berry fruits	2 853	1 489	* 130 833	26 455	116 531	4.4
Vegetables for human consumption	1 562	1 180	16 135	14 761	68 552	4.6
Nurseries, cut flowers and cultivated turf	1 078	872	4 519	^ 3 854	^ 18 629	4.8
Grapevines	1 586	1 466	41 619	37 275	150 649	4.0

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

* estimate has a relative standard error of 25% to 50% and should be used with caution

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Includes ACT.

(c) Annual totals include area of agricultural land. This does not equal the sum of area under pasture or crop as not all land on agricultural holdings is under pasture or crop. Also, pasture for grazing refers to improved pasture only.

(d) Totals include other pastures or crops not elsewhere classified.

(e) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

2.3 PASTURES AND CROPS IRRIGATED(a), Victoria—2005–06 to 2009–10

	<i>Agricultural businesses</i>	<i>Agricultural businesses irrigating</i>	<i>Area under pasture or crop(b)</i>	<i>Area irrigated</i>	<i>Volume applied</i>	<i>Application rate</i>
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2005–06	37 146	11 621	12 313 994	647 729	2 448 485	3.8
2006–07	37 429	10 557	13 250 203	437 654	1 648 914	3.8
2007–08	34 177	10 309	12 535 698	427 584	1 332 045	3.1
2008–09	32 973	10 080	12 090 736	370 957	1 194 501	3.2
2009–10(c)	(d) 32 741	(d) 10 579	12 851 527	440 719	1 504 742	3.4
2009–10						
Pasture for grazing	24 479	5 444	6 097 724	240 917	^ 797 760	3.3
Pasture for hay	14 709	^ 1 357	590 345	^ 45 789	^ 109 455	^ 2.4
Pasture for silage	4 268	^ 603	176 657	^ 16 731	^ 27 542	1.6
Rice	**2	np	np	np	np	np
Other cereals for grain or seed	7 558	^ 342	3 005 892	^ 18 702	^ 31 762	^ 1.7
Cotton	—	—	—	—	—	—
Sugar cane	—	—	—	—	—	—
Other broadacre crops	3 162	np	^ 578 339	np	np	np
Fruit trees, nut trees, plantation or berry fruits	1 441	1 117	52 483	45 553	259 716	5.7
Vegetables for human consumption	991	758	30 890	25 158	93 797	3.7
Nurseries, cut flowers and cultivated turf	647	590	4 800	3 042	11 247	3.7
Grapevines	2 140	2 025	39 709	^ 38 069	^ 155 293	4.1

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

— nil or rounded to zero (including null cells)

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Annual totals include area of agricultural land. This does not equal the sum of area under pasture or crop as not all land on agricultural holdings is under pasture or crop. Also, pasture for grazing refers to improved pasture only.

(c) Totals include other pastures or crops not elsewhere classified.

(d) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

2.4 PASTURES AND CROPS IRRIGATED(a), Queensland—2005–06 to 2009–10

	<i>Agricultural businesses</i>	<i>Agricultural businesses irrigating</i>	<i>Area under pasture or crop(b)</i>	<i>Area irrigated</i>	<i>Volume applied</i>	<i>Application rate</i>
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2005–06	32 212	9 861	145 519 376	539 157	2 325 003	4.3
2006–07	30 650	8 757	143 870 532	457 822	1 840 252	4.0
2007–08	29 121	9 047	141 057 855	512 774	1 842 729	3.6
2008–09	28 142	8 805	141 209 793	547 949	2 058 471	3.8
2009–10(c)	(d)27 578	(d)9 402	129 667 586	502 600	1 823 870	3.6
2009–10						
Pasture for grazing	14 803	2 955	30 692 043	^ 50 683	^ 154 718	^ 3.1
Pasture for hay	3 066	^ 1 462	^ 99 125	^ 27 201	^ 87 836	^ 3.2
Pasture for silage	^ 792	^ 269	^ 36 319	^ 11 199	^ 28 348	^ 2.5
Rice	**14	np	np	np	np	np
Other cereals for grain or seed	3 220	^ 459	1 408 505	37 076	112 499	3.0
Cotton	256	256	73 114	73 114	383 107	5.2
Sugar cane	3 571	np	370 493	np	np	np
Other broadacre crops	1 601	^ 174	253 359	^ 13 876	32 416	2.3
Fruit trees, nut trees, plantation or berry fruits	2 338	1 454	^ 109 679	33 578	122 668	3.7
Vegetables for human consumption	1 465	1 152	33 580	29 383	87 576	3.0
Nurseries, cut flowers and cultivated turf	779	658	5 110	4 013	18 438	4.6
Grapevines	^ 156	np	^ 2 874	np	^ 16 279	np

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Annual totals include area of agricultural land. This does not equal the sum of area under pasture or crop as not all land on agricultural holdings is under pasture or crop. Also, pasture for grazing refers to improved pasture only.

(c) Totals include other pastures or crops not elsewhere classified.

(d) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

2.5 PASTURES AND CROPS IRRIGATED(a), South Australia—2005–06 to 2009–10 ..

	<i>Agricultural businesses</i>	<i>Agricultural businesses irrigating</i>	<i>Area under pasture or crop(b)</i>	<i>Area irrigated</i>	<i>Volume applied</i>	<i>Application rate</i>
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2005–06	16 455	6 298	55 408 492	216 749	897 197	4.1
2006–07	15 835	6 447	50 064 634	200 594	966 057	4.8
2007–08	14 996	6 114	47 075 615	225 716	880 268	3.9
2008–09	14 454	5 821	49 126 060	196 215	827 230	4.2
2009–10(c)	(d) 14 097	(d) 5 624	45 746 996	186 494	711 991	3.8
2009–10						
Pasture for grazing	7 012	1 325	3 532 120	^ 45 565	^ 214 316	4.7
Pasture for hay	4 272	^ 510	208 857	^ 20 818	^ 74 744	^ 3.6
Pasture for silage	^ 512	*60	^ 23 596	*3 588	*11 836	*3.3
Rice	—	—	—	—	—	—
Other cereals for grain or seed	5 607	^ 147	3 310 205	^ 5 137	*6 621	^ 1.3
Cotton	—	—	—	—	—	—
Sugar cane	—	—	—	—	—	—
Other broadacre crops	2 821	**25	521 734	*1 438	*3 175	*2.2
Fruit trees, nut trees, plantation or berry fruits	1 087	811	17 877	14 940	103 372	6.9
Vegetables for human consumption	^ 687	554	16 417	11 775	73 272	6.2
Nurseries, cut flowers and cultivated turf	^ 194	147	843	^ 775	^ 2 880	3.7
Grapevines	2 787	2 715	73 456	71 915	174 513	2.4

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

— nil or rounded to zero (including null cells)

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Annual totals include area of agricultural land. This does not equal the sum of area under pasture or crop as not all land on agricultural holdings is under pasture or crop. Also, pasture for grazing refers to improved pasture only.

(c) Totals include other pastures or crops not elsewhere classified.

(d) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

2.6 PASTURES AND CROPS IRRIGATED(a), Western Australia—2005–06 to 2009–10

	<i>Agricultural businesses</i>	<i>Agricultural businesses irrigating</i>	<i>Area under pasture or crop(b)</i>	<i>Area irrigated</i>	<i>Volume applied</i>	<i>Application rate</i>
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2005–06	14 526	3 173	98 652 515	60 336	306 284	5.1
2006–07	13 608	2 935	96 741 958	53 268	293 186	5.5
2007–08	13 084	2 720	93 034 706	63 364	284 878	4.5
2008–09	12 658	2 865	93 645 885	47 804	226 085	4.7
2009–10(c)	(d) 12 465	(d) 2 881	94 391 470	50 815	252 058	5.0
2009–10						
Pasture for grazing	8 038	^ 614	4 779 714	^ 15 890	^ 89 479	5.6
Pasture for hay	4 423	*55	226 261	^ 896	^ 5 628	6.3
Pasture for silage	^ 321	np	^ 16 450	np	np	np
Rice	—	—	—	—	—	—
Other cereals for grain or seed	5 080	np	6 738 764	np	** 15 533	np
Cotton	—	—	—	—	—	—
Sugar cane	—	—	—	—	—	—
Other broadacre crops	3 577	*10	1 642 535	3 014	20 879	6.9
Fruit trees, nut trees, plantation or berry fruits	1 096	^ 881	^ 11 281	7 469	36 519	4.9
Vegetables for human consumption	598	486	9 203	8 007	50 315	6.3
Nurseries, cut flowers and cultivated turf	^ 267	^ 243	^ 1 286	^ 1 154	10 783	9.3
Grapevines	782	731	^ 11 696	^ 11 180	^ 14 019	1.3

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

* estimate has a relative standard error of 25% to 50% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

— nil or rounded to zero (including null cells)

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Annual totals include area of agricultural land. This does not equal the sum of area under pasture or crop as not all land on agricultural holdings is under pasture or crop. Also, pasture for grazing refers to improved pasture only.

(c) Totals include other pastures or crops not elsewhere classified.

(d) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

2.7 PASTURES AND CROPS IRRIGATED(a), Tasmania—2005–06 to 2009–10

	<i>Agricultural businesses</i>	<i>Agricultural businesses irrigating</i>	<i>Area under pasture or crop(b)</i>	<i>Area irrigated</i>	<i>Volume applied</i>	<i>Application rate</i>
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2005–06	4 745	1 919	1 739 161	80 912	203 931	2.5
2006–07	4 783	2 060	1 659 163	87 472	263 029	3.0
2007–08	4 200	2 185	1 541 487	91 538	252 113	2.8
2008–09	4 000	1 962	1 630 432	88 028	262 296	3.0
2009–10(c)	(d) 3 935	(d) 2 027	1 647 437	104 803	281 953	2.7
2009–10						
Pasture for grazing	3 225	1 122	851 035	55 988	165 289	3.0
Pasture for hay	2 031	^ 242	53 586	4 215	10 462	2.5
Pasture for silage	829	^ 127	22 685	np	np	np
Rice	—	—	—	—	—	—
Other cereals for grain or seed	438	^ 95	20 826	3 772	np	np
Cotton	—	—	—	—	—	—
Sugar cane	—	—	—	—	—	—
Other broadacre crops	523	363	21 081	17 140	34 616	2.0
Fruit trees, nut trees, plantation or berry fruits	^ 281	187	^ 4 041	^ 3 057	^ 7 649	2.5
Vegetables for human consumption	583	530	14 694	14 565	44 322	3.0
Nurseries, cut flowers and cultivated turf	97	78	329	np	896	np
Grapevines	^ 108	^ 104	^ 1 360	^ 1 313	np	np

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

— nil or rounded to zero (including null cells)

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Annual totals include area of agricultural land. This does not equal the sum of area under pasture or crop as not all land on agricultural holdings is under pasture or crop. Also, pasture for grazing refers to improved pasture only.

(c) Totals include other pastures or crops not elsewhere classified.

(d) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

2.8 PASTURES AND CROPS IRRIGATED(a), Northern Territory—2005–06 to 2009–10

	<i>Agricultural businesses</i>	<i>Agricultural businesses irrigating</i>	<i>Area under pasture or crop(b)</i>	<i>Area irrigated</i>	<i>Volume applied</i>	<i>Application rate</i>
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2005–06	659	351	59 127 121	7 235	22 356	3.1
2006–07	643	342	61 202 240	6 161	19 737	3.2
2007–08	605	288	^ 63 887 775	^ 4 940	^ 15 683	^ 3.2
2008–09	558	278	54 016 380	6 176	21 962	3.6
2009–10(c)	(d) 510	(d) 234	55 686 751	5 021	18 628	3.7
2009–10						
Pasture for grazing	109	17	482 119	44	^ 139	3.2
Pasture for hay	54	8	10 526	^ 303	^ 3 263	10.8
Pasture for silage	—	—	—	—	—	—
Rice	—	—	—	—	—	—
Other cereals for grain or seed	^ 2	np	^ 49	np	np	np
Cotton	—	—	—	—	—	—
Sugar cane	—	—	—	—	—	—
Other broadacre crops	12	np	498	np	np	np
Fruit trees, nut trees, plantation or berry fruits	180	144	3 483	3 170	8 208	2.6
Vegetables for human consumption	72	60	778	675	1 395	2.1
Nurseries, cut flowers and cultivated turf	24	20	71	np	610	np
Grapevines	^ 5	np	418	np	np	np

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

— nil or rounded to zero (including null cells)

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Annual totals include area of agricultural land. This does not equal the sum of area under pasture or crop as not all land on agricultural holdings is under pasture or crop. Also, pasture for grazing refers to improved pasture only.

(c) Totals include other pastures or crops not elsewhere classified.

(d) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

2.9 PASTURES AND CROPS IRRIGATED (a), Murray–Darling Basin(b)—2005–06 to 2009–10

	<i>Agricultural businesses</i>	<i>Agricultural businesses irrigating</i>	<i>Area under pasture or crop (c)</i>	<i>Area irrigated</i>	<i>Volume applied</i>	<i>Application rate</i>
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2005–06	61 033	18 634	88 827 650	1 653 788	7 369 807	4.5
2006–07	59 685	17 062	97 160 318	1 101 410	4 458 279	4.1
2007–08	56 586	15 479	95 561 754	957 752	3 141 659	3.3
2008–09	54 098	15 077	96 041 055	929 074	3 492 407	3.8
2009–10(d)	(e) 53 681	(e) 15 120	95 194 851	975 660	3 564 481	3.7
2009–10						
Pasture for grazing	34 998	5 973	25 057 180	288 573	722 288	2.5
Pasture for hay	13 993	2 273	652 029	^ 77 875	^ 221 301	2.8
Pasture for silage	2 964	^ 570	127 296	^ 26 506	^ 54 423	^ 2.1
Rice	300	np	np	np	np	np
Other cereals for grain or seed	19 894	1 741	9 966 163	188 758	468 944	2.5
Cotton	412	412	137 555	137 555	763 924	5.6
Sugar cane	*3	np	*103	np	np	np
Other broadacre crops	7 194	^ 325	1 478 291	27 479	46 795	1.7
Fruit trees, nut trees, plantation or berry fruits	3 132	2 416	^ 149 513	78 646	449 862	5.7
Vegetables for human consumption	1 041	734	32 394	25 339	129 403	5.1
Nurseries, cut flowers and cultivated turf	332	^ 267	3 128	^ 1 856	^ 8 242	4.4
Grapevines	3 965	3 759	101 865	96 050	427 580	4.5

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

* estimate has a relative standard error of 25% to 50% and should be used with caution

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Based on NRM regions. Refer to the Explanatory Notes for further information.

(c) Annual totals include area of agricultural land. This does not equal the sum of area under pasture or crop as not all land on agricultural holdings is under pasture or crop. Also, pasture for grazing refers to improved pasture only.

(d) Totals include other pastures or crops not elsewhere classified.

(e) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

2.10**PASTURES AND CROPS IRRIGATED (a), Non-Murray Darling Basin(b)—2005–06 to 2009–10**

	<i>Agricultural businesses</i>	<i>Agricultural businesses irrigating</i>	<i>Area under pasture or crop(c)</i>	<i>Area irrigated</i>	<i>Volume applied</i>	<i>Application rate</i>
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2005–06	93 648	26 192	346 097 164	892 530	3 367 557	3.8
2006–07	91 132	24 725	328 289 023	821 572	3 177 915	3.9
2007–08	84 118	24 158	321 725 808	893 185	3 143 140	3.5
2008–09	81 899	24 863	312 987 692	831 684	3 008 170	3.6
2009–10(d)	(e)80 872	(e)25 696	303 385 373	864 950	3 031 558	3.5
2009–10						
Pasture for grazing	51 255	8 854	35 438 016	253 548	^ 999 314	3.9
Pasture for hay	21 991	2 774	845 996	61 065	^ 211 532	3.5
Pasture for silage	5 702	^ 847	221 730	^ 26 801	^ 63 914	2.4
Rice	**14	np	np	np	np	np
Other cereals for grain or seed	13 164	^ 483	10 033 859	28 873	^ 98 877	3.4
Cotton	^ 45	^ 45	^ 15 633	^ 15 633	^ 88 026	5.6
Sugar cane	3 985	np	389 368	np	np	np
Other broadacre crops	9 135	^ 585	2 398 902	31 575	^ 92 496	2.9
Fruit trees, nut trees, plantation or berry fruits	6 144	3 667	^ 180 165	55 575	204 801	3.7
Vegetables for human consumption	4 915	3 985	89 302	78 985	289 826	3.7
Nurseries, cut flowers and cultivated turf	2 754	2 342	13 830	11 287	55 241	4.9
Grapevines	3 601	3 424	69 267	66 552	87 904	1.3

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

** estimate has a relative standard error greater than 50% and is considered too unreliable for general use

np not available for publication but included in totals where applicable, unless otherwise indicated

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Based on NRM regions. Refer to the Explanatory Notes for further information.

(c) Annual totals include area of agricultural land. This does not equal the sum of area under pasture or crop as not all land on agricultural holdings is under pasture or crop. Also pasture for grazing refers to improved pasture only.

(d) Totals include other pastures and crops not elsewhere classified.

(e) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

SOURCES OF
AGRICULTURAL WATER

Australia

The main sources of Australia's water for agriculture in 2009–10 were government or private irrigation schemes, groundwater and surface water.

Government or private irrigation schemes accounted for 2,903 gigalitres, or 39% of all agricultural water. Compared to 2008–09, the amount of water supplied by government or private irrigation schemes increased by 11%. Groundwater accounted for 32% of agricultural water use nationally (2,325 gigalitres), a 7% decrease compared to 2008–09. Surface water made up a further 25% of the total volume of water from all sources in 2009–10 (1,871 gigalitres), a 5% decrease compared to 2008–09.

In comparison, a decrease in the volume of water for agricultural purposes was recorded for town or country reticulated mains supply (down by 2% in 2009–10 compared to 2008–09).

State/Territory

Groundwater was the major source of agricultural water in South Australia (60%), Western Australia (43%), and Northern Territory (68%).

Water supplied by government or private irrigation schemes was the main source of agricultural water in New South Wales (35%), Victoria (59%), and Queensland (41%) while in Tasmania, the main source was surface water (71%).

Murray–Darling Basin

In 2009–10, water supplied by government or private irrigation schemes was the major source of water for agriculture in the Murray–Darling Basin, accounting for 48% of agricultural water sourced in the region. Groundwater supplied 26% of the total volume, while surface water also supplied 24%. Outside the Murray–Darling Basin, ground water was the major source of water for agriculture (38%).

3.1 SOURCES OF AGRICULTURAL WATER, by State—2009-10

	NSW(a)	Vic.	Qld	SA	WA	Tas.	NT	Aust.
	ML	ML	ML	ML	ML	ML	ML	ML
Water supplied by government or private irrigation schemes	765 661	978 056	825 248	174 891	^ 107 150	51 903	^ 465	2 903 375
Groundwater	760 965	^ 349 932	537 691	^ 462 978	146 176	^ 30 623	37 081	2 325 445
Surface water	607 104	227 110	621 482	100 407	80 156	217 509	16 991	1 870 759
Recycled/re-used water from off-farm sources	* 45 807	^ 68 229	^ 29 802	^ 9 815	^ 510	np	np	^ 156 845
Town or country reticulated mains supply	^ 14 260	^ 13 479	^ 2 485	21 604	^ 3 605	np	np	57 177
Other	* 11 053	^ 7 301	^ 20 544	* 2 587	^ 2 669	np	np	^ 45 157
Total all sources	2 204 850	1 644 108	2 037 251	772 283	340 265	305 366	54 634	7 358 756

- ^ estimate has a relative standard error of 10% to less than 25% and should be used with caution
- * estimate has a relative standard error of 25% to 50% and should be used with caution
- np not available for publication but included in totals where applicable, unless otherwise indicated
- (a) Includes ACT

3.2 SOURCES OF WATER(a), by Murray-Darling Basin—2009-10

	MDB	Non-MDB	Australia
	ML	ML	ML
Water supplied by government or private irrigation schemes	1 829 532	1 073 843	2 903 375
Surface water	927 588	943 171	1 870 759
Groundwater	989 197	1 336 248	2 325 445
Recycled/re-used water from off-farm sources	* 58 108	^ 98 736	^ 156 845
Town or country reticulated mains supply	^ 13 803	43 374	57 177
Other	^ 18 671	^ 26 486	^ 45 157
Total all sources	3 836 899	3 521 857	7 358 756

- ^ estimate has a relative standard error of 10% to less than 25% and should be used with caution
- * estimate has a relative standard error of 25% to 50% and should be used with caution
- (a) Based on NRM regions. Refer to the Explanatory Notes for further information.

EXPLANATORY NOTES

INTRODUCTION

1 This publication presents estimates of agricultural water use, including pastures and crops irrigated, irrigation water sources, irrigation water management and water related responses to adverse seasonal conditions. Data are available for a range of sub-state geographic levels, including Natural Resource Management (NRM) region, Statistical Division (SD) and Murray-Darling Basin (MDB) in July 2011.

GENERAL

2 In 2007–08, an ARMS was run with a reduced set of commodities compared to the Agricultural Survey/Census of previous years. The ARMS was a combination of a reduced Agricultural Survey and a benchmark survey of land management practices undertaken by agricultural businesses as well as a survey of management responses to adverse seasonal conditions experienced by affected agricultural businesses. In 2008–09, the Australian Bureau of Statistics (ABS) returned to the Agricultural Survey which collected a greater range of agricultural commodities and livestock breakdowns than the 2007–08 ARMS. In 2009-10, a reduced set of commodities was once again collected in the ARMS.

3 Where figures for individual states/territories have been suppressed for reasons of confidentiality, they have been included in relevant totals.

4 Australian Capital Territory data have been combined with New South Wales data.

5 Where figures have been rounded, discrepancies may occur between sums of the component items and totals.

SCOPE AND COVERAGE

6 The scope of the 2009–10 ARMS was all agricultural businesses recorded on the ABS Business Register (ABSBR) above a minimum size cutoff. The ABSBR is based on the Australian Business Register (ABR) which is administered and maintained by the Australian Taxation Office (ATO).

7 A minimum size cut-off of \$5,000 was applied to determine whether a business was in-scope for the 2009–10 ARMS. The measure of size was based on the ABS' Estimated Value of Agricultural Operations (EVAO) or a derived value based on Business Activity Statement (BAS) turnover.

8 While the ABSBR does not include all agricultural businesses in Australia, it provides improved coverage from the former ABS-maintained Agricultural Survey frame as most businesses and organisations in Australia need to obtain an Australian Business Number (ABN) from the ATO for their business operations. The ABR-based register is also more up-to-date as it excludes agricultural businesses with cancelled ABNs and incorporates regularly updated information on agricultural businesses from the ATO.

9 For the 2009–10 ARMS, a response rate of approximately 87% was achieved from a sample of approximately 38,000 agricultural businesses selected from an in-scope population of approximately 171,000 agricultural businesses.

AGRICULTURAL BUSINESSES AND AREA UNDER PASTURE OR CROP

10 The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where these are available. In some cases, the number of agricultural businesses and the area under pasture or crop are not available or may not be directly comparable with the categories used for irrigated crops. More information is available upon request.

COMPARABILITY WITH
AGRICULTURAL COMMODITIES
AUSTRALIA

11 The estimates of agricultural establishments and area under pasture or crop for 2004–05 to 2008–09 presented in this publication differ from *Agriculture Commodities, Australia* (cat. no 7121.0), in that the estimates for grapevines in this publication are derived from the Agricultural Survey and ARMS rather than the Vineyards Collection.

12 Additionally, the number of agricultural businesses in this publication refers to all businesses undertaking agricultural activity within the 2009-10 period, differing from those in *Agriculture Commodities, Australia* (cat. no 7121.0) which report only on the number of agricultural businesses still active at 30 June 2010. For further clarification, contact the National Information and Referral Service on 1300 135 070.

MURRAY-DARLING BASIN
GEOGRAPHY

13 Data for the Murray–Darling Basin (MDB) region were derived from a concordance of NRM regions falling mostly within the MDB region. The MDB data used in *Water Use on Australian Farms, 2005–06* (cat. no. 4618.0) were derived from geocoded data. Therefore, there will be small differences when comparing these data to 2006–07, 2007–08, 2008–09 and 2009-10 MDB data.

RELIABILITY OF DATA
SAMPLING ERRORS

14 The estimates in this publication are subject to sampling and non-sampling errors.

15 The estimates in this publication are based on information obtained from respondents to the ARMS for the year ended 30 June 2010 and are subject to sampling variability; that is, estimates may differ from figures that would be produced if all agricultural businesses had been included in the survey. One measure of the likely difference is given by the standard error (SE), which indicates the extent to which an estimate might vary by chance when not all units have responded, i.e. when a 'sample' of responses only is obtained. There are about two chances in three that a 'sample' estimate will differ by less than one SE from the figure that would have been obtained if all units had responded, and about nineteen chances in twenty that the difference will be less than two SEs.

16 In this publication, 'sampling' variability of the estimates is measured by the relative standard error (RSE) which is obtained by expressing the SE as a percentage of the estimate to which it refers.

17 Most published estimates have RSEs less than 5%. For some states/territories with limited irrigation of certain commodities or limited numbers of units reporting a particular source of agricultural water, RSEs are greater than 10%. Where the RSE of an estimate included in this publication falls in the range of 10% to less than 25%, it has been annotated with the symbol '^' indicating that the estimate should be used with caution as it is subject to sampling variability too high for some purposes. Where the RSE of an estimate is 25% to 50%, it has been annotated with the symbol '*', indicating that the estimate should be used with caution as it is subject to sampling variability too high for most practical purposes. Where the RSE of an estimate exceeds 50%, it has been annotated with the symbol '**', indicating that the sampling variability causes the estimate to be considered too unreliable for general use. Separate indication of the RSEs of all estimates is available on request.

18 The following table contains estimates of RSEs for a selection of the statistics presented in this publication:

SAMPLING ERRORS *continued*

RELATIVE STANDARD ERRORS OF SELECTED ESTIMATES, by State—2009-10

	NSW(a)	Vic.	Qld	SA	WA	Tas.	NT	AUST.
	%	%	%	%	%	%	%	%
Total area irrigated (ha)	3.3	6.1	3.9	5.8	6.1	3.8	1.9	2.0
Total volume applied (ML)	2.6	7.9	3.4	6.8	6.8	4.6	2.9	2.3
Pasture for grazing area irrigated (ha)	7.0	9.6	19.5	14.1	12.4	5.4	8.8	5.0
Pasture for grazing volume applied (ML)	9.0	13.7	14.7	14.8	15.1	6.7	11.7	7.0
Rice area irrigated (ha)	4.8	67.4	13.3	—	—	—	—	4.8
Rice volume applied (ML)	4.1	67.4	6.4	—	—	—	—	4.0
Sugar cane area irrigated (ha)	95.5	—	6.9	—	—	—	—	6.9
Sugar cane volume applied (ML)	95.5	—	6.5	—	—	—	—	6.5
Cotton area irrigated (ha)	3.3	—	5.2	—	—	—	—	3.1
Cotton volume applied (ML)	3.2	—	5.3	—	—	—	—	3.1

— nil or rounded to zero (including null cells)

(a) Includes ACT.

NON-SAMPLING ERRORS

19 Errors other than those due to sampling may occur because of deficiencies in the list of units from which the sample was selected, non-response, and errors in reporting by providers. Inaccuracies of this kind are referred to as non-sampling errors, which may occur in any collection, whether it be a census or a sample. Every effort has been made to reduce non-sampling error to a minimum by careful design and testing of questionnaires, operating procedures and systems used to compile the statistics.

ABS DATA AVAILABLE ON REQUEST

20 As well as the statistics included in this and related publications, the ABS may have other relevant data available on request. Inquiries should be made to the National Information and Referral Service on 1300 135 070.

ACKNOWLEDGMENT

21 ABS publications draw extensively on information provided freely by individuals, businesses, governments and other organisations. Their continued cooperation is very much appreciated. Without it, the wide range of statistics published by the ABS would not be available. The Bureau of Meteorology's contribution of the Climate Conditions Appendix in this publication is especially acknowledged. Information received by the ABS is treated in strict confidence, as required by the *Census and Statistics Act 1905*.

**AUSTRALIAN
CLIMATE
CONDITIONS-
2009-10**

The 2009-10 financial year was exceptionally warm in Australia. Mean temperatures averaged over Australia for the 12 months were 0.87°C above the mean for the 1961-90 reference period, making it the warmest 12 months on record (breaking the previous record anomaly of +0.76°C in 2004-05). It was also the warmest financial year on record in Western Australia, Victoria and Tasmania.

Both daytime maximum and overnight minimum temperatures were above normal for the 12 months for most states throughout Australia, with the only major exceptions in parts of far western Queensland, and for overnight minimum temperatures in the far southwest of Western Australia. Daytime maximum temperatures for the year were more than 2°C above normal in much of the WA Pilbara, and at least 1°C over vast areas of the country. This included most of Western Australia away from the coastal fringe, as well as southern and eastern areas covering the agricultural areas of South Australia, most of NSW and Victoria, and southeast Queensland. Overnight minimum temperatures were not quite so extreme but were still more than 1°C above normal in many areas. This included southern and western NSW, eastern Victoria, outback South Australia, southern Northern Territory, and parts of the interior of Western Australia.

All twelve months were warmer than normal but August and November 2009 were particularly exceptional. They were the warmest August and November on record respectively for Australia, with August, which was 2.47°C above normal, also having the second-largest monthly temperature anomaly for any month (after April 2005). August saw temperatures in much of New South Wales and Queensland far exceeding previous records for the month, with some sites reaching levels more than 5°C above their previous August record. Bedourie, in western Queensland, reached 38.5°C, and Mungindi, in northern inland NSW, 37.8°C. November was marked more by consistent heat than individual extremes, especially in the southeast, with NSW, Victoria and South Australia all having their largest mean temperature anomalies on record for a month (4.61°C above normal in NSW). Temperatures returned closer to normal from March 2010 but remained above average until June, driven particularly by high overnight minimum temperatures during the wet months of early 2010.

Australian rainfall for the 12 months was 9% above normal, as an El Niño event in the Pacific in late 2009 transitioned towards La Niña by mid-2010. This 12-month total encompassed three distinct periods: a rather dry July-November, a wet summer and early autumn, and a near-normal April-June. For the 12 months as a whole, most areas outside Western Australia had above-normal rainfall, except for parts of eastern NSW, Queensland and Victoria. The most abnormal rains were in the central and eastern interior, extending from the southern Northern Territory across southwest Queensland into northern inland NSW, as well as along the Gulf of Carpentaria coast on both sides of the NT/Queensland border. A few localities in each region had their wettest 12 months on record. In contrast, most of Western Australia, except for parts of the Kimberley and interior, was drier than normal, notably so in much of the state's west, with large parts of

AUSTRALIAN CLIMATE
CONDITIONS- 2009-10
continued

both the Pilbara and Gascoyne region, and the southwest, having rainfall in the driest 10% of all years.

The July-November period was rather dry in most of the mainland, especially Queensland and the Northern Territory. This was the second half of a dry nine-month period, with March-November 2009 the 11th driest of 110 years for Australia. Tasmania, though, was very wet - particularly in winter and early spring, with July-September the state's wettest on record, South Australia was also wetter than normal for the period with a large part of this rainfall coming in a single event in late November. Victorian rainfall was near normal, as it was in the southwest of Western Australia.

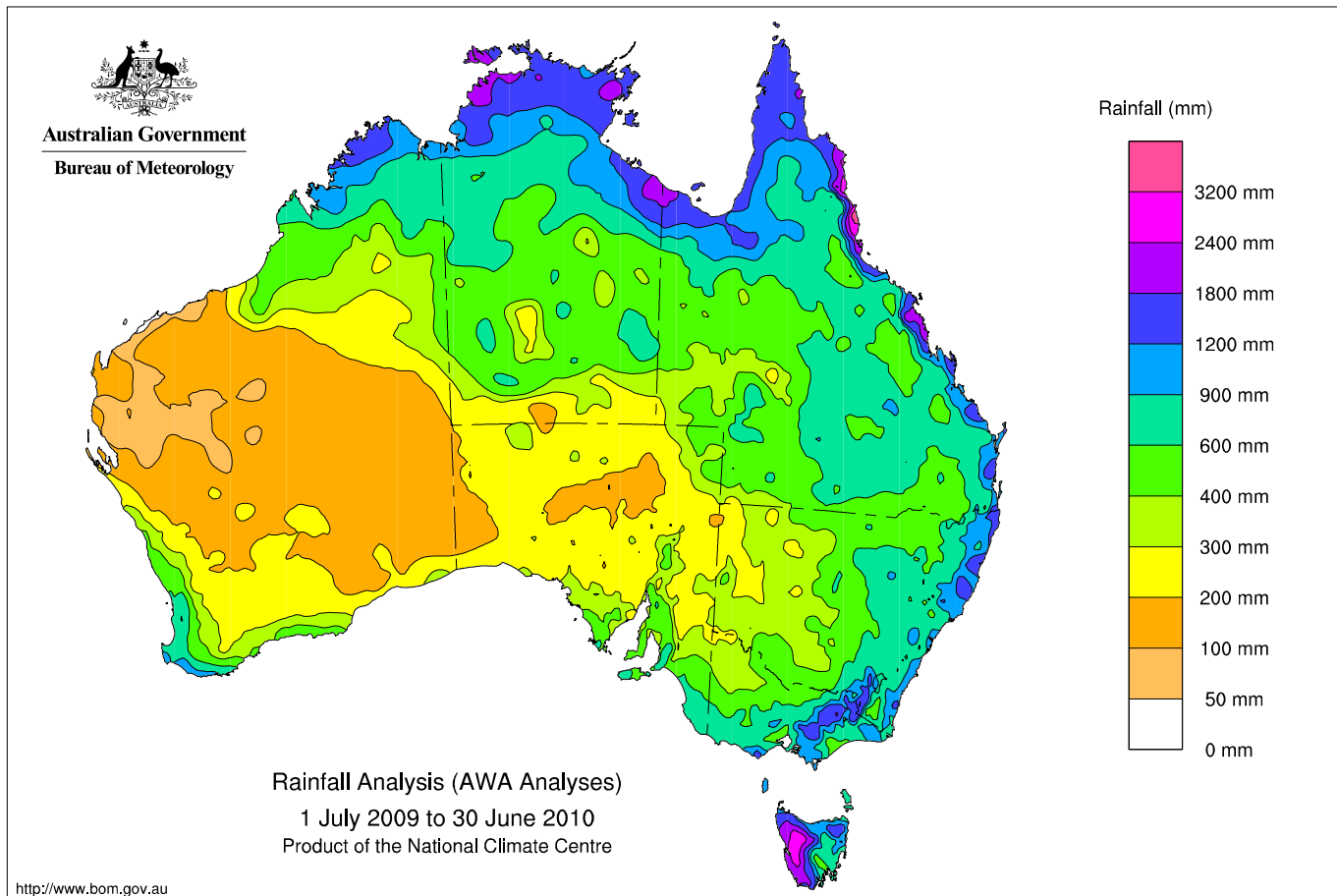
The December-March period was wet in most of the eastern half of the mainland. There was a particularly significant rain event in the eastern interior at the end of summer, starting in the southern Northern Territory at the end of February and moving on to southern inland Queensland in the first few days of March. This event, which set records for the largest area covered by 100 mm-plus daily totals, brought widespread flooding to the region and was a major contributor to the partial filling of Lake Eyre later in 2010. There were also widespread floods in northern inland NSW in late December and early January, partly resulting from the remnants of the year's most intense tropical cyclone, the category 5 Laurence which made landfall between Broome and Port Hedland. Rainfall in the northern tropics for the wet season was mostly normal to slightly above normal. Further south, extremely damaging hailstorms hit Melbourne and Perth in the space of two weeks in March. In both cases it was the largest hail on record in the area (10 cm diameter in Melbourne, 6 cm in Perth), and both events caused more than \$1 billion in damage, much of it to motor vehicles.

April-June rainfall was mostly unexceptional, except in the northern tropics and the far southwest. An unusual dry-season rain event brought heavy falls to much of northwestern Australia in the second half of May, which combined with early April falls from cyclone Paul to produce seasonal totals well above normal throughout the northern tropics, except near the Queensland coast. The southwest of Western Australia was very dry throughout, with the region experiencing its second-driest April-June on record.

AUSTRALIAN CLIMATE
CONDITIONS- 2009-10

A1.1 Australian rainfall analysis, 1 July 2009 to 30 June 2010

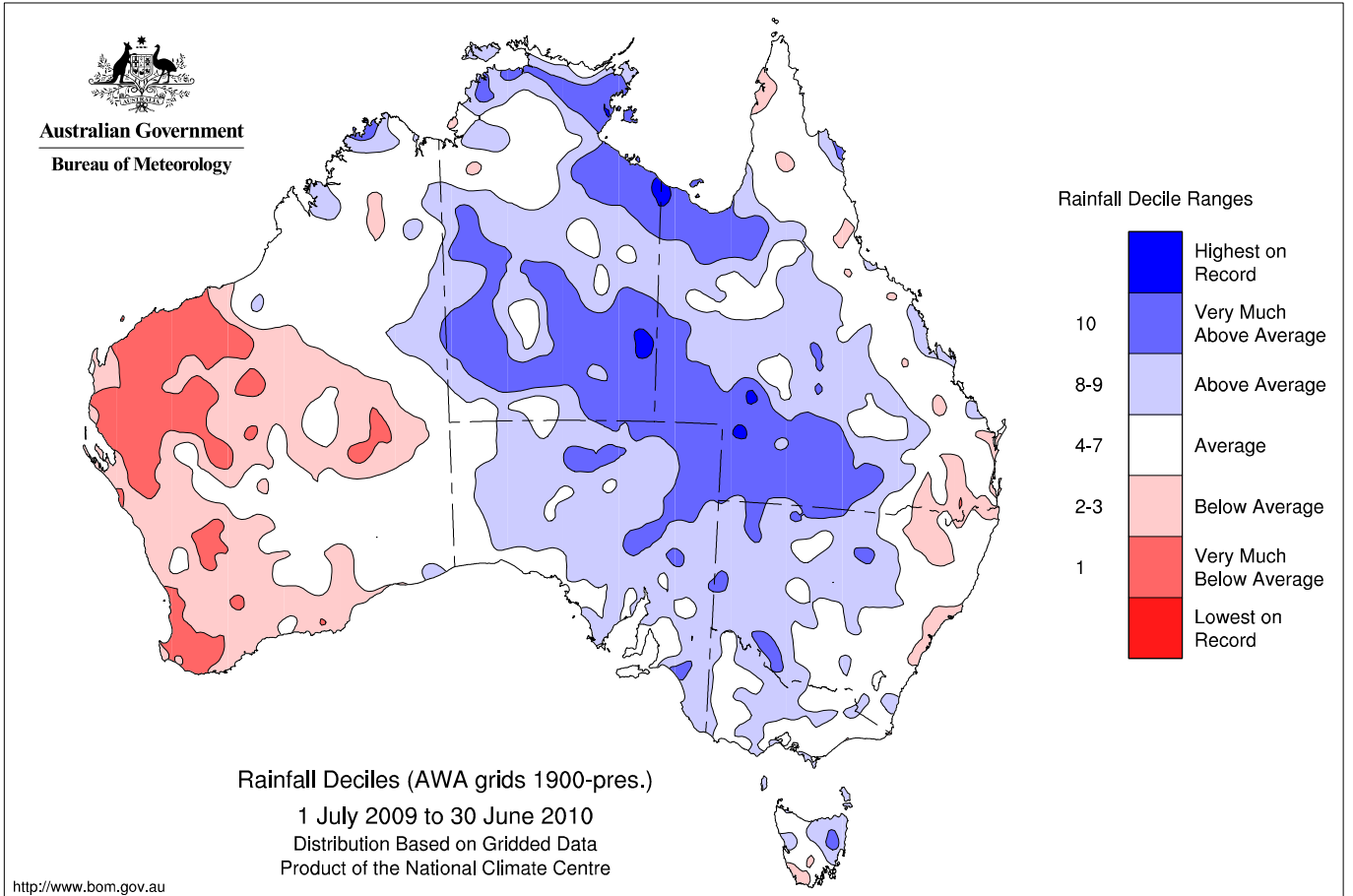
continued



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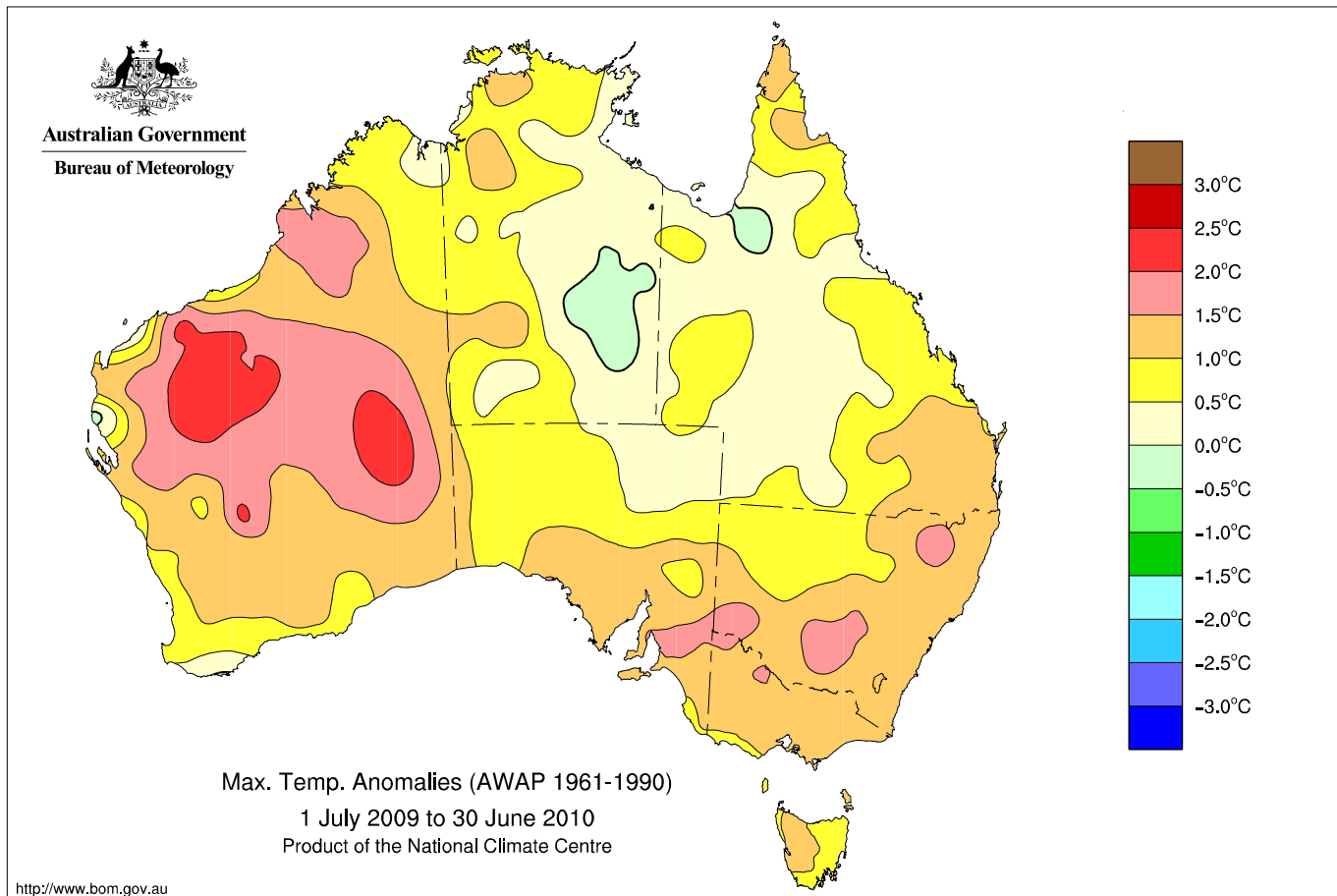
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AUSTRALIAN CLIMATE
CONDITIONS- 2009-10

A1.3 Maximum temperature anomaly, 1 July 2009 to 30 June 2010

continued

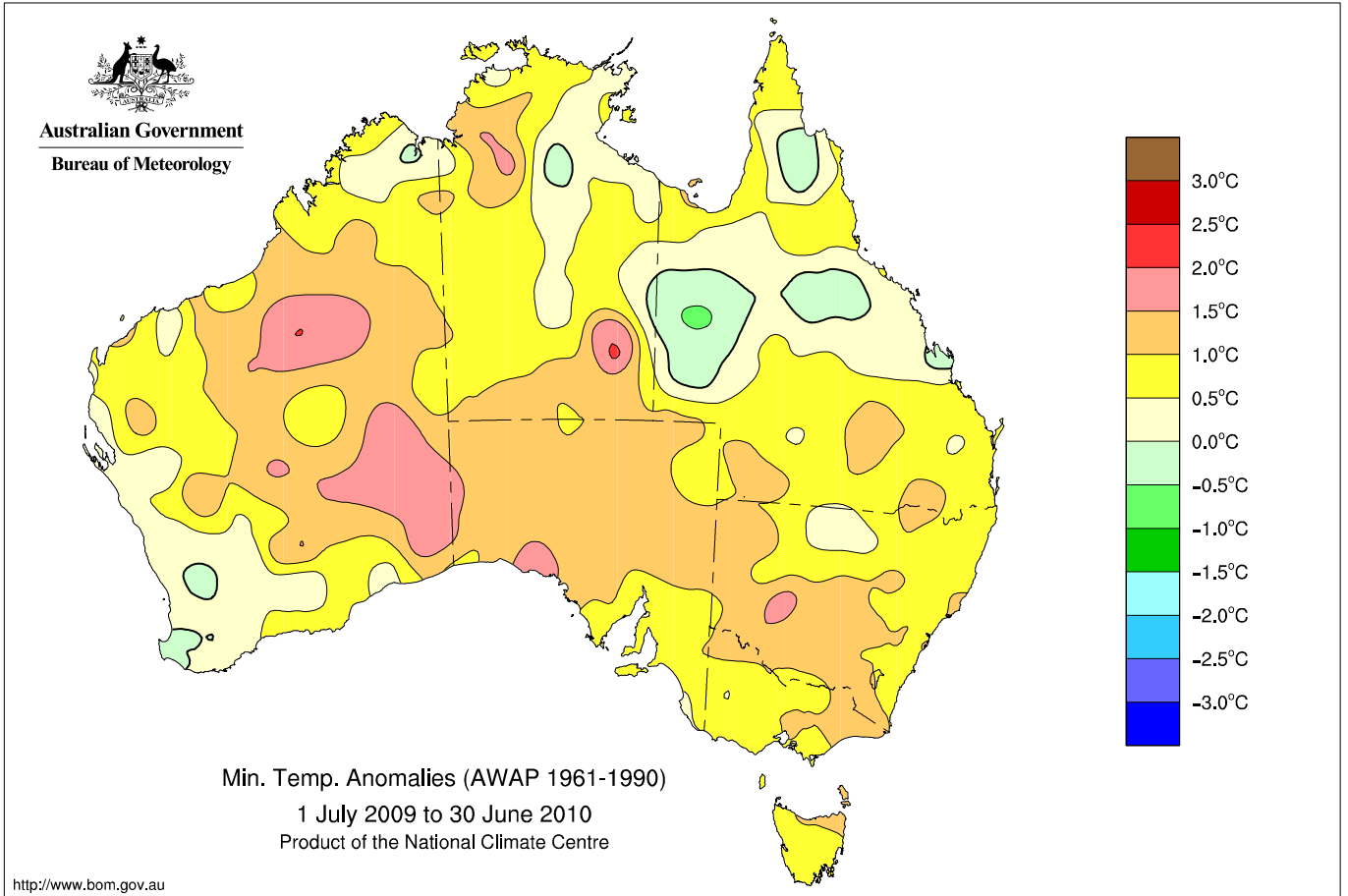


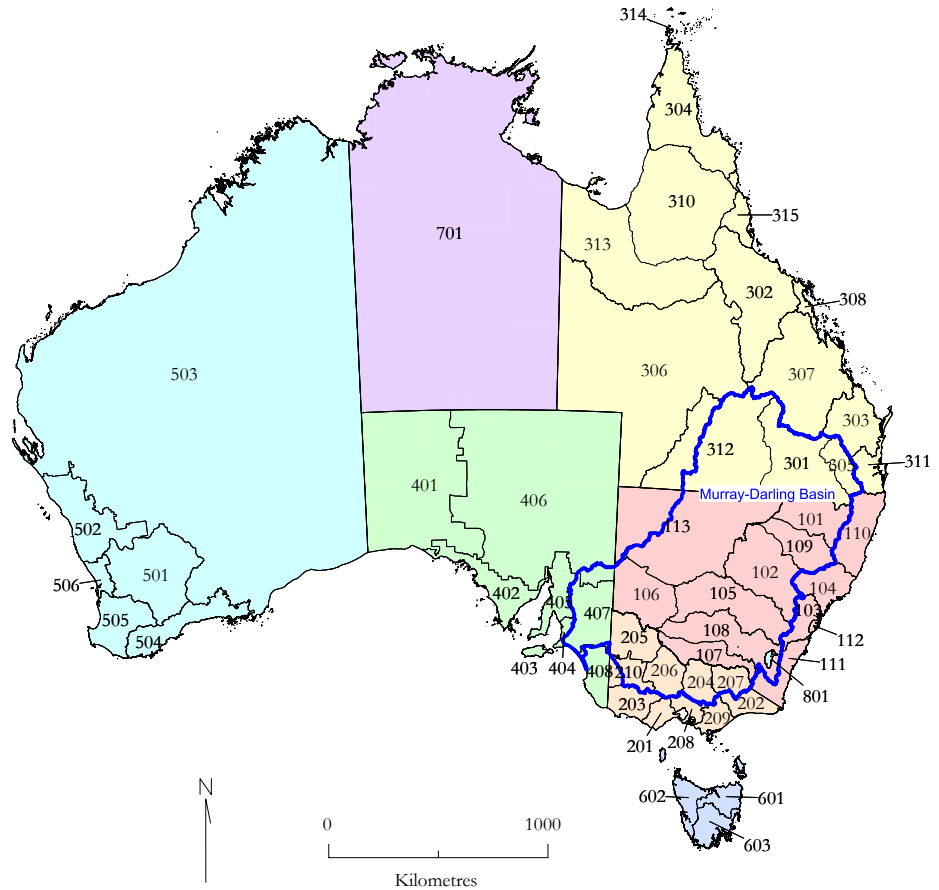
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continued





NRM Region *

- | | | |
|---|--|---|
| <ul style="list-style-type: none"> ■ NSW 101: Border Rivers-Gwydir 102: Central West 103: Hawkesbury-Nepean 104: Hunter-Central Rivers 105: Lachlan 106: Lower Murray-Darling 107: Murray 108: Murrumbidgee 109: Namoi 110: Northern Rivers 111: Southern Rivers 112: Sydney Metro 113: Western ■ VIC 201: Corangamite 202: East Gippsland 203: Glenelg Hopkins 204: Goulburn Broken 205: Mallee 206: North Central 207: North East (VIC) | <ul style="list-style-type: none"> 208: Port Phillip and Westernport 209: West Gippsland 210: Wimmera ■ QLD 301: Border Rivers Maranoa-Balonne 302: Burdekin 303: Burnett Mary 304: Cape York 305: Condamine 306: Desert Channels 307: Fitzroy 308: Mackay Whitsunday 310: Northern Gulf 311: South East (QLD) 312: South West (QLD) 313: Southern Gulf 314: Torres Strait 315: Wet Tropics ■ SA 401: Alinytjara Wilurara 402: Eyre Peninsula 403: Kangaroo Island | <ul style="list-style-type: none"> 404: Adelaide and Mount Lofty Ranges 405: Northern and Yorke 406: SA Arid Lands 407: SA Murray Darling Basin 408: South East (SA) ■ WA 501: Avon 502: Northern Agricultural Region 503: Rangelands (WA) 504: South Coast Region 505: South West Region 506: Swan ■ TAS 601: North (TAS) 602: North West (TAS) 603: South (TAS) ■ NT 701: Northern Territory ■ ACT 801: ACT |
|---|--|---|

*Numbers used are NRM codes.
Source: Department of the Environment and Heritage - 2008.

GLOSSARY

Agricultural business	A business which is engaged in agricultural activities above a minimum size (\$5,000, based on EVAO or a derived value based on Business Activity Statement (BAS) Turnover).
Application rate	The rate at which water is applied to an area or crop. Measured in megalitres per hectare, application rate is calculated by dividing the total area of interest by the total volume applied to the area.
Area of agricultural holding	Includes all occupied and maintained land owned, leased or rented, land worked by sharefarmers and all road permits by a particular agricultural establishment. Excludes land leased or rented to others.
Area of agricultural land	Refers to the area of agricultural holding of in-scope agricultural businesses. This is not equal to the area under pasture or crop as not all land on agricultural holdings is under pasture or crop.
Estimated value of agricultural operations (EVAO)	An estimation of the value of agricultural activity undertaken by an agricultural business. Three-year average weighted prices are applied to livestock turnoff and livestock numbers on the farm, and to area and production data for crops. The resultant aggregation of these commodity values is EVAO. It is not an indicator of the value of receipts of individual farms, but rather, an indicator of the extent of agricultural activity.
Gigalitre	One thousand million litres.
Megalitre	One million litres.

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