Australian Bureau of Statistics

2009–10

4627.0

LAND MANAGEMENT AND FARMING IN AUSTRALIA

AUSTRALIA

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CONTENTS

INQUIRIES

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

NOTES

ABOUT THIS PUBLICATION

This publication presents information on agricultural land management practices. Data were collected in the 2009–10 Agricultural Resource Management Survey (ARMS) conducted by the ABS.

The publication and related datacubes provide important information on a variety of management practices of Australian agricultural businesses, including cropping and pasture management, fertiliser use, surface water and effluent management, natural environment conservation protection and farm management.

The estimates in this publication provide benchmark data on resource management practices for the Australian Government's Caring for our Country program. This program is a Commonwealth government initiative that seeks to achieve an environment that is healthy, better protected, well managed and resilient, and provides essential ecosystem services in a changing climate.

Also presented in the datacubes attached to this publication are final data on adverse seasonal conditions experienced in 2009–10, and the farm management responses found effective in dealing with these adverse seasonal conditions.

Data are published at the Australian and State levels in this publication and at National Resource Management (NRM) levels in related datacubes to be released at a later date.

Complementary data collected from the 2009–10 ARMS can be found in Water Use on Australian Farms, 2009–10 (cat. no. 4618.0) and Agricultural Commodities, Australia, 2009–10 (cat. no. 7121.0).

ABBREVIATIONS

'000	thousand
ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
ARMS	Agricultural Resource Management Survey
Aust.	Australia
ha	hectare
m	million
no.	number
NRM	natural resource management
NSW	New South Wales
NT	Northern Territory
Qld	Queensland
RSE	relative standard error
SA	South Australia
SE	standard error
Tas.	Tasmania
Vic.	Victoria
WA	Western Australia

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SUMMARY OF FINDINGS

LAND USE AND AGRICULTURAL ACTIVITY

In 2009-10, approximately 52% of Australia's total land area was managed by agricultural businesses, a 4% decrease since 2007-08. On a state basis, the lowest proportion of land managed by agricultural businesses was in Tasmania (24% of state area) while the highest was in Queensland (75% of state area). The largest change in land managed by agricultural businesses was in the Northern Territory which has decreased by 13% since 2007-08.

In 2009-10, the majority of agricultural businesses were engaged in grazing activities (78%), an 8% increase since 2007-08. This was the most common activity in all states, except South Australia, where cropping activity was most common (72%). Nationally, 88% of agricultural land was used for grazing, of this, 15% was on improved pasture and 73% on other agricultural land.

Nationally, almost half (48%) of all agricultural businesses in Australia were engaged in cropping activities, a decline of 7% since 2007-08. Agricultural businesses reported that 8% of land was used for crops, ranging from less than 1% in the Northern Territory to 37% in Victoria.

While relatively few agricultural businesses were engaged in horticulture on a national basis (17% of all agricultural businesses), and despite a decline of 5% since 2007-08, almost half (45%) of the agricultural businesses in the Northern Territory reported that they had undertaken horticultural activities, mainly fruit and nut production.

PROTECTING THE NATURAL ENVIRONMENT FOR CONSERVATION PURPOSES

In 2009-10, 65% of all agricultural businesses reported having native vegetation on their holding and 55% of these protected their native vegetation for conservation purposes. Similarly, half of all agricultural businesses reported rivers or creeks on their holding with 55% of these protecting their river or creek banks. Wetlands were reported by 12% of all agricultural businesses with 57% of these businesses reporting that they had protected these wetlands.

TILLAGE

In 2009-10, just under 60,000 agricultural businesses prepared land for crops or horticulture covering 25.1 million hectares. The majority (54%) of these businesses reported that they did not undertake cultivation. Almost half (29,000) of businesses undertook two cultivations passes or less, with only 19% (11,000 businesses) reporting three or more cultivations.

Nationally 19 million hectares was prepared using zero–till compared with 5 million hectares prepared using one or two cultivation passes. Western Australia performed zero-till on the largest area of land prepared for crops and pastures (7 million hectares) and the Northern Territory the smallest area (1,000 hectares).

CROP RESIDUE

Of all agricultural businesses managing crop residue, the main crop residue management practices undertaken were to leave stubble intact (48%), ploughing crop residue into the soil (34%) and removal of crop residue by baling or heavy grazing (23%).

Although most states and territories followed the national trend, more than two thirds of agricultural businesses in Western Australia that managed crop residue on their land left stubble intact (69%), while only 13% ploughed crop residue into the soil. In Queensland and Tasmania, the most common crop residue management practice undertaken was to

CROP RESIDUE *continued*

plough crop residue into the soil (55% and 59% of agricultural businesses managing crop residue respectively).

Nationally, the area of crop residue management decreased by 3% to 24,000 hectares since 2007-08, influenced by a 10% decline in South Australia.

GROUND COVER

Of agricultural businesses grazing livestock on crops or pasture, 71% monitor the amount of ground cover in paddocks and 34% of these have established a minimum ground cover level target. Queensland reported the highest proportion (45%) of agricultural businesses with a target for minimum ground cover levels, while in Tasmania only 21% reported minimum ground cover targets.

By far the most common method undertaken by agricultural businesses for monitoring ground cover was visual estimates, with 86% reporting using this method. The Northern Territory had the highest proportion (5%) of use of photo monitoring standards (comparison with photos of known ground cover levels) to monitor ground cover.

FERTILISER USAGE

Fertiliser usage remained at consistent levels compared with 2007-08, with a large proportion (61%) of agricultural businesses in Australia applying fertiliser to their holding in 2009-10. The highest percentage of fertiliser use by agricultural businesses was reported in Western Australia (79%) and the lowest was reported in Queensland (43%).

The most common type of fertiliser used was urea (used by approximately 33% of all agricultural businesses reporting fertiliser use). However, ammonium phosphates and single superphosphates were also widely used nationally, with 30% and 28% of agricultural businesses respectively reporting their use. Use of animal manure remained steady at 12% compared with 2007-08.

Nationally, the average application rates for manufactured fertilisers ranged between 0.08 and 0.21 tonnes per hectare. The application rate for animal manure was 2.73 tonnes per hectare down from 3.19 tonnes per hectare in 2007-08.

LIST OF TABLES AND MAPS

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TABLES

MAP

1 LAND USE, by State—2009—10

	NSW (a)	Vic.	Qld	SA	WA	Tas.	NT	Aust.
AGRICULTURAL BUSINESSES AND LAND AREA								
Agricultural businesses (no.)	43 228	32 743	27 578	14 095	12 465	3 935	510	134 553
Area of agricultural holdings ('000 ha)	58 588	12 852	129 668	45 747	94 391	1 647	55 687	398 580
Total land area ('000 ha)(b)(c)	80 300	22 742	173 065	98 348	252 988	6 840	134 913	769 202
LAND USE ON AGRICULTURAL HOLDINGS (%)(d)								
Land use for agricultural production								
Crops	16.1	36.9	2.5	11.3	11.1	8.8	—	8.3
Grazing								
Improved pasture	24.0	47.4	23.7	7.7	5.1	51.7	0.9	15.2
Other grazing land	55.1	9.4	70.2	76.9	80.6	19.4	96.7	72.7
Forestry plantation	*—	^—	*—	*—	^—	^4.1	^—	^—
Other agricultural purposes	^—	^—	^—	^—	^—	^—	^—	—
Land not used for agricultural production								
Land set aside for conservation/protection purposes	^2.2	3.7	^1.6	3.1	1.7	8.4	1.1	1.9
Other land not used for agricultural production	^2.0	2.6	^2.0	0.9	^1.6	*8.3	1.9	1.8

^ 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

— nil or rounded to zero (including null cells)

(a) Includes ACT.

(b) Total land area refers to total land area of each state, including agricultural land. Source: Geoscience Australia, GEODATA 100k Coastline database, 2004.

(c) Total area of Australia includes Jervis Bay.

(d) Land use areas as a percentage of area of agricultural holdings.

MAJOR AGRICULTURAL ACTIVITIES, by NRM—Year ended 30 June 2010

	AGRICULTURAL BUSINESSES (a)			
	Total	*Cropping*	*Horticulture*	*Grazing*
	no.	no.	no.	no.
NSW(b)				
Border Rivers-Gwydir	2 822	959	*69	2 625
Central West	5 405	2 814	^ 419	5 115
Hawkesbury-Nepean	3 131	1 400	1 301	1 788
Hunter-Central Rivers	3 660	^ 772	^ 585	3 204
Lachlan	5 228	3 079	^ 264	4 574
Lower Murray Darling	568	393	343	^ 231
Murray	3 073	1 989	^ 173	2 542
Murrumbidgee(b)	5 483	3 509	919	4 143
Namoi	3 319	1 501	*43	3 034
Northern Rivers	7 476	2 280	1 619	5 765
Southern Rivers	2 186	^ 360	^ 206	2 035
Sydney Metro	*246	^ 120	*117	**68
Western	631	^ 94	*7	606
Total	*43 228*	*19 269*	*6 067*	*35 730*
Vic.				
Corangamite	2 985	^ 955	^ 283	2 640
East Gippsland	980	*226	^ 35	^ 879
Glenelg Hopkins	4 017	^ 1 226	*126	3 772
Goulburn Broken	4 887	2 228	526	4 221
Mallee	2 415	2 208	1 185	^ 477
North Central	4 409	2 549	^ 511	3 632
North East (Vic.)	2 571	^ 749	^ 348	2 373
Port Phillip and Westernport	4 387	1 765	1 403	3 130
West Gippsland	3 745	^ 378	^ 152	3 626
Wimmera	2 346	1 971	*120	1 675
Total	*32 743*	*14 255*	*4 690*	*26 425*
Qld				
Border Rivers and Maranoa Balonne	2 448	1 103	256	2 185
Burdekin	1 433	826	^ 281	^ 744
Burnett Mary	5 056	1 711	840	4 180
Cape York	^ 73	*28	*28	^ 60
Condamine	3 632	1 919	^ 115	3 020
Desert Channels	863	*11	1	856
Fitzroy	3 477	^ 762	^ 198	3 220
Mackay Whitsunday	1 627	1 207	*90	^ 727
Northern Gulf	461	205	161	313
South East (Qld)	4 829	1 806	1 346	3 560
South West (Qld)	651	^ 14	^ 5	647
Southern Gulf	^ 276	*5	*2	^ 272
Wet Tropics	2 752	1 875	697	1 184
Alinytjara Wilurara and SA Arid Lands combined	139	**10	—	139
Total	*27 578*	*11 474*	*4 021*	*20 967*
SA				
Eyre Peninsula	1 334	1 161	*17	930
Kangaroo Island	298	^ 188	^ 18	268
Adelaide and Mount Lofty Ranges	3 043	2 148	1 719	1 392
Northern and Yorke	2 733	2 399	^ 367	1 623
SA Murray Darling Basin	3 795	2 753	1 588	1 905
South East (SA)	2 752	1 421	^ 321	2 440
Total	*14 095*	*10 080*	*4 031*	*8 696*

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* 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) Many agricultural businesses undertake more than one major agricultural activity. Therefore the sum of the agricultural businessses undertaking major agricultural activities may exceed the total number of agricultural businesses.

(b) Includes ACT.

MAJOR AGRICULTURAL ACTIVITIES, by NRM—Year ended 30 June 2010 *continued*

	AGRICULTURAL BUSINESSES (a)			
	Total	*Cropping*	*Horticulture*	*Grazing*
	no.	no.	no.	no.
WA				
Avon	2 491	2 185	*33	1 745
Northern Agricultural	1 307	1 067	^ 40	918
Rangelands (WA)	614	^ 264	^ 216	^ 378
South Coast	2 256	1 295	^ 179	1 863
South West	4 286	2 107	1 122	3 613
Swan	1 511	997	730	813
Total	*12 465*	*7 916*	*2 320*	*9 330*
Tas.				
North (Tas.)	1 400	535	281	1 287
North West (Tas.)	1 432	487	^ 406	1 287
South (Tas.)	1 103	436	301	857
Total	*3 935*	*1 457*	*988*	*3 431*
NT				
Northern Territory	510	240	229	287
Total	*510*	*240*	*229*	*287*
Total Australia	**134 553**	**64 691**	**22 345**	**104 867**

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(a) Many agricultural businesses undertake more than one major agricultural activity. Therefore the sum of the agricultural businessses undertaking major agricultural activities may exceed the total number of agricultural businesses.

3 LAND MANAGEMENT PRACTICES TO PROTECT THE NATURAL ENVIRONMENT, by State—2009—10

	NSW(a)	*Vic.*	*Qld*	*SA*	*WA*	*Tas.*	*NT*	*Aust.*
	no.	no.	no.	no.	no.	no.	no.	no.
PROTECTION OF THE NATURAL ENVIRONMENT								
Agricultural businesses (no.)								
Agricultural businesses	43 228	32 743	27 578	14 095	12 465	3 935	510	134 553
Native vegetation on holding	29 607	17 583	19 804	8 300	9 398	2 339	383	87 415
Wetlands on holding	4 249	3 873	3 146	1 660	2 547	508	136	16 120
Rivers or creeks on holding	24 865	12 994	15 839	3 990	6 613	2 551	238	67 090
Undertook activities to protect natural environment areas (%)								
Protected native vegetation(b)	50.5	60.1	50.6	54.9	66.5	54.7	41.9	54.7
Protected wetland areas(c)	53.6	57.7	56.8	64.8	60.4	^ 46.8	62.1	57.3
Protected river and creek banks(d)	49.7	64.5	55.7	47.8	59.3	47.8	46.7	54.7

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

(a) Includes ACT.

(b) Number of agricultural businesses reporting protection of native vegetation on holding as a percentage of agricultural businesses reporting native vegetation on holding.

(c) Number of agricultural businesses reporting protection of wetlands on holding as a percentage of agricultural businesses reporting wetlands on holding.

(d) Number of agricultural businesses reporting protection of river or creek banks on holding as a percentage of agricultural businesses reporting river or creek banks on holding.

4 LAND PREPARATION FOR CROPS AND HORTICULTURE AND PASTURES, by State—2009—10

	NSW(a)	*Vic.*	*Qld*	*SA*	*WA*	*Tas.*	*NT*	*Aust.*
CROPS AND HORTICULTURE								
AGRICULTURAL BUSINESSES AND LAND AREA								
Agricultural businesses preparing land for crops and horticulture	18 915	13 293	11 062	8 118	6 688	1 437	99	59 613
Total area of land prepared for crops and horticulture ('000 ha)	6 971.9	3 705.7	2 362.1	3 909.7	8 050.2	75.6	3.5	25 078.5
LAND PREPARED FOR CROPS AND HORTICULTURE(b)								
Agricultural businesses preparing land (no.)								
No cultivation	10 616	7 544	3 588	5 076	4 944	298	45	32 110
One or two cultivations only	9 845	6 725	5 517	4 059	2 291	775	48	29 260
Three or more cultivations	2 622	2 458	4 552	^ 466	^ 327	629	14	11 068
Area prepared ('000 ha)								
No cultivation	4 739.6	2 686.6	1 309.8	2 810.2	7 059.6	18.1	1.4	18 625.3
One or two cultivations only	1 831.9	778.5	765.8	1 051.0	954.0	32.4	1.4	5 415.0
Three or more cultivations	^ 400.3	^ 240.6	286.5	^ 48.5	*36.5	25.0	0.8	1 038.3
PASTURES								
AGRICULTURAL BUSINESSES AND LAND AREA								
Agricultural businesses reporting land for pastures	31 351	26 250	16 180	8 266	9 309	3 441	156	94 954
Total area of land prepared for pastures ('000 ha)	1 147.3	1 307.2	^ 1 325.8	497.4	843.9	81.5	12.2	5 215.4
LAND PREPARED FOR PASTURES(b)								
Agricultural businesses preparing land (no.)								
No cultivation	8 933	9 213	2 892	2 944	3 668	903	36	28 589
One or two cultivations only	4 768	3 926	1 881	^ 823	^ 855	827	25	13 105
Three or more cultivations	^ 982	^ 712	^ 412	*173	*69	380	^ 3	2 732
Area prepared ('000 ha)								
No cultivation	830.4	1 144.1	^ 1 182.8	411.5	794.3	52.5	11.0	4 426.6
One or two cultivations only	^ 280.4	^ 145.4	^ 127.0	^ 75.2	^ 48.6	21.4	1.0	699.1
Three or more cultivations	^ 36.5	^ 17.8	^ 16.0	*10.8	*1.1	7.5	^ 0.1	^ 89.7

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(a) Includes ACT.

(b) Some agricultural businesses undertake different cultivation practices on different parts of their land. Therefore the sum of the land preparation practices may exceed the number of agricultural businesses preparing land for crops and pastures.

5 CROP RESIDUE MANAGEMENT PRACTICES, by State—2009—10

	NSW(a)	*Vic.*	*Qld*	*SA*	*WA*	*Tas.*	*NT*	*Aust.*
AGRICULTURAL BUSINESSES (NO.)								
Agricultural businesses	43 228	32 743	27 578	14 095	12 465	3 935	510	134 553
Agricultural businesses managing crop residue	17 044	11 410	10 285	7 323	6 168	1 259	61	53 550
CROP RESIDUE MANAGEMENT PRACTICES USED (%)(b)(c)								
Stubble left intact (no cultivation)	49.4	44.0	33.6	56.3	69.4	23.1	33.6	47.8
Most stubble or trash removed by baling or heavy grazing	23.7	29.4	14.9	20.5	21.8	32.5	22.7	22.8
Stubble or trash removed by hot burn (early season)	^ 3.2	^ 5.7	^ 4.3	^ 6.2	10.2	np	np	5.3
Stubble or trash removed by cool burn (late season)	7.5	16.8	^ 4.4	15.1	25.3	8.5	^ 5.4	12.0
Stubble or trash ploughed into the soil	33.7	30.0	55.3	24.6	13.3	59.0	38.6	34.1
Stubble or trash was mulched	10.1	12.6	18.8	14.0	^ 4.6	29.4	19.1	12.7
AREA OF CROP RESIDUE MANAGEMENT ('000 HA)								
Stubble was left intact (no cultivation)	4 646	2 132	1 368	2 410	5 746	16	—	16 319
Stubble or trash removed by baling or heavy grazing	586	385	^ 143	402	585	12	^ —	2 113
Stubble or trash was removed by hot burn (early season)	^ 66	^ 92	^ 11	^ 77	^ 406	np	np	654
Stubble or trash removed by cool burn (late season)	^ 163	283	*31	172	629	np	np	1 281
Stubble or trash was ploughed into the soil	1 051	^ 415	520	394	^ 175	23	1	2 579
Stubble or trash was mulched	^ 331	^ 238	246	191	^ 122	6	^ —	1 134
Total	**6 843**	**3 545**	**2 320**	**3 646**	**7 664**	**61**	**2**	**24 081**

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— nil or rounded to zero (including null cells)

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(a) Includes ACT.

(b) Number of agricultural businesses reporting a specific crop residue management practice as a percentage of agricultural businesses reporting crop residue management.

(c) Some agricultural businesses undertake more than one crop residue management practice. Therefore the sum of the crop residue management practices may exceed the number of agricultural businesses managing crop residue.

6 GROUND COVER MONITORING, by State—2009–10

	NSW(a)	Vic.	Qld	SA	WA	Tas.	NT	Aust.
AGRICULTURAL BUSINESSES								
Agricultural businesses (no.)								
Agricultural businesses	43 228	32 743	27 578	14 095	12 465	3 935	510	134 553
Monitor ground cover in paddocks	31 351	26 250	16 180	8 266	9 309	3 441	156	94 954
Have a minimum target for pasture ground cover levels	12 366	6 833	7 240	2 406	2 510	721	65	32 142
Agricultural businesses (%)								
Monitor ground cover in paddocks(b)	72.5	80.2	58.7	58.6	74.7	87.5	30.5	70.6
Have a minimum target for pasture ground cover levels(c)	39.4	26.0	44.7	29.1	27.0	21.0	41.8	33.9
MAIN METHOD FOR MONITORING GROUND COVER (%)(d)								
Visual estimates	87.1	83.8	87.2	85.4	85.7	81.7	84.7	85.7
Step pointing	*0.8	**0.4	**0.1	**0.1	*0.1	*0.2	—	^0.4
Photo monitoring standards	np	*0.1	^2.1	^0.1	*0.3	np	4.9	^0.5
Counting number of plants in a defined area	^2.0	^1.5	*0.8	*1.6	*0.9	np	np	1.5
Satellite imagery and remote sensing	np	*0.1	*0.4	—	*0.1	—	np	*0.1
Other	*0.9	*1.2	*1.7	**1.0	*0.8	np	np	^1.2
None	8.8	12.9	7.7	11.9	^12.1	^15.7	8.2	10.6

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(a) Includes ACT.

(b) Agricultural businesses monitoring ground cover in paddocks as a percentage of agricultural businesses.

(c) Agricultural businesses with a minimum target for ground cover levels as a percentage of agricultural businesses monitoring ground cover in paddocks.

(d) Main method for monitoring ground cover as a percentage of agricultural businesses monitoring ground cover.

7 FERTILISER USE, by State—2009–10

	NSW(a)	*Vic*	*Qld*	*SA*	*WA*	*Tas.*	*NT*	*Aust.*
AGRICULTURAL BUSINESSES								
Agricultural businesses (no.)	43 228	32 743	27 578	14 095	12 465	3 935	510	134 553
Agricultural businesses reporting fertiliser use (no.)	25 288	21 557	11 799	10 205	9 819	2 894	247	81 810
Agrcultural businesses reporting fertiliser use (%)	58.5	65.8	42.8	72.4	78.8	73.6	48.5	60.8
TYPES OF FERTILISER USED (%)(b)(c)								
Urea	26.5	31.4	47.3	28.4	40.7	38.0	25.4	33.1
Ammonium sulphate	^ 4.9	^ 2.6	^ 5.6	^ 6.2	15.7	^ 3.0	8.3	5.8
Urea ammonium nitrate	^ 2.7	^ 3.3	^ 3.5	^ 9.9	14.9	^ 2.4	2.6	5.3
Anhydrous ammonia	^ 1.6	**0.3	3.2	np	*0.1	^ 0.1	np	1.0
Single superphosphate	31.5	35.8	5.6	23.7	29.7	49.5	21.7	28.3
Double/triple superphosphate	7.9	12.8	^ 2.7	8.5	10.1	^ 10.9	6.4	8.9
Muriate of potash/sulphate of potash	^ 3.7	10.3	15.0	^ 3.4	19.2	^ 16.3	21.5	9.4
Potassium nitrate	^ 3.1	^ 3.4	7.8	^ 4.2	4.3	*5.1	33.6	4.3
Ammonium phosphates	33.0	30.9	16.5	45.1	23.3	12.3	9.6	29.6
All other manufactured fertiliser	22.0	23.4	50.2	22.6	48.3	43.7	60.2	30.5
Animal manure	14.1	11.1	13.9	11.1	^ 5.4	7.5	18.4	11.6

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(a) Includes ACT.

(b) Number of agricultural businesses reporting a specific fertiliser use as a percentage of agricultural businesses reporting fertiliser use.

(c) Some agricultural businesses use more than one type of fertiliser. Therefore the sum of the types of fertiliser used may exceed the number of agricultural businesses reporting fertiliser use.

8 FERTILISER APPLICATION RATES, by State—2009–10

	NSW(a)	*Vic.*	*Qld*	*SA*	*WA*	*Tas.*	*NT*	*Aust.*
Urea								
Area ('000 ha)	1 382.1	1 546.0	680.0	1 104.6	4 135.9	110.6	4.3	8 963.5
Amount ('000 t)	^ 243.6	^ 230.6	149.5	82.0	328.8	22.2	0.7	1 057.5
Application rate (t/ha)	^ 0.18	^ 0.15	0.22	0.07	0.08	0.20	0.17	0.12
Ammonium sulphate								
Area ('000 ha)	^ 258.5	^ 120.6	^ 69.1	^ 263.4	774.7	np	np	1 494.5
Amount ('000 t)	^ 38.0	^ 13.0	^ 7.4	^ 24.0	77.2	np	np	160.9
Application rate (t/ha)	^ 0.15	^ 0.11	0.11	^ 0.09	0.10	np	np	0.11
Urea ammonium nitrate								
Area ('000 ha)	^ 105.6	^ 202.0	^ 42.1	np	2 281.8	^ 4.5	np	2 840.3
Amount ('000 t)	^ 13.2	^ 16.0	*11.5	np	168.4	np	np	232.0
Application rate (t/ha)	0.13	^ 0.08	*0.27	np	0.07	np	np	0.08
Anhydrous ammonia								
Area ('000 ha)	^ 227.2	**11.0	163.9	np	*18.2	np	np	420.9
Amount ('000 t)	27.9	**2.0	^ 30.1	np	*1.8	np	np	61.8
Application rate (t/ha)	0.12	**0.18	^ 0.18	np	0.10	np	np	0.15
Single superphosphate								
Area ('000 ha)	1 544.8	1 408.8	^ 80.9	556.1	1 374.2	233.5	2.0	5 200.2
Amount ('000 t)	202.6	251.8	^ 7.8	68.6	160.2	50.9	0.3	742.2
Application rate (t/ha)	0.13	0.18	^ 0.10	0.12	0.12	0.22	0.15	0.14
Double or triple superphosphate								
Area ('000 ha)	623.9	^ 613.3	*40.5	489.4	^ 552.3	^ 20.7	0.7	2 340.7
Amount ('000 t)	*75.4	^ 65.4	^ 3.0	30.2	40.0	5.8	0.1	219.8
Application rate (t/ha)	^ 0.12	0.11	^ 0.07	0.06	0.07	0.28	0.11	0.09
Muriate of potash or sulphate of potash								
Area ('000 ha)	^ 41.0	^ 243.3	^ 148.3	^ 44.4	990.4	*65.2	1.4	1 534.0
Amount ('000 t)	^ 4.0	^ 32.8	*51.7	^ 6.2	^ 69.7	*11.7	0.5	^ 176.5
Application rate (t/ha)	^ 0.10	^ 0.13	*0.35	^ 0.14	^ 0.07	0.18	0.34	^ 0.12
Potassium nitrate								
Area ('000 ha)	*25.1	^ 43.0	^ 35.3	^ 27.5	^ 25.7	*6.6	2.6	165.8
Amount ('000 t)	^ 3.1	^ 13.0	^ 8.2	*4.9	*4.3	*1.1	0.2	34.8
Application rate (t/ha)	^ 0.12	^ 0.30	^ 0.23	^ 0.18	*0.17	^ 0.16	0.07	0.21
Ammonium phosphates								
Area ('000 ha)	3 790.7	2 493.6	635.5	2 822.5	3 591.4	^ 44.5	^ 4.5	13 382.8
Amount ('000 t)	268.4	^ 219.1	37.1	210.7	277.9	^ 8.9	^ 0.2	1 022.3
Application rate (t/ha)	0.07	^ 0.09	0.06	0.07	0.08	0.20	^ 0.05	0.08
All other manufactured fertiliser								
Area ('000 ha)	^ 851.6	^ 1 135.0	513.9	645.9	3 909.5	^ 124.7	6.5	7 187.1
Amount ('000 t)	151.1	^ 161.8	264.0	77.2	459.8	42.6	1.8	1 158.3
Application rate (t/ha)	^ 0.18	^ 0.14	0.51	0.12	0.12	0.34	0.28	0.16
Animal manure								
Area ('000 ha)	^ 192.4	^ 183.3	^ 114.7	^ 80.7	*43.1	^ 7.5	0.6	622.4
Amount ('000 t)	523.4	^ 383.4	^ 532.7	^ 131.2	^ 116.0	13.5	0.9	1 701.2
Application rate (t/ha)	^ 2.72	^ 2.09	4.64	^ 1.63	*2.69	^ 1.81	1.49	2.73

^ 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

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

(a) Includes ACT.

EXPLANATORY NOTES

INTRODUCTION

1 This publication presents estimates from the 2009-10 Agricultural Resource Management Survey (ARMS). It contains detailed statistics at the national and state/territory levels, on the major agricultural activities undertaken, land use, and key land management practices. Additional datacubes at national, state/territory and NRM region levels provide a more detailed picture of land management and farming in Australia. These datacubes can be accessed via the Downloads tab of *Land Management and Farming in Australia, 2009–10* (cat. no. 4627.0).

2 A reduced range of commodity items was collected from the 2009-10 ARMS in comparison to surveys and censuses of previous years. As a result, care must be taken when comparing estimates over time for Australia, state/territory and regional levels. More information is available upon request.

GENERAL

3 Where figures for individual states/territories have been suppressed for reasons of confidentiality, they have been included in relevant national totals. In addition, some categories have been combined, for example, combining Australian Capital Territory data with New South Wales data.

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

5 For some items, multiple responses are possible and thus totals are not necessarily the sum of the component items. For example, a respondent could perform more than one land management practice on their holding.

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 cut–off. The ABSBR is based on the Australian Business Register (ABR) which is administered and maintained by the Australian Taxation Office (ATO).

7 A minimum 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 87% was achieved from a sample of approximately 38,000 agricultural businesses. This sample was selected from an in–scope population of approximately 171,000 agricultural businesses.

RELIABILITY OF DATA

10 The estimates in this publication are subject to sampling and non–sampling errors.

SAMPLING ERRORS

11 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.

SAMPLING ERRORS *continued*

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

13 Most published estimates have RSEs less than 5%. 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.

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

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

	NSW(a)	*Vic.*	*Qld*	*SA*	*WA*	*Tas.*	*NT*	*Aust.*
	%	%	%	%	%	%	%	%
Reporting fertiliser use (no. of businesses)	2.2	2.0	2.1	2.3	1.9	2.5	1.4	1.0
Land used for grazing (no. of businesses)	1.2	1.4	1.4	2.0	1.7	1.7	1.3	0.7
Monitoring ground cover on pastures (no. of businesses)	1.6	1.7	2.2	2.7	2.0	2.7	1.7	0.9
Ground cover target set for cropping land (no. of businesses)	2.9	3.4	3.1	3.3	2.7	3.9	2.1	1.5
Native vegetation on holding (no. of businesses)	1.7	2.9	1.9	2.8	2.1	3.0	1.2	1.1
Wetlands on holding (no. of businesses)	6.8	7.4	7.2	8.6	6.2	9.7	1.9	3.1
Rivers or creeks on holding (no. of businesses)	2.0	3.4	2.5	3.9	2.8	3.4	1.2	1.3
Stubble left intact (no cultivation) ('000 ha)	4.4	5.6	4.5	2.8	3.4	4.9	9.3	2.0
Stubble removed by baling or heavy grazing ('000 ha)	7.2	9.7	14.8	8.1	8.5	4.5	13.2	3.8

(a) Includes ACT.

NON–SAMPLING ERRORS

15 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 error, 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.

RELATED PUBLICATIONS

16 A range of environmental and agricultural publications are produced by the ABS, including:

- *Agricultural Commodities, Australia* (cat. no. 7121.0)
- *Principal Agricultural Commodities, Australia, Preliminary* (cat. no. 7111.0)
- *Water use on Australian Farms* (cat. no. 4618.0)

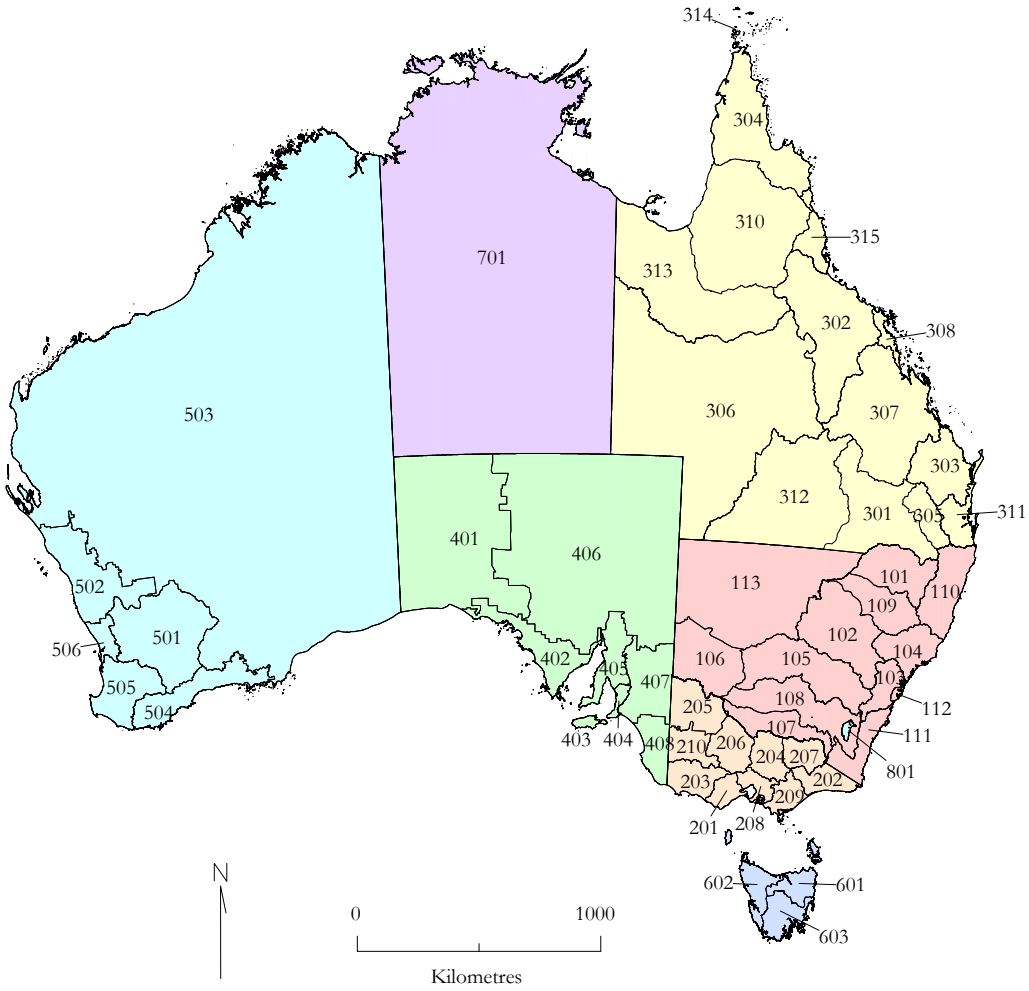
17 For more information please refer to the ABS web site <http://www.abs.gov.au>. The ABS also issues a daily Release Advice on the web site which details products to be released in the week ahead. All ABS publications are available free of charge from the ABS website.

ABS DATA AVAILABLE ON REQUEST

18 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.

GENERAL ACKNOWLEDGMENT

19 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. Information received by the ABS is treated in strict confidence, as required by the *Census and Statistics Act 1905*.



NRM Region *

- 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)
  - 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
  - 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, Water, Heritage and the Arts - 2008.

FOR MORE INFORMATION . . .

INTERNET	**www.abs.gov.au** the ABS website is the best place for data from our publications and information about the ABS.

INFORMATION AND REFERRAL SERVICE

Our consultants can help you access the full range of information published by the ABS that is available free of charge from our website. Information tailored to your needs can also be requested as a 'user pays' service. Specialists are on hand to help you with analytical or methodological advice.

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FREE ACCESS TO STATISTICS

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