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Introduction

The development of Australian agricultural industries has been determined by interacting factors such as the opening up of new land, the development of transport facilities and profitable markets, and technical and scientific achievements. Until the late 1950s, agricultural products accounted for more than 80% of the value of Australia's exports. Since then, the proportion of Australia's exports from the agricultural sector has declined markedly as the Australian economy has become increasingly diverse and the quantities and value from the mining and manufacturing sectors have expanded (this decline in importance has not been due to a decline in agricultural activity as agricultural output has increased over this period).

Consequently agriculture's direct contribution (based on ABS industry classification) to Gross Domestic Product (GDP) has been declining and is currently 3%. Nevertheless it is still a vital and thriving sector and occupies a significant place in global rural trade, with wool, beef, wheat and sugar being particularly important in volume terms. Australia is also an important source of dairy produce, fruit, cotton, rice and flowers.

The agricultural environment

Australia is a relatively flat continent, with mean elevation just exceeding 200 metres. The dominant feature of the continent is the Great Dividing Range which spans the length of the Eastern seaboard. There are very few naturally good soils for agriculture. Most are infertile and shallow with deficiencies in phosphorus and/or nitrogen. To offset these deficiencies superphosphate and nitrogenous fertilisers are widely used, particularly on pasture and cereal crops. Fragile soil structure and a susceptibility to waterlogging are other common features of Australian soils, while large areas are naturally affected by salt or acidity. These soil characteristics restrict particular agricultural activities or rule out agricultural activity altogether.

With the possible exception of Antarctica, Australia is the world's driest continent. The wet northern summer is suited to beef cattle grazing inland and the growing of sugar and tropical fruits on the coast. The drier summer conditions of southern Australia favour wheat and other dryland cereal farming, sheep grazing and dairy cattle (in the higher rainfall areas) as well as beef cattle. Within regions there also exists a high degree of rainfall variability from year to year, which is most pronounced in the arid and semi-arid regions. Rainfall variability often results in lengthy periods without rain (dry spells) and drought. The seasonality and variability of rainfall in Australia require that water be stored, and 70% of the stored water resource (including ground water) is consumed by the agricultural sector. Storage ensures that there are adequate supplies all year round for those agricultural activities requiring a continuous supply. Irrigation has opened up areas of Australia to agricultural activities which would have otherwise not been practical.

Evaporation is another element of Australia's climate affecting agricultural production. Hot summers are accompanied by an abundance of sunlight. This combination of climate variables leads to rates of evaporation which are high relative to other continents. Areas that have been cleared for crop and pasture production tend to coincide with five to nine months effective rainfall (where rainfall exceeds evaporation) per year. In areas of effective rainfall of more than nine months, generally only higher value crops or tropical crops and fruits are grown, while in areas with effective rainfall of less than five months cropping is usually restricted to areas that are irrigated.

Since European settlement the vegetation of Australia has been altered significantly. In particular, large areas of Australia's forest and woodland vegetation systems have been cleared, predominantly for agricultural activity. The areas that have been altered most are those which have been opened up to cultivation or intensive grazing. Other areas, particularly in the semi-arid regions where extensive grazing of native grasses occurs, now show signs of returning to timber and scrub.

Agricultural improvements

Irrigation

Most crops require a minimum amount of annual rainfall to grow successfully without irrigation. The variability in stream flow and annual rainfall means that successful irrigation of crops and pastures is dependent on storage. Ground water supplies are used in areas where the quantity is adequate

and the quality is suitable. The area of land irrigated (about 2.4 million hectares in 1993–94), although less than 1% of the total land used for agriculture, represented about 6% of land under crops and 5% of the total area under crops and pastures. Most irrigated land is located within the confines of the Murray–Darling Basin which covers parts of New South Wales, Victoria, Queensland and South Australia.

14.1 AREA OF CROPS AND PASTURES IRRIGATED

	Australia										1994
	1992 '000 ha	1993 '000 ha	1994 '000 ha	NSW '000 ha	Vic. '000 ha	Qld '000 ha	SA '000 ha	WA '000 ha	Tas. '000 ha	NT '000 ha	ACT '000 ha
Pastures	1 081	1 184	1 362	635	556	70	53	14	33	1	—
Cereals	275	311	364	284	23	45	7	1	2	1	—
Vegetables for human consumption	93	89	96	17	20	27	9	6	16	—	—
All fruits	120	125	144	33	35	25	40	7	3	1	—
All other crops	356	245	275	176	13	73	4	3	6	—	—
Sugar cane	146	154	168	(a)	(a)	168	(a)	(a)	(a)	(a)	(a)
Total	2 069	2 107	2 408	1 145	646	409	112	32	61	3	—

(a) Not classified.

Source: AgStats (7117.0).

Fertilisers

Most Australian soils are deficient in phosphorus. Because of this and the significant but less widespread deficiency of sulphur in many soils, phosphate fertilisers, particularly single strength superphosphate, account for the bulk of fertiliser use. Over half of superphosphate is used on pastures in areas with moderate to good rainfall. Large quantities

are also used on cereal crops. Nitrogen deficiency is also generally evident in Australian soils and the use of nitrogenous fertilisers is increasing. Potassium deficiency is confined mainly to soils in the higher rainfall areas which are intensively cropped or used for irrigated pastures.

14.2 ARTIFICIAL FERTILISERS, Area and Usage

Year	Area fertilised '000 ha	Superphosphate used '000 t	Nitrogenous fertilisers used '000 t	Other fertilisers used '000 t
1988–89	27 871	2 523	438	971
1989–90	27 360	2 378	483	1 010
1990–91	23 627	(a)	(a)	(b)3 239
1991–92	19 517	(a)	(a)	(b)2 678
1992–93	19 702	(a)	(a)	(b)2 761
1993–94	20 529	(a)	(a)	(b)3 000

(a) Not collected. (b) Includes all fertiliser categories.

Source: Summary of Crops, Australia (7330.0).

Characteristics of Australian farms

The gross product of agriculture, forestry and fishing in 1994–95 was \$12,747m, 3% of GDP. Agriculture constituted the major proportion of this total, as indicated by the fact that 377,100 of the 404,400 people employed in the above group of industries were employed in Agriculture and Services to agriculture. As at August 1995, 5% of employed persons were employed in Agriculture and Services to agriculture.

Table 14.3 provides information on the numbers and types of establishments with agricultural

activity at 31 March 1995. Table 14.4 shows the employment in Agriculture and Services to agriculture for the years 1991 to 1996.

Prior to 1991–92 agricultural establishments were classified in accordance with the 1983 edition of the *Australian Standard Industrial Classification (ASIC)* (1201.0). Since ASIC has now been replaced by the *Australian and New Zealand Standard Industrial Classification (ANZSIC)* (1292.0), 1994–95 census units have been classified by industry on an ANZSIC basis. Care should be taken when making comparisons between years where these different classifications have been used.

14.3 ESTABLISHMENTS WITH AGRICULTURAL ACTIVITY, Year Ending 31 March 1995

	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	Aust.
Establishments mainly engaged in agriculture, forestry and fishing industries									
Agriculture									
Plant nurseries	591	284	727	128	140	36	19	4	1 929
Cut flower and flower seed growing	200	184	184	122	122	56	4	—	872
Vegetable growing	678	1 015	1 296	569	564	589	9	4	4 724
Grape growing	659	1 645	78	1 730	233	58	3	—	4 406
Apple and pear growing	219	448	117	141	207	165	—	2	1 299
Stone fruit growing	476	251	107	383	173	20	—	—	1 410
Kiwi fruit growing	26	13	3	—	7	—	—	—	49
Fruit growing n.e.c.	1 628	382	2 118	697	294	37	57	1	5 214
Grain growing	1 978	2 452	1 529	2 652	2 276	16	2	—	10 905
Grain-sheep/beef cattle farming	6 091	2 939	1 494	3 588	4 055	75	4	—	18 246
Sheep-beef cattle farming	5 547	3 178	1 046	1 108	630	461	—	29	11 999
Sheep farming	6 281	5 017	743	1 617	1 928	624	—	24	16 234
Beef cattle farming	11 195	8 367	11 998	1 224	1 889	1 190	208	21	36 092
Dairy cattle farming	2 167	7 946	1 916	850	516	779	—	1	14 175
Poultry farming (meat)	316	155	104	72	59	14	1	—	721
Poultry farming (eggs)	144	118	110	47	85	14	6	2	526
Pig farming	442	242	450	221	135	40	1	—	1 531
Horse farming	556	330	495	109	113	41	1	2	1 647
Deer farming	111	112	57	49	38	32	—	—	399
Livestock farming n.e.c.	817	734	659	194	156	75	2	3	2 640
Sugar cane growing	437	—	4 653	—	—	—	—	—	5 090
Cotton growing	405	—	419	—	—	—	—	—	824
Crop and plant growing n.e.c.	304	390	1 626	110	63	73	2	—	2 568
Total Agriculture	41 268	36 202	31 929	15 611	13 683	4 395	319	93	143 500
Services to agriculture; hunting and trapping	37	40	26	24	9	8	—	—	144
Forestry and logging	5	1	6	—	3	13	—	—	28
Commercial fishing	1	—	2	6	8	6	—	—	23
Total establishments mainly engaged in agriculture, forestry and fishing industries	41 311	36 243	31 963	15 641	13 703	4 422	319	93	143 695
Establishments mainly engaged in other industries, but also with some agricultural activity									
Mining	5	2	3	2	2	2	—	—	16
Manufacturing	48	33	9	37	20	5	1	—	153
Electricity, gas and water supply	—	2	—	—	—	—	—	—	2
Construction	43	60	31	24	15	19	—	—	192
Wholesale trade	28	31	16	18	12	7	—	—	112
Retail trade	15	24	33	10	11	11	—	—	104
Accommodation, cafes and restaurants	14	7	5	4	3	3	—	—	36
Transport and storage	45	74	33	40	15	26	—	—	233
Communication services	—	—	—	—	—	—	—	—	—
Finance and insurance	2	1	1	3	—	1	—	—	8
Property and business services	37	7	41	19	18	8	—	—	130
Government administration and defence	9	—	—	—	—	—	—	—	9
Education	16	1	8	1	15	6	—	—	47
Health and community services	4	2	8	1	1	—	—	—	16
Cultural and recreational services	12	14	3	4	2	2	—	—	37
Personal and other services	5	1	9	2	7	1	—	—	25
Unclassified(a)	693	568	685	146	147	41	15	—	2 295
Total establishments with agricultural activity	42 287	37 070	32 848	15 952	13 971	4 554	337	93	147 112

(a) Establishments which could not be classified to an industry because they undertook no agricultural activity during the year ended 31 March 1995.

Source: AgStats (7117.0).

Employment in agriculture

14.4 EMPLOYED PERSONS(a) IN AGRICULTURE AND SERVICES

August	Married males '000	All males '000	Married females '000	All females '000	Persons '000
1991	182.7	266.6	97.6	116.7	383.6
1992	174.2	259.0	92.4	114.5	373.1
1993	188.3	268.8	98.2	116.3	385.1
1994	186.9	262.6	96.3	115.6	378.0
1995	182.7	256.7	99.3	120.4	377.1
1996	182.2	269.9	99.7	121.7	391.6

(a) The estimates of employed persons include persons who worked without pay for at least one hour per week in a family business or on a farm (that is, unpaid family helpers). Persons who worked in another industry and in agriculture are classified to the industry of predominant activity.

Source: Labour Force, Australia (6203.0).

Australian women in agriculture

On 15 October 1996 women in Australia gathered to celebrate the inaugural World Rural Women's Day. The Foundation for Australian Women in Agriculture made a presentation to Prime Minister John Howard, the Minister for Primary Industries and Energy, John Anderson and Minister for Social Security and Minister Assisting the Prime Minister for the Status of Women, Jocelyn Newman. In formally acknowledging World Rural Women's Day, Minister John Anderson stated '...Australian agricultural women have ... been the catalyst for a growing international "women in agriculture movement" which has assisted in highlighting the invaluable contribution of agricultural women to producing the world's food, managing the world's natural resources, and nurturing the families and communities that keep rural areas vibrant and sustainable.'

The day's events highlighted the previously underestimated importance of women in the rural workforce which has been growing in recent years. Through organisations like the Foundation of Australian Agricultural Women, Australian Women in Agriculture and the various Women's Units within agricultural departments at the State and Commonwealth

levels, women involved in agriculture have promoted a broader and more active role in the full range of agricultural issues. In Australia, major concerns identified by rural women include their under-representation in rural decision-making bodies, a lack of visibility and recognition of women's economic contribution to the rural sector, and improving access to an integrated delivery of services (health, education, childcare, family support and telecommunications technology).

ABARE's 'Women on Farms' survey

In 1994 the Australian Bureau of Agricultural and Resource Economics (ABARE) collected information about women on farms as part of its wider Farm Surveys. This was the first time that such data about the contribution of women on farms have been collated on a large scale. The study covered family-operated farms in the broadacre and dairy industries. For each farm in the sample, a principal contact and their spouse were selected as the people who made most management decisions about the farm (not all farms had both a female and male contact).

Although they represented only a part of the women involved in agriculture, the women interviewed were central figures in the family farm unit, participating in various ways in the roles of wife and mother, part time worker, farmer and/or decision maker. The group did not include all women working on farms: for example other family members and paid employees were excluded from this study.

The women identified in these surveys were involved in the family farm business in several ways: some women worked alone on the farm and were solely responsible for the decision making and operation of the farm, while others shared the decision making about the financial structure of the business, sales and purchases of livestock and crops, farm labour, and family and household duties. Some assisted during the peak times but were not involved in the day-to-day farm operations, while other women worked in the home attending to household duties or had full time, off-farm employment.

The results show that these women spent more time working off-farm than the men. A greater proportion of the women than of the men had a high level of formal education. Women with a high level of education generally worked for longer periods off-farm compared with other women. Women in the dairy industry spent a greater amount of time working on-farm than did their female counterparts in the broadacre industries. However, on farms with relatively higher levels of debt, women in general spent more time working, both on-farm and off-farm.

Women of all ages contributed to on-farm work, with an estimated one-third of females aged between 41 and 50. In addition, women over the age of 70 still contributed to on-farm work. Women spent more time working on-farm on the larger farms while they worked more off-farm for farms with higher capitalisation.

Social issues

In a 1985 study, commissioned by the Country Women's Association and the Office for the Status of Women (OSW), rural women identified a clear set of priorities. Almost 33% identified financial and economic issues as the single biggest problem facing rural women.

'Rural women want better transport systems and roads to facilitate access to essential services and social contact. They want improved education, training and employment opportunities to broaden their own and their families' economic position and prospects. They want better access to health and community services for themselves and their families, and better telecommunication facilities. These very basic services are crucial in mitigating ...the undesirable effects of isolation.' (*Life Has Never Been Easy, Report of the Survey of Women in Rural Australia*, Office of the Status of Women and the Country Women's Association of Australia)

ABARE data show that both women and men considered health and social services to be the most important issues affecting rural women. Rural employment opportunities and the performance of the farm business were identified as the most important issues affecting rural centres. The issues perceived to be the most important affecting rural families were educational facilities, rural employment opportunities and the performance of the farm business and the rural sector.

Farming has traditionally been considered a male dominated activity. The 1991 Census showed that 71% of farmers were male and 29% were female. In comparison, across all occupations, 57% of workers were male and 43% were female. There has been a gradual increase over time in the number of women reported as working on farms as a proportion of the total farm workforce. It is possible that the growth in female participation can also be attributed to perceptions that farm women have in regard to their role as farm manager.

ABS data show that there were 72,200 women employed as farmers or farm managers in August 1996. Many of these were in partnership with their husbands. Women represented 30% of all farmers or farm managers. The number of female farmers has remained fairly constant during the last ten years while the numbers of men in farming has fallen by 11%.

There were also many women who worked on farms who were not farmers or farm managers. At August 1996, 123,900 women worked in agriculture or industries that service

agriculture (about 30% of the agricultural workforce). This compares with 63,900 in August 1966 (or 15% of the agricultural

workforce at that time). Over the period 1966 to 1996 women employed in the Agricultural sector increased by 94% (see table 14.5 below).

14.5 EMPLOYMENT IN AGRICULTURE AND SERVICES TO AGRICULTURE, Australia

	Numbers employed at August				Farmers and farm managers at August			
	1966 '000	1976 '000	1986 '000	1996 '000	1966 '000	1976 '000	1986 '000	1996 '000
Males	348.1	287.6	278.6	272.9	227.9	205.0	188.3	168.1
Married females	48.2	71.0	94.7	101.9	n.a.	n.a.	66.7	65.3
All females	63.9	82.9	112.9	123.9	26.5	26.4	73.7	72.2
All persons	412.0	370.5	391.4	396.8	254.4	231.4	262.0	240.2

Source: Labour Force, Australia (6203.0) and Labour Force, Australia (6204.0).

Labour Force data indicate noticeable changes in female employment in the rural sector. 'Women have always been important in maintaining the family farm but with changes in employment mix and growth in part-time work their participation in rural labour markets has risen dramatically' (Lewis in *Agriculture in the Australian Economy*, edited by D.B. Williams). Both full-time and part-time employment have increased, more so part-time which has increased substantially, with nearly all of this change attributed to married rather than single women. The increase in part-time employment can be explained by the mix between household duties and the nature of farm work. The supply of female labour is well suited to the requirements of farm work, especially given that technological change has reduced the need for strenuous physical work. 'Greater emphasis on maintaining accounts and the business management side of farming also provide opportunity for women to use their skills effectively' (Lewis). Economic pressures seem to have contributed to the increase in female farm employment. In many cases male farmers have sought off-farm income and transferred a range of farm duties to their partner.

Education and qualifications

A recent study found that 'Women on farms are more likely to hold higher educational qualifications than male farmers and are also more likely to undertake retraining to provide financial security for families' (Cameron, 1994). This in part reflects women from farms also holding off-farm jobs, and enables them to do so. It probably also reflects past patterns

of farmers' sons leaving school to provide on-farm labour and learning farming in that way. Today, many parents 'aware of the difficulties facing the agricultural industry, encourage their children to broaden their training. Many who train with a view to returning to the land subsequently find that a degree or experience in business management is a sufficiently versatile qualification to permit employment in non-farm areas' (Epps, 1993). Of all students at the post-secondary institutions, 3.6% of females study farm-related courses (i.e. agriculture, animal husbandry or veterinary science) (Dawe, 1993).

Communications and technology

Looking to the future, women and men in rural Australia are well poised to take advantage of developments in technology with services such as Farmwide Online Computer Pilot, which is run by the National Farmers' Federation. Farmwide provides access to the Internet, e-mail and a wide range of rural services. This pilot aims to facilitate and accelerate the uptake of online services in rural Australia and to determine the specific information and communication needs of rural and regional Australia.

Women have always played a significant role in Australian agriculture, in the nation's farm houses, paddocks and rural communities. Increasingly they are involved in planning and farm management, and decision making. Many of them also support the farm finances through their off-farm employment. In recent years there has been growing recognition for the many roles they play in agriculture.

Gross value of agricultural commodities produced

Table 14.6 shows the gross value of agricultural commodities produced for the years 1990–91 to 1995–96. The value shown is the value of recorded production at the wholesale prices realised in the market place.

14.6 GROSS VALUE OF AGRICULTURAL COMMODITIES PRODUCED

Commodity	1990–91 \$m	1991–92 \$m	1992–93 \$m	1993–94 \$m	1994–95 \$m	1995–96p \$m
Crops						
Barley for grain	568.3	680.9	801.8	844.9	622.2	1 347.0
Oats for grain	147.3	178.3	208.8	147.9	165.8	311.0
Wheat for grain	1 988.1	2 097.2	2 685.5	2 866.8	2 127.2	4 602.0
Other cereal grains	304.9	473.3	340.1	537.5	580.2	683.5
Sugar cane cut for crushing	748.0	602.7	800.9	944.6	1 207.7	1 319.7
Fruit and nuts	1 059.6	1 304.1	1 402.9	1 316.7	1 426.3	1 421.6
Grapes	362.0	433.0	395.5	450.1	511.1	680.6
Vegetables	1 284.9	1 242.4	1 248.6	1 443.7	1 491.6	1 465.0
All other crops(a)	2 611.5	2 853.8	2 853.2	2 963.8	2 999.6	3 752.1
Total crops	9 074.6	9 865.7	10 737.3	11 515.9	11 131.7	15 582.5
Livestock slaughterings and other disposals(b)						
Cattle and calves(c)	3 869.4	3 801.9	3 839.2	4 433.5	4 213.5	3 474.3
Sheep and lambs	364.2	460.6	680.8	793.6	833.7	1 005.5
Pigs	691.0	658.6	649.5	660.5	630.6	589.2
Poultry	788.3	778.0	833.5	929.3	902.0	964.6
Total livestock slaughterings and other disposals(d)	5 721.0	5 738.1	6 032.7	6 852.9	6 615.7	6 066.4
Livestock products						
Wool	4 180.9	2 979.5	2 568.5	2 449.1	3 317.9	2 686.8
Milk	1 824.8	1 960.0	2 314.4	2 448.0	2 419.1	2 965.8
Eggs	321.1	278.1	286.5	233.9	230.6	250.9
Total livestock products(e)(f)	6 354.3	5 244.0	5 207.5	5 166.7	5 993.7	5 937.9
Total value of agricultural commodities produced(g)	21 158.5	20 861.3	21 990.6	23 547.2	23 750.3	27 595.9

(a) Includes pastures and grasses. Excludes crops for green feed or silage. (b) Includes net exports of livestock. (c) Includes dairy cattle slaughtered. (d) Includes goat slaughterings and Tasmanian pigs and poultry. (e) Includes honey and beeswax. (f) Excludes Northern Territory milk and eggs. (g) Includes pigs, poultry, milk and eggs in the Northern Territory.

Source: *Value of Agricultural Commodities Produced, Australia (7503.0)*, *Value of Principal Agricultural Commodities Produced, Australia (7501.0)*.

Table 14.7 shows the index of the gross value of commodities produced at constant prices, which is a measure of change in value after the direct effects of price changes have been eliminated.

14.7 INDEX OF VALUES(a) OF AGRICULTURAL COMMODITIES PRODUCED, At Constant Prices

Commodity	1989-90	1990-91	1991-92	1992-93	1993-94	1994-95
Crops						
Barley for grain	1 000	1 016	1 120	1 335	1 649	720
Oats for grain	1 000	933	1 030	1 181	1 004	563
Wheat for grain	1 000	1 056	729	1 019	1 139	615
Other cereal grains	1 000	859	1 379	857	1 166	1 106
Sugar cane(b)	1 000	940	831	1 089	1 165	1 223
Fruit and nuts	1 000	959	1 003	1 171	1 188	1 126
Grapes	1 000	1 027	1 185	983	1 127	952
Vegetables	1 000	1 042	1 050	1 042	1 159	1 105
All other crops(c)	1 000	1 050	1 245	1 244	1 208	1 013
Total crops	1 000	1 019	1 000	1 114	1 200	916
Livestock slaughterings and other disposals						
Cattle and calves(d)	1 000	1 049	1 068	1 089	1 088	1 076
Sheep and lambs	1 000	908	932	945	956	937
Pigs	1 000	984	1 059	1 035	1 085	1 107
Poultry	1 000	1 011	1 076	1 099	1 191	1 191
Total livestock slaughterings(e)	1 000	1 023	1 055	1 070	1 088	1 081
Livestock products						
Wool	1 000	969	804	782	755	666
Milk	1 000	1 022	1 075	1 171	1 291	1 311
Eggs	1 000	1 018	896	942	892	867
Total livestock products(f)	1 000	982	868	876	882	819
Total agricultural commodities produced	1 000	1 008	970	1 024	1 066	925

(a) Indexes of values at constant prices (weighted by average unit values for 1989-90). (b) Sugar cane cut for crushing and planting. (c) Includes pasture and grasses. Excludes crops for green feed or silage. (d) Includes dairy cattle slaughtered.

(e) Component series based on carcass weight. Includes goat slaughterings. (f) Includes honey, beeswax and goat products.

Source: *Value of Agricultural Commodities Produced, Australia (7503.0)*.

Financial statistics of farm businesses

14.8 FARM BUSINESSES, Estimates of Selected Financial Aggregates

	1990-91	1991-92	1992-93	1993-94	1994-95
	\$m	\$m	\$m	\$m	\$m
Sales from crops	7 196.7	7 718.3	8 594.6	9 369.5	9 804.2
Sales from livestock	4 864.5	4 905.3	5 431.1	6 232.5	6 279.1
Sales from livestock products	5 853.6	4 753.6	4 770.9	4 637.3	5 596.3
Turnover	19 190.6	18 576.0	20 068.2	21 694.3	23 516.3
Purchases and selected expenses	10 892.5	10 726.3	11 392.6	12 541.1	13 517.0
Value added(a)	7 329.0	8 048.2	9 099.5	10 598.4	9 768.1
Adjusted value added(a)	6 004.4	6 737.8	7 753.3	9 178.5	8 234.3
Gross operating surplus(a)	4 114.9	4 885.2	5 832.7	7 081.2	6 006.0
Interest paid	2 066.0	1 820.4	1 499.2	1 302.0	1 508.9
Cash operating surplus(b)	3 412.8	3 095.0	4 083.2	4 433.3	4 835.7
Net capital expenditure	1 216.6	1 420.8	1 660.2	1 945.0	2 090.8
Gross indebtedness	14 140.6	14 819.2	15 390.5	15 921.7	18 267.7

(a) Includes an estimate for the increase (or decrease) in the value of livestock. (b) Excludes an estimate for the value of the increase (or decrease) in the value of livestock.

Source: *Agricultural Industries, Financial Statistics, Australia (7507.0)*.

Estimates of selected financial aggregates of farm businesses are shown in the following tables and graphs. The estimates have been derived from the Agricultural Finance Survey (AFS), conducted annually since 1986–87.

14.9 FARM BUSINESSES, Estimates of Selected Financial Aggregates — 1994–95

	NSW \$m	Vic. \$m	Qld \$m	SA \$m	WA \$m	Tas. \$m	Aust.(a) \$m
Sales from crops	2 102.6	1 307.1	3 028.4	1 206.0	1 937.5	193.2	9 804.2
Sales from livestock	2 029.0	1 072.5	1 874.7	501.9	574.6	124.8	6 279.1
Sales from livestock products	1 687.6	1 885.5	555.5	454.6	806.5	201.0	5 596.3
Turnover	6 321.3	4 584.8	6 004.9	2 353.8	3 529.9	570.6	23 516.3
Purchases and selected expenses	3 834.8	2 574.2	3 406.3	1 279.2	2 033.8	320.4	13 517.0
Value added(b)	2 066.4	1 959.2	2 518.7	1 034.0	1 640.6	243.8	9 768.1
Adjusted value added(b)	1 581.9	1 657.8	2 176.0	873.5	1 439.2	209.5	8 234.3
Gross operating surplus(b)	896.8	1 219.6	1 599.0	683.9	1 210.5	130.1	6 006.0
Interest paid	447.4	287.1	359.5	151.1	221.3	38.4	1 508.9
Cash operating surplus(c)	912.0	988.1	1 351.6	570.7	875.7	97.8	4 835.7
Net capital expenditure	507.6	321.0	607.5	222.6	382.6	41.6	2 090.8
Gross indebtedness	5 143.2	3 025.8	4 924.3	1 604.7	2 987.6	462.1	18 267.7

(a) Includes the Northern Territory and the Australian Capital Territory. (b) Includes an estimate for the value of the increase (or decrease) in livestock. (c) Excludes an estimate for the value of the increase (or decrease) in livestock.

Source: *Agricultural Industries, Financial Statistics, Australia* (7507.0).

Turnover

Turnover (all gross proceeds received by the business during the year from the sale of crops, livestock, livestock products and other miscellaneous revenue) is a good guide to the level of farm business activity. In aggregate, the turnover by farm businesses for 1994–95 of \$23.5b was 8% higher than during 1993–94 (table 14.10). The average turnover per farm business increased by 9% during 1994–95. The increase was due to a 21% increase in sales from livestock products and a 5% increase in sales from crops.

In 1994–95, 19,200 or 18% of Australian farm businesses had a turnover of more than \$300,000 and contributed 57% of the total turnover of all Australian farms. Their average turnover was \$692,100 and average cash operating surplus, \$142,600.

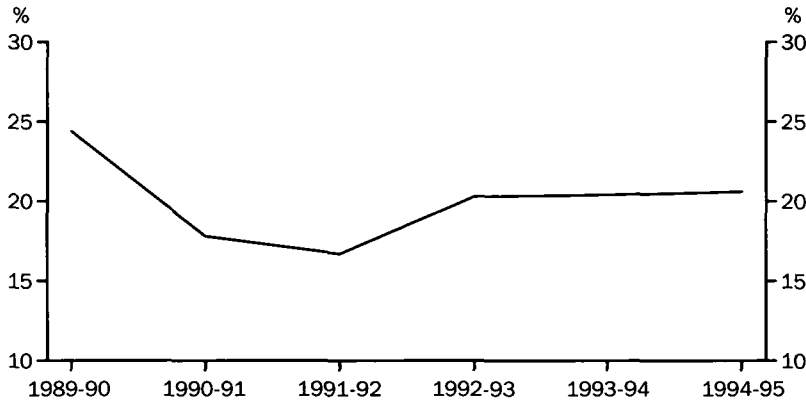
At the other end of the scale, 22,800 farms (21%) had a turnover of less than \$50,000. These farm businesses contributed only 3% of the total turnover, at an average of \$30,500. These farms had an average cash operating loss of \$2,300 per farm.

In 1994–95, the farm business profit margin (the ratio of cash operating surplus to turnover) was 21%, little changed from the 20% in 1993–94 (graph 14.11). The profit margin of Australian farm businesses has still not recovered to the profitability levels achieved between 1986 and 1990.

14.10 FARM BUSINESSES, By Size of Turnover — Australia

Size of turnover	Number of farm businesses				Total turnover			
	1991-92 '000	1992-93 '000	1993-94 '000	1994-95 '000	1991-92 \$m	1992-93 \$m	1993-94 \$m	1994-95 \$m
Less than \$50 000	26.3	23.7	21.4	22.8	758.7	762.8	626.4	696.1
\$50 000 to \$99 999	29.7	25.5	24.0	22.2	2 095.9	1 918.6	1 622.3	1 678.1
\$100 000 to \$149 999	18.5	18.3	19.4	17.1	2 267.3	2 281.1	2 313.5	2 142.7
\$150 000 to \$199 999	11.2	10.5	12.4	10.9	1 965.6	1 823.7	2 159.4	1 928.5
\$200 000 to \$249 999	6.8	8.0	8.5	8.4	1 536.0	1 789.0	1 808.2	1 936.6
\$250 000 to \$299 999	5.1	4.8	5.1	6.6	1 417.8	1 299.2	1 384.6	1 821.7
\$300 000 and over	12.0	15.2	16.8	19.2	8 534.8	10 193.9	11 779.9	13 312.6
Total	109.6	106.1	107.5	107.3	18 576.0	20 068.2	21 694.3	23 516.3

Source: Agricultural Industries, Financial Statistics, Australia (7507.0).

14.11 AUSTRALIAN FARM BUSINESSES, Profit Margins

Source: Agricultural Industries, Financial Statistics, Australia (7507.0).

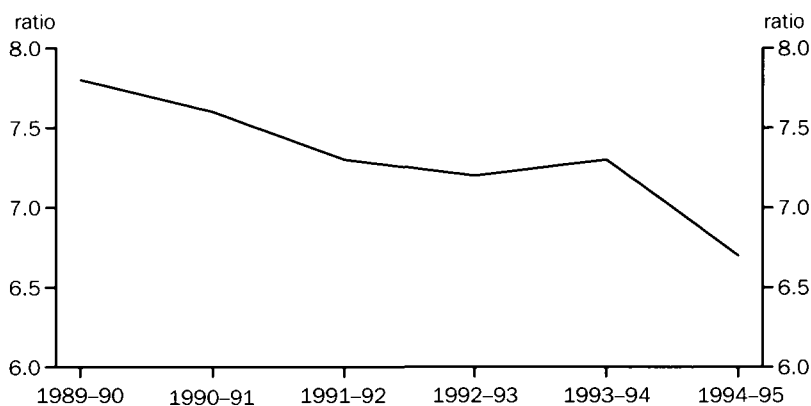
Gross indebtedness

Australian farm businesses owed a total of \$18.3b at 30 June 1995, a 15% increase on 1993-94. The aggregate debt had risen from \$11.5b in 1986-87 when the current series of surveys began. The average gross indebtedness was \$170,300 per farm business. About 22% of farm businesses owed more than \$200,000. These farms owed 78% of the aggregate debt. On the other hand, 24% of farm businesses were debt free at the end of June 1995. The total interest bill for Australian farm business, \$1.5b, was 16% more than in 1993-94. The average interest payment per farm business was \$14,100 in 1994-95, and was \$5,300 below the high recorded in 1989-90.

14.12 AUSTRALIAN FARM BUSINESSES, Aggregate and Average Gross Indebtedness

30 June	Aggregate gross indebtedness \$m	Average gross indebtedness per farm business \$
1990	14 518.0	126 400
1991	14 140.6	130 600
1992	14 819.2	135 200
1993	15 390.5	145 100
1994	15 921.7	148 100
1995	18 267.7	170 300

Source: Agricultural Industries Financial Statistics, Australia (7507.0).

14.13 AUSTRALIAN FARM BUSINESSES, Debt to Asset Ratio(a) — 30 June

(a) The debt to asset ratio is the total value of assets at 30 June divided by gross indebtedness at 30 June.

Source: *Agricultural Industries Financial Statistics, Australia (7507.0)*.

14.14 AUSTRALIAN FARM BUSINESSES, Ratio of Cash Operating Surplus to Interest Paid - 30 June

Source: *Agricultural Industries Financial Statistics, Australia (7507.0)*.

Land used for agriculture

Scope of Agricultural Census

The major source of the statistics on land use, commodity production and livestock numbers in this chapter is the Agricultural Census conducted by the ABS at 31 March each year.

The ABS excludes from the Census those establishments which make only a small contribution to overall agricultural activity. The cutoff, in terms of the estimated value of agricultural operations (EVAO) has been

adjusted over the years since 1982-83. For the 1993-94 and 1994-95 censuses the cut-off was lowered from \$22,500 to \$5,000 to ensure that all important agricultural activity was covered.

While this alteration has resulted in some changes in the counts of numbers of establishments engaged in agricultural activities, the effect on the statistics of production of major commodities is small. Statistics of minor

commodities normally associated with small-scale operations may be affected to a greater extent. Care should be exercised when comparing the 1993–94 and 1994–95 results with those of previous years.

Land used for agriculture

In spite of Australia's harsh environment, agriculture constitutes the most extensive form of land use. At 31 March 1995, the estimated total area of agricultural establishments in Australia was 463.3 million hectares, representing about 60% of the total land area (tables 14.15 and 14.16). The remainder of the Australian land area consists of unoccupied land (mainly desert in western central Australia), Aboriginal land reserves principally located in the Northern Territory, forests, mining leases, National parks and urban areas.

Livestock grazing is the largest land user in Australian agriculture. This activity has led to the replacement of large areas of native vegetation with introduced pastures and grasses in the higher rainfall and irrigation areas. At 31 March 1995, 8% of Australia's agricultural land was sown to pastures and grasses. In the semi-arid and arid zones livestock graze on native grasses.

At 31 March 1995, 4% of Australia's agricultural land was cropped. This continues the trend which has seen about 10% of Australia's agricultural land cultivated each year since the 1980s. Until this time the area of land cropped or sown to pastures and grasses had been expanding rapidly. This expansion was facilitated by factors including increased use of fertilisers, improved water supply and reduction in the rabbit population due to myxomatosis.

14.15 AGRICULTURAL LAND UTILISATION IN AUSTRALIA

Year	Area of			Total	
	Crops(a) mill. ha	Sown pastures and grasses mill. ha	Balance(b) mill. ha	Area of establishments with agricultural activity mill. ha	% of Australian land area (768 284 000 ha) %
1989–90	17.0	30.9	416.4	464.3	60.4
1990–91	17.4	28.3	417.1	462.8	60.2
1991–92	16.4	30.8	418.8	466.0	60.7
1992–93	17.3	29.0	413.8	460.1	59.9
1993–94	18.0	29.5	421.6	469.1	61.1
1994–95	17.0	36.1	410.2	463.3	60.3

(a) Excludes pastures and grasses harvested for hay and seed which have been included in 'sown pastures and grasses'. (b) Includes areas of arid or rugged land held under grazing licences but not always used for grazing, and also variable amounts of fallow land.

Source: AgStats (7117.0).

14.16 AREA OF ESTABLISHMENTS WITH AGRICULTURAL ACTIVITY

31 March	NSW mill. ha	Vic. mill. ha	Qld mill. ha	SA mill. ha	WA mill. ha	Tas. mill. ha	NT mill. ha	Aust. (incl. ACT) mill. ha
1990	62.0	13.1	152.3	57.5	110.9	1.9	66.6	464.3
1991	60.7	12.7	150.8	57.0	110.9	1.9	68.8	462.8
1992	60.4	12.4	150.0	56.9	115.7	1.8	68.7	466.0
1993	59.4	12.3	149.5	56.6	110.6	1.8	69.9	460.1
1994	61.2	13.0	152.6	57.3	114.4	2.0	68.6	469.1
1995	60.3	12.7	149.7	56.1	114.0	1.9	68.6	463.3

Source: AgStats (7117.0).

Crops

Table 14.17 shows the area of crops in the States and Territories of Australia since 1870–71, and table 14.18 is a summary of the area, production

and gross value of the principal crops in Australia in recent years

14.17 AREA OF CROPS(a)

Year	NSW '000 ha	Vic. '000 ha	Qld '000 ha	SA '000 ha	WA '000 ha	Tas. '000 ha	NT '000 ha	ACT '000 ha	Aust. '000 ha
1870–71	156	280	21	235	22	64	—	—	868
1880–81	245	627	46	846	26	57	—	—	1 846
1890–91	345	822	91	847	28	64	—	—	2 197
1900–01	990	1 260	185	959	81	91	—	—	3 567
1910–11	1 370	1 599	270	1 112	346	116	—	—	4 813
1920–21	1 807	1 817	316	1 308	730	120	—	1	6 099
1930–31	2 756	2 718	463	2 196	1 939	108	1	2	10 184
1940–41	2 580	1 808	702	1 722	1 630	103	—	2	8 546
1949–50	2 295	1 881	832	1 518	1 780	114	—	4	8 424
1959–60	2 888	1 949	1 184	1 780	2 628	130	1	3	10 564
1969–70	4 999	2 212	2 208	2 290	3 912	98	6	2	15 728
1979–80	5 243	2 243	2 334	2 771	5 281	79	2	1	17 954
1990–91	4 073	2 063	2 872	2 933	5 359	75	6	—	17 382
1991–92	3 846	2 039	2 302	2 920	5 216	76	5	—	16 404
1992–93	3 906	2 258	2 316	3 073	5 668	73	4	1	17 297
1993–94	4 209	2 317	2 394	2 940	6 100	78	5	—	18 043
1994–95	3 432	2 296	2 055	2 991	6 181	70	4	—	17 030

(a) The classification of crops was revised in 1971–72, and adjustments made to statistics back to 1967–68. After 1966–67, lucerne for green feed, hay, seed and pasture cut for hay and harvested for seed or green feed are excluded. From 1970–71 to 1980–81 the figures related to area 'used for' crops, that is, an area used for more than one purpose during the year was counted only once. From 1981–82, an area double cropped has been counted separately each time used.

Source: AgStats (7117.0).

Cereal grains

In Australia, cereals are conveniently divided into autumn-winter-spring growing (winter cereals) and spring-summer-autumn growing (summer cereals). Winter cereals such as wheat, oats, barley and rye are usually grown in rotation with some form of pasture such as subterranean clover, medics or lucerne. In recent years, alternative winter crops such as canola, field peas and lupins have been introduced to cereal rotation in areas where they had not previously been grown. Rice, maize and sorghum are summer cereals, with the latter being grown in association with winter cereals in some areas. In northern Australia there are two rice growing seasons.

Wheat

Wheat is Australia's most important crop. It is produced in all States but primarily on the

mainland in a narrow crescent known as the wheat-belt. Inland of the Great Dividing Range, the wheat-belt stretches in a curve from central Queensland through New South Wales, Victoria and southern South Australia. In Western Australia, the wheat-belt continues around the south-west of the State and some way north, along the western side of the continent (see map 14.21).

The 1995–96 preliminary estimate of wheat production showed a 92% increase compared with the 1994–95 season (tables 14.19 and 14.20). Due to the breaking of the drought, New South Wales produced more than five times the amount of wheat produced in 1994–95. Production approximately doubled in Victoria, Queensland and South Australia, and in Western Australia it rose 31% to 7.1 million tonnes.

14.18 SELECTED CROPS, Area, Production and Gross Value

Crop	1992-93			1993-94			1994-95		
	Area '000 ha	Production '000 t	Gross value \$m	Area '000 ha	Production '000 t	Gross value \$m	Area '000 ha	Production '000 t	Gross value \$m
Cereals for grain									
Barley	2 947	5 397	802	3 424	6 668	845	2 470	2 913	622
Grain sorghum	427	548	87	499	1 084	173	687	1 273	242
Maize	45	199	42	44	204	41	50	242	59
Oats	1 149	1 937	209	947	1 647	148	897	924	166
Rice	106	858	164	125	1 042	262	119	1 016	216
Wheat	8 275	14 739	2 686	8 383	16 479	2 867	7 891	8 972	2 127
Lupins for grain	1 032	1 195	235	1 150	1 480	270	1 407	1 076	199
Crops for hay									
Oats	247	981	96	233	931	108	252	745	109
Wheat	21	60	6	17	65	6	36	64	12
Sugar cane cut for crushing	328	27 958	801	338	31 312	945	363	32 971	1 208
Tobacco	4	11	70	3	8	51	3	7	40
Cotton seed	287	1 000	706	293	788	652	245	796	851
Peanuts (in shell)	23	32	33	22	45	34	13	23	17
Soybean	30	49	19	41	81	36	18	27	11
Canola	107	178	57	177	305	108	356	264	97
Sunflower	60	50	16	113	105	40	136	112	46
Orchard fruit									
Oranges	n.a.	616	215	n.a.	582	230	n.a.	517	215
Apples	n.a.	328	267	n.a.	307	238	n.a.	317	270
Pears (excluding Nashi)	n.a.	161	103	n.a.	155	89	n.a.	152	73
Peaches	n.a.	63	51	n.a.	59	53	n.a.	58	50
Other fruit									
Bananas	11	214	303	11	219	203	10	208	255
Pineapples	6	142	42	9	157	45	5	139	43
Grapes	63	791	396	67	920	450	73	769	511
Vegetables									
Carrots	5	170	82	5	195	91	7	239	133
Potatoes	39	1 129	317	40	1 185	338	38	1 122	378
Tomatoes	9	280	148	9	327	173	9	340	166
Total all crops (excluding pastures and grasses)	17 297	..	10 133	18 043	..	10 947	17 030	..	10 490

Source: AgStats (7117.0), Value of Agricultural Commodities Produced, Australia (7503.0).

14.19 WHEAT, Area, Production and Receipts

Year	Area(a)		Production(a)		Australian Wheat Board receipts '000 t
	For grain '000 ha	All purposes(b) '000 ha	Grain '000 t	Gross value \$m	
1990-91	9 218	(b)9 237	15 066	1 988.1	13 047
1991-92	7 183	(b)7 213	10 557	2 113.0	6 769
1992-93	8 275	(b)8 296	14 739	2 685.0	12 173
1993-94	8 383	(b)8 400	16 479	2 866.8	13 811
1994-95	7 891	(b)7 927	8 972	2 127.2	6 114
1995-96p	9 719	9 743	17 196	4 602.0	12 661

(a) Area and production data relate to the year ending 31 March. (b) Excludes wheat for hay for all States, except New South Wales.

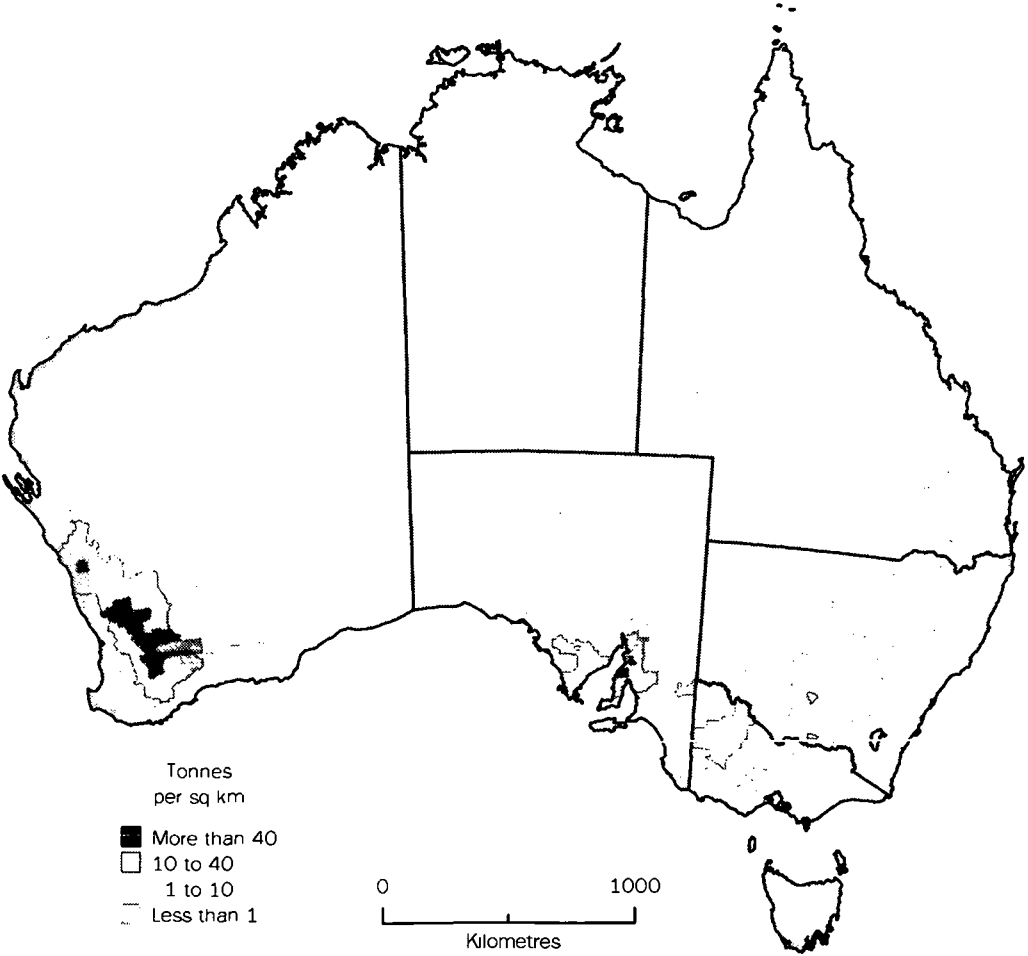
Source: Value of Agricultural Commodities Produced, Australia (7503.0); AgStats (7117.0); Principal Agricultural Commodities, Australia (Preliminary), 1995-96 (7111.0).

14.20 WHEAT FOR GRAIN, Area and Production

Year	NSW	Vic	Qld	SA	WA	Tas.	Aust.
AREA ('000 ha)							
1990-91	2 166	911	1 060	1 448	3 632	1	9 218
1991-92	1 499	664	492	1 297	3 230	1	7 183
1992-93	1 694	821	669	1 419	3 669	1	8 275
1993-94	1 978	780	556	1 216	3 852	2	8 383
1994-95	1 424	822	401	1 395	3 848	1	7 891
1995-96p	2 477	896	684	1 614	4 049	1	9 719
PRODUCTION ('000 t)							
1990-91	4 128	1 493	1 973	2 021	5 449	2	15 066
1991-92	2 183	1 150	344	2 141	4 736	3	10 557
1992-93	3 583	2 022	735	2 421	5 979	5	14 739
1993-94	5 086	222	555	2 121	6 689	5	16 479
1994-95	875	944	225	1 487	5 438	3	8 972
1995-96p	4 660	1 962	563	2 887	7 120	4	17 196

Source: AgStats (7117.0).

14.21 WHEAT FOR GRAIN, Production — 1994-95



Oats

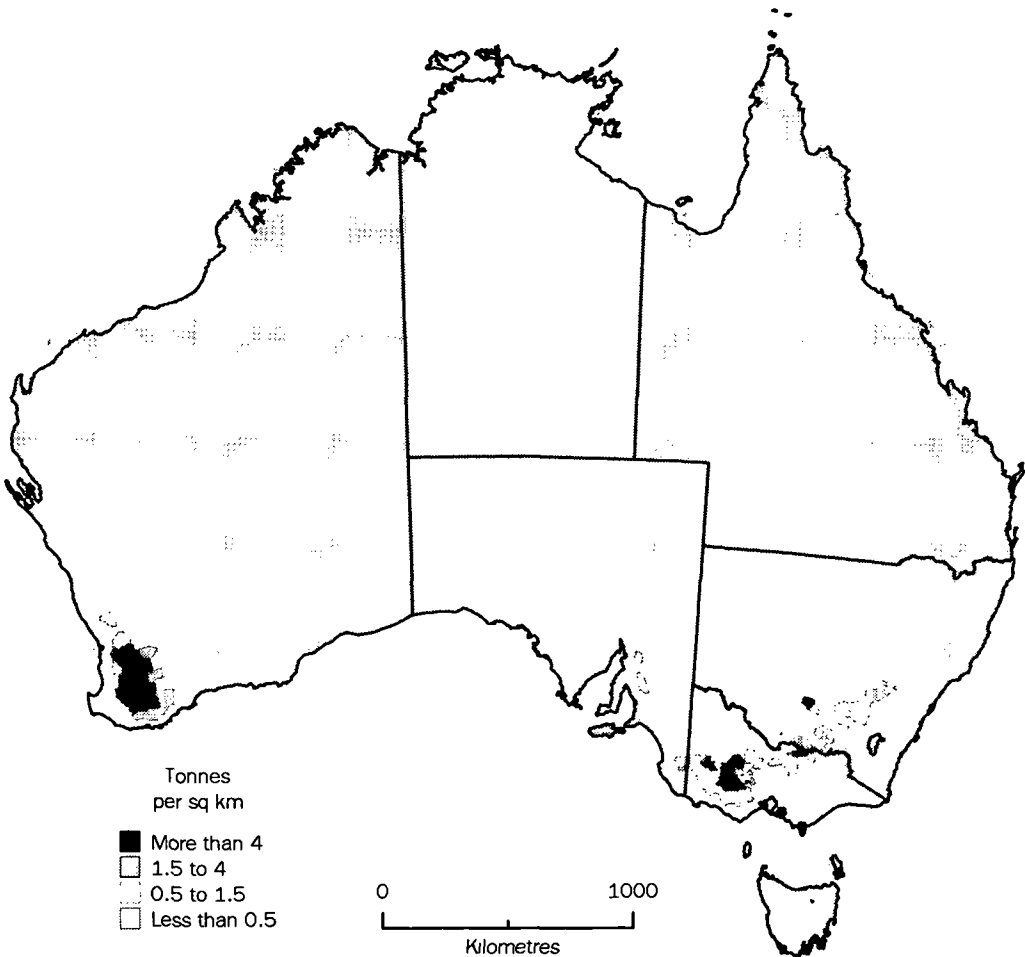
Oats are traditionally grown in moist, temperate regions. However, improved varieties and management practices have enabled oats to be grown over a wide range of soil and climatic conditions. They have a high feed value and produce a greater bulk of growth than other winter cereals; they need less cultivation and

respond well to superphosphate and nitrogen. Oats have two main uses: as a grain crop, or as a fodder crop (following sowing, or fallow or rough sowing into stubble or clover pastures). Fodder crops can either be grazed and then harvested for grain after removal of livestock or else mown and baled or cut for chaff.

Map 14 22 shows the production of oats in Australia in 1994-95.

14.22

OATS FOR GRAIN, Production — 1994-95



The 1995–96 preliminary estimate of oats for grain production more than doubled when compared with the 1994–95 harvest

(table 14.23). In 1995–96, New South Wales production showed a fourfold increase while Victoria doubled production.

14.23 OATS FOR GRAIN, Area and Production

Year	NSW	Vic.	Qld	SA	WA	Tas.	Aust.
AREA ('000 ha)							
1990–91	374	177	24	135	324	9	1 044
1991–92	457	183	15	129	367	9	1 160
1992–93	448	223	15	123	332	9	1 149
1993–94	369	186	16	101	268	7	947
1994–95	375	148	14	95	256	8	897
1995–96p	556	196	13	127	322	10	1 225
PRODUCTION ('000 t)							
1990–91	538	301	27	148	497	19	1 530
1991–92	579	300	5	172	614	19	1 690
1992–93	761	404	10	165	578	19	1 937
1993–94	618	362	8	135	511	13	1 647
1994–95	197	201	3	87	425	11	924
1995–96p	779	405	8	171	627	20	2 009

Source: Agstats (7117.0); Principal Agricultural Commodities, Australia (Preliminary) 1995–96 (7111.0).

Barley

This cereal contains two main groups of varieties, 2-row and 6-row. The former is generally, but not exclusively, preferred for malting purposes. Barley is grown principally as a grain crop although in some areas it is used as a fodder crop for grazing, with grain being subsequently harvested if conditions are suitable. It is often grown as a rotation crop with wheat, oats and pasture. When sown for fodder, sowing may take place either early or late in the season, as it has a short growing period. It may therefore provide grazing or fodder supplies when other sources are not available. Barley

grain may be crushed to meal for stock or sold for malting. Map 14.25 shows the production of barley in Australia in 1994–95.

Preliminary estimates for barley in 1995–96 showed production was double the harvest of the previous year (table 14.24). New South Wales increased production fourfold while Victoria produced more than three times as much barley as the previous year. Queensland and South Australia also experienced large increases in production.

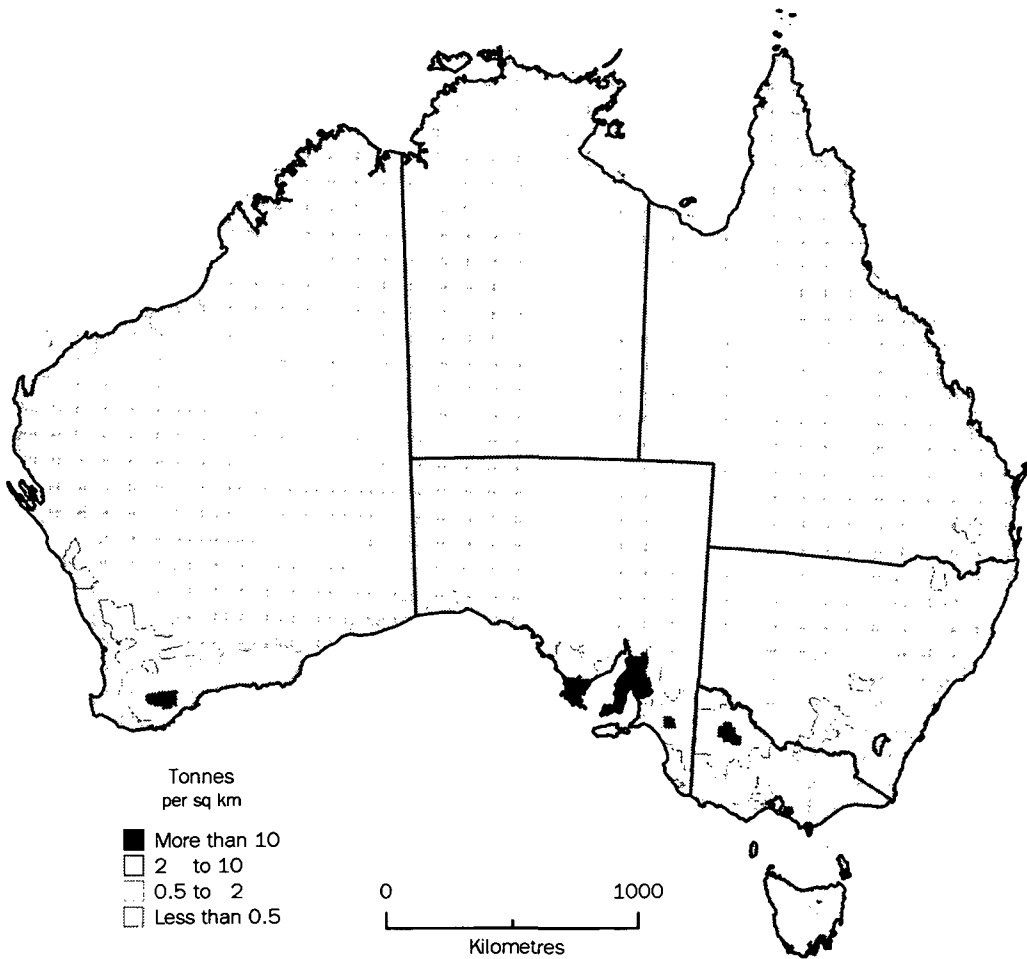
14.24 BARLEY FOR GRAIN, Area and Production

Year	NSW	Vic.	Qld	SA	WA	Tas.	Aust.
AREA ('000 ha)							
1990–91	463	463	177	945	498	10	2 556
1991–92	517	534	128	999	554	11	2 744
1992–93	560	551	189	1 023	611	12	2 947
1993–94	623	639	232	1 115	799	15	3 424
1994–95	410	492	93	882	579	14	2 470
1995–96p	630	651	183	1 017	760	13	3 253
PRODUCTION ('000 t)							
1990–91	822	651	361	1 506	742	26	4 108
1991–92	749	898	70	1 882	900	32	4 530
1992–93	1 044	1 116	285	1 855	1 061	35	5 397
1993–94	1 357	1 386	261	2 242	1 381	41	6 668
1994–95	291	448	73	1 159	915	27	2 913
1995–96p	1 148	1 548	212	1 955	1 355	34	6 252

Source: AgStats (7117.0); Principal Agricultural Commodities, Australia (Preliminary), 1995–96 (7111.0).

14.25

BARLEY FOR GRAIN, Production — 1994-95



Grain sorghum

The sorghums are summer growing crops which are used in three ways: grain sorghum for grain; sweet or fodder sorghum, sudan grass and, more recently, columbus grass for silage, green feed and grazing; and broom millet for brooms and brushware.

Grain sorghum has been grown extensively only in the last two decades. Rapid increases in production have resulted in a substantial

increase in exports over this period. The grain is used primarily as stockfeed and is an important source for supplementing other coarse grains for this purpose.

Grain sorghum production nearly doubled in 1994-95, with Queensland contributing 72% of the Australian harvest and increasing its own production 8% over that of the previous year (table 14.26).

14.26 GRAIN SORGHUM FOR GRAIN, Area and Production

Year	NSW	Vic.	Qld	SA	WA	Tas.	Aust.(a)
AREA ('000 ha)							
1989-90	138	—	238	—	—	—	380
1990-91	84	—	291	(b)	1	(b)	378
1991-92	147	—	420	(b)	—	(b)	569
1992-93	118	—	308	—	—	—	427
1993-94	99	—	399	(b)	—	—	499
1994-95	161	6	519	(b)	—	(b)	687
PRODUCTION ('000 t)							
1989-90	359	1	578	—	1	—	946
1990-91	187	1	558	(b)	2	(b)	751
1991-92	398	—	1 045	(b)	—	(b)	1 447
1992-93	229	—	315	—	2	—	548
1993-94	228	—	852	(b)	—	(b)	1 084
1994-95	347	8	916	(b)	2	(b)	1 273

(a) Includes the Northern Territory. (b) Not collected.

Source: AgStats (7117.0).

Maize

Like sorghum, maize is a summer cereal demanding specific soil and climatic conditions. Maize for grain is almost entirely confined to the south-east regions and the Atherton Tablelands of Queensland; and the north coast, northern slopes and tablelands and the Murrumbidgee Irrigation Area in New South Wales. Small amounts are grown in all States, except South Australia, for green feed and silage, particularly in association with the dairy industry.

In 1994-95, maize production rose 19% (table 14.27). Most maize is grown in New South Wales, and the increased production there (45%) accounted for most of the increase for Australia.

14.27 MAIZE FOR GRAIN, Area and Production

Year	NSW	Vic.	Qld	SA	WA	Tas.	Aust.
AREA ('000 ha)							
1989-90	17	—	34	—	1	—	52
1990-91	18	—	29	(a)	1	(a)	49
1991-92	17	—	34	(a)	1	(a)	52
1992-93	16	—	27	(a)	2	(a)	45
1993-94	14	—	28	(a)	2	(a)	44
1994-95	21	1	27	(a)	2	(a)	50
PRODUCTION ('000 t)							
1989-90	98	1	115	—	5	—	219
1990-91	91	2	95	(a)	5	(a)	194
1991-92	119	3	141	(a)	5	(a)	269
1992-93	108	3	75	(a)	13	(a)	199
1993-94	100	2	87	(a)	15	(a)	204
1994-95	145	5	80	(a)	11	(a)	242

(a) Not collected.

Source: AgStats (7117.0).

Rice

Rice was first grown commercially in 1924-25 in the Murrumbidgee Irrigation Area, one of three irrigation areas in southern New South Wales

where rice is now produced. Nearly all of Australia's rice is grown in New South Wales. The remainder is grown in the Burdekin River

basin at Mareeba in northern Queensland and in the Adelaide River District in the Northern Territory.

Preliminary estimates of the rice harvest in 1995–96 show a decrease in production of 2% (table 14.28).

14.28 RICE FOR GRAIN, Area and Production

Year	NSW	Vic.	Qld	SA	WA	Tas.	Aust.
AREA ('000 ha)							
1990–91	85	(a)	4	(a)	(a)	(a)	89
1991–92	109	(a)	4	(a)	(a)	(a)	114
1992–93	105	(a)	2	(a)	(a)	(a)	106
1993–94	125	(a)	(a)	(a)	(a)	(a)	125
1994–95	119	(a)	(a)	(a)	(a)	(a)	119
1995–96p	140	(a)	(a)	(a)	(a)	(a)	140
PRODUCTION ('000 t)							
1990–91	719	(a)	21	(a)	(a)	(a)	740
1991–92	929	(a)	28	(a)	(a)	(a)	957
1992–93	846	(a)	12	(a)	(a)	(a)	858
1993–94	1 042	(a)	(a)	(a)	(a)	(a)	1 042
1994–95	1 016	(a)	(a)	(a)	(a)	(a)	1 016
1995–96p	999	(a)	(a)	(a)	(a)	(a)	1 000

(a) Not collected.

Source: AgStats (7117.0).

Vegetables

The area sown to vegetables reached a peak of over 200,000 hectares in 1945. It remained static at around 109,000 hectares from the mid-1970s to the mid-1980s, then increased until the end of the decade but has levelled out in recent years (table 14.29). Yields from most vegetable crops have continued to increase due to variety breeding for increased yields, greater use of irrigation and better control of disease and insect pests.

In 1994–95 potatoes were the largest vegetable crop in terms of both area and weight (tables 14.29 and 14.30).

14.29 SELECTED VEGETABLES FOR HUMAN CONSUMPTION, Area

Year	French and runner beans '000 ha	Cabbages '000 ha	Carrots '000 ha	Cauliflowers '000 ha	Onions '000 ha	Green peas '000 ha	Potatoes '000 ha	Tomatoes '000 ha	Other '000 ha	Total vegetables '000 ha
1989–90	7.3	2.3	4.8	3.7	5.1	13.3	40.6	9.6	39.1	125.8
1990–91	6.4	2.3	4.3	3.8	5.7	10.8	39.8	10.1	37.5	120.7
1991–92	6.8	2.3	4.7	3.6	5.4	8.9	39.8	9.0	37.0	117.5
1992–93	6.7	2.1	4.9	4.0	4.4	9.2	(a)38.8	8.6	39.0	117.7
1993–94	6.5	2.0	5.4	3.7	5.2	10.5	(a)40.3	8.9	42.8	125.3
1994–95	6.1	2.1	6.9	3.7	5.2	8.4	(a)37.6	8.7	40.6	119.3

(a) Excludes potatoes for seed.

Source: AgStats (7117.0).

14.30 SELECTED VEGETABLES FOR HUMAN CONSUMPTION, Production

Year	French and runner beans '000 t	Cabbages '000 t	Carrots '000 t	Cauliflowers '000 t	Onions '000 t	Green peas (pod weight) '000 t	Potatoes '000 t	Tomatoes '000 t
1989-90	38.4	77.8	154.9	88.6	192.5	110.7	1 178.0	322.1
1990-91	29.9	76.8	152.1	90.3	222.3	91.5	1 136.2	364.1
1991-92	32.5	78.6	158.3	78.3	220.5	83.5	1 150.1	330.5
1992-93	32.0	69.5	169.5	80.2	167.9	79.6	1 129.2	290.8
1993-94	31.0	64.5	194.8	75.2	213.2	97.2	1 184.7	327.2
1994-95	29.4	70.8	238.5	66.1	200.4	44.6	1 122.0	340.1

Source: AgStats (7117.0).

Fruit (excluding grapes)

A wide variety of fruit is grown in Australia ranging from pineapples, mangoes and pawpaws in the tropics to pome, stone and berry fruits in temperate regions.

The most important fruit crops in Australia are apples, oranges and bananas.

However, some other fruit types have experienced considerable growth in recent years. These include kiwi fruit and strawberries. The most significant crops in terms of gross value of production are apples and bananas. In 1994-95 the value of the banana crop increased by 25% while the value of the apple crop rose 14% (table 14.32).

14.31 SELECTED FRUIT STATISTICS

Year	Orchard fruit				Area of tropical and other fruits			Total area of fruit (excluding grapes) ha
	Apples '000 trees	Oranges '000 trees	Pears '000 trees	Peaches '000 trees	Bananas ha	Pineapples ha	Other fruit ha	
1989-90	7 023	7 187	(a)2 201	2 035	9 092	6 461	2 417	121 785
1990-91	6 919	7 357	1 558	2 104	9 578	5 927	2 293	113 225
1991-92	7 206	7 536	1 645	2 123	9 913	5 745	2 531	116 702
1992-93	7 321	7 797	1 531	2 214	10 520	5 854	2 848	123 066
1993-94	7 777	8 062	1 610	2 502	10 687	5 870	4 736	132 419
1994-95	7 989	7 684	1 508	2 386	9 807	5 226	2 991	128 083

(a) Includes Nashi.

Source: AgStats (7117.0).

14.32 SELECTED FRUIT, Production and Value of Production

Year	Apples	Apricots	Bananas	Cherries	Oranges	Peaches	Pears	Pineapples	Plums and prunes
PRODUCTION ('000 t)									
1989-90	319.4	29.7	180.3	4.7	487.2	58.0	(a)164.2	141.6	19.9
1990-91	288.7	25.2	165.1	5.4	453.3	57.9	156.7	126.0	19.6
1991-92	316.1	31.8	176.9	4.8	469.9	61.7	175.7	133.3	21.6
1992-93	327.8	29.5	213.9	5.0	616.5	62.6	161.4	142.4	25.0
1993-94	306.9	21.2	219.2	6.4	582.1	59.4	155.2	157.4	26.1
1994-95	316.6	29.8	208.1	5.8	517.2	58.4	151.7	138.5	21.8
GROSS VALUE OF PRODUCTION (\$m)									
1989-90	211.6	28.0	181.3	17.4	175.9	50.9	(a)79.3	40.7	24.3
1990-91	182.6	23.6	235.2	19.7	164.6	44.0	83.6	37.3	26.3
1991-92	269.4	33.5	270.0	20.2	202.8	49.0	127.1	39.0	29.9
1992-93	263.4	30.6	299.8	19.2	212.1	49.7	103.0	41.8	37.5
1993-94	237.6	27.1	203.3	27.0	230.0	53.2	89.0	45.2	37.2
1994-95	269.8	28.8	254.7	27.2	214.8	50.0	73.4	43.3	31.9

(a) Includes Nashi.

Source: AgStats (7117.0); Value of Commodities Produced, Australia (7503.0).

Grapes

Grapes are a temperate crop which require warm to hot summer conditions for ripening and predominantly winter rainfall. Freedom from late spring frosts is essential. They are grown for wine-making, drying and, to a lesser extent, for table use (see tables 14.33 and 14.34). Some of the better known wine producing areas are the Barossa, Clare, Riverland, Southern

Districts and Coonawarra (South Australia); north-eastern Victoria and Great Western (Victoria); Hunter and Riverina (New South Wales); Sunraysia (New South Wales and Victoria); and Swan Valley and Margaret River (Western Australia).

The gross value of viticultural production for 1994-95 increased by 14% to \$511m (table 14.33).

14.33 VITICULTURAL STATISTICS, Area, Production and Value

Year	14.35 VITICULTURAL STATISTICS, Area, Production and Value					
	Area		Production grapes used for(a)			Total(b)
	Bearing '000 ha	Total '000 ha	Winemaking '000 t fresh weight	Drying '000 t fresh weight	Quantity '000 t fresh weight	Gross value \$m
1990-91	54	60	487	317	851	362.0
1991-92	56	61	565	373	987	433.0
1992-93	58	63	545	197	793	377.6
1993-94	61	67	662	213	920	450.1
1994-95	62	73	577	147	769	511.0

(a) Excludes the Northern Territory and the Australian Capital Territory. (b) Includes grapes used for table and other purposes.

Source: Value of Agricultural Commodities Produced, Australia (7503.0).

14.34 VITICULTURE, Area and Production — 1996 season

Variety	Area of vines at harvest			Production of grapes used for(a)			
	Bearing ha	Not yet bearing ha	All vines ha	Winemaking(a) tonnes fresh weight	Drying tonnes fresh weight	Other tonnes fresh weight	Total tonnes fresh weight
Red grapes							
Cabernet Sauvignon	6 296	1 620	7 915	53 389	—	7	53 396
Currant (including Carina)	1 186	121	1 307	1 159	11 771	6	12 937
Grenache	1 980	46	2 025	20 753	—	48	20 802
Mataro	595	27	622	7 836	—	31	7 866
Pinot Noir	1 425	188	1 613	13 581	—	2	13 582
Shiraz	6 451	2 323	8 773	65 639	—	10	65 649
Other red grapes	4 671	646	5 320	32 223	711	13 724	46 658
Total red grapes	22 604	4 971	27 575	194 580	12 482	13 828	220 890
White grapes							
Chardonnay	6 504	3 343	9 847	57 122	—	8	57 130
Doradillo	628	2	630	12 036	—	12	12 048
Muscat Gordo Blanco	3 388	146	3 534	61 052	3 712	45	64 809
Palomino and Pedro Ximenes	649	5	653	8 662	—	10	8 673
Rhine Riesling	3 548	67	3 616	33 092	—	—	33 092
Semillon	2 983	558	3 541	31 315	—	—	31 315
Sultana	14 811	599	15 410	93 848	127 331	21 198	242 376
Waltham Cross	627	22	648	3 110	3 100	1 846	8 056
Other white grapes	6 712	702	7 415	82 547	382	7 510	90 438
Total white grapes	39 850	5 444	45 294	382 784	134 525	30 629	547 937
Total grapes	62 454	10 415	72 869	577 364	147 006	44 456	768 827

(a) Excludes Northern Territory and the Australian Capital Territory where varietal data is not collected.

Source: AgStats 1994–95 (7117.0).

Selected other crops

Oilseeds

The oilseeds industry is a relatively young industry by Australian agricultural standards. The specialist oilseed crops grown in Australia are sunflower, soybeans, canola, safflower and linseed. Sunflower and soybeans are summer grown while the others are winter crops. In Australia, oilseeds are crushed for their oil, which is used for both edible and industrial purposes and protein meals for livestock feeds.

While oilseed crops are grown in all States, the largest producing regions have been the grain growing areas of the eastern States. However, Western Australia recorded a 125% increase in production in 1994–95 (table 14.35). The last 10 years have seen sunflower production fall 48% to 112,000 tonnes. This has been more than offset by the rapid rise in popularity of canola, with production in 1994–95 of 264,000 tonnes compared to only 32,000 in 1984–85.

14.35 OILSEEDS, Area and Production

Year	NSW	Vic.	Qld	SA	WA	Tas.	Aust.
AREA ('000 ha)							
1989-90	84	39	69	7	1	—	200
1990-91	134	23	135	7	2	—	302
1991-92	155	47	71	15	17	—	305
1992-93	119	37	50	14	12	—	232
1993-94	177	66	88	24	37	—	392
1994-95(a)	216	95	92	33	104	—	540
PRODUCTION ('000 t)							
1989-90	119	38	84	7	2	—	251
1990-91	169	21	124	9	2	—	325
1991-92	191	44	78	19	16	—	348
1992-93	198	41	36	16	12	—	304
1993-94	301	83	82	32	48	—	545
1994-95(a)	147	69	64	30	108	—	417

(a) Excludes linseed.

Source: AgStats (7117.0).

Cotton

Cotton is grown primarily for its fibre (lint). When the cotton is matured, seed cotton is taken to a gin where it is separated (ginned) into lint and seed. Lint is used for yarn while seed is further processed at an oil mill. There the short fibres (linters) remaining on the seed after ginning are removed. They are too short to make into cloth but are used for wadding, upholstery and paper. The seeds are then separated into kernels and hulls. Hulls are

used for stock feed and as fertiliser, while kernels are crushed to extract oil. The oilcake residue (crushed kernels) is ground into meal which is a protein roughage also used as stock feed.

Seed cotton production in 1994-95 rose marginally after two consecutive falls (table 14.36). Yield also improved, up from 2.7 tonnes per hectare to 3.2 tonnes per hectare.

14.36 COTTON, Area, Production and Exports

Year	Seed cotton(a)			Raw cotton exports			
	Area '000 ha	Quantity '000 t	Gross value \$m	Cottonseed(b) '000 t	Lint(b) '000 t	Quantity '000 t	Value f.o.b. \$m
1989-90	240	792	640	493	305	291	539
1990-91	279	1 129	898	686	433	319	689
1991-92	312	1 278	879	724	502	463	945
1992-93	287	1 000	706	528	373	399	753
1993-94	293	788	652	466	329	360	732
1994-95	245	796	851	474	335	297	679

(a) Before ginning. (b) Estimated by the Australian Bureau of Agricultural and Resource Economics (ABARE), and the ABS Foreign Trade Section.

Source: ABARE, *Australian Commodity Statistics, 1995; Value of Agricultural Commodities Produced, Australia (7503.0)*; AgStats (7117.0).

Sugar

Sugar cane is grown commercially in Australia along the east coast over a distance of some 2,100 km, in a number of discontinuous areas from Maclean in northern New South Wales to

Mossman in Queensland. The geographical spread contributes to the overall reliability of the sugar cane crop and to Australia's record as a reliable sugar supplier.

About 95% of production occurs in Queensland, with some 75% of the crop grown north of the Tropic of Capricorn in areas where rainfall is reliable and the warm, moist and sunny

conditions are ideal for the growing of sugar cane. Farm sizes generally range between 20 and 70 hectares.

14.37 SUGAR CANE, Area, Production and Yield

Year	New South Wales						Queensland				
	Sugar cane cut for crushing			Raw sugar(a)			Sugar cane cut for crushing			Raw sugar(a)	
	Area harvested '000 ha	Production tonnes	Yield '000 t/ha	Quantity tonnes	Yield '000 t/ha		Area harvested '000 ha	Production tonnes	Yield '000 t/ha	Quantity tonnes	Yield '000 t/ha
1990-91	14	1 137	81.3	161	11.5		311	23 232	74.8	3 354	10.8
1991-92	15	1 416	93.7	180	12.0		314	19 225	61.2	2 931	9.3
1992-93	16	1 667	107.3	240	15.0		312	26 292	84.2	4 016	12.9
1993-94	15	1 674	112.7	218	14.5		323	29 638	91.8	4 082	12.6
1994-95	16	1 825	111.2	242	15.1		347	31 146	89.8	4 821	13.8
1995-96p	19	2 090	108.4	284	14.9		365	34 384	94.3	4 677	12.8

(a) In terms of 94 net titre.

Source: AgStats (7117.0); ABARE: Australia Commodities Forecasts and Issues, 1996.

Fodder crops

Considerable areas of Australia are devoted to fodder crops which are used either for grazing (as green feed), or harvested and conserved as hay and ensilage, etc.

This development of fodder conservation as a means of supplementing pasture and natural sources of stockfeed is the result of the seasonal and comparatively unreliable nature of rainfall in Australian agricultural areas.

14.38 FODDER CROPS, Area and Production

Year	Hay(a)				Green feed or silage(b)	
	Area '000 ha	Quantity '000 t	Production		Area '000 ha	Silage made '000 t
			Gross value \$m			
1989-90	297	964	104.0		1 053	723
1990-91	(c)336	(c)1 068	(c)112.3		(d)787	(d)574
1991-92	(c)450	(c)1 480	(c)159.0		(d)759	(d)687
1992-93	(c)324	(c)1 220	(c)r119.2		(d)712	(d)883
1993-94	321	1 227	136.3		707	1 142
1994-95	385	1 074	158.1		n.a.	n.a.

(a) Principally oaten and wheaten hay. (b) Principally from oats, barley, wheat and forage sorghum. (c) Excludes wheat for hay for all States, except New South Wales. (d) Excludes oats for New South Wales, Victoria, Tasmania and the Northern Territory.

Source: AgStats (7117.0).

Livestock

The numbers of each of the principal categories of livestock in Australia are shown in table 14.39 at 10-yearly intervals from 1871 to 1991, and then yearly.

14.39 LIVESTOCK

	Cattle '000	Sheep and lambs '000	Pigs '000
31 March			
1861	3 958	20 135	351
1871	4 276	41 594	543
1881	7 527	62 184	816
1891	10 300	97 881	891
1901	8 640	70 603	950
1911	11 745	98 066	1 026
1921	13 500	81 796	674
1931	11 721	110 568	1 072
1941	13 256	122 694	1 797
1951	15 229	115 596	1 134
1961	17 332	152 579	1 615
1971	24 373	177 792	2 590
1981	25 168	134 407	2 430
1991	(a)23 662	163 238	2 531
1992	(a)23 880	148 203	2 570
1993	(a)24 059	138 099	2 646
1994	(a)25 758	132 569	2 775
1995	(a)25 736	123 210	2 653
1996p	(a)27 012	126 320	2 663

(a) Excluding house cows and heifers.

Source: *Livestock and Livestock Products, Australia* (7215.0),
Principal Agricultural Commodities, Australia (Preliminary)
1995–96 (7111.0).

Cattle

Cattle raising is carried out in all States, the main object in certain districts being the production of stock suitable for slaughtering and in others the raising of dairy herds. In many areas, cattle are raised for both dairy and beef purposes. While dairy cattle are restricted mainly to southern and coastal districts, beef cattle are more concentrated in Queensland and New South Wales. Cattle numbers in Australia increased slowly during the 1960s and 1970s, despite seasonal changes and heavy slaughterings, to a peak of 33.4 million in 1976. Beef cattle production is often combined with cropping, dairying and sheep. In the northern half of Australia, cattle properties and herd sizes are very large, pastures are generally unimproved, fodder crops are rare and beef is usually the only product. The industry is more intensive in the south because of the more favourable environment including more improved pasture (see map 14.42).

Drought conditions in the early 1980s led to a decline in the beef herd until 1984. For the next five years, the size of the herd remained relatively static. Since 1989, cattle numbers have gradually increased, despite drought conditions which have prevailed in many parts of Queensland and north-western New South Wales. Table 14.41 shows the number of cattle by State/Territory.

14.40 CATTLE, By Age, Sex and Purpose

	31 March					
	1991 '000	1992 '000	1993 '000	1994 '000	1995 '000	1996p '000
Milk cattle						
Bulls used or intended for service	31	31	31	36	(a)	(a)
Cows, heifers and heifer calves	2 399	2 401	2 472	2 642	1 822	(a)
House cows and heifers	(a)	(a)	(a)	(a)	(a)	(a)
Total	2 430	2 432	2 504	2 678	2 741	2 933
Meat cattle						
Bulls used or intended for service	538	521	526	557	555	565
Cows and heifers (1 year and over)	10 687	10 748	11 171	12 076	11 215	11 908
Calves under 1 year	5 208	5 128	5 064	5 388	5 806	5 959
Other cattle (1 year and over)	4 799	5 050	4 795	5 058	5 419	5 646
Total	21 232	21 447	21 555	23 080	22 995	24 079
Total all cattle	23 662	23 880	24 062	25 758	25 736	27 012

(a) Not collected.

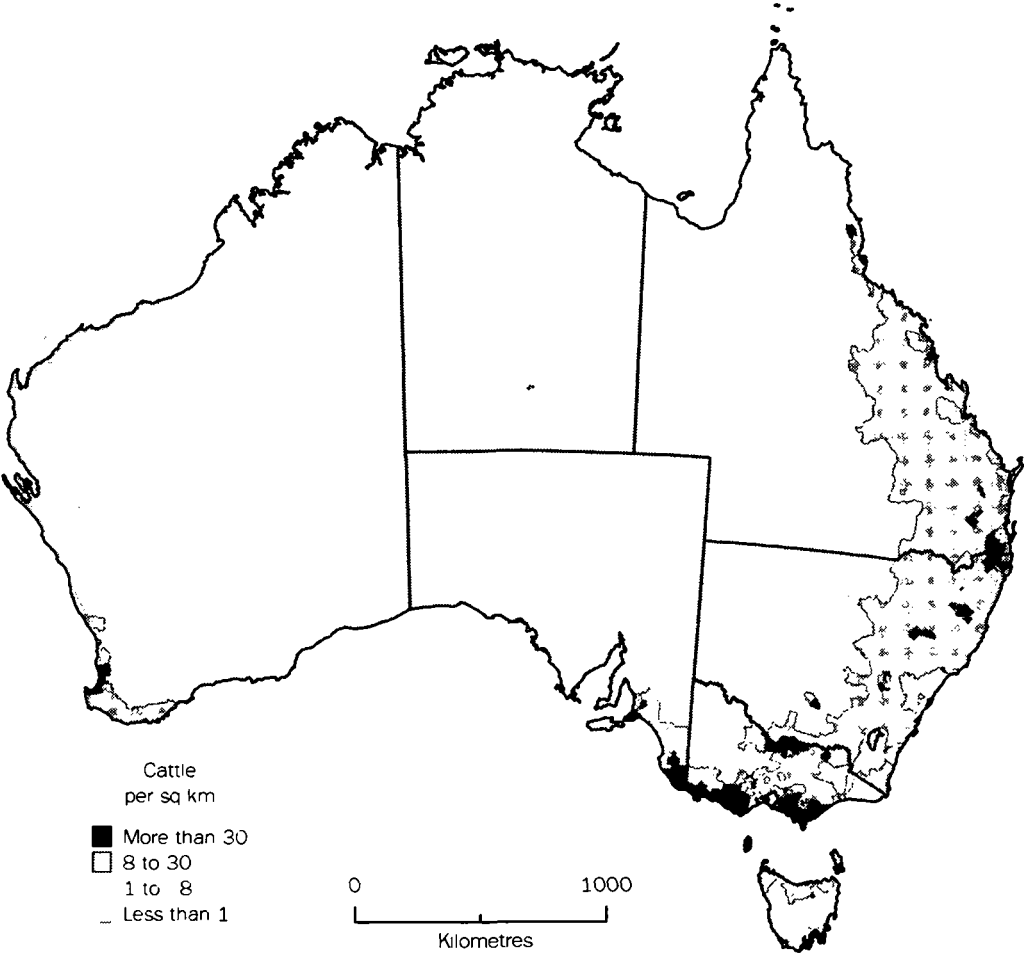
Source: *Livestock and Livestock Products, Australia* (7215.0); *Principal Agricultural Commodities, Australia* (Preliminary), 1995–96 (7111.0).

14.41 CATTLE, By State/Territory

Year	NSW '000	Vic. '000	Qld '000	SA '000	WA '000	Tas. '000	NT '000	Aust.(a) '000
1991	5 653	3 631	9 856	990	1 584	584	1 353	(b)23 662
1992	5 697	3 574	10 005	1 016	1 649	593	1 334	(b)23 880
1993	5 783	3 689	9 873	1 104	1 648	605	1 347	(b)24 062
1994	6 515	4 189	9 942	1 202	1 806	679	1 435	(b)25 758
1995	6 236	4 285	9 974	1 216	1 899	693	1 421	(b)25 736
1996p	6 661	4 579	10 483	1 206	1 817	733	n.a.	(b)27 012

(a) Includes the Australian Capital Territory. (b) Excluding house cows and heifers.
Source. *Livestock and Livestock Products, Australia* (7215 0); *Principal Agricultural Commodities, Australia* (Preliminary). 1995-96 (7111 0)

14.42 CATTLE FOR ALL PURPOSES, excluding house cows — 31 March 1995



Dairying

Dairying is a major Australian rural industry, ranking third behind the wheat and beef industries in terms of value of production. The preliminary estimate of the gross value of dairy production at farm gate prices in 1995–96 was \$2,965.8m (table 14.44), about 11% of the gross value of rural production. The gross value of this industry at an ex-factory level is about \$6,000m per year. The industry is also one of Australia's leading rural industries in terms of the proportion of downstream employment and processing it generates. Employment at manufacturing, processing and farm establishments is nearly 60,000 people.

The entry of the United Kingdom, Australia's then largest market, into the European Union in 1973 forced the Australian dairy industry to become more internationally competitive and to develop new export trade links. This emphasis was reinforced with the introduction of the Kerin Plan on 1 July 1986, which directly linked domestic product prices to international market returns. Around 45% of Australian milk production is now exported in manufactured forms, with over 80% of these sales destined for markets in Asia and the Middle East.

Dairy production

There are areas in Australia where climate and natural resources are favourable to dairying and allow production to be based on year-round pasture grazing. This encourages efficient, low cost milk production. With the exception of several inland river schemes, pasture growth generally depends on natural rainfall. Most non-irrigated dairy production is located in

coastal fringe areas. Feedlot based dairying remains uncommon in Australia, although the use of supplementary feed, such as grains, has become more common in recent years.

While seasonal conditions continue to have some influence on yearly output, Australian milk production has risen steadily over the past seven years and in 1995–96 was 8,716 million litres (table 14.44), an increase of 6% compared with the previous year. This largely reflected productivity gains through a combination of farm and herd management techniques. Table 14.43 shows the number of milk cattle over recent years. The preliminary 1995–96 figure for average production per dairy cow of 4,445 litres in 1995–96 was around a third higher than the levels of the early 1980s.

14.43 MILK CATTLE

31 March	Bulls used or intended for service '000	Cows and heifers used or intended for production of milk or cream for sale		Total(a) '000
		Cows (in milk and dry) '000	Heifers '000	
1991	31	1 637	762	2 430
1992	31	1 652	749	2 432
1993	31	1 697	776	2 504
1994	36	1 786	856	2 678
1995	(b)	1 822	(b)	2 741
1996p	(b)	1 961	(b)	2 933

(a) Excludes house cows and heifers. (b) Not collected separately, included in total.

Source: AgStats (7117.0).

14.44 WHOLE MILK, Production, Utilisation and Gross Value

Year	Market milk sales by factories mill. litres	Milk used in the manufacture of dairy products mill. litres	Whole milk intake by factories	
			Total intake mill. litres	Gross value \$m
1991–92	1 765	4 965	6 731	1 960.0
1992–93	1 777	5 550	7 327	2 314.4
1993–94	1 811	6 266	8 077	2 448.0
1994–95	1 832	6 374	8 206	2 419.1
1995–96p	1 835	6 881	8 716	2 965.8

Source: Australian Dairy Corporation; Value of Principal Agricultural Commodities Produced, Australia, 1995–96 Preliminary (7501.0).

Dairy domestic market

Average annual per capita milk consumption has stabilised at around 100 litres since the mid-1980s. However, there have been substantial changes in the types of fresh milk consumed, with fat reduced and modified milks taking an increasing share of overall market milk sales.

In 1994–95, Australians consumed 173,823 tonnes of cheese, 5% more than the previous year. On a per capita basis, this was 9.7 kg per person, 20% more than that consumed in 1984–85.

Sheep

New South Wales has been the State with the most sheep, except for a short period in the early 1860s, when the flocks in Victoria were larger. Western Australia is presently the second largest sheep raising State, with Victoria third (table 14.45).

Sheep numbers reached a peak of 180 million in Australia in 1970. Following subsequent falls, by March 1990 flock numbers had risen to 170 million. However, poor market prospects for wool since 1990 have had a marked impact on the flock size and numbers have declined since then. Map 14.47 shows the distribution of sheep and lambs in Australia at 31 March 1995.

14.45 SHEEP AND LAMBS

31 March	NSW mill.	Vic. mill.	Qld mill.	SA mill.	WA mill.	Tas. mill.	Aust. mill.
1991	59.8	27.5	17.4	17.2	36.5	4.8	163.2
1992	53.6	24.8	15.3	16.1	34.1	4.3	148.2
1993	48.1	23.6	13.4	15.7	33.0	4.3	138.1
1994	46.5	23.4	11.5	14.7	32.0	4.3	132.6
1995	42.9	21.4	11.6	13.2	30.2	3.9	123.2
1996p	43.8	22.6	10.8	14.0	31.0	4.0	126.3

Source: AgStats (7117.0); Selected Agricultural Commodities, Australia (Preliminary), 1995–96 (7112.0).

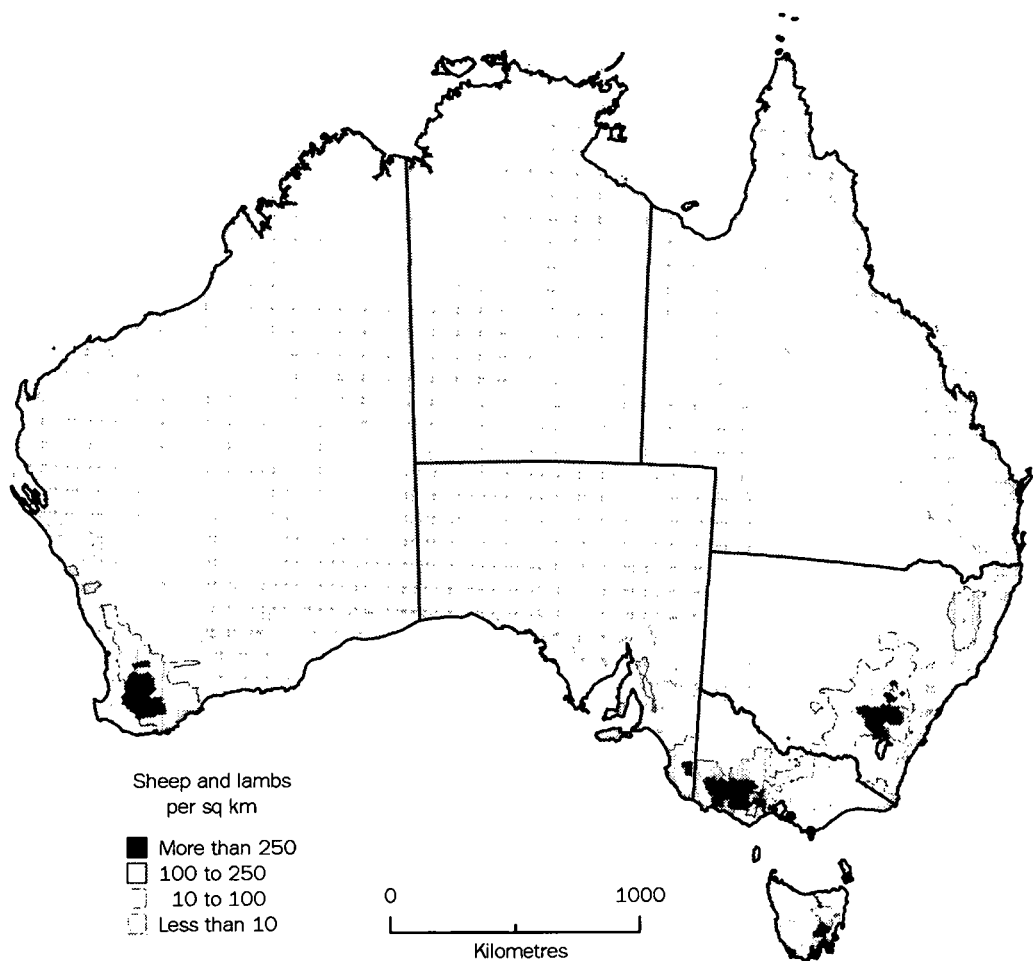
14.46 SHEEP AND LAMBS

	1991(a) mill.	1992(a) mill.	1993(a) mill.	1994(a) mill.	1995(a) mill.	1996p(a) mill.
Sheep (1 year and over)						
Rams	1.7	1.6	1.4	1.4	(b)	(b)
Breeding ewes	67.0	65.5	61.4	60.8	(b)	(b)
Other ewes	9.7	7.9	6.6	5.9	(b)	(b)
Wethers	48.7	45.5	40.3	34.8	(b)	(b)
All sheep	127.1	120.5	109.7	102.8	95.9	95.3
Lambs and hoggets (under 1 year)	36.1	27.8	28.4	29.7	27.3	31.0
Total sheep and lambs	163.2	148.2	138.1	132.6	123.2	126.3

(a) At 31 March. (b) Not separately collected.

Source: AgStats (7117.0); Selected Agricultural Commodities, Australia (Preliminary), 1995–96 (7112.0).

14.47 SHEEP AND LAMBS, total number — 31 March 1995



Pigs

As table 14.48 shows, New South Wales is the largest State for pig numbers, closely followed by Queensland.

14.48 PIGS

	NSW	Vic.	Qld	SA	WA	Tas.	Aust.(a)
31 March	'000	'000	'000	'000	'000	'000	'000
1991	821	403	596	400	271	38	2 531
1992	799	431	560	420	318	40	2 570
1993	818	425	617	435	305	44	2 646
1994	834	460	682	440	312	46	2 775
1995	791	439	644	423	316	38	2 653
1996p	747	463	670	415	330	34	2 663

(a) Includes the Northern Territory and the Australian Capital Territory.

Source: AgStats (7117.0).

Poultry

Meat strain chickens are easily the largest category of poultry in Australia, followed by hens and pullets for egg production (table 14.49).

14.49 POULTRY

31 March	Hens and pullets for egg production '000	Meat strain chickens (broilers) '000	Chickens		Other poultry		Total all poultry '000
			Total chickens(a) '000	Ducks '000	Turkeys '000	Other poultry '000	
1990(b)	12 759	43 537	59 262	276	1 221	446	61 205
1991(b)	12 257	39 429	54 330	364	1 426	442	56 562
1992(b)	10 735	44 318	59 320	413	1 317	(c)500	61 550
1993(b)	12 565	51 157	68 087	404	1 093	(c)330	69 914
1994(c)	12 788	50 153	68 701	(d)	(d)	1 660	70 361
1995(e)	11 148	54 445	65 593	n.c.	n.c.	2 088	67 681

(a) Includes breeding stock. (b) Excludes poultry in Tasmania and turkeys in South Australia. (c) Excludes some poultry in Tasmania and turkeys in South Australia. (d) Included in other poultry. (e) Excludes some poultry in Tasmania and other poultry in South Australia.

Source: *Livestock and Livestock Products, Australia* (7215.0); *AgStats* (7117.0).

Meat production and slaughtering

Tables 14.50 and 14.51 show details of slaughtering and meat production from abattoirs, commercial poultry and other slaughtering establishments, and include estimates of animals slaughtered on farms and by country butchers. The data relate only to slaughtering for human consumption and do not include animals condemned or those killed for boiling down.

Production of sheep meats in Australia is closely associated with the wool industry. Sheep grazing often occurs on mixed farms in conjunction with beef and/or grain enterprises and in some areas producers specialise in lamb production. The supply of sheep meat depends greatly on seasonal conditions, decisions to build up or reduce flock numbers, expectations of wool prices, live sheep exports and the pattern of

domestic consumption of meat. Preliminary mutton and lamb production estimates for 1995–96 show a fall of 8% to 555,000 tonnes (table 14.50).

Significant changes have taken place in the pig producing industry in recent years. Capital investment and corporate take-overs have seen the emergence of a few large companies producing 30% of all pigs sold in Australia. These moves, on top of the trend to more intensive and efficient production techniques, have seen pig meat production rise steadily since 1982 to reach a peak in 1994–95 of 351,330 tonnes. However, preliminary data for 1995–96 show a fall of 6% to 328,951 tonnes. In addition, there has been an increase in the slaughter weights of pigs, reflecting the demands of the fresh pork trade.

14.50 PRODUCTION OF MEAT(a)

Year	Carcass weight						Dressed weight(b)(c)	
	Beef '000 t	Veal '000 t	Mutton '000 t	Lamb '000 t	Pig meat '000 t	Total meat '000 t	Total all chickens '000 t	Poultry(d) '000 t
1990-91	1 723	36	381	287	312	2 741	388	424
1991-92	1 753	38	392	275	336	2 794	421	452
1992-93	1 787	39	370	273	328	2 798	441	468
1993-94	1 786	39	381	267	344	2 817	469	500
1994-95	1 766	38	339	265	350	2 757	467	499
1995-96p	1 667	34	295	260	329	2 586	468	503

(a) Excludes offal. (b) Excludes Tasmania, the Northern Territory and the Australian Capital Territory.

(c) Dressed weight of whole birds, pieces and giblets. (d) Includes other fowls, turkeys, ducks and drakes.

Source: *Livestock Products, Australia* (7215.0).

14.51 LIVESTOCK AND POULTRY SLAUGHTERED FOR HUMAN CONSUMPTION

Year	Cattle mill. head	Calves mill. head	Sheep mill. head	Lambs mill. head	Pigs mill. head	Chickens(a)(b) mill. head	Other fowls(c) and turkeys(b) mill. head	Ducks and drakes(b) mill. head
1990-91	7.3	1.0	18.2	16.4	4.9	(c)283.7	9.9	2.3
1991-92	7.6	1.1	18.8	15.8	5.1	(c)293.5	8.7	2.2
1992-93	7.4	1.0	17.5	15.4	5.0	304.1	8.4	2.3
1993-94	7.3	1.0	17.8	15.0	5.2	329.5	8.0	2.5
1994-95	7.2	1.0	16.8	15.1	5.1	330.5	8.7	2.3
1995-96p	6.8	1.0	13.9	14.0	4.8	329.3	9.5	2.6

(a) Comprises broilers, fryers and roasters (b) Excludes Tasmania, the Northern Territory and the Australian Capital Territory.

(c) Comprises hens, roosters, etc.

Source: *Livestock Products, Australia* (7215.0).

Table 14.52 shows a time series of the gross value of livestock slaughterings. The value for 1995-96 shows a sharp fall from 1994-95, due

mainly to a fall in the value of cattle and calf slaughterings.

14.52 GROSS VALUE OF LIVESTOCK SLAUGHTERINGS AND OTHER DISPOSALS(a)

Year	Cattle and calves \$m	Sheep and lambs \$m	Pigs \$m	Poultry \$m	Total(b) \$m
1990-91	3 869.4	364.2	691.0	788.3	5 721.0
1991-92	3 801.9	460.6	658.6	778.0	5 738.1
1992-93	3 839.2	663.0	649.5	833.5	6 023.5
1993-94	4 433.5	793.6	660.5	929.3	6 852.9
1994-95	4 213.5	833.7	630.6	902.0	6 615.7
1995-96p	3 474.3	1 005.5	589.2	964.6	6 066.4

(a) Includes adjustment for net exports of live animals. (b) Includes goats and buffalo.

Source: *Value of Agricultural Commodities Produced, Australia* (7503.0).

In 1995-96 exports of beef to Japan increased 3% to 340,738 tonnes. Liberalisation of the Japanese market occurred in 1991. This involved the removal of import quotas in exchange for a percentage of customs value. The United Kingdom also bought more Australian beef in 1995-96, raising its take by 37% to 10,167 tonnes. However, exports of beef to the United States fell 27% to 190,074 tonnes and

Canada only accepted 30,293 tonnes, 21% less than 1994-95. In 1995-96, Australia also exported 16% less beef to Taiwan and 14% less to Korea.

Table 14.53 shows a time series of the volume of exports of fresh, chilled or frozen meat, which is dominated by bone-out beef. Exports of both bone-out beef and bone-in mutton experienced falls in 1995-96.

14.53 EXPORTS OF FRESH, CHILLED OR FROZEN MEAT(a)

Year	Beef(b)(c)		Veal(b)		Mutton(b)		Lamb(b)		Pork Meat
	Bone-in '000 t	Bone-out '000 t	Bone-in '000 t	Bone-out '000 t	Bone-in '000 t	Bone-out '000 t	Bone-in '000 t	Bone-out '000 t	
1990-91	83.8	662.0	1.0	5.1	91.0	64.9	41.4	3.4	5.4
1991-92	100.0	691.5	1.5	5.7	103.7	75.0	39.4	4.6	5.0
1992-93	81.0	739.9	2.1	5.4	80.2	77.4	46.7	5.5	7.0
1993-94	62.7	742.4	1.3	5.8	97.9	71.0	52.7	5.2	5.9
1994-95	59.8	716.8	2.0	6.9	103.3	65.4	48.5	4.6	5.5
1995-96p	50.5	700.8	1.7	5.3	80.8	64.2	46.1	7.7	5.6

(a) Excludes offal. (b) Factors can be applied to beef, veal, mutton and lamb bone-out figures to derive bone-in carcass weight which, when added to bone-in figures, shows total exports in carcass weight. The factor for beef and veal is 1.5 and that for mutton and lamb 2.0 (Source: Australian Meat and Livestock Corporation). (c) Includes buffalo meat.

Source: *Merchandise Import and Exports, 1994-95 (5410.0)*.

14.54 LIVE SHEEP AND CATTLE EXPORTS(a)

Year	Live sheep exports				Live cattle exports			
	No. '000	Gross weight '000 t	Gross value \$'000	Unit value(b) \$	No. '000	Gross weight '000 t	Gross value \$'000	Unit value(b) \$
1990-91	3 140.5	162.0	45 612	14.40	94.9	31.3	50 407	542.30
1991-92	4 395.6	258.0	87 717	20.00	107.4	33.2	54 930	511.40
1992-93	5 097.1	270.5	121 933	23.92	148.6	50.4	69 847	470.20
1993-94	5 429.8	287.4	148 907	27.42	234.7	79.9	115 020	489.97
1994-95	5 533.6	283.6	179 086	32.36	385.7	136.5	201 948	523.52
1995-96p	5 874.4	296.6	226 461	38.55	616.8	219.2	344 053	557.84

(a) Excludes live sheep and cattle for breeding. (b) Obtained by dividing the gross value by the number of sheep, or cattle.

Source: *Foreign Trade, Australia: Merchandise Imports and Exports, 1994-95 (5410.0)*

Wool

Wool production

Shorn wool ('greasy wool') contains an appreciable amount of grease, dirt, vegetable matter and other extraneous material. The exact quantities of these impurities in the fleece vary with climatic and pastoral conditions, seasonal fluctuations and the breed and condition of the sheep. It is, however, the clean wool fibre that is ultimately consumed by the textile industry, and the term 'clean yield' is used to express the net wool fibre content present in greasy wool.

Following a gradual upward trend of clean yields to 66% of the Australian clip in 1992-93, this has now fallen to 65% in 1995-96.

Preliminary estimates of the gross value of wool produced in 1995-96 are 55% lower than in 1988-89, the peak year in the wool boom of the 1980s and 19% below the 1994-95 gross value (table 14.55).

14.55 SHEARING, WOOL PRODUCTION AND VALUE

Year	Sheep and lambs shorn mill.	Average fleece weight kg	Wool production			
			Shorn wool '000 t	Other wool(a) '000 t	Total wool	
					Quantity '000 t	Gross value(b) \$m
1990-91	212.9	4.65	989.2	76.9	1 066.1	4 181.0
1991-92	181.2	4.42	801.2	73.7	875.0	2 980.0
1992-93	179.0	4.55	815.1	54.3	869.4	2 569.0
1993-94	148.7	4.49	775.8	52.6	828.3	2 449.1
1994-95	155.5	4.37	679.4	49.6	729.0	3 317.9
1995-96p	143.2	4.48	641.4	44.9	686.3	2 686.8

(a) Comprises dead and fellmongered wool, and wool exported on skins. (b) Gross value is based for shorn wool upon the average price realised for greasy wool sold at auction and, for skin wools, on prices recorded by fellmongers and skin exporters.

Source: *Value of Agricultural Commodities Produced, Australia (7503.0)*; *Livestock and Livestock Products, Australia (7215.0)*.

Wool receivals

The total amounts of taxable wool received by brokers and purchased by dealers in recent years are shown in table 14.56. It excludes wool received by brokers on which tax had already been paid by other dealers (private buyers) or brokers.

14.56 TAXABLE WOOL RECEIVALS

Year	Receivals			Dealers as % of total receivals %
	Brokers '000 t	Dealers '000 t	Brokers and dealers '000 t	
1990-91	916.3	96.4	1 012.7	9.5
1991-92	734.2	102.3	836.6	12.2
1992-93	703.2	140.8	844.1	16.8
1993-94	635.2	149.0	784.2	19.0
1994-95	566.6	112.8	679.4	16.6
1995-96p	548.2	93.0	641.2	14.5

Source: *Livestock Products, Australia (7215.0)*.

Wool marketing arrangements

The auction system reverted to a 'free marketing' system during the 1990-91 season. The Reserve Price Scheme that had operated since 1974 was suspended in February 1991. It had become unworkable due to the massive accumulation of wool in the stockpile and the substantial debt which had been incurred. The wool stockpile at the end of 1990-91 was 4,623,938 bales.

In 1994 the Australian Wool Research and Promotion Organisation (AWRAP) integrated its operations with the International Wool Secretariat (IWS) to form a strong

customer-oriented international promotion and research organisation focused on building sustainable demand for wool and wool products. While AWRAP and IWS remain separate legal entities all operational activities are now conducted under the name of IWS. AWRAP conducts certain statutory activities independent of IWS.

From 1 February 1994, the Australian Wool Exchange (AWEX) took over responsibility for the wool auction system. AWEX is not a statutory body and cannot compulsorily collect levies, and is run on a commercial basis. Its major role includes the building and running of a self-regulating wool selling structure and market reporting service on behalf of the wool trade. To achieve this goal, AWEX will explore the advantages and disadvantages of selling wool by different methods. This is illustrated by the currently scheduled trials involving sale of wool by description without display samples.

Sales of wool from the stockpile are controlled by Wool International, the statutory authority in charge of the stockpile. Most wool is sold forward from the stockpile by private treaty, supplemented by auction sales for spot or deferred delivery. From 1 January 1995, Wool International is required to sell a minimum of 182,000 bales and a maximum of 192,000 bales from the stockpile per quarter. Until 1 July 1996, Wool International received wool tax from wool sales for debt repayment associated with the stockpile. Wool tax paid over the period 1993-94 to 1995-96 will form the basis for an entitlement to the residual assets, following the liquidation of the stockpile and repayment of debt.

Wool International's unsold stock at 30 June 1996 was 2,276,070 bales.

Beekeeping

The beekeeping industry consists of 300–400 full-time apiarists, who account for about 70% of the Australian honey production, and a large

number of part-time apiarists who produce the rest. Some of these apiarists move as far afield as from Victoria to Queensland in an endeavour to obtain a continuous supply of nectar for honey from suitable flora. While honey production remains the predominant sector of the industry, production of breeding stock and provision of pollination services are also significant.

14.57 BEEKEEPING

Year	Honey produced						Beeswax produced	
	Number of apiarists	Number of beehives			Average production per productive hive kg	Gross value \$'000	Quantity tonnes	Gross value(b) \$'000
		Productive(a) '000	Total '000	Quantity '000 t				
1989–90	819	298	405	21	71	26 113	412	1 546
1990–91	726	290	384	21	71	26 078	381	1 389
1991–92	651	264	366	19	72	25 008	390	1 305
1992–93	686	278	362	23	81	31 499	422	1 522
1993–94(c)	1 659	381	534	26	68	32 923	620	2 648
1994–95(c)	1 271	314	465	19	61	24 621	341	1 475

(a) Beehives from which honey was taken. (b) Includes pollen. (c) Estimated Value of Agricultural Operations (EVAO) \$5,000.

Source: AgStats (7117.0).

Emerging agricultural industries

The list of agricultural commodities that are now produced in Australia has continued to expand. Some, such as goat (either for fibre, meat or milk) and deer (meat and velvet) production, are now well established. Newer ventures conducted by the livestock farming industry include:

- sheep milk farming
- emu farming
- ostrich farming
- rabbit farming
- crocodile farming
- alpaca farming

In horticulture established crops now include tea and coffee. Other crops more recently introduced include a large variety of fruits and vegetables (mainly from Asia), herbs and pyrethrum, an important oil.

Apparent consumption of foodstuffs

Estimates of the consumption of foodstuffs in Australia are compiled by deducting exports from the sum of production and imports and allowing for recorded movement in stocks of the various commodities. The term consumption is used in a specialised sense. The estimates derived are broadly the quantities available for consumption at a particular level of distribution, that is, ex-market, ex-store or ex-factory depending on the method of marketing and/or processing. Because consumption of foodstuffs is measured, in general, at producer level, no allowance is made for wastage before they are consumed. The effect of ignoring wastage is ultimately to overstate consumption to some extent.

The estimates of consumption per capita have been obtained by using the mean resident population for the period.

Table 14.58 shows the changes in trends in the consumption of various foodstuffs since 1938–39.

14.58 APPARENT PER CAPITA CONSUMPTION OF FOOD STUFFS

Commodity	Units	Average 3 years ended							
		1938-39	1948-49	1958-59	1968-69	1978-79	1988-89	1993-94p	1994-95p
Meat (carcass equivalent weight)									
Beef	kg	n.a.	n.a.	n.a.	n.a.	n.a.	39.5	36.4	33.6
Veal	kg	n.a.	n.a.	n.a.	n.a.	n.a.	1.5	1.6	1.5
Beef and veal	kg	63.6	49.5	56.2	40.0	64.8	41.1	r38.1	35.1
Lamb	kg	6.8	11.4	13.3	20.5	14.4	14.9	r11.5	11.4
Mutton	kg	27.2	20.5	23.1	18.8	3.6	6.8	r9.1	5.2
Pigmeat(a)	kg	3.9	3.2	4.6	6.7	13.3	18.1	r19.4	19.3
Total meat	kg	101.5	84.6	97.2	85.9	96.1	80.8	r78.1	71.1
Offal and meat, n.e.i.	kg	3.8	4.0	5.2	5.1	5.9	2.5	2.3	1.8
Total meat and meat products (carcass equivalent weight)	kg	118.5	103.0	112.4	98.8	102.0	83.3	r80.3	72.9
Canned meat (canned weight)	kg	1.0	1.2	1.9	2.2	1.6	n.a.	n.a.	n.a.
Bacon and ham (cured carcass weight)	kg	4.6	5.3	3.2	3.6	6.0	6.9	n.a.	n.a.
Poultry									
Poultry (dressed weight)	kg	n.a.	n.a.	n.a.	8.3	17.1	24.2	r27.9	27.2
Milk and milk products									
Market milk (fluid whole litres)	L	106.4	138.7	128.7	128.2	100.5	101.0	r102.0	103.0
Cheese (natural equivalent weight)	kg	2.0	2.5	2.6	3.5	5.3	9.0	9.3	9.7
Oils and fats									
Butter	kg	14.9	11.2	12.3	9.8	5.1	2.9	r2.7	2.9
Table margarine	kg	0.4	0.4	n.a.	1.5	5.4	6.8	r5.9	5.3
Other margarine	kg	1.8	2.4	2.2	3.4	3.1	2.2	1.9	2.0
Total margarine	kg	2.2	2.8	n.a.	4.9	8.5	9.0	r7.8	7.3
Beverages									
Tea	—	3.1	2.9	2.7	2.3	1.7	1.2	1.0	0.9
Coffee(b)	—	0.3	0.5	0.6	1.2	1.6	2.0	2.3	2.2
Aerated and carbonated waters	L	n.a.	n.a.	n.a.	47.3	67.4	79.9	r104.6	108.1
Beer	L	53.2	76.8	99.7	113.5	133.2	115.4	r99.8	95.4
Wine	L	2.7	5.9	5.0	8.2	14.7	19.1	18.5	18.2
Spirits (litres alcohol)	L	0.5	0.8	0.7	0.9	1.2	1.3	r1.4	1.4

(a) Includes pigmeat for bacon and ham. (b) Coffee and coffee products in terms of roasted coffee.

Source: *Apparent Consumption of Foodstuffs and Nutrients, Australia (4306.0)*.

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