

CHAPTER 13

AGRICULTURAL INDUSTRIES

This chapter is divided into the following major parts:—Introduction; Sources of statistics and definitions of units; Structural statistics (provides data on the legal arrangements, size and industry class of the business organisations operating within the agricultural sector); Value of agricultural commodities produced and index of values at constant prices; Apparent consumption of foodstuffs and nutrients; Land tenure and utilisation; Crop statistics; Livestock statistics; Livestock products; Agricultural improvements, employment, regulation of agricultural industries, and the agricultural research activities of the Commonwealth Scientific and Industrial Research Organization (CSIRO).

Introduction

The development of Australian agricultural industries has been determined by interacting factors such as profitable markets, the opening up of new land (including the development of transport facilities) and technical and scientific achievements. Subsistence farming, recurring gluts, low prices and losses to farmers were gradually overcome by the development of an export trade. Profitable overseas markets for merino wool and wheat, and the introduction of storage and refrigerated shipping for the dairying and meat industry combined to make the agricultural sector Australia's main export earner. Until the late 1950s, agricultural products comprised more than 80 per cent of the value of Australia's exports. Since then, the proportion of Australia's exports coming from the agricultural sector has declined markedly.

However, this decline in importance has been due not to a decline in agricultural activity but rather to an increase in the quantity and values of the exports of the mining and manufacturing sectors. In fact, the agricultural sector experienced an increase in total output over that period. One interesting aspect of this increase in output is that it was accompanied by a large reduction in the size of the agricultural labour force, implying a large growth in productivity within the sector.

Sources of statistics and definitions of units

Agricultural Census

The major source of the statistics in this chapter is the Agricultural Census conducted at 31 March each year. This collects a wide range of information from agricultural establishments with agricultural activity covering the physical aspects of agriculture such as area and production of crops, fertilisers used, number of livestock disposed of, etc. In conjunction with the Census, certain supplementary collections are conducted in some States where this has proved expedient, e.g. where the harvesting of certain crops has not been completed by 31 March (apples, potatoes, etc.), special returns covering the crops concerned are collected after the completion of the harvest.

The ABS excludes from the Census those establishments which make only a small contribution to overall agricultural production. Thus the 1984-85 Census includes establishments with agricultural activity which had, or were expected to have, an estimated value of agricultural operations of \$2,500 or more. In previous years the value cut off was applied at the enterprise level—for 1981-82 the value was \$2,500 and for earlier years, \$1,500.

While these changes have resulted in some changes in the counts of numbers of establishments appearing in publications, 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.

Details of the method used in the calculation of the estimated value of agricultural operations are contained in the publication *Agricultural Industries: Structure of Operating Units, Australia* (7102.0).

Integrated Register Information System (IRIS)

The former register, the Integrated Agricultural Register (IAR), contained information about the area, type, legal status, level of activity and location of units engaged in agriculture, and was originally compiled by adding data from a special census of economic units conducted in 1974 to existing data relating to physical characteristics of agricultural establishments. Details of agricultural units for 1983-84 have been derived from the Integrated Register Information System (IRIS) which has absorbed the IAR. Details of the structure of economic units engaged in agriculture, in hierarchical order, are:

- *Enterprise* (the second level of economic unit). The enterprise is that unit comprising all operations in Australia of a single operating legal entity. (The term 'single legal entity' means a sole trader, partnership, company, trust, co-operative or estate in the private sector, or a department, local government authority or statutory authority in the government sector). For the agricultural sector, a 'multi-State enterprise' is an enterprise which belongs to an enterprise group which undertakes agricultural activities in more than one State.
- *Establishment* (the smallest economic unit). The establishment covers all operations carried out by one enterprise at a single physical location.

Other Statistical Collections

The ABS conducts a number of other collections to obtain agricultural statistics. These include collections from wool brokers and dealers, livestock slaughterers and other organisations involved in the marketing and selling of agricultural commodities.

For financial statistics from the Agricultural Finance Survey, last conducted for 1980-81, see Year Book No. 69, page 250, or *Agricultural Industries: Financial Statistics, Australia 1980-81* (7507.0).



Cotton growing in northern Australia.

Australian Information Service

Structural statistics

The following tables provide information relating to the structure of operating units during 1983-84. Although the definitions of the operating units have been provided above, the following terminology is also used:

- *Industry*. As set out in the *Australian Standard Industrial Classification* (ASIC) (1201.0 and 1202.0). These publications provide details of the methodology used in determining the industry class of an economic unit.
- *Estimated Value of Agricultural Operations* (EVAO). This is determined by valuing the physical crop and livestock information collected in the Agricultural Census.

A further explanation of this terminology and more detailed statistics are given in the publication *Agricultural Industries: Structure of Operating Units, Australia* (7102.0).

NUMBER OF UNITS BY TYPE OF UNIT							
<i>Year/unit</i>	<i>N.S.W.</i>	<i>Vic.</i>	<i>Qld</i>	<i>S.A.</i>	<i>W.A.</i>	<i>Tas.</i>	<i>Aust. (a)</i>
1981-82(b)—							
Agricultural establishments	52,695	46,167	33,820	19,170	16,613	5,664	174,166
Non-agricultural establishments with agricultural activity	1,017	2,440	1,500	2,232	939	308	8,506
Agricultural enterprises	50,872	44,873	32,342	18,699	15,354	5,439	168,309
Non-agricultural enterprises operating agricultural establishments	831	793	407	251	316	164	2,795
1982-83(c)—							
Agricultural establishments	52,952	46,661	33,764	19,840	16,471	5,702	175,731
Non-agricultural establishments with agricultural activity	753	506	272	279	338	138	2,294
Agricultural enterprises				—n.a.—			
Non-agricultural enterprises operating agricultural establishments				—n.a.—			
1983-84(c)p—							
Agricultural establishments	52,704	45,560	33,948	19,289	16,584	5,586	174,025
Non-agricultural establishments with agricultural activity	307	424	219	190	166	78	1,387
Agricultural enterprises				—n.a.—			
Non-agricultural enterprises operating agricultural establishments				—n.a.—			

(a) Includes enterprises and establishments in the Northern Territory, Australian Capital Territory and multi-State enterprises.

(b) As recorded by the Integrated Agricultural Register in its last year of operation. Agricultural Enterprises, and their component Agricultural Establishments, were not tabulated if estimated value of agricultural operations of the parent enterprise was less than \$2,500.

(c) Establishments recorded by the Agricultural Census.

AGRICULTURAL ESTABLISHMENTS, INDUSTRY AND ESTIMATED VALUE OF AGRICULTURAL OPERATIONS: 1983-84

ASIC Code	Industry of establishment	Estimated value of agricultural operations (\$'000)										200 and more	Total enterprises(a)
		3-9	10-19	20-29	30-39	40-49	50-59	60-74	75-99	100-149	150-199		
A	Agriculture, Forestry, Fishing and Hunting												
01	Agriculture												
0124	Poultry for meat	15	33	43	50	74	60	96	100	88	23	91	681
0125	Poultry for eggs	42	57	43	32	38	31	54	58	145	101	380	996
0134	Grapes	535	664	703	796	529	425	339	262	154	48	75	4,635
0135	Plantation fruit	199	387	334	241	177	149	150	143	110	49	70	2,036
0136	Orchard and other fruit	1,179	1,088	811	660	517	409	464	495	511	194	294	6,973
0143	Potatoes	56	111	131	124	127	118	148	201	279	158	294	1,758
0144	Vegetables (except potatoes)	671	832	539	405	297	226	248	301	390	213	479	4,704
0181	Cereal grains (incl. oilseeds n.e.c.)	775	1,136	1,049	1,054	1,115	1,188	1,799	2,626	3,786	2,444	5,277	22,420
0182	Sheep—cereal grains	462	1,031	1,396	1,518	1,625	1,583	2,382	3,210	3,976	2,008	2,625	21,869
0183	Meat cattle—cereal grains	397	614	529	434	358	300	349	478	573	274	386	4,726
0184	Sheep—meat cattle	1,268	1,493	1,301	1,029	807	660	799	799	838	408	514	10,154
0185	Sheep	3,498	3,484	2,583	2,135	1,749	1,342	1,520	1,652	1,533	589	659	21,526
0186	Meat cattle	11,175	7,079	3,303	1,881	1,202	847	858	922	899	437	829	32,363
0187	Milk cattle	455	976	1,343	1,922	2,529	2,660	3,337	3,208	2,210	545	351	19,655
0188	Pigs	307	346	252	213	180	142	194	227	296	149	301	2,672
0191	Sugar cane	34	133	252	468	701	726	955	1,082	1,031	415	319	6,122
0192	Peanuts	9	19	26	38	35	39	52	51	57	29	28	388
0193	Tobacco		2	13	31	51	67	119	198	163	40	23	708
0194	Cotton	1	3	2	2	3	2	6	8	21	33	342	425
0195	Nurseries	255	263	243	182	101	163	144	147	184	93	261	2,338
0196	Agriculture n.e.c.	2,267	1,660	763	494	302	200	180	175	144	50	83	6,876
	Total (ASIC code 01)	23,600	21,411	15,659	13,709	12,517	11,337	14,193	16,343	17,388	8,300	13,681	174,025
02	Services to agriculture	42	28	15	5	5	5	9	1	3	—	—	128
03	Forestry and logging	13	8	4		2	1	1	2	—	1	1	34
04	Fishing and hunting	2	2	1	1	—	1	—	—	—	—	—	8
	Total (ASIC Division A)	23,657	21,449	15,679	13,715	12,524	11,344	14,203	16,346	17,391	8,301	13,682	174,195
B	Mining	8	2	1	—	—	—	1	—	2	—	—	19
C	Manufacturing	28	38	24	11	5	2	6	8	8	1	13	160
D	Electricity, Gas and Water					1	—	1	—	—	—	1	3
E	Construction	79	56	28	10	5	7	5	3	2	—	—	234
F	Wholesale and Retail Trade	68	45	28	29	17	12	14	8	13	5	16	298
G	Transport and Storage	78	58	28	11	8	4	5	5	4	—	1	222
H	Communication					—	—	—	—	—	—	—	—
I	Finance, Property and Business Services	22	11	5	3		1	—	—	1	—	—	49
J	Public Administration and Defence		1		1	—	—	—	1	—	—	—	3
K	Community Services	13	7	14	7	6	6	9	12	16	12	24	135
L	Recreation, Personal and Other Services	41	13	8	9	3	3	1	1	—	—	1	94
	Total, all industries	23,994	21,680	15,815	13,769	12,569	11,379	14,245	16,384	17,437	8,319	13,738	175,412

(a) Includes establishments with an EVAO of less than \$3,000

AGRICULTURAL ESTABLISHMENTS(a) INDUSTRY: 1983-84

ASIC Code	Industry of establishment	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	Australia(b)
A	Agriculture, Forestry, Fishing and Hunting—							
01	Agriculture—							
0124	Poultry for meat	329	123	96	68	48	15	681
0125	Poultry for eggs	354	210	192	99	109	27	996
0134	Grapes	755	1,912	120	1,633	207	6	4,635
0135	Plantation fruit	1,046	—	879	—	106	—	2,036
0136	Orchard and other fruit	2,107	1,203	1,144	1,525	671	318	6,973
0143	Potatoes	243	675	288	154	190	208	1,758
0144	Vegetables (except potatoes)	1,058	758	1,253	766	582	272	4,704
0181	Cereal grains (incl. oilseeds n.e.c.)	6,964	4,818	3,985	3,271	3,328	51	22,420
0182	Sheep—cereal grains	7,800	4,012	397	4,617	4,850	188	21,869
0183	Meat cattle—cereal grains	1,838	452	2,235	132	45	19	4,726

For footnote see end of table.

AGRICULTURAL ESTABLISHMENTS(a) INDUSTRY: 1983-84—continued

ASIC Code	Industry of establishment		N.S.W.	Vic	Qld	S.A.	W.A.	Tas	Australia(b)
	Description								
0184	Sheep—meat cattle		3,824	3,132	820	981	811	566	10,154
0185	Sheep		7,260	7,053	1,244	2,589	2,122	1,222	21,526
0186	Meat cattle		10,962	7,914	9,428	912	1,885	1,051	32,363
0187	Milk cattle		3,232	10,455	2,778	1,309	630	1,245	19,655
0188	Pigs		811	430	739	318	242	130	2,672
0191	Sugar cane		526	—	5,595	—	1	—	6,122
0192	Peanuts		3	—	384	—	1	—	388
0193	Tobacco		42	268	398	—	—	—	708
0194	Cotton		237	—	188	—	—	—	425
0195	Nurseries		906	445	468	208	247	54	2,338
0196	Agriculture n.e.c.		2,407	1,700	1,317	707	509	214	6,876
	Total (ASIC code 01)		52,704	45,560	33,948	19,289	16,584	5,586	174,025
02	Services to agriculture		16	56	30	11	13	2	128
03	Forestry and logging		7	6	8	—	2	11	34
04	Fishing and hunting		—	—	2	2	3	1	8
	Total (ASIC division A)		52,727	45,622	33,988	19,302	16,602	5,600	174,195
B	Mining		5	5	3	4	2	—	19
C	Manufacturing		30	31	23	35	37	4	160
D	Electricity, Gas and Water		—	2	—	1	—	—	3
E	Construction		44	92	25	36	24	13	234
F	Wholesale and Retail Trade		83	83	37	46	29	19	298
G	Transport and Storage		55	76	22	24	26	19	222
H	Communication		—	—	—	—	—	—	—
I	Finance, Property and Business Services		14	14	5	11	5	—	49
J	Public Administration and Defence		2	—	—	1	—	—	3
K	Community Services		33	11	55	13	15	6	135
L	Recreation, Personal and Other Services		18	48	9	6	10	3	94
	Total, all industries		53,011	45,984	34,167	19,479	16,750	5,664	175,412

(a) Includes establishments with an EVAO of less than \$3,000.

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

Value of agricultural commodities produced and index of values at constant prices

Definitions

Gross value of commodities produced is the value placed on recorded production at the wholesale prices realised in the market place.

Marketing costs include freight, cost of containers, commission and other charges incurred in marketing.

Local value of commodities produced is the value placed on commodities at the place of production and is ascertained by deducting marketing costs from the gross value.

Index of values at constant prices is the index of the gross value of commodities produced at constant prices, i.e. it is a measure of change in value after the direct effects of price changes have been eliminated.

VALUES OF AGRICULTURAL COMMODITIES: 1983-84

	Gross value of agricultural commodities produced	Marketing costs	Local value of commodities produced	Index of values at constant prices of agricultural commodities produced (a) (Base year: 1979-80=1000)
	\$m	\$m	\$m	
Crops	8,434.7	1,355.0	7,079.7	1,285
Livestock slaughtering and other disposals	3,392.8	245.5	3,147.3	903
Livestock products	3,489.8	165.9	3,323.9	1,035
Total agriculture	15,317.2	1,766.3	13,550.9	1,111

(a) Weighted by average unit values for the year 1979-80.

Publications

Two preliminary estimates of value of commodities produced are published: *Value of Principal Agricultural Commodities Produced, Australia, First Estimates* (7501.0) and *Value of Selected Agricultural Commodities Produced, Australia, Second Estimates* (7502.0). A final publication, *Value of Agricultural Commodities Produced, Australia* (7503.0), contains Indexes of Values at Constant Prices.

Index of Agricultural Commodities Produced

The index is consistent in scope with those of previous years. The indexes are weighted by the average unit values for the year 1979-80 with a reference base of 1979-80=1000.

For further details on how these and earlier series were calculated see Year Book No. 61, pages 1063-65 and *Value of Agricultural Commodities Produced, Australia* (7503.0).

PERCENTAGE OF TOTAL GROSS VALUE OF AGRICULTURAL COMMODITIES, AUSTRALIA, 1979-80 TO 1984-85

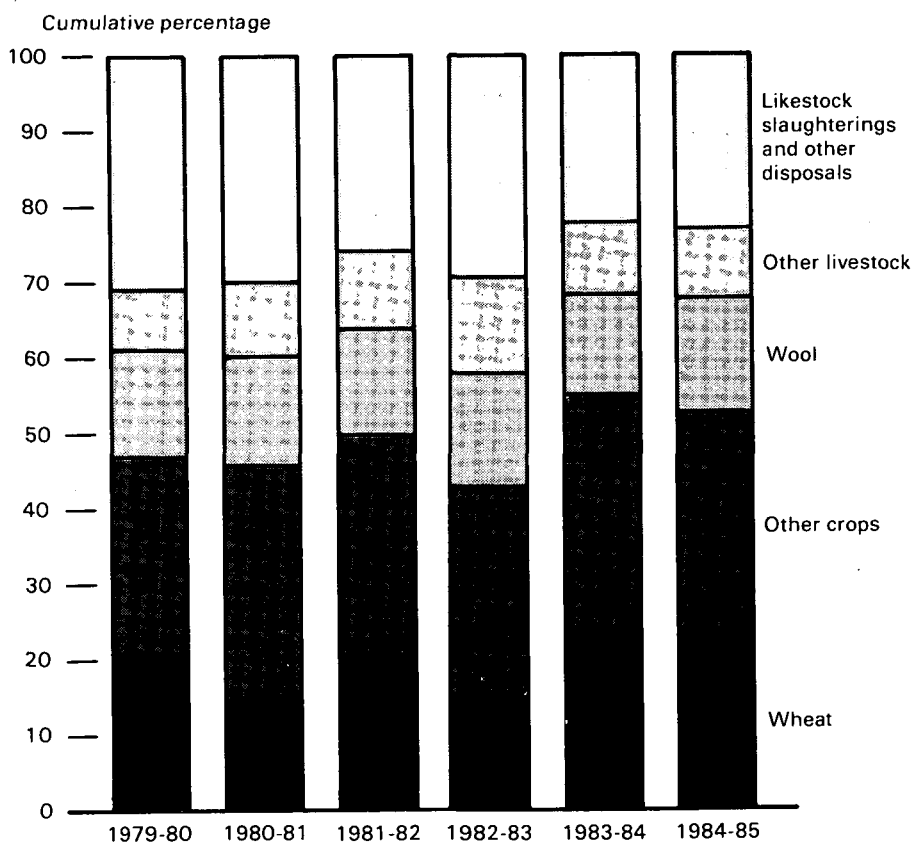


PLATE 34

GROSS VALUE OF AGRICULTURAL COMMODITIES PRODUCED

	(\$m)					
	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85p
Crops—						
Barley for grain	449.8	380.9	463.4	290.8	734.0	772.7
Oats for grain	98.8	139.5	155.7	116.1	203.8	128.0
Wheat for grain	2,478.0	1,684.1	2,599.4	1,566.2	3,605.6	3,503.8
Other cereal grains	218.9	327.6	294.1	260.4	408.7	400.1
Sugar cane cut for crushing	548.2	799.7	590.2	508.9	516.6	500.4
Fruit and nuts	406.6	459.8	464.4	498.0	554.4	626.7
Grapes	231.1	178.2	222.8	212.5	217.0	199.2
Vegetables	402.3	509.0	554.3	556.9	738.6	624.8
All other crops (a)	707.3	827.2	967.6	1,000.5	1,456.0	1,377.2
<i>Total crops</i>	<i>5,540.8</i>	<i>5,305.9</i>	<i>6,311.9</i>	<i>5,010.3</i>	<i>8,434.7</i>	<i>8,132.9</i>
Livestock slaughterings and other disposals (b)—						
Cattle and calves (c)	2,386.0	2,056.5	1,890.1	2,076.2	2,037.5	2,118.9
Sheep and lambs	654.3	718.9	646.7	548.0	562.1	539.5
Pigs	311.3	337.5	396.1	414.9	373.7	435.2
Poultry	307.2	361.4	362.7	413.1	419.4	468.4
<i>Total livestock slaughterings and other disposals</i>	<i>3,658.8</i>	<i>3,474.3</i>	<i>3,295.6</i>	<i>3,452.2</i>	<i>3,392.8</i>	<i>3,562.1</i>
Livestock products—						
Wool	1,651.4	1,669.5	1,788.7	1,760.9	2,016.1	2,321.3
Milk	676.0	(d)885.1	(d)1,033.9	1,186.5	(d)1,153.2	(d)1,082.2
Eggs	216.1	(e)227.4	(e)253.4	275.3	(e)280.6	(e)292.9
<i>Total livestock products (f) (g)</i>	<i>2,564.3</i>	<i>2,803.8</i>	<i>3,100.6</i>	<i>3,245.8</i>	<i>3,489.8</i>	<i>3,726.4</i>
Total value of agricultural commodities produced	11,763.9	11,584.1	12,708.2	11,708.3	15,317.2	15,421.4

(a) Includes pastures and grasses cut for hay and harvested for seed. Excludes crops for green feed or silage. (b) Includes net exports of livestock. (c) Includes dairy cattle slaughtered. (d) Excludes the Northern Territory and the A.C.T. (e) Excludes the A.C.T. (f) Includes honey and beeswax. (g) Excludes Northern Territory milk. Includes A.C.T. milk and eggs.

INDEX OF VALUES AT CONSTANT PRICES OF AGRICULTURAL COMMODITIES PRODUCED(a)

(Base year: 1979-80=1000)

	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84
Crops—						
Barley for grain	1,082	1,000	724	932	524	1,321
Oats for grain	1,250	1,000	799	1,146	603	1,627
Wheat for grain	1,127	1,000	663	1,017	545	1,373
Other cereal grains	1,207	1,000	1,233	1,417	975	1,561
Sugar cane (b)	983	1,000	1,120	1,162	1,192	1,086
Fruit and nuts	1,022	1,000	1,069	988	1,017	961
Grapes	783	1,000	825	984	963	994
Vegetables	998	1,000	1,011	1,056	1,044	1,102
All other crops (c)	991	1,000	964	1,106	931	1,361
<i>Total</i>	<i>1,066</i>	<i>1,000</i>	<i>838</i>	<i>1,053</i>	<i>763</i>	<i>1,285</i>
Livestock slaughterings and other disposals—						
Cattle and calves (d)	1,290	1,000	938	1,005	986	855
Sheep and lambs	830	1,000	1,032	946	1,018	930
Pigs	904	1,000	1,061	1,038	1,087	1,153
Poultry	866	1,000	968	893	1,000	952
<i>Total (e)</i>	<i>1,138</i>	<i>1,000</i>	<i>968</i>	<i>988</i>	<i>1,002</i>	<i>903</i>
Livestock products—						
Wool	994	1,000	990	1,012	995	1,026
Milk	1,031	1,000	947	956	1,011	1,089
Eggs	1,017	1,000	959	927	961	935
<i>Total (f)</i>	<i>1,004</i>	<i>1,000</i>	<i>974</i>	<i>990</i>	<i>995</i>	<i>1,035</i>
Total agricultural commodities produced	1,075	1,000	909	1,019	889	1,111

(a) Indexes of values at constant prices (weighted by average unit values of the year 1979-80). (b) Sugar cane cut for crushing and planting. (c) Includes pastures and grasses. Excludes crops for green feed or silage. (d) Includes dairy cattle slaughtered. (e) Component series based on carcass weight. (f) Includes honey and beeswax.

Apparent consumption of foodstuffs and nutrients

Estimates of consumption in Australia are compiled by deducting net exports from the sum of production and imports and allowing for recorded movement in stocks of the respective commodities. The term 'consumption' is used in a specialised sense, since the quantities actually measured are broadly the quantities available for consumption at a particular level of distribution, i.e. 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 but it is believed that more efficient distribution and storage methods in recent years have cut down wastage. Furthermore, it is likely that many of the foodstuffs are being supplemented by householders' self-supplies over and above the broad estimate already made.

The estimates of consumption per capita have been derived by using Estimated Resident Population (ERP), which is compiled according to the place of usual residence of the population and includes an estimate for those persons temporarily overseas.

More detailed information on the consumption of foodstuffs is contained in the publication *Apparent Consumption of Foodstuffs and Nutrients, Australia* (4306.0). For some commodities, more timely information is contained in the publication *Apparent Consumption of Selected Foodstuffs, Australia (Preliminary)* (4315.0).

APPARENT PER CAPITA CONSUMPTION OF FOODSTUFFS

(Kg—unless otherwise indicated)

Commodity	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85 p
Meat and meat products—						
Meat (carcass equivalent weight)						
Beef	47.4	46.7	49.6	45.0	41.9	40.6
Veal	2.5	2.5	2.6	3.5	2.4	2.1
<i>Beef and veal</i>	49.9	49.2	52.2	48.4	44.3	42.7
Lamb	15.5	15.8	16.3	16.2	16.7	15.4
Mutton	5.2	5.2	3.8	4.7	5.1	6.0
Pigmeat (a)	14.6	15.7	15.2	15.3	16.5	16.4
<i>Total</i>	85.2	85.9	87.4	84.6	82.7	80.5
Offal and meat, n.e.i.	3.9	4.2	4.4	4.4	4.0	4.3
Total meat and meat products	89.2	90.1	91.8	89.0	86.7	84.8
Poultry—						
Poultry (dressed weight)	20.2	20.3	19.6	20.4	20.0	22.0
Seafood—						
Fresh and frozen (edible weight)—						
Fish—						
Australian	1.4	1.8	1.6	1.2	1.7	n.y.a.
Imported	1.5	1.7	1.1	1.5	1.8	n.y.a.
Crustacea and molluscs	0.5	1.1	1.0	1.1	0.8	n.y.a.
Seafood otherwise prepared (product weight)—						
Australian	0.5	0.4	0.4	0.6	0.6	n.y.a.
Imported—						
Fish	1.9	1.8	1.9	1.5	2.0	n.y.a.
Crustacea and molluscs	0.3	0.4	0.5	0.4	0.4	n.y.a.
Total seafood	6.2	7.2	6.4	6.3	7.4	n.y.a.
Milk and Milk Products—						
Market milk (fluid whole) (litres)	103.4	104.0	103.1	102.9	101.7	103.3
Condensed, concentrated and evaporated milk—						
Full cream sweetened	0.7	0.9	0.6	0.9	0.7	n.y.a.
Full cream unsweetened	2.2	2.7	2.4	1.8	2.2	n.y.a.
Skim	1.4	1.0	1.2	0.8	0.9	n.y.a.
Powdered milk—						
Full cream	0.8	0.9	0.9	0.8	0.7	n.y.a.
Skim	3.7	3.2	2.8	2.7	2.3	n.y.a.
Infants' and invalids' food	1.1	1.0	1.3	1.2	1.2	n.y.a.
Cheese (natural equivalent weight)	6.6	6.6	7.0	7.4	7.7	8.1
Total (converted to milk solids, fat and non-fat)	23.5	23.1	23.0	22.8	22.5	n.y.a.

For footnotes see end of table.

APPARENT PER CAPITA CONSUMPTION OF FOODSTUFFS—*continued*

(Kg—unless otherwise indicated)

Commodity	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85 ^p
Fruit and Fruit Products—						
Fresh fruit (incl. fruit for fruit juice)—						
Citrus	40.2	39.2	36.4	47.9	51.2	n.y.a.
Other	39.3	35.8	37.8	39.4	38.2	n.y.a.
Jams, conserves, etc	1.5	1.5	1.7	1.7	1.8	n.y.a.
Dried fruit	2.5	2.2	2.3	2.5	2.4	n.y.a.
Processed fruit	12.4	11.7	10.9	9.4	9.8	n.y.a.
Total (fresh fruit equivalent)	106.8	99.9	98.7	110.6	113.1	n.y.a.
Vegetables—						
White potatoes	54.9	54.9	57.6	52.2	62.6	n.y.a.
Other root and bulb vegetables	17.3	17.5	18.7	16.9	17.4	n.y.a.
Tomatoes	14.5	15.7	16.7	16.5	18.6	n.y.a.
Leafy and green vegetables	25.1	22.3	20.8	21.4	21.8	n.y.a.
Other vegetables	17.6	17.5	17.1	18.0	18.3	n.y.a.
Total (fresh equivalent weight)	129.5	127.8	130.8	125.0	138.8	n.y.a.
Grain Products—						
Flour (b)	70.5	70.7	72.0	67.1	70.7	n.y.a.
Breakfast foods—						
Oatmeal and rolled oats	0.3	0.8	0.9	1.2	1.3	n.y.a.
Other (from grain)	6.9	6.9	7.1	7.6	7.8	n.y.a.
Total breakfast foods	7.2	7.8	8.0	8.7	9.1	n.y.a.
Table rice	2.5	2.9	2.9	3.0	3.3	n.y.a.
Total grain products	80.2	81.4	82.9	78.8	83.1	n.y.a.
Bread	48.0	46.1	47.5	48.4	47.1	n.y.a.
Eggs and Egg Products—						
Total (eggs in shell weight)	12.5	12.4	12.5	12.5	12.4	n.y.a.
Equivalent number of eggs	220	220	222	221	223	n.y.a.
Nuts (in shell)—						
Peanuts	1.3	1.5	1.5	2.1	1.8	n.y.a.
Tree nuts	2.8	3.0	3.3	3.2	3.6	n.y.a.
Oils and fats—						
Butter	4.6	4.3	4.3	4.0	3.9	4.0
Total margarine	8.9	9.2	9.5	9.6	9.6	9.1
Table margarine	6.4	6.7	6.8	6.8	6.9	6.7
Other margarine	2.4	2.5	2.7	2.8	2.7	2.4
Total (fat content) (c)	21.5	21.5	21.8	21.6	21.5	21.2
Sugar—						
As refined sugar	12.8	13.7	12.5	12.0	11.5	n.y.a.
In manufactured foods	34.6	35.0	34.8	33.7	32.5	n.y.a.
Total	47.4	48.7	47.2	45.7	44.0	n.y.a.
Honey	0.9	0.6	0.9	0.8	0.9	n.y.a.
Total (d)	51.6	52.7	51.4	49.1	48.1	n.y.a.
Beverages—						
Tea	1.6	1.5	1.6	1.4	1.5	1.4
Coffee (e)	1.7	1.9	1.9	2.0	2.1	2.0
Aerated and carbonated waters (litres)	63.9	67.6	64.2	65.7	63.0	67.3
Beer (litres)	132.3	129.3	128.6	121.6	117.8	115.0
Wine (litres)	17.3	18.2	19.1	19.7	20.4	21.4
Spirits (litres alcohol)	1.0	1.1	1.2	1.2	1.1	1.2

(a) Includes bacon and ham. (b) Includes flour used for breadmaking. (c) Includes an estimate for vegetable oils and other fats.
 (d) Includes sugar content of syrups and glucose. (e) Coffee and coffee products in terms of roasted coffee.

Nutrients

The nutrients table has been compiled by the Nutrition Section of the Commonwealth Department of Health and is based on the estimates of the quantity of foodstuffs available for per capita consumption.

For further information on the level of nutrient intake see the publication *Apparent Consumption of Foodstuffs and Nutrients, Australia* (4306.0).

ESTIMATED SUPPLY OF NUTRIENTS AVAILABLE FOR CONSUMPTION (a)

(Per capita per day)

Nutrient	Unit	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84
Protein—							
Animal	g	67.6	65.4	66.0	66.0	65.0	63.8
Vegetable	g	32.3	32.3	32.6	33.2	32.2	33.9
Total	g	99.9	97.7	98.6	99.2	97.2	97.7
Fat (from all sources)	g	148.4	145.3	147.6	149.3	147.6	147.3
Carbohydrate	g	395.2	396.0	400.0	400.0	386.2	398.0
Calcium	mg	899	932	922	917	914	911
Iron	mg	15.4	14.7	14.9	15.2	15.0	15.2
Vitamin A activity	µg	1,552	1,432	1,492	1,512	1,499	1,503
Vitamin C (b)—							
Unadjusted	mg	105.4	108.9	106.7	105.3	115.3	122.3
Adjusted	mg	75.8	79.7	78.4	76.6	87.6	93.2
Thiamin (b)—							
Unadjusted	mg	1.8	1.7	1.8	1.8	1.8	1.9
Adjusted	mg	1.5	1.5	1.5	1.5	1.5	1.6
Riboflavin	mg	2.7	2.6	2.6	2.7	2.6	2.6
Niacin (b)—							
Unadjusted	mg	23.3	22.3	22.6	22.8	22.9	23.1
Adjusted	mg	40.0	38.6	39.0	39.3	39.1	39.3
Energy value	kJ	14,430	14,285	14,460	14,545	14,200	14,370

(a) Figures are based on conversion factors calculated from the revised and enlarged edition of S. Thomas and M. Corden *Metric Tables of Composition of Australian Foods*, Canberra, 1977. (b) Data for vitamin C, Thiamin and Niacin show adjustments made for loss of nutrients in cooking and the extra niacin obtained from the metabolism of protein.



Sheep sale, near Wagga Wagga, N.S.W.

Australian Information Service

Land tenures

Land tenure statistics, in the main, relate to land held under freehold tenure ('alienated or in process of alienation') or leasehold tenure ('leased or licenced') with all agricultural establishments falling within these categories. Descriptions of the land tenure systems of the States and the Territories, and conspectuses of land legislation in force were provided in Year Book No. 48 and previous issues (*see also* Year Book No. 50, page 85).

Disposal of Crown lands

For a description of the provisions that exist in all mainland States for the disposal of Crown lands for public purposes, for unconditional purchase and occupation under lease or licence, *see* Year Book No. 61, page 742.

Closer settlement and war service settlement

Particulars of these are given in issues of the Year Book up to No. 22, and in Year Book Nos. 48, 55 and 61.

Alienation and occupation of Crown lands

For data relating to Land Tenures, in the States and Territories, *see* Year Book No. 66, page 285 and Year Book No. 67, page 321.

Land utilisation in Australia

The total area under tenure differs from the total area of agricultural establishments (shown below) by amounts which represent unused land or land held for non-agricultural purposes. In general, land in the more fertile regions tends to be mostly freehold, while the less productive land is held under Crown lease or licence.

AREA OF ESTABLISHMENTS WITH AGRICULTURAL ACTIVITY

(Million hectares)

<i>At 31 March</i>	<i>N.S.W.</i>	<i>Vic.</i>	<i>Qld</i>	<i>S.A.</i>	<i>W.A.</i>	<i>Tas</i>	<i>N.T.</i>	<i>Aust. (incl. A.C.T.)</i>
1980	65.0	14.7	157.7	62.8	114.9	2.2	78.2	495.6
1981	65.2	14.7	157.5	62.4	115.8	2.2	77.6	495.4
1982	63.4	14.4	157.1	62.9	113.5	2.2	77.1	490.8
1983	64.0	14.2	155.9	60.2	112.0	2.2	75.2	483.8
1984	64.0	14.3	158.1	62.1	114.3	2.2	71.7	486.6
1985p	64.3	14.1	158.3	60.6	113.9	2.1	73.8	487.1

LAND UTILISATION: AUSTRALIA

(Million hectares)

Year	Area of		Balance (c)	Total	
	crops (a) (b)	sown pastures and grasses (b)		Area of establishments	Percentage of Australian land area (768,284,000 hectares)
1979-80	18.0	27.1	450.6	495.6	64.5
1980-81	18.3	24.9	452.3	495.4	64.5
1981-82	19.6	26.9	444.2	490.8	63.9
1982-83	19.4	25.6	438.8	483.8	63.0
1983-84	22.0	26.1	438.5	486.6	63.3
1984-85p	21.0	27.6	438.6	487.1	63.3

(a) Excludes pastures and grasses harvested for hay and seed which have been included in 'sown pastures and grasses'.

(b) Prior to 1981-82 figures related to area 'used for' crop or pasture, i.e., an area used for more than one purpose during the year was counted only once. From 1981-82, an area double cropped or an area of pasture also planted to crop has been counted separately each time used.

(c) Used for grazing, lying idle, fallow, etc.

The total area of agricultural establishments in 1984-85 constituted 63.3 per cent of the Australian land area, the remainder being urban areas, State forests and mining leases, with an overwhelming proportion of unoccupied land (mainly desert). The balance data includes large areas of arid or rugged land held under grazing licences but not always used for grazing. Balance data also includes variable amounts of fallow land.

The crop area data represents up to 4.3 per cent of the area of agricultural establishments and emphasises the relative importance of the livestock industry in Australia. The agricultural labour force (*see* page 303) is used on large areas of land with low carrying capacity.

Crops

For this section, statistics relating to crop areas and production have been obtained from the annual Agricultural Census. The census returns are collected in all States and the two Territories at 31 March each year and relate mainly to crops sown in the previous twelve months.

Where harvests are not completed by March (e.g. potatoes), provision is made in some States for a supplementary collection after the harvest is completed. Additional statistics relating to value of agricultural commodities produced, manufactured production and overseas trade are also included. Agricultural Census data published in this section refer to the 'agricultural' year ended 31 March, while other data refer to the year ended 30 June; but for most purposes there will be little error involved in considering 'agricultural year' data as applying to the financial year.

The following table shows the area of crops in each of the States and Territories of Australia since 1860-61.

AREA OF CROPS (a): 1860-61 TO 1984-85
(^{'000} hectares)

Year	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas	N.T.	A.C.T.	Aust.
1860-61	100	157	2	145	10	62	-	-	475
1870-71	156	280	21	325	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
1954-55	2,183	1,904	1,049	1,711	2,069	122	-	2	9,040
1959-60	2,888	1,949	1,184	1,780	2,628	130	1	3	10,564
1964-65	4,182	2,621	1,605	2,414	3,037	163	2	4	14,028
1969-70	4,999	2,212	2,208	2,290	3,912	98	6	2	15,728
1970-71	3,967	1,732	1,791	1,998	3,826	80	2	1	13,397
1971-72	4,186	1,925	2,017	2,278	3,751	67	7	1	14,231
1972-73	4,329	1,943	1,963	2,122	3,814	80	12	1	14,265
1973-74	4,628	1,981	1,786	2,451	4,133	74	6	1	15,060
1974-75	4,089	1,772	1,898	2,257	3,754	67	7	1	13,845
1975-76	4,285	1,851	2,010	2,116	4,208	60	8	1	14,539
1976-77	4,520	1,943	2,026	2,036	4,417	65	2	1	15,010
1977-78	4,984	2,163	2,107	2,564	4,910	70	1	1	16,800
1978-79	5,020	2,209	2,307	2,827	4,993	80	2	1	17,438
1979-80	5,243	2,243	2,334	2,771	5,281	79	2	1	17,954
1980-81	5,208	2,180	2,481	2,772	5,547	84	1	1	18,273
1981-82	5,744	2,184	2,765	2,865	5,963	90	2	1	19,613
1982-83	5,200	2,234	2,648	2,856	6,380	98	3	1	19,420
1983-84	6,566	2,655	2,998	3,108	6,526	101	5	1	21,961
1984-85p	5,708	2,561	3,010	2,893	6,721	99	4	1	20,997

(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 and seed, and pasture cut for hay and harvested for seed or green feed are excluded.

NOTE: From 1970-71 to 1980-81 figures related to area 'used for' crops, i.e. 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.

The wide range of climatic and soil conditions over the agricultural regions of Australia has resulted in a diversity of crops being grown throughout the country. Generally, cereal crops (excluding rice, maize and sorghum) are grown in all mainland States over wide areas, while other crops are confined to specific locations in a few States. However, scanty or erratic rainfall, limited potential for irrigation and unsuitable soils or topography have restricted intensive agriculture. Despite this, agricultural production has increased over time to meet increased demands both in Australia and from overseas.

The following table provides an Australian summary of the area, production and gross value of the principal crops.

CROPS: AREA, PRODUCTION AND GROSS VALUE

	1982-83		1983-84		1984-85			
	Area ('000 ha)	Prod- uction ('000 tonnes)	Gross value (\$m)	Area ('000 ha)	Prod- uction ('000 tonnes)	Gross value (\$m)	Area ('000 ha)	Prod- uction ('000 tonnes)
Cereals for grain—								
Barley	2,452	1,939	291	3,109	4,890	734	3,503	5,559
Grain sorghum	707	958	124	730	1,885	246	710	n.y.a.
Maize	64	139	23	68	238	36	104	n.y.a.
Oats	1,212	848	116	1,772	2,296	204	1,060	1,395
Rice	85	548	88	119	642	89	118	n.y.a.
Wheat	11,520	8,876	1,566	12,931	21,764	3,606	12,039	18,635
Legumes for grain	407	238	40	510	521	96	776	n.y.a.
Crops for hay—								
Oats	273	645	73	279	994	80	183	637
Wheat	106	202	22	71	209	15	55	171
Crops for green feed, silage—								
Barley	117	n.a.	n.a.	58	n.a.	n.a.	54	n.a.
Forage sorghum	112			72			72	
Oats	723			611			564	
Wheat	130			23			29	
Sugar cane cut for crushing	318	24,817	509	307	24,194	517	306	25,448
Tobacco	7	13	62	7	14	71	9	n.y.a.
Cotton	96	286	168	137	401	269	151	n.y.a.
Peanuts	36	23	18	32	47	40	26	n.y.a.
Linseed	5	2	1	5	4	1	7	7
Rapeseed	12	7	2	18	17	5	29	31
Safflower	12	5	2	55	31	8	44	29
Sunflower	176	104	28	234	170	59	311	n.y.a.
Fruit (excl. grapes)	104	—	509	108	—	430	109	—
Fruit—								
Orchard	87	—	385	90	—	418	90	—
Oranges	n.a.	410	101	n.a.	392	105	n.a.	439
Apples		301	132		267	134		n.y.a.
Pears		119	42		122	46		n.y.a.
Peaches		63	21		48	25		59
Bananas	9	140	70	9	146	87	9	151
Pineapples	6	111	25	6	115	26	7	135
Grapes	66	768	213	65	843	217	65	n.y.a.
Vegetables	110	—	557	113	—	739	108	—
Potatoes	37	858	169	38	1,020	290	38	n.y.a.
Total, all crops (ex- cluding pastures)	19,420	—	4,705	21,961	—	7,901	20,997	—

In the tables that follow, crop statistics are shown in these groupings: wheat, coarse grains, rice, oilseeds, sugar, vegetables, fruit, grapes and other crops such as tobacco, mushrooms and fodder crops.

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 grass, subterranean clover, medics or lucerne. In recent years, alternative winter crops such as rapeseed, field peas and lupins have been introduced to cereal rotation in areas where they had not previously been grown. Rice, maize, sorghum and the millets are summer cereals with the latter two being grown in association with winter cereals in some areas. In Northern Queensland and Western Australia there are two rice growing seasons—a dry season winter crop and a wet season summer crop.

Cereals for grain form a significant percentage of both the value of Australia's agricultural commodities and of the country's export earnings. The following table shows the significance of cereal grains in the last 6 years.

CEREAL GRAINS IN AUSTRALIA: A PERSPECTIVE

Year	Cereal grains(a)		Total agriculture gross value	Total Australian exports— all produce value f.o.b.	Gross value of cereal grains as a percentage of gross value of agriculture	Export value of cereal grains as a percentage of total Australian exports
	Gross value	Export value f.o.b.			per cent	per cent
	\$m	\$m	\$m	\$m		
1979-80	3,245.4	2,764.7	11,764	18,870	27.6	14.7
1980-81	2,532.0	2,160.6	11,610	19,169	21.8	11.3
1981-82	3,512.6	2,367.9	12,708	19,581	27.6	12.1
1982-83	2,233.6	1,669.7	11,719	22,123	19.1	7.6
1983-84	4,952.1	2,564.9	15,317	23,510	32.3	10.9
1984-85p	4,804.6	4,007.5	15,421	29,270	31.2	13.7

(a) Principally wheat, barley, oats, grain sorghum, rice and maize, with panicum/millet, canary seed and rye being minor cereals.

For more up-to-date and detailed information on cereals for grain see the following publications:

Agricultural Industries: Structure of Operating Units, Australia (7102.0); *Agricultural Land Use and selected Inputs, Australia* (7411.0); *Principal Agricultural Commodities, Australia (preliminary)* (7111.0); *Selected Agricultural Commodities, Australia (Preliminary)* (7112.0); *Crops and Pastures, Australia* (7321.0); *Cereal Grains: Estimates of Area Sown, Australia* (7312.0); *Value of Principal Agricultural Commodities Produced: Australia, First Estimates* (7501.0); *Value of Selected Agricultural Commodities Produced: Australia, Second Estimates* (7502.0); *Value of Agricultural Commodities Produced, Australia* (7503.0).

Wheat

Wheat is grown in all States except the Northern Territory, and is the most important crop in Australia in terms of area, production and value of exports. Factors which have contributed to the development of the industry are the increasing demand from and the organisation of overseas markets, the existence of statutory marketing arrangements including stabilised or guaranteed pricing, agronomic and plant breeding research and the availability of suitable cropping land. As a large proportion (70-80 per cent) of the wheat crop is exported, wheat marketing arrangements play an important role. The Australian Wheat Board (AWB) was constituted in September 1939, under *National Security (Wheat Acquisition) Regulations*, to purchase, sell or dispose of wheat or wheat products and to manage or control all matters connected with the handling, storage, protection, shipment, etc of wheat acquired and such other matters as were necessary to give effect to the regulations. At the end of World War II the Board continued to operate under extensions to these regulations, until 1948, when the Commonwealth and States agreed to national marketing arrangements. After a poll of growers had approved the plan the necessary complementary legislation was passed by the Commonwealth and the States. The *Wheat Industry Stabilization Act 1948* established the present Australian Wheat Board to acquire and market all wheat and to administer the first stabilisation plan. A stabilisation fund made up of a charge on exports and supplemented by Government payments provided growers with a 'guaranteed price' for a specific quantity of export wheat. Until 1979 there were six Stabilisation Plans. The *Wheat Marketing Act 1979* replaced the stabilisation plans with a guaranteed minimum price scheme, applicable to an unlimited quantity of wheat. Amendments to this legislation in 1982 and 1983 gave the board additional powers in financial matters, including the ability to operate on futures markets and borrow money outside Australia.

Wheat marketing and pricing arrangements 1984-85 to 1988-89. On 25 October 1984 the *Wheat Marketing Act 1984* received Royal Assent and new wheat marketing and pricing arrangements became operative for the period ending 30 June 1989. The basic elements of the new arrangements were negotiated between the Australian Wheatgrowers' Federation and Commonwealth and State Governments. The enactment of State legislation complementary to the Commonwealth legislation was necessary for the implementation of a national scheme.

The new wheat marketing and pricing provisions contain most features of the previous scheme, the most important of which are: the Australian Wheat Board continues as a statutory authority responsible for the marketing of wheat in Australia and overseas although it can now issue permits for the domestic sale of stockfeed wheat outside the pooling arrangements; the general powers of the Board remain largely unchanged; the legislation applies to a seven-year period, except for the pricing provisions, which run for five years (approximately); and the concept of a guaranteed minimum price is retained.

The following are important features in the current plan.

Guaranteed Minimum Price. Under the 1984 Act, the Commonwealth Government continues to underwrite 95 per cent of wheat returns on a net basis through a Guaranteed Minimum Price (GMP) for Australian Standard White (ASW) wheat, although the method of calculating and the timing of payment of the GMP has been changed. The ASW GMP is to be set at 95 per cent of the average of the estimated gross return per tonne for ASW wheat from the subject season and the lowest two of the previous three seasons less the estimated pool costs per tonne for the subject season. There is provision in the Act for separate GMPs to be established for specified categories other than ASW, based on the expected market value of the wheat in those categories relative to ASW.

Growers will receive a split first advance payment. Upon delivery of his wheat, a grower will be paid 90 per cent of the estimated GMP for the relevant category (i.e. 90 per cent of the relevant preliminary GMP) less contributions to research (wheat tax), dockages for non-preferred varieties and for defects (if any), and allowances for storage, handling and transportation charges. When the final GMP has been determined (before 1 March during the subject season), the grower receives the final GMP, increased or decreased by an allowance for the quality of wheat (in addition to the deductions made at the time of delivery), less the interim advance payment already received. Initial allowances may be adjusted by the Board at a later date to reflect actual costs and returns. If the net return per tonne exceeds the GMP, the excess is returned to growers by way of a final payment, which may be made by instalments over a number of years.

These arrangements provide the industry with support from the Government that is designed to help it overcome any short-run down-turn in producers' returns, modified by longer-run adjustments in market returns whether these adjustments be for a rising or a falling market. To date, it has not been necessary for the Government to meet any deficiency between the net pool return rate and the GMP.

For the 1984-85 season, the preliminary GMP is \$145.35 per tonne for ASW wheat. Four additional categories have been specified with preliminary guaranteed minimum prices ranging from \$100.35 to \$155.35.

Financial Arrangements. Prior to the 1978-79 season, the Board's borrowing was limited to Reserve Bank of Australia Rural Credits Department borrowings. In that season approval was granted for partial borrowings on the domestic money market. In 1981-82 and 1982-83 funding was moved exclusively to the domestic money market. For 1983-84 the Minister for Primary Industry approved the AWB borrowing up to 50 per cent of its prospective net borrowing requirement overseas, and up to 50 per cent on the domestic money market. Commencing in 1984-85, the AWB may, with the Minister's approval, borrow overseas up to an amount equal to the aggregate size of expected foreign currency denominated sales in respect of a particular season, provided that amount does not exceed that season's net financing requirement.

The Wheat Finance Fund, a \$100 million revolving fund of growers' moneys, was wound up on 1 July 1985 with the repayment of grower contributions and accumulated interest. The Fund had never been used for its originally intended purpose of refinancing outstanding loans from the Reserve Bank.

Domestic Pricing. The arrangements for the pricing of wheat sold on the domestic market recognise the different segments of the market, namely, the use of wheat for milling into flour for human consumption and the use of wheat for stockfeed and for industrial purposes.

The 1984 Act changed the method of setting the domestic price for human consumption wheat. The price is now determined each quarter by averaging the export prices for the forward and past quarters and adding a margin to cover the additional costs of servicing the domestic market. The prices for the four quarters from October 1984 ranged from \$195.25 per tonne to \$229.76 per tonne, including \$1.40 per tonne Tasmanian freight levy. This levy now applies to all domestic wheat sales. It is used exclusively to cover the cost of shipping wheat from the mainland to Tasmania each season.

Domestic prices for industrial and stockfeed wheats are quoted by the Board in the light of its commercial judgment and having regard to orderly marketing considerations. Prices are quoted each day and are related to export prices. Buyers may enter into contracts to fix the price of wheat for delivery up to six months in advance.

Domestic Marketing Arrangements. The Australian Wheat Board controls the domestic marketing of wheat although domestic stockfeed wheat may be directly sold by growers to buyers under a permit issued by the Board. The availability of these permits is governed by guidelines issued by the Federal Minister for Primary Industry and the relevant State Ministers. Wheat sold pursuant to a stockfeed purchase permit is subject to a deduction to cover wheat research tax, Tasmanian freight, the Board's administration costs and a reduced bulk handling authority charge. No pooling or GMP provisions or minimum or maximum prices apply in respect of such wheat.

The Board may also authorise a grower to sell wheat on behalf of the Board under grower-to-buyer direct delivery transactions. The grower and buyer negotiate the sale price, which may be at a premium or a discount to the Board's domestic ASW price applicable for the same end use. The proceeds of sale are incorporated in the Board's pooling arrangements.

The grower receives payment from the Board as if he had delivered ASW wheat, adjusted by the abovementioned discount or premium and a reduction in the relevant bulk handling authority's charge.

Wheat which is retained by a grower for his own use does not come under the control of the Board.

The Board has power to import wheat for use on the domestic market.

Overseas Marketing Arrangements. Under the 1984 Act, the Board maintains sole authority for the export of wheat but no longer controls the export of wheat products. The Act extends the powers of the Board in relation to overseas marketing to enable it to enter into tripartite barter arrangements and the sale and shipment of other grains in combination with wheat.

Wheat varieties and standards of wheat

The practice of breeding wheat suitable to local conditions has long been established in Australia. William Farrer (1845-1905) did invaluable work in pioneering this field and the results of his labour and the continued efforts of those who have followed him have proved of immense benefit to the industry. Their efforts have resulted in the development of disease-resistant varieties with higher yields and improved quality which, when combined with a greater uniformity of sample, have created certain marketing advantages for Australia's wheat crop. The continuation of wheat breeding activities has led to expansions in the areas sown to wheat as well as in yields per hectare, but it is difficult to distinguish progress due to improved wheat varieties from that due to crop/pasture rotations, increased mechanisation and superphosphate-improved pastures.

Wheat quality is a complex subject but can be broadly described in terms of four measurements; grain hardness, protein content, milling performance and physical dough properties. These characteristics are governed by a combination of the wheat variety and the environmental conditions under which the wheat is grown.

Australia produces only white grained wheats. This is in contrast to our major competitors who predominantly produce red-grained wheats. Within the Australian wheatbelt there exist wide ranges of soil fertility, rainfall, day length and temperature. Through the development of varieties which complement these diverse growing conditions, it has been possible to produce wheats with qualities that are suitable to virtually all commercial applications.

Australian wheats may be classified into two broad types, namely the milling and non-milling classes. Since 1974 there have been five classes of Australian wheats suitable for milling purposes:

- Australian Prime Hard
- Australian Hard
- Australian Standard White (ASW)
- Australian Soft
- Australian Durum

There exists within each class a number of individual grades. In some seasons a total in excess of 30 different grades of Australian wheat have been marketed. This large number has developed to meet individual customer requirements and also to reflect the wide range of wheat types available from Australia. Prior to 1974 most of the Australian wheat crop was marketed under the single classification Fair Average Quality (F.A.Q.). Particulars of Australian wheat standards may be found in *Crops and Pastures, Australia* (7321.0).

Central Grain Research Laboratory

In 1976, the Australian Wheat Board established this laboratory in Sydney as an addition to the facilities of the Bread Research Institute of Australia. The main functions of the laboratory are to test and report on the Australian crop, to analyse and compare competitor wheats from other countries and to develop research programs to aid the marketing of wheat.

WHEAT: AREA, PRODUCTION AND RECEIVALS

Season	Area (a)		Production (a)		Australian Wheat Board receipts (b)
	For grain	All purposes	Grain	Gross value	
	'000 ha	'000 ha	'000 tonnes	\$m	'000 tonnes
1979-80	11,153	11,249	16,188	2,478.0	15,328
1980-81	11,283	11,436	10,856	1,684.1	10,059
1981-82	11,885	11,995	16,360	2,599.4	(b) 15,545
1982-83	11,520	11,755	8,876	1,566.2	7,927
1983-84	12,931	13,025	21,764	3,605.6	21,059
1984-85p	12,039	12,123	18,635	3,503.8	17,500

(a) Area and production data relate to the year ending 31 March. (b) Due to amendments to the Wheat Marketing Act 1979, the AWB has changed from a December-November to an October-September crop year. To facilitate this transition, 1981-82 was a 10 month (December-September) reporting period.

WHEAT FOR GRAIN: AREA AND PRODUCTION, BY STATE

Season	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	Australia
AREA ('000 hectares)							
1979-80	3,415	1,457	733	1,424	4,121	2	11,153
1980-81	3,345	1,431	727	1,445	4,333	2	11,283
1981-82	3,600	1,322	941	1,427	4,593	1	11,885
1982-83	3,162	1,327	767	1,398	4,865	1	11,520
1983-84	3,999	1,614	1,006	1,564	4,781	2	12,931
1984-85p	3,564	1,530	918	1,376	4,649	2	12,039
PRODUCTION ('000 tonnes)							
1979-80	6,000	3,250	846	2,349	3,739	4	16,188
1980-81	2,865	2,538	485	1,650	3,315	3	10,856
1981-82	5,910	2,467	1,482	1,695	4,803	2	16,360
1982-83	1,499	394	754	692	5,534	1	8,876
1983-84	8,961	3,971	1,922	2,590	4,316	3	21,764
1984-85p	5,813	2,660	1,540	2,038	6,580	4	18,635

PRODUCTION AND DISPOSAL OF WHEAT

('000 tonnes)

	1982	1983	1984
Year ended 31 March—			
Production	16,360	8,876	21,764
Balance held on farm for seed, feed and other uses	829	949	596
Year ended 30 September(a)—			
Wheat received (incl. net early season deliveries)	15,545	7,927	21,059
Carryin	2,044	4,879	2,285
<i>Total availability for export, domestic disposal and carryover.</i>	<i>17,589</i>	<i>12,806</i>	<i>23,344</i>
Exports of wheat, flour and wheat products	11,068	7,280	14,159
Domestic disposals	1,628	3,241	1,674
<i>Total disposals</i>	<i>12,696</i>	<i>10,521</i>	<i>15,833</i>

(a) Source: Australian Wheat Board (AWB). Due to amendments to the Wheat Marketing Act 1979, the AWB has changed from a December-November to an October-September crop year. To facilitate this transition, 1981-82 was a 10 month (December-September) reporting period.

Wheat pools

Details of wheat receivals by State of origin for the several Pools together with Pool payments and times of payment will be found in the latest issue of *Crops and Pastures, Australia* (7321.0).

International Wheat Agreement

A number of Agreements have operated since 1949 to provide a valuable framework for continuing international consultation and co-operation on world wheat matters, including the regular monitoring of the world wheat situation. The 1971 International Wheat Agreement (the first expiring on 30 June 1974) has been extended seven times by protocol, the most recent extension expiring on 30 June 1986. It comprises two separate legal instruments, the Wheat Trade Convention and the Food Aid Convention, linked by a common preamble. Negotiations towards a new Agreement were held in January 1978 and January-February 1979 under the auspices of the United Nations Conference on Trade and Development (UNCTAD). No consensus was reached on an Agreement with economic provisions designed to bring about a measure of price stability by the accumulation and release of internationally co-ordinated nationally-held reserve stocks. The 1979 conference was adjourned indefinitely. Subsequently, in 1980 and 1981, the International Wheat Council considered other possible bases for an Agreement with its attention focussing on a more flexible approach to stock-holding with reserve stock action being taken on the basis of a consensus within the Council rather than applying automatically at a particular time as a result of price movements. With strong opposition of the United States Administration to the international co-ordination of holding of wheat, this approach proved not negotiable. However, the Council agreed, in December 1981, on immediate steps to strengthen the operation of the existing Agreement. The Council also decided that it was imperative to continue the search for an agreed basis for a new Agreement, keeping in view the paramount objectives of market stability and food security. At the 1984 session some members of the International Wheat Council re-emphasised the need for the Council to vigorously pursue efforts towards the conclusion of a new agreement with appropriate provisions to meet the aspirations of developing countries. This led to the formation by the International Wheat Council in December 1984 of a Working Group to consider future action on the Wheat Trade Convention. The Working Group is considering a draft Wheat Trade Convention 1986, which strengthens and improves the 1971 Convention. In particular, unworkable economic provisions of the previous Convention have been deleted, overcoming possible objections of some participants. In the meantime the current Agreement runs to 1986.

WHEAT EXPORTS: A COMPARISON WITH OTHER EXPORT COMMODITIES(a)

Year	Wheat for grain: Export		Total Australian exports— all produce: Value f.o.b.	Export value of wheat for grain as a percentage of total Australian exports per cent
	Quantity	Value f.o.b.		
	'000 tonnes	\$m	\$m	
1979-80	14,876	2,176.8	18,870	11.5
1980-81	10,552	1,729.4	19,169	9.0
1981-82	10,912	1,719.7	19,581	8.8
1982-83	8,022	1,343.1	22,060	6.1
1983-84	10,535	1,813.8	24,781	7.3
1984-85p	16,649	2,785.7	29,270	9.5

(a) These statistics exclude re-exports.

WORLD WHEAT: AREA AND PRODUCTION

Source: International Wheat Council, *World Wheat Statistics, 1984*

	Area (million hectares)			Production (million tonnes)		
	1982-83	1983-84p	1984-85p	1982-83	1983-84p	1984-85p
Europe	26.2	27.1	n.y.a.	103.1	103.3	n.y.a.
EEC (10)	13.0	13.2	n.y.a.	59.9	59.3	76.3
U.S.S.R.	57.3	50.9	n.y.a.	85.0	80.0	75.0
North & Central America	45.6	39.5	n.y.a.	107.8	96.4	96.4
Canada	12.6	13.7	n.y.a.	26.8	26.9	21.2
U.S.A.	32.0	24.9	n.y.a.	76.5	66.0	70.6
South America	11.1	9.7	n.y.a.	18.0	15.9	17.1
Asia	79.5	81.4	n.y.a.	150.3	169.2	n.y.a.
China (a)	27.9	28.5	n.y.a.	68.4	81.4	87.8
India	22.1	23.2	n.y.a.	37.5	42.5	45.1
Iran	6.0	6.0	n.y.a.	6.5	6.5	6.0
Pakistan	7.1	7.3	n.y.a.	11.1	12.4	10.9
Turkey	9.4	9.2	n.y.a.	17.5	16.4	17.2
Africa	8.0	7.9	n.y.a.	10.0	8.8	9.2
Oceania	11.6	13.0	n.y.a.	9.2	22.4	18.9
Australia	11.5	12.9	12.0	8.9	22.1	18.6
Total world	239.3	229.5	n.y.a.	483.5	496.0	n.y.a.

(a) Excludes Taiwan Province; FAO estimates.

NOTE 1. Crop years shown cover northern hemisphere harvests combined with those of the southern hemisphere which immediately follow.

2. The 10 members of the EEC are: Belgium, Denmark, France, Federal Republic of Germany, Greece, Ireland, Italy, Luxembourg, Netherlands and the United Kingdom.

Coarse grains

In the late sixties and early seventies, restrictions on wheat deliveries and low returns in the sheep industry caused a resurgence of interest in coarse grain crops and the newer oilseed crops. The resultant higher level of plantings and production has been maintained, despite the lifting of wheat delivery quotas and a general improvement in market prospects for wheat, wool and meat.

Oats

Oats are traditionally a cereal of 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. Oats produced in New South Wales are marketed through a statutory board while the Victorian Oatgrowers' Pool and Marketing Company Ltd and private merchants market the bulk of oats produced in Victoria. In South Australia the Barley Marketing Act was amended in 1977 to give the Australian Barley Board powers over oat marketing in that State. Under the legislation amendments the Board controls export sales and grain resold on the local market; however, direct sales between producers and consumers are outside the Board's supervision. In Western Australia, oats are marketed under a warehousing system operated by Co-operative Bulk Handling Ltd.

Oats are usually next in importance to wheat and barley among the grain crops. About three-quarters of the crop is used domestically as stockfeed or for human consumption.

OATS FOR GRAIN: AREA, PRODUCTION AND EXPORTS

Year	Area	Production		Exports	
		Quantity	Gross value	Quantity	Value f.o.b.
	'000 ha	'000 tonnes	\$m	'000 tonnes	\$m
1979-80	1,123	1,411	98.8	472	43.8
1980-81	1,093	1,128	139.5	196	27.7
1981-82	1,388	1,617	155.7	153	24.1
1982-83	1,212	848	116.1	83	13.2
1983-84	1,772	2,296	203.8	289	40.9
1984-85p	1,060	1,395	128.0	391	49.0

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 thus provide grazing or fodder supplies when other sources are not available. Barley grain may be crushed to meal for stock or sold for malting.

Crops sown for malting purposes require a combination of light textured soil of moderate fertility, reliable rainfall, and mild weather during ripening. The main barley-growing areas in Australia are situated in South Australia, but considerable quantities are grown also in New South Wales, Western Australia, Victoria and Queensland. In December 1980 a joint Commonwealth/Industry research scheme for the barley industry commenced operation. The scheme is financed by a levy on barley production and a Commonwealth contribution not exceeding the total of the levy.

Barley is marketed by statutory marketing authorities in each of the mainland States. The Australian Barley Board controls marketing in both South Australia and Victoria while separate authorities operate in the three other States.

BARLEY FOR GRAIN: AREA, PRODUCTION AND EXPORTS

Year	Area	Production				Exports	
		2-row	6-row	Total		Quantity	Value f.o.b.
				Quantity	Gross value		
	'000 ha		— '000 tonnes —		\$m	'000 tonnes	\$m
1979-80	2,482	3,545	159	3,703	449.8	2,962	353.5
1980-81	2,451	2,563	119	2,682	380.9	1,598	242.7
1981-82	2,685	3,252	198	3,450	463.4	1,577	241.3
1982-83	2,452	1,785	153	1,939	290.8	834	131.4
1983-84	3,109	4,585	305	4,890	734.0	3,121	499.4
1984-85p	3,503	5,196	364	5,559	772.7	5,345	778.3

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.

The climatic conditions of Queensland and northern New South Wales are particularly suited to the growing of sorghum. In Queensland, grain sorghum production is concentrated in the Darling Downs, Fitzroy and Wide Bay-Burnett Divisions. In New South Wales, the northern and north-western slopes and plains are the main areas.

In Queensland, a degree of orderly marketing is ensured by the operation of the Central Queensland Grain Sorghum Marketing Board (a statutory authority in a defined area in central Queensland). A State statutory marketing board handles sorghum grown in New South Wales.

GRAIN SORGHUM: AREA, PRODUCTION AND EXPORTS

Year	Area	Production		Exports	
		Quantity	Gross value	Quantity	Value f.o.b.
	'000 ha	'000 tonnes	\$m	'000 tonnes	\$m
1979-80	518.6	922.0	96.1	580.4	59.8
1980-81	657.9	1,203.9	152.0	462.7	57.5
1981-82	648.6	1,316.7	140.1	1,270.9	152.8
1982-83	706.5	958.0	124.4	445.0	53.9
1983-84	730.3	1,885.5	246.3	772.1	110.7
1984-85p	709.7	n.y.a.	203.3	1,568.5	242.0

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 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.

A statutory board controls the marketing of maize in the Atherton Tablelands area of Queensland. A large proportion of the crop is sold directly to food processors.

MAIZE: AREA, PRODUCTION AND EXPORTS

Year	Area	Production		Exports	
		Quantity	Gross value	Quantity	Value f.o.b.
	'000 ha	'000 tonnes	\$m	'000 tonnes	\$m
1979-80	54.1	150.9	19.8	7.7	0.9
1980-81	56.5	172.8	26.1	29.1	3.4
1981-82	61.0	212.4	29.6	14.2	1.9
1982-83	64.3	139.1	23.3	18.3	2.4
1983-84	68.4	238.2	35.6	19.0	2.8
1984-85p	103.8	n.y.a.	n.y.a.	139.8	24.9

Rice

In Australia, 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. Today, about 96 per cent of Australia's rice is grown in New South Wales. The remainder is grown in the Burdekin River basin and at Mareeba in Northern Queensland.

Rice is a summer growing crop in N.S.W. The combination of irrigation water and the relatively cloudless days characteristic of summers in temperate regions of the world is the main contributing factor to the very high yields per hectare often achieved by N.S.W. growers. In Queensland, a winter and a summer crop are grown.

State statutory marketing boards are responsible for the marketing of the N.S.W. and Queensland crops.

RICE: AREA, PRODUCTION AND EXPORTS

Year	Area	Production		Exports	
		Quantity(a)	Gross value	Quantity	Value f.o.b.
	'000 ha	'000 tonnes	\$m	'000 tonnes	\$m
1979-80	116.4	613.2	93.8	457.3	129.9
1980-81	103.9	727.5	138.2	281.3	99.9
1981-82	122.9	853.9	103.5	596.3	195.4
1982-83	84.8	547.7	88.4	404.7	120.3
1983-84	119.0	632.2	88.9	245.6	91.9
1984-85p	118.4	776.5	100.0	341.2	121.6

(a) In terms of paddy (or rough) rice.

Oilseeds

Specialised Oilseeds

The oilseeds industry is a relatively young industry by Australian agricultural standards. Production has increased rapidly in recent years following changes in relative profitability and agronomic advances.

Irregular seasonal conditions in 1984-85 favoured the sowing of summer oilseeds over winter cereals and production of oilseeds rose to record levels. Production is forecast to fall slightly in 1985-86 given average seasonal conditions.

The expected profitability of oilseeds relative to crops such as wheat and coarse grains will continue to influence future production levels in the industry. This profitability will be related to domestic and international markets for protein meals and vegetable fats and oils.

The specialist oilseed crops grown in Australia are sunflower, soybeans, rapeseed, 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.

Oilseed crops are grown in all States but the largest producing regions are the grain growing areas of the Eastern States.

Sunflower

When crushed, sunflower seed yields a high quality dual purpose oil used primarily to manufacture margarine, salad and cooking oils.

Queensland produces about two thirds of the Australian crop with the Darling Downs and Central Highlands being the major regions. New South Wales is the next largest producer with the north-west of the State dominating production. Smaller amounts are produced in all other states except Tasmania.

Soybeans

The major uses of soybean oil are in salad and cooking oils and margarine. Small amounts are used in the production of paints, detergents and plastics. Soybeans also yield a high protein feed for livestock with a small proportion used to manufacture adhesives and synthetic fibres and meats.

Queensland and New South Wales produce virtually all of Australia's soybean crop. The main producing areas are the irrigation districts of the Darling Downs and northern New South Wales. Lesser areas include the Burnett and Lockyer regions of Queensland while production of raingrown soybeans is expanding on the North Coast of New South Wales.

In irrigated areas, soybeans have increasingly been used as a rotational crop for cotton.

Rapeseed

The main use of rapeseed oil has been in salad and cooking oils and in margarine with a small amount being used for industrial purposes.

The major production areas are the tablelands and western slopes of New South Wales followed by the south-east of South Australia and the Western Districts of Victoria. Smaller levels of production occur in the South Coast region of Western Australia.

Following significant increases in the 1960s and 1970s, rapeseed production declined rapidly due to problems of blackleg disease and erucic acid content. Production has recovered in recent years with the development of varieties to overcome these problems and in response to the crop rotation benefits of rapeseed.

Safflower

The oil from safflower is used in the production of cooking oil, margarine, soaps, paints, varnishes, enamels and textiles. In recent years, New South Wales and Queensland together have produced around 90 per cent of Australian output. In Queensland, most production occurs in the Central Highlands with smaller amounts coming from the Dawson-Callide Valley and the Darling Downs. New South Wales production is centred on the Central West.

Wide fluctuations in safflower production since the mid 1960s have been due to variable seasonal conditions affecting yields and the profitability of other crops which has influenced plantings.

Linseed

The oil from crushed linseed is used in the manufacture of paints, varnishes, technical inks and linoleum.

The main producing areas are the wheat belt of New South Wales, the Darling Downs in Queensland, the Western Districts of Victoria and, to a lesser extent, the south-eastern districts of Victoria. Linseed production has been generally declining in recent years.

Other Oilseeds

Peanuts and cottonseed are summer crops grown primarily for human consumption and fibre purposes respectively. The rapid expansion of the cotton industry in recent years has resulted in cottonseed becoming the major oilseed in Australia. In 1984-85 cottonseed production reached some 373,000 tonnes. Cottonseed oil is used mainly in the manufacture of compound cooking fats and margarine. The least important source of vegetable oils in Australia is peanuts as it is only the low quality kernels which are crushed for oil. Crashings may vary between 3,000 and 7,000 tonnes per annum depending on the quality of the crop. Peanut oil is a high quality oil which is used in the manufacture of margarine and in compound cooking fats and is also used as a cooking and salad oil.

Peanuts

The major peanut growing areas are around Kingaroy in south-east Queensland and the Atherton Tablelands in North Queensland, with smaller pockets of production around Tweed Heads in New South Wales, the Ord River area of Western Australia and around Douglas in the Northern Territory.

About 80 per cent of peanuts grown in Australia are of Virginia variety, the remainder being of Spanish types.

Although area planted to peanuts has stabilised in recent years at around 25,000 to 33,000 hectares, production has fluctuated depending on seasonal conditions. Output in 1984-85 is estimated to total some 43,000 tonnes compared with 47,000 tonnes produced in 1983-84.

Local demand for peanuts and peanut products is comparatively static with a limited potential for growth corresponding to population growth. The local growing industry normally supplies most of the domestic demand for edible peanuts in its major outlets: peanut butter, packaged trade and confectionery. Any surplus is sold on export markets. Exports vary according to the size of the crop.

SELECTED OILSEED CROPS: AREA, PRODUCTION AND GROSS VALUE

Year	Sunflower	Soybeans	Rapeseed	Safflower	Linseed	Total
Area ('000 hectares)						
1979-80	221.1	56.5	41.6	53.6	17.2	390.0
1980-81	197.7	39.6	23.6	18.3	10.0	289.2
1981-82	177.5	40.5	15.7	33.4	6.6	273.7
1982-83	176.1	48.3	12.4	11.5	4.9	253.2
1983-84	233.5	48.1	17.8	54.9	5.3	320.4
1984-85p	310.7	59.5	29.0	43.5	6.7	449.4
Production ('000 Tonnes)						
1979-80	141.7	82.0	41.1	30.0	14.4	309.2
1980-81	139.0	73.2	17.2	8.1	7.4	244.9
1981-82	115.1	77.1	14.5	19.6	6.0	232.3
1982-83	104.0	53.2	6.7	5.3	2.5	171.7
1983-84	170.4	88.6	17.2	30.6	4.3	311.1
1984-85p	n.y.a.	n.y.a.	30.7	29.1	6.5	n.y.a.
Gross Value (\$ million)						
1979-80	36.3	21.6	9.1	6.0	3.1	76.1
1980-81	34.3	22.4	4.5	2.2	2.2	65.6
1981-82	28.3	19.8	3.3	5.2	1.6	58.2
1982-83	27.2	16.3	1.6	1.6	0.7	47.4
1983-84	58.9	26.9	5.0	7.8	1.3	99.9
1984-85p	8.4	n.y.a.	8.1	6.6	1.7	n.y.a.

PEANUTS: AREA, PRODUCTION AND GROSS VALUE

Year	Area	Production	Gross value
	('000 hectares)	('000 tonnes)	(\$ million)
1979-80	31.7	38.9	22.3
1980-81	27.1	43.2	36.6
1981-82	33.4	57.6	37.0
1982-83	35.9	23.3	17.8
1983-84	32.2	47.2	40.2
1984-85p	25.5	n.y.a.	37.6

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, seed and thrash. 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 fertilizer while kernels are crushed to extract oil. The remaining cake is ground into meal which is protein roughage used as stock feed.

Over three-quarters of Australia's total production of cotton lint is grown in New South Wales, principally in the Namoi, Macquarie, Gwydir and McIntyre Valleys and the Bourke area. Irrigation water for these areas is provided from the Keepit, Burrendong, Copeton and Glenlyon dams and the Darling River. The rest is grown in Queensland, in the Emerald, Biloela, St George, and Darling Downs areas. Most of these areas are also irrigated. Australian production has for some time satisfied most of the requirements of local mills for short and medium staple cotton. Since the mid 1970s there has been very strong investment growth in the cotton industry and the resultant surge in plantings has resulted in large amounts of cotton becoming available for export.

Exports from the 1984-85 crop will account for 92 per cent of production, and are expected to be about 225,000 tonnes of raw cotton (or lint), valued at over \$300 million, with Japan, Taiwan and South Korea being the main markets.

A further expansion in Australian cotton plantings is expected in 1985-86. It is unlikely that local yarn spinners will increase production significantly in the medium term. Consequently any further growth in production is likely to be accompanied by a growth in cotton exports

COTTON: AREA, PRODUCTION AND EXPORTS

Year	Area	Seed cotton (a)			Lint(c)	Raw cotton export	
		Quantity	Gross value	Cottonseed (b)		Quantity	Value f.o.b.
	'000 ha	'000 tonnes	\$m	'000 tonnes	'000 tonnes	'000 tonnes	\$m
1979-80	75.0	243.7	135.3	135.8	83.2	48.5	66.9
1980-81	77.9	236.6	147.2	161.2	98.9	58.7	92.1
1981-82	92.3	324.9	182.0	219.0	134.0	79.2	117.2
1982-83	96.4	285.6	167.5	164.0	101.0	129.2	197.6
1983-84	137.4	400.5	268.8	230.0	141.0	81.5	147.9
1984-85p	151.3	n.y.a.	317.2	373.0	243.0	139.7	259.6

(a) Before ginning.
Advisory Committee.

(b) Estimated by the Bureau of Agricultural Economics.

(c) Provided by the Raw Cotton Marketing

Sugar

Sugar cane is grown commercially in Australia along the east coast over a distance of some 2,100 kilometres 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.

Approximately 95 per cent of production occurs in Queensland, with some 75 per cent 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. The total area of land assigned to cane growing, among the 6,600 canegrowers in 1984-85 was 390,000 hectares. Farm sizes range between 20-70 hectares.

Australian cane farmers are regarded as amongst the most efficient in the world and employ a high degree of mechanisation in ploughing, planting, harvesting, and transportation activities. The Australian industry was the first in the world to introduce mechanical cultivation and harvesting techniques and by 1964 the entire industry had converted to bulk handling.

The cane crop is generally planted in April/May and harvested from June to December the following year. The major proportion of each year's crop is from ratoons while in New South Wales most crops are allowed to grow for two seasons due to the slower growing conditions.

The organisation of the Australian sugar industry is complex. The Queensland Government controls the quantity of raw sugar produced through a system of mill peaks which is translated into cane quotas for growers. In addition the Queensland Government contracts with CSR Limited and Millaquin Sugar Company Pty Limited for the refining, marketing and distribution of home consumption needs, arranges through CSR Limited the export marketing of raw sugar, and regulates the division of industry proceeds between growers and millers.

There are 33 raw sugar mills located throughout the growing regions: 30 are located in Queensland and the remaining 3 in New South Wales. Fifteen of the mills are co-operatively owned by canegrowers and the remaining eighteen by proprietary companies. Refineries are located in each mainland capital city and at Bundaberg. The six bulk sugar export terminals located in Queensland are at present capable of storing 2.9 million tonnes. While raw sugar is the main product from mills, important by-products are bagasse (fibre), molasses, ash and filter mud.

In recent years sugar cane production has been around 24 million tonnes yielding between 2.8 and 3.3 million tonnes of sugar. In 1985 approximately 24 million tonnes of cane are expected to be crushed to produce 3.4 million tonnes of sugar.

Area, production and yield levels for sugar cane from 1979-80 to 1984-85 are provided in the following table.

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	Produc-	Yield	Quantity	Yield	Area	Produc-	Yield	Quantity	Yield
	harvested	tion				harvested	tion			
	'000 ha	'000 tonnes	t/ha	'000 tonnes	t/ha	'000 ha	'000 tonnes	t/ha	'000 tonnes	t/ha
1979-80 . . .	11.8	1,291.5	109.1	155.8	13.2	255.4	19,859.6	77.8	2,807.2	11.0
1980-81 . . .	14.0	1,435.3	102.4	181.2	12.9	274.3	22,540.4	82.2	3,148.5	11.5
1981-82 . . .	14.3	1,505.9	105.4	184.7	13.4	301.7	23,587.9	78.2	3,250.4	10.8
1982-83 . . .	16.0	1,702.3	106.5	175.9	11.0	302.5	23,114.8	76.4	3,324.2	11.0
1983-84 . . .	15.2	1,468.4	96.7	159.0	10.5	292.0	22,723.0	77.8	3,011.6	10.3
1984-85p . . .	18.2	1,538.1	84.3	198.9	10.9	297.8	23,910.0	80.3	3,349.2	11.5

(a) In terms of 94 net titre.

The domestic market is reserved entirely for sugar produced in Australia. This is achieved by an embargo on the import of sugar. The maximum price of refined sugar for sale to wholesalers and manufacturers is fixed each six months under a formula contained in the Commonwealth/Queensland Sugar Agreement.

Domestic sales account for about 760,000 tonnes annually or approximately twenty per cent of the total industry sales. Granulated sugars account for about 75 per cent of the total domestic sales with liquid sugars (15 per cent), castor sugar (5 per cent), and raw sugar taking up the bulk of the remainder. About two-thirds of the sales of refined sugar products go to processed food and drink manufacturers.

The Australian sugar industry exports about 75 per cent of its annual raw sugar production and is one of the world's largest sugar exporters. In 1984 exports totalled 2.59 million tonnes compared with exports from Cuba of 7.02 million tonnes, Brazil 3.04 and the EEC 4.39 million tonnes.

In 1984-85 the domestic market and long-term contracts with Korea, Malaysia, Singapore, New Zealand and China provided secure outlets for approximately 50 per cent of the industry's capacity, the balance of export sugar being sold on the free market. Prices on the free market during 1984-85 were very low.

The disposal pattern of Australia's sugar production is shown in the following table.

SUGAR: AREA, PRODUCTION, EXPORTS AND CONSUMPTION

SUGAR AREA, PRODUCTION, EXPORTS AND CONSUMPTION								
Year	Area harvested	Production		Exports		Apparent consumption in Australia(a)		
		Sugar cane	Raw sugar	Raw and refined sugar				
		Quantity	Gross value	Quantity	Quantity	Value f.o.b.	Total	Per head
		mil. '000 ha	\$m tonnes	mil. tonnes	mil. tonnes	\$m tonnes	'000 tonnes	kg
1979-80	267.2	21.5	548.2	3.0	2.2	666.9	692.5	47.4
1980-81	288.3	24.0	799.7	3.3	2.6	1,146.2	721.4	48.7
1981-82	315.9	25.1	590.2	3.4	2.5	777.7	710.8	47.2
1982-83	318.5	24.8	508.9	3.5	2.5	557.7	697.9	45.1
1983-84	307.1	24.2	516.6	3.2	2.4	621.3	681.1	44.1
1984-85p	316.0	25.4	500.4	3.5	2.5	574.1	n.y.a.	n.y.a.

(a) Total quantity of sugar available for consumption in Australia comprises refined sugar and refined sugar contained in manufactured foods.

Australia has regularly participated in arrangements to regulate the international sugar market and was a signatory to the 1984 International Sugar Agreement (ISA). The new Agreement is an administrative pact only, and unlike previous Agreements contains no economic provisions. This means that member countries are not constrained in their sugar exports.

Vegetables

Vegetables for human consumption

The area sown to vegetables reached a peak of over 200,000 hectares in 1945, but has remained static at around 109,000 hectares since 1975-76. However, yields from most vegetable crops have increased due to variety breeding for increased yields, greater use of irrigation and better control of disease and insect pests.

Because of the wide climatic range in Australia, supplies for main city markets are drawn from widely different areas, depending on the times of maturity of the various crops. Historically, market gardens were located near urban centres and, while many small scale growers still produce crops close to city markets, urban expansion, rising urban land values, improvements in transport and irrigation and developments in freezing, canning and drying have extended the industry far from the cities. Transport costs are reduced by the location of processing establishments in producing areas, although city markets still absorb the bulk of fresh and processed produce.

Potatoes. Potatoes require deep friable soils which, in Australia, are usually basaltic, alluvial or swampy in origin. Fertiliser requirements, which are generally high, vary with the type of soil. While potatoes require only moderate temperatures for growth, the greatest proportion of Australia's potatoes are grown as a summer crop because potato plants are killed by heavy frosts. In recent years an increasing proportion of potatoes has been grown under irrigation and potato growing has become increasingly mechanised, with individual growers having larger areas and becoming more specialised.

Over the last two decades increases in per capita consumption have followed population increases. Consumption of processed potato products is forecast to continue to increase slightly. The main processed potato products are frozen chips, crisps, dehydrated granule and flake. Other, but less important, processed potato products are soup, baby foods, salads and canned potatoes.

Potato marketing. Sixty-five per cent of total production is sold through fresh market outlets with the remaining 35 per cent going to processing. The principal forms of potato processing are canning, drying and freezing. The majority of processing potatoes are purchased by the two frozen french fry potato processors who operate in Tasmania and Victoria. Processors negotiate contracts directly with growers. South Australia and Western Australia have marketing authorities which monitor production, pricing and the sale of potatoes. Other States rely on potato merchants and agents for marketing.

Potato trading. Exports of fresh potatoes, and potato flour, meal and flakes have shown an overall increase in the last decade, with the exception of 1983-84, when due to seasonal conditions there was a marked decrease in exports of fresh potatoes. Imports of processed potatoes are generally insignificant.

Tomatoes. Tomatoes are grown generally for the fresh market. The major producing States are Queensland and Victoria. Processing is undertaken mainly in Victoria, New South Wales and South Australia.

Peas. Growing peas is an important activity for farmers in northern Tasmania, and in the Lockyer and Fassifern Valleys of Queensland. Nationally, about 10 per cent of the total area used for vegetable growing is devoted to pea production. Peas for processing accounted for more than 90 per cent of the total area sown to peas for the year ending 31 March 1984.

Beans. Beans are mainly grown for the processing market. Major producing States are Queensland and Tasmania.

Onions. Onions are grown throughout Australia with the major producing States being South Australia and Queensland. Processing is relatively insignificant.

Other Vegetables. The other major vegetables produced are carrots, cauliflowers and cabbages (mainly for the fresh market).

APPARENT CONSUMPTION OF VEGETABLES

(Kilograms per capita per year)

Year	Potatoes	Other root and bulb vegetables	Tomatoes	Leafy and green vegetables	Other vegetables	Total, fresh equivalent weight
1978-79	51.5	17.2	13.5	27.5	19.5	129.2
1979-80	54.9	17.3	14.5	25.1	17.6	129.5
1980-81	54.9	17.5	15.7	22.3	17.5	127.8
1981-82	57.6	18.7	16.7	20.8	17.1	130.8
1982-83	52.2	16.9	16.5	21.4	18.0	125.0
1983-84	62.6	17.4	18.6	21.8	18.3	138.8

VEGETABLES FOR HUMAN CONSUMPTION: AREA AND PRODUCTION

Year	French and runner beans	Cabbages	Carrots	Cauli- flowers	Onions	Green peas	Potatoes	Tomatoes	Total vege- tables
AREA ('000 hectares)									
1979-80 . . .	7.1	2.5	3.6	3.3	4.0	14.5	36.7	8.5	106.5
1980-81 . . .	(a)6.3	2.4	3.7	(a)2.8	4.0	(a)10.8	35.7	9.1	103.0
1981-82 . . .	7.1	(a)2.4	3.9	3.1	4.0	12.1	(a)36.1	9.1	106.7
1982-83 . . .	6.7	2.5	3.8	3.3	4.2	14.8	(a)37.4	8.7	110.3
1983-84 . . .	6.7	2.5	4.3	3.4	3.8	12.2	37.9	9.1	109.9
1984-85p . . .	n.y.a.	n.y.a.	n.y.a.	n.y.a.	4.5	n.y.a.	37.7	8.5	108.2

Year	French and runner beans	Cabbages	Carrots	Cauli- flowers	Onions	Green peas Process- ing (shelled weight)	Sold in pod (pod weight)	Potatoes	Tomatoes
PRODUCTION ('000 tonnes)									
1979-80 . . .	34.3	74.7	101.6	94.6	119.9	43.0	2.1	857.4	196.9
1980-81 . . .	(a)34.0	76.1	112.6	(a)79.2	114.8	(a)32.6	(a)1.5	865.8	216.8
1981-82 . . .	34.6	(a)71.0	112.5	85.4	127.4	38.4	1.7	(a)918.6	228.4
1982-83 . . .	33.5	67.2	105.0	76.5	129.0	46.0	1.9	858.5	224.1
1983-84 . . .	32.3	72.3	124.3	84.4	115.9	44.0	2.1	1,019.8	258.3
1984-85p . . .	n.y.a.	n.y.a.	n.y.a.	n.y.a.	148.1	n.y.a.	n.y.a.	n.y.a.	249.2

(a) Incomplete, information on this commodity was not separately collected in some States.

Value of production and value of exports

Gross value of production for 1984-85 (preliminary) amounted to \$624.8 million. Export value of fresh, frozen, or otherwise prepared vegetables amounted to \$55 million for the same period.

PROCESSED VEGETABLES: AUSTRALIAN PRODUCTION

('000 tonnes—unless otherwise stated)

Derived from the recorded monthly production of the Manufacturing Census

Item	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85p
Quick frozen vegetables—						
Beans	16.1	19.2	22.5	16.7	21.2	205.3
Peas	38.9	35.5	47.3	42.4	41.7	
Potatoes	65.8	77.9	94.3	94.8	107.8	
Other	28.3	25.2	34.3	25.5	25.2	
Vegetables preserved, canned or bottled (excluding pickles, etc.)						
(a)—						
Beans—Green	3.7	3.4	5.7	4.1	4.1	n.a.
Baked (including pork and beans)	26.1	21.3	25.0	27.4	n.a.	n.a.
Beetroot	25.9	23.3	26.1	n.a.	n.a.	n.a.
Carrots	6.1	4.4	3.7	4.4	2.5	n.a.
Cucumber (including pickled)	1.0	1.6	0.9	n.a.	1.2	n.a.
Gherkins—pickled	1.9	2.3	2.2	2.0	2.1	1.7
Olives—pickled	0.3	0.5	0.5	0.5	0.6	0.6
Onions (including pickled)	4.1	4.9	3.4	3.5	2.7	2.6
Peas—Green	9.7	9.4	11.2	13.7	11.9	n.a.
Tomatoes (excluding canned pulp)	13.1	15.3	15.4	9.9	17.8	n.a.
Tomato juice (million litres)	9.3	7.0	8.3	4.5	n.a.	n.a.

(a) Canned in tinplate or aluminium cans; bottled in glass bottles.

For further information on vegetables see the following publications: *Crops and Pastures, Australia* (7321.0), *Production Bulletin No. 3: Food, Drink and Tobacco, Australia* (8359.0), *Apparent Consumption of Foodstuffs and Nutrients, Australia* (4306.0) and *Value of Agricultural Commodities Produced, Australia* (7503.0).

Fruit (excluding grapes)

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

Citrus fruits (predominantly oranges) are grown in all States except Tasmania and account for almost half of the production of all orchard fruits. New South Wales and South Australia produce the greatest quantity of citrus, followed by Victoria and Queensland while that of Western Australia is very small. Pome fruits (apples and pears) account for about 40 per cent of orchard fruit grown in Australia. Victoria, New South Wales and Tasmania are the most important apple-growing States with significant quantities also being grown in the other States. About 80 per cent of all Australian pears are produced in Victoria. Stone fruits (peaches, apricots, plums and prunes, cherries and nectarines) account for around one-eighth of orchard fruit production. Heaviest production is in Victoria, South Australia and New South Wales, with smaller quantities in the other States. Pineapples (about 80 per cent canned) and bananas (virtually all sold fresh) are the most important tropical fruits. Queensland produces almost all the pineapples and about 46 per cent of the bananas grown in Australia. Banana production on the sub-tropical north coast of New South Wales is equivalent to that of Queensland with the remaining 8 per cent of production grown in Western Australia.

In recent years there has been rapid expansion in the cultivation of many relatively new fruit crops in Australia. The combined gross value of output of these new fruits is presently worth about \$40m a year and there is considerable scope for continued growth in the future.

Avocado is perhaps the most commonly known of these crops and production has expanded considerably during the past decade to a current gross value of over \$6m. Avocado production is mainly in Queensland and New South Wales with minor quantities produced in Western Australia, South Australia and Victoria.

Kiwifruit is a relatively new temperate fruit crop to Australia. Production has been expanding rapidly mainly in Victoria and New South Wales and further expansion is expected. Of the berry fruits, strawberries are widely grown, with largest production in Victoria and Queensland. Interest in the production of blueberries in Australia has developed only recently and plantings of blueberries have increased rapidly mainly in Victoria and New South Wales. Other berries (currants and raspberries) are grown predominantly in Tasmania and production has been reasonably constant over the past five years.

Tropical fruit such as mangoes, papaws, passionfruit, custard apples and guavas, are grown mainly in Queensland. Smaller quantities of tropical fruit are produced in the north coast region of New South Wales, Western Australia and more recently the Northern Territory. The largest expansion has been of mango production which has more than doubled since 1979. Given the large number of non-bearing mango trees production is expected to continue to increase dramatically. There is also considerable interest in many other exotic tropical and subtropical fruits. Production of lychees and persimmons has recently commenced and some plantings of rambutan, sapote and longans have been made, mainly in Queensland and the north coast region of New South Wales.

Almond is still the major nut crop in Australia with almost the entire almond crop produced in South Australia and Victoria. Pecan nut production increased substantially in the 1970s, mainly in northern New South Wales. More recently plantings of pistachio trees have commenced in South Australia, Victoria, New South Wales and Western Australia. The major expansion in the nut crops has been with macadamias, a native Australian tree. The main growing regions are the coastal region of northern New South Wales and southern Queensland. During the past decade production of macadamia nuts has increased rapidly to a current gross value of about \$3m.

SELECTED FRUIT STATISTICS

Year	Orchard fruit: number of trees('000)				Tropical and other fruits: area (ha)			Total area of fruit (ha)
	Apples	Oranges	Pears	Peaches	Bananas	Pineapples	Other fruit	
1979-80 . . .	6,113	5,532	1,601	1,570	8,136	6,784	1,744	98,451
1980-81 . . .	6,099	5,872	1,622	1,649	8,558	6,583	1,831	100,516
1981-82 . . .	6,065	6,055	1,703	1,669	8,740	6,373	1,738	102,068
1982-83 . . .	6,098	6,219	1,556	1,642	9,040	6,010	1,774	104,325
1983-84 . . .	6,066	6,397	1,584	1,646	9,282	6,011	2,085	107,534
1984-85p. . .	6,012	6,575	1,500	1,690	9,449	6,856	1,864	90,301

SELECTED FRUIT STATISTICS—continued

Year	Apples	Apricots	Bananas	Cherries	Oranges	Peaches	Pears	Pine-apples	Plums and Prunes
PRODUCTION ('000 tonnes)									
1979-80	298.8	26.4	125.1	(a) 3.9	392.1	71.5	124.3	123.3	(a) 15.0
1980-81	306.9	30.6	124.3	6.5	424.5	79.2	145.6	123.3	20.8
1981-82	294.5	27.1	129.6	5.4	376.3	64.6	(a) 109.7	125.5	16.4
1982-83	300.8	26.9	140.5	4.2	410.0	63.0	119.2	111.3	20.6
1983-84	207.0	23.6	146.4	3.5	391.8	48.3	122.1	115.1	20.0
1984-85p	n.y.a.	24.3	151.4	3.8	439.0	58.8	n.y.a.	135.3	20.7
GROSS VALUE OF PRODUCTION (\$ million)									
1979-80	107.7	13.9	45.9	5.8	77.9	24.0	36.5	20.2	10.6
1980-81	118.9	16.9	59.5	10.0	86.0	25.7	41.4	19.8	15.2
1981-82	124.2	18.1	61.4	13.2	89.6	23.0	(a) 30.8	20.5	11.2
1982-83	132.4	18.3	70.1	7.9	101.0	21.3	41.9	25.4	16.9
1983-84	134.1	17.6	86.8	8.7	105.3	25.4	45.9	26.2	17.5
1984-85p	159.5	n.y.a.	93.7	n.y.a.	n.y.a.	24.4	42.2	30.6	n.y.a.

(a) Incomplete; information on this commodity was not separately collected in some States.

Processed fruit and fruit products

After rapid expansion in the 1960s, output of canned fruit declined and then levelled off due to the effects of contracting overseas markets for Australian canned fruit. Production of natural fruit juices has increased markedly in the last decade and this has reflected improvements in marketing methods, effective promotion and public awareness of the nutritional value of natural juices.

FRUIT PRODUCTS

Derived from the Annual Manufacturing Census and the recorded monthly production

	Unit	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85p
Fruit juice based cordials and syrups(a)	ML	76.3	77.8	80.4	78.7	75.7	85.2
Natural fruit juice(b)—							
Single strength	ML	208.4	232.6	186.5	201.1		
Concentrated(c)	ML	24.6	32.6	27.3	32.6	n.y.a.	n.y.a.
Cider and perry	ML	17.1	15.0	19.0	18.4		
Canned or bottled fruit (excl. canned pulp)	'000 tonnes	257.5	226.4	146.7	157.6	153.0	186.2
Jams	'000 tonnes	21.8	29.1	32.6	29.3	30.3	29.8

(a) Containing at least 25 per cent by volume of pure fruit juices. (b) Excludes fruit drinks consisting of diluted fruit juices with or without artificial flavourings. (c) Excludes grape must, and comprises actual quantity of concentrated juices.

APPARENT CONSUMPTION OF FRUIT AND FRUIT PRODUCTS

(kg per capita per year)

Year	Fresh Oranges	Other citrus	Other fresh fruit	Jams, conserves, etc.	Dried tree fruit	Processed fruit	Total, fresh equivalent weight
1978-79	28.1	7.3	34.4	2.3	0.4	10.5	93.3
1979-80	33.8	6.4	39.3	1.5	0.6	12.4	106.8
1980-81	31.6	7.6	35.8	1.5	0.4	11.7	99.9
1981-82	29.5	6.9	37.8	1.7	0.6	10.9	99.7
1982-83	41.4	6.4	39.4	1.7	0.6	9.4	110.6
1983-84	43.5	7.7	38.2	1.8	0.7	9.8	113.1

Fruit exports

The value of exports of fruit and fruit products (excluding grapes) has in most recent years accounted for more than a quarter of the value of the production of fresh fruit. Fresh or chilled fruit (mostly apples, pears and citrus) account for some 40 per cent of this; preserved fruit (mostly canned pears and peaches) make up most of the remainder; only small quantities of dried fruits (other than grapes) are exported. The total value of those exports has been relatively constant in recent years.

Fresh apple exports to Europe have been markedly reduced in recent years mainly because of rising shipping costs and improved storage techniques in Europe. On the other hand, markets in other areas such as South-East Asia and the Middle East have been maintained in most years. Fresh pear exports to Europe have also declined but not to the same extent as apples. Other export markets for pears, such as in South-East Asia, have

gained importance in recent years. Exports of citrus, predominantly oranges, have been relatively steady in recent years quantity wise, while values have steadily increased. Citrus exports are sensitive to competition from the U.S.A. Exports of oranges were made to Japan for the first time in 1983-84 and more than doubled in 1984-85. The Australian industry sees this as an important first step in establishing a potentially important trade with Japan. Effects of the E.E.C. import regime have shown in a decrease in processed fruit exports to Europe, although the U.K. remains Australia's main market.

FRUIT EXPORTS; VALUE F.O.B.

(\$ million)

Year	Fresh and chilled			Canned or bottled					Fruit salad
	Apples	Pears	Oranges	Apricots	Peaches	Pears	Peaches and pears	Pine-apples	
1979-80	20.1	18.3	9.9	1.5	19.3	20.0	3.6	3.1	7.6
1980-81	15.3	20.0	8.0	1.3	16.0	20.6	3.0	3.5	9.6
1981-82	19.0	13.7	8.9	1.0	15.4	13.7	2.1	3.6	7.5
1982-83	15.7	17.8	12.6	1.1	13.8	16.5	2.4	2.2	9.8
1983-84	13.7	15.9	9.4	1.2	13.4	10.9	1.8	2.5	10.7
1984-85p	12.0	21.3	14.4	0.4	12.1	17.9	1.4	3.9	10.2

FRUIT: VALUE OF PRODUCTION AND EXPORTS

(\$ million)

Year	Gross value			Exports(a) value f.o.b.
	Orchard fruit	Tropical, berry and other	Total	
1979-80	325	82	407	131
1980-81	366	94	460	131
1981-82	365	99	464	122
1982-83	385	113	498	135
1983-84	419	136	554	117
1984-85p	n.y.a.	n.y.a.	627	141

(a) Fruit and nuts, excluding grapes (fresh and dried); includes fresh, dried and preserved and fruit preparations.

Fruit imports

Small but increasing quantities of fresh fruit, mainly off-season citrus from the U.S.A., are imported, while most imports of dried fruit consist of dates from China, Iraq, Iran, Pakistan and the U.S.A. Dried apricots became a significant import in 1984. Imports of orange juice have increased to around 100 million litres in recent years to meet the shortfall in Australian production.

Marketing and regulation of the fruit industry

Apples and pears. The Australian Apple and Pear Corporation has the function of promoting and controlling the export of Australian apples and pears as well as the promotion of trade and commerce in apples and pears within Australia. It also has power to promote, or engage in, research relating to the production, packaging, handling, transportation or marketing of apples and pears and to promote new apple and pear products.

The current underwriting schemes for export apples and pears terminate at the end of the 1985 export season. Under the schemes the Government guarantees a minimum return of 95 per cent of the weighted average returns for all apple and pear exports over the preceding four seasons. The Industries Assistance Commission is to report in September 1985 on what Government assistance measures may be appropriate for the apple and pear industry after the 1985 season.

Canned Fruit. On 29 November 1979 the Commonwealth enacted legislation restructuring the industry's marketing arrangements. Similar complementary legislation has been enacted by the four States of New South Wales, Victoria, South Australia and Queensland.

Under the legislation the Australian Canned Fruits Corporation (replacing the Australian Canned Fruits Board) is empowered to acquire and sell the production of canned apricots, peaches and pears and is responsible for determining prices, terms and conditions for sales in both Australian and export markets. Sales are made through markets nominated by canners

and approved by the Corporation. Markets are classified as Pool and Non-Pool with returns from Pool markets equalised by the Corporation. Entitlements for sales in Pool markets are allocated to canners prior to the start of each season.

The Corporation's administrative expenses are financed by a levy imposed on the production of canned fruits under the *Canned Fruits Levy Act 1979*.

The Corporation is advised in the performance of its functions by the Australian Canned Fruits Industry Advisory Committee.

In October 1984, the operation of the Australian Canned Fruits Corporation (ACFC) was extended for a further three years to the end of 1987. A more commercially orientated and flexible corporation is envisaged with the expansion of the Corporation's board to make it more effective in its commercial operations, more accountable to industry and government and more capable of achieving its objective of improving returns to growers.

For further data on fruits and fruit products see the publications *Fruit, Australia* (7322.0), *Production Bulletin No. 3: Food, Drink and Tobacco, Australia* (8359.0), *Apparent Consumption of Foodstuffs and Nutrients, Australia* (4306.0) and *Value of Agricultural 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 minor extent, for table use. Some of the better known wine producing areas are Barossa, Clare, Riverland, Southern Districts and Coonawarra (S.A.); North Eastern Victoria and Great Western (Vic.); Hunter and Riverina (N.S.W.); Sunraysia (N.S.W. and Victoria); Swan Valley and Margaret River (W.A.).

Nearly all the dried fruit is produced along the River Murray and its tributaries in Victoria and N.S.W. with small localised areas in other States.

VITICULTURAL STATISTICS: AREA, PRODUCTION AND VALUE

Area		Production: grapes used for—				
Year	Bearing	Total	Winemaking	Drying	Total (a)	
					Quantity	Gross value
	'000 ha	'000 ha	'000 tonnes fresh weight	'000 tonnes fresh weight	'000 tonnes fresh weight	\$m
1979-80	65.2	69.7	502.5	339.2	865.3	231.1
1980-81	64.7	69.5	473.1	248.1	743.4	178.2
1981-82	63.7	68.4	499.9	361.7	884.9	222.8
1982-83	61.9	66.5	431.3	310.3	768.1	212.5
1983-84	61.7	66.0	495.1	320.0	840.9	217.0
1984-85p	58.8	63.0	494.8	319.7	836.6	199.2

(a) Includes grapes used for table and other purposes.

The bearing area of vines fell by about 10 per cent between 1979-80 and 1984-85. Area of vines not yet bearing has also decreased slightly from 1979-80 to 1984-85. Production of wine grapes has remained at around 500,000 tonnes in recent vintages, except for a reduced 1983 vintage of 431,000 tonnes due to adverse climatic conditions. Production of wine grapes has increased by more than 51 per cent since 1972-73.

The multipurpose grape production base has not shown much change over this period apart from annual variations due to seasonal conditions. Multipurpose grapes are used predominantly for winemaking and drying, the latter process being particularly susceptible to adverse seasonal conditions. There was a diversion of multipurpose grapes to winemaking during most of the 1970s and this resulted in a decline in the volume of grapes dried. In the early 1980s there was some reversal in this trend, and production of dried vine fruit in 1980 and 1982 to 1984 seasons, inclusive, was higher than levels prevailing in the 1970s. However production in 1985 was estimated to be only slightly above the average of the late 1970s, mainly reflecting winery demand. While a serious oversupply of dried vine fruit existed on world markets in 1983 and 1984, the situation improved rapidly in early 1985 as a consequence of a strong US dollar and reduced production from Northern Hemisphere suppliers in late 1984. While the US still holds considerable stocks of fruit, prices have improved considerably on the depressed levels of 1984. Australian exporters have continued to make

significant sales on international markets (assisted by the high quality of the Australian product). The Australian Dried Fruits Corporation is the body responsible for the organisation of the export trade in dried vine fruits. The Corporation also administers the statutory Dried Vine Fruits Equalisation Scheme and the Dried Sultana Production Underwriting Scheme. Both these schemes were restructured by the Government in 1985 following an inquiry into the dried vine fruits industry by the Industries Assistance Commission. The Government's objective was to make the industry more responsive to market signals. Until 1983 imports of dried vine fruit had been largely insignificant. However, imports totalled 2,473 tonnes in 1983-84 and 2,697 tonnes in 1984-85, the major sources being Greece and the USA. The Australian industry has demonstrated injury from subsidised imports from Greece and countervailing measures have been implemented. Also preliminary anti-dumping measures have been applied to imports from the USA, pending completion of inquiries as to whether dumping has occurred.

Varietal Statistics: 1984 Season

Varietal information relating to vines, grape production by end use and yield per hectare, is obtained in a special collection conducted at 30 June in New South Wales, Victoria, South Australia and Western Australia of all growers who reported vines in the Agricultural Census. No varietal information is collected in the other States and Territories. There is continuing research into correct identification of varieties to find out which are most suitable for different wine styles and different regions and several varieties have recently been re-named. The data are aggregated from the States of New South Wales, Victoria, South Australia and Western Australia only.

VITICULTURE: AREA AND PRODUCTION BY VARIETY, 1984 SEASON

	Area of Vines at harvest			Grubbings (actual and/or intended)	Production			
	Bearing	Not yet bearing	Total		Grapes used for—			
					Wine making	Drying	Other (a)	Total
	—hectares—			hectares	—tonnes (freshweight)—			
Red grapes—								
Cabernet Sauvignon	3,401	363	3,764	133	23,672	—	4	23,676
Currant (incl. Carina)	1,578	151	1,728	47	233	15,927	40	16,199
Grenache	3,532	18	3,550	158	35,233	—	301	35,534
Mataro	1,040	7	1,047	53	11,166	—	222	11,388
Pinot Noir	319	155	473	8	2,049	—	4	2,053
Shiraz	6,309	77	6,387	265	56,260	23	199	56,482
Other red grapes	1,793	398	2,192	69	9,469	126	4,547	14,143
<i>Total red grapes</i>	<i>17,972</i>	<i>1,169</i>	<i>19,141</i>	<i>733</i>	<i>138,082</i>	<i>16,076</i>	<i>5,317</i>	<i>159,475</i>
White grapes—								
Chardonnay	1,202	720	1,920	4	8,515	—	12	8,526
Doradillo	1,473	10	1,484	84	27,467	15	76	27,557
Muscat Blanc	546	77	624	13	5,801	—	82	5,885
Muscat Gordo Blanco	4,084	168	4,252	85	71,224	1,478	662	73,365
Palomino and Pedro Ximenes	2,106	40	2,146	82	27,004	—	52	27,056
Rhine Riesling	4,344	351	4,694	94	36,201	—	52	36,253
Semillon	2,650	159	2,810	55	31,905	—	20	31,925
Sultana	17,118	795	17,912	299	74,641	298,914	9,038	382,595
Waltham Cross	1,269	31	1,299	68	7,470	3,106	3,801	14,377
Other white grapes	6,055	639	6,696	215	66,476	83	3,035	69,593
<i>Total white grapes</i>	<i>40,847</i>	<i>2,990</i>	<i>43,837</i>	<i>999</i>	<i>356,704</i>	<i>303,597</i>	<i>16,830</i>	<i>677,132</i>
Total grapes.	58,819	4,159	62,978	1,731	494,786	319,673	22,147	836,607

(a) 'Other' includes table use.

DRIED VINE FRUIT: PRODUCTION, EXPORTS AND CONSUMPTION

(Dried weight)

Year	Production				Exports			Consumption of dried vine fruit
	Raisins	Sultanas	Currants	Total	Raisins/sultanas	Currants	Total	
							Quantity	Value f.o.b.
	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	\$m kg
1979-80	5.3	71.8	5.8	82.8	39.2	2.3	41.5	55.1 1.9
1980-81	5.7	50.7	4.8	61.1	50.1	1.9	52.0	75.5 1.8
1981-82	5.8	78.5	5.9	90.2	38.5	0.8	39.4	49.5 1.7
1982-83	3.9	64.9	4.7	73.4	57.1	2.4	59.5	59.7 1.9
1983-84	1.4	69.0	4.6	75.0	51.6	0.9	52.5	54.1 1.7
1984-85p	n.y.a.	n.y.a.	n.y.a.	n.y.a.	61.5	1.0	62.4	58.7 n.y.a.

Wine industry

Australia produces a wide range of wine and brandy products. Over the past five years there has been a distinct trend towards greater production and consumption of unfortified or table wines. In the twelve months ending June 1985 sales of table wine accounted for more than 76 per cent of all sales of Australian wine. The large growth in table wine sales over the past five years has been principally due to the successful marketing of wine in 'casks' (usually fibreboard, box-shaped, 4-5 litre containers equipped with dispensing faucets). Exports and imports of wine, representing only some 2.7 per cent and 3.8 per cent respectively of the total domestic market for wine, are both relatively insignificant. The Australian Wine and Brandy Corporation is the body responsible for the control of the export trade in wine, brandy and grape spirit products. The Corporation has the power to regulate exports as well as promotion and publicity functions in export markets and in Australia. The Corporation has the power to trade with the approval of the Minister for Primary Industry but, to date, this power has not been invoked. The Corporation's future role is currently under review.

PRODUCTION, CONSUMPTION AND EXPORT OF WINES

Year	Pro-duction	Exports		Consumption in Australia per capita
		Quantity	Value	
			f.o.b.	
	mil. litres	mil. litres	\$m	litres
1979-80	414.2	6.1	8.4	17.2
1980-81	374.3	7.5	11.9	18.2
1981-82	402.7	8.4	14.0	19.1
1982-83	340.1	8.0	13.4	19.7
1983-84	396.2	9.0	16.8	20.4
1984-85p	n.y.a.	8.7	16.9	21.3

For further details on viticulture, dried vine fruit, wine, etc. see the following publications: *Fruit, Australia* (7322.0), *Sales and Stocks of Australian Wine and Brandy* (8504.0) and *Viticulture, Australia* (7310.0).

Miscellaneous crops

The principal crops not covered above include fodder crops, tobacco, hops and mushrooms which, in 1983-84 had gross values as follows:

Crops	Gross value	Per cent of total crop gross value
Fodder crops (hay)	\$m	%
Lupins	99.5	1.2
Tobacco	64.1	0.8
Hops	70.9	0.8
Mushrooms	13.5	0.2
Other (incl. nurseries)	29.4	0.3
	223.7	2.7

Fodder crops

As well as crops specifically for grain, considerable areas of Australia are devoted to fodder crops. These crops are utilised either for grazing (as green feed), or conserved as hay, 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.

FODDER CROPS: AREA AND PRODUCTION

Year	Hay(a)			Green feed or silage(b)	
	Area	Production		Area	Silage made
		Quantity	Gross value		
	'000 ha	'000 tonnes	\$m	'000 ha	'000 tonnes
1979-80	265	819	39.1	947	270
1980-81	320	826	58.3	1,096	338
1981-82	380	1,033	77.1	936	413
1982-83	408	879	100.6	1,292	301
1983-84	377	1,248	99.5	896	698
1984-85p	261	848	70.9	864	n.y.a.

(a) Principally oaten and wheaten hay.

(b) Principally from oats, barley, wheat and forage sorghum.

Lupins

Lupins are grown primarily as a grain crop, but grazing of standing crops and stubble is also an important use. Because of their high protein content lupins are becoming increasingly important in livestock feed and for human consumption, particularly in some of the Asian countries.

There has been a significant expansion of lupin production in recent years, particularly in Western Australia which is the major producer and exporter of lupins. Smaller quantities are also grown in New South Wales, Victoria and South Australia mainly for domestic use.

The value of lupin exports in 1984-85 was estimated at about \$41 million, main markets being Europe and Taiwan.

FARMSTOCKS OF CEREAL GRAINS, HAY AND SILAGE

('000 tonnes)

At 31 March	Cereal grains			Hay	Silage
	Barley	Oats	Wheat		
1979	637	1,256	880	5,355	753
1980	542	1,207	815	4,872	722
1981	518	933	860	4,764	578
1982	628	1,356	832	4,941	502
1983	506	711	970	2,983	333
1984	627	1,705	1,021	6,789	642

Tobacco

Tobacco is a summer-growing annual which requires a temperate to tropical climate, adequate soil moisture and frost-free period of approximately five months. In Australia, all tobacco is grown under irrigation. Because of specialised requirements, production is limited to areas with suitable soils and climate. The main centres of production are the Mareeba-Dimbulah districts of north Queensland and Myrtleford in north-eastern Victoria. Other areas where tobacco is grown include Bundaberg, Beerwah and Texas (Queensland) and Yetman and Coraki (New South Wales). All tobacco grown in Australia is of the flue-cured type except for small quantities of burley tobacco produced mainly in Victoria.

TOBACCO: AREA, PRODUCTION AND OVERSEAS TRADE

Year	Area	Production (dried leaf)	Exports (value f.o.b.)		Imports (value)	
			Unmanu- factured	Manu- factured	Unmanu- factured	Manu- factured
	'000 ha	'000 tonnes	\$'000	\$'000	\$'000	\$'000
1979-80	7.5	15.1	4,161	9,138	42,394	25,234
1980-81	7.1	14.5	2,893	8,559	44,007	31,129
1981-82	6.6	13.3	2,080	8,551	46,268	23,187
1982-83	6.7	13.4	4,835	9,667	52,916	30,420
1983-84	6.5	14.4	2,296	8,941	58,938	31,425
1984-85p	5.3	n.y.a	n.y.a	n.y.a	59,789	27,692

Marketing. In 1965 the Commonwealth and State Governments agreed to a stabilisation plan which provided for an annual Australian tobacco leaf marketing quota of flue-cured tobacco and a guaranteed minimum average reserve price. The plan is administered by the Australian Tobacco Board, constituted under the *Tobacco Marketing Act 1965*, and is composed of representatives of the Commonwealth Government, tobacco-growing States, growers and manufacturers.

Following a review by the Industries Assistance Commission of the tobacco industry in 1982, the government announced a new 5 year stabilisation scheme which began in 1984. The new scheme is designed to rationalise marketing arrangements in the industry. The scheme provides that the annual tobacco leaf quotas are adjusted in line with consumption, that manufacturers' stocks are reduced to a level equivalent to 13 months' consumption by 1988, and that prices be adjusted so as to significantly reduce the gap between Australian and World prices by 1990.

Hops

Hops are grown from perennial rootstocks over deep, well-drained soils in localities sheltered from the wind. The hop-bearing vine shoots are carried upon trellises, from which they are later harvested. The green hops are kiln-dried and baled on the farm. The dried hops can be further processed at centralised processing establishments into pellets, extract or high density packs. The pelleted form constitutes the bulk of the exported hops.

The area planted to hops in Australia is about 1,300 hectares. About 65 per cent of plantings are in Tasmania (confined to the Derwent, Huon and Channel areas in the south-east, the Scottsdale-Ringarooma district in the north-east, and the Gunn Plains in the north-west of the State). The other hop producing areas are the Ovens and King Valleys in Victoria and a small area near Manjimup in Western Australia.

Australian hop production is about 2,600 tonnes, approximately 70 per cent of which is used by domestic breweries, with the remainder being exported.

Mushrooms

Statistics of mushroom growing were collected for the first time in all States for the year ended 30 June 1975.

MUSHROOMS: AREA, PRODUCTION, GROSS VALUE AND IMPORTS

Year	Total production				Imports			
	Area	Quantity		Canned or bottled production	Dried		Canned or bottled	
		tonnes	Gross value		Quantity	Value f.o.b.	Quantity	Value f.o.b.
	hectares	tonnes	\$m	tonnes	tonnes	\$'000	'000 litres	\$'000
1978-79	53	7,806	14.7	5,718	88	964	3,738	4,723
1979-80	57	8,340	16.9	4,793	93	1,082	4,482	5,486
1980-81	56	8,265	18.5	3,743	93	1,140	5,864	7,120
1981-82	57	9,382	21.7	4,776	120	1,478	6,413	8,454
1982-83	65	10,266	27.1	n.p.	58	895	5,845	8,447
1983-84	69	11,036	29.4	n.p.	94	1,447	4,760	7,218
1984-85p	n.y.a.	n.y.a.	n.y.a.	n.p.	92	1,448	4,426	8,278

Jojoba

Jojoba is an arid zone perennial shrub native to the Sonoran Desert in USA and Mexico where it has a reputation for its ability to survive and grow under extremely adverse conditions. About 50 per cent of seed weight consists of a high quality liquid wax suitable for a wide range of industrial applications.

Attempts are being made to establish a jojoba growing and processing industry in Australia using wild, unimproved planting material. A research backing is needed, and research in this country has investigated the environmental factors controlling flowering and fruit growth, the physiological basis of jojoba's adaptation to moisture and temperature extremes, and the sites with the best potential to support an industry.

The future development of a jojoba industry depends upon the use of improved, high-yielding plant lines and the selection of the best plantation sites. Although there are many proposed uses for the wax, future market size and price structure are unknown.

Livestock

Since 1861, annual enumerations of livestock have been made based, with few exceptions, on actual collections made through the agency of the State police or by post. Particulars concerning the numbers of each of the principal kinds of livestock in Australia at ten-yearly intervals from 1861 to 1971, and then from 1980 on by single years, are given in the following table.

LIVESTOCK: AUSTRALIA, 1861 TO 1985
(^{'000})

Year	Cattle	Sheep	Pigs	Year	Cattle	Sheep	Pigs
1861	3,958	20,135	351	1951	15,229	115,596	1,134
1871	4,276	41,594	543	1961	17,332	152,679	1,615
1881	7,527	62,184	816	1971	24,373	177,792	2,590
1891	10,300	97,881	891	1980	26,203	135,985	2,518
1901	8,640	70,603	950	1981	25,168	134,407	2,430
1911	11,745	98,066	1,026	1982	24,553	137,976	2,373
1921	13,500	81,796	674	1983	22,478	133,237	2,490
1931	11,721	110,568	1,072	1984	22,161	139,242	2,527
1941	13,256	122,694	1,797	1985	22,738	149,248	2,463

While livestock numbers (particularly sheep) have increased substantially since 1861, marked fluctuations have taken place during the period, mainly on account of widespread droughts which have from time to time left their impressions on the pastoral history of Australia.

Australia has suffered ten major widespread droughts since the keeping of rainfall records began:

1864-66 All States were affected except Tasmania.

1880-86 Southern and eastern mainland States were affected.

1888 All States were hit except Western Australia.

1895-1903 This drought, one of the worst on record, halved Australia's sheep population (originally 100 million) and cut cattle numbers (12 million) by 40 per cent.

1911-1916 Wheat crops were affected in most States, sheep numbers declined by 19 million and cattle by 2 million.

1918-1920 During this period parts of Western Australia were the only areas completely free from drought.

1939-1945 This prolonged drought affected crops and/or pastoral areas in all States. Sheep numbers fell from 125 million in 1942 to 96 million in 1945.

1965-1967 This drought, in its impact on Queensland, New South Wales and Victoria, ranked with the 1902 drought as one of the most severe on record. It resulted in a 40 per cent drop in the wheat harvest, a loss of 20 million sheep, and a decrease in farm income of \$300-500 million. There was a chain reaction to other industries, with heavy losses being suffered by manufacturers of farm machinery and the N.S.W. Railways.

Effects of the drought were worsened by water rationing in irrigation areas.

1972 Widespread drought occurred throughout Australia.

Much of eastern Australia experienced one of the worst droughts on record in 1982 and early 1983. Widespread and soaking rains during the autumn months of 1983 greatly alleviated the situation and most areas received further good rains during 1983-84. However, 1985 saw

the return of light and variable rainfall conditions. In July 1985, much of New South Wales and western Queensland had again been drought declared and regional areas of concern were notified in western Victoria, parts of South Australia and Western Australia, and much of the Northern Territory. Good rains during August 1985 relieved much of this problem.

For further details of droughts in Australia see Yearbook No. 54, pages 991-96 'Droughts in Australia'.

The years in which the numbers of livestock attained their peaks are as follows: cattle, 1976 (33,434,000); sheep, 1970 (180,080,000); and pigs, 1973 (3,259,000).

Cattle

Cattle-raising is carried out in all States, the main object in certain districts being the production of stock suitable for slaughtering purposes and in others the raising of dairy herds. While dairy cattle are restricted mainly to southern and to coastal districts, beef cattle are more widely distributed. Cattle numbers in Australia increased slowly during the 1960s and 1970s, despite seasonal vicissitudes and heavy slaughtering, to a peak of 33.4 million in 1976. There was a continuous decline, aggravated by drought conditions, to 22.2 million in 1984. Improved seasonal conditions and higher export prices in 1984 encouraged producers to commence rebuilding herds and numbers increased to 23.0 million in 1985.

Beef cattle production is often combined with cropping, dairying and sheep. In the north (north of the 26th parallel), cattle properties and herd size 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.

For further details on cattle see *Livestock and Livestock Products, Australia* (7221.0).

CATTLE NUMBERS

('000)

31 March	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust. (incl. A.C.T.)
1980	6,097	4,252	10,332	1,067	2,065	649	1,727	26,203
1981	5,459	4,313	9,925	1,091	2,034	659	1,675	25,168
1982	5,429	4,121	9,782	1,013	1,942	628	1,624	24,553
1983	5,018	3,408	9,349	828	1,754	562	1,548	22,478
1984	5,036	3,487	9,154	813	1,730	542	1,390	22,161
1985p	5,190	3,568	9,395	844	1,713	554	1,461	22,738

Classification of cattle

CATTLE NUMBERS, BY AGE, SEX, PURPOSE

('000)

Classification	31 March					
	1980	1981	1982	1983	1984	1985p
Milk cattle—						
Bulls used or intended for service.	56	54	49	47	46	46
Cows, heifers and heifer calves	2,697	2,672	2,661	2,642	2,693	2,709
House cows and heifers.	77	74	73	69	68	65
Total.	2,830	2,799	2,783	2,757	2,805	2,820
Meat cattle—						
Bulls used or intended for service.	545	533	527	499	498	530
Cows and heifers (1 year and over)	11,727	11,269	11,032	9,929	9,964	10,225
Calves under 1 year.	5,445	5,135	5,023	4,644	4,455	4,915
Other cattle (1 year and over)	5,656	5,431	5,188	4,649	4,438	4,248
Total.	23,373	22,368	21,770	19,721	19,356	19,918
Total, all cattle	26,203	25,168	24,553	22,478	22,161	22,738

Sheep

With the exception of a short period in the early eighteen-sixties, when the flocks in Victoria outnumbered those of New South Wales, the latter State has occupied the premier position in sheep raising. Western Australia is the second largest sheep raising State followed by Victoria. Sheep numbers reached a peak of 180 million in Australia in 1970. They then declined rapidly up to March 1973 as producers turned off large numbers for slaughter and

moved from wool-growing towards grain and beef production. By 1975, the numbers had again increased to 151,653,000, but in March 1978 the numbers had fallen to 131,442,000, the lowest since 1955. Improved seasonal conditions during 1978 and 1979 enabled producers to begin rebuilding their flocks. By March 1980, numbers had risen to 136.0 million. Subsequently, high levels of drought-induced slaughter led to a decline in numbers to 134.4 million by March 1981. Numbers rose to 138.0 million in March 1982 with improved seasonal conditions and the attractiveness of sheep enterprises relative to cattle contributing to the growth in numbers. Subsequently, drought conditions saw the flock reduce to 133.2 million in March 1983. The increase in flock numbers to 139.2 million in March 1984 reflects flock rebuilding by producers in response to favourable seasonal conditions beginning in the autumn of 1983, improved lambing rates, and a favourable outlook for wool and live sheep enterprises. This trend continued and, in March 1985, flock numbers reached 149.2 million.

SHEEP NUMBERS
(Millions)

31 March	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	Aust. (incl. N.T., A.C.T.)
1980	48.6	24.4	12.2	16.0	30.4	4.2	136.0
1981	46.0	25.5	10.6	17.1	30.8	4.4	134.4
1982	48.7	25.3	12.3	16.7	30.3	4.5	138.0
1983	48.1	22.7	12.2	15.4	30.2	4.5	133.2
1984	51.0	24.6	13.0	16.4	29.5	4.6	139.2
1985p	55.3	26.4	13.9	17.1	31.6	4.8	149.2

SHEEP, BY AGE AND SEX
(Millions)

31 March	Sheep: 1 year and over				Lambs and hoggets (under 1 year)	Total, sheep and lambs
	Rams	Breeding ewes	Other ewes	Wethers		
1980	1.7	66.5	5.0	30.5	32.3	136.0
1981	1.8	66.9	4.8	30.1	30.8	134.4
1982	1.8	68.5	4.8	30.5	32.4	138.0
1983	1.7	65.6	5.5	28.8	31.6	133.2
1984	1.7	70.3	4.9	30.5	31.8	139.2
1985p	1.8	70.8	5.5	33.0	38.0	149.2

The combined value of wool and sheep slaughtered during 1983-84 is estimated (by the Bureau of Agricultural Economics) at 18 per cent of the gross value of agricultural commodities. This proportion varies with wool and meat prices and seasonal conditions. Australia has about 20 per cent of the world's woolled sheep but produces around 25 per cent of the world's greasy wool output. In addition, in 1984-85 the sheep industry produced 474,000 tonnes of mutton and lamb. Exports of live sheep for slaughter during 1984-85 totalled 6.3 million head, with Kuwait and Saudi Arabia accounting for 69 per cent of the total.

SHEEP AND LAMBS: ANALYSIS OF MOVEMENT IN NUMBERS
(Millions)

Year ended 31 March	Number at beginning of season	Lambs marked	Live sheep exports	Sheep and lambs slaughtered (a)	Estimated deaths on farms (b)	Number at end of season
1980	134.2	45.8	5.3	30.2	8.5	136.0
1981	136.0	43.7	6.1	31.4	7.8	134.4
1982	134.4	44.8	6.3	28.3	6.6	138.0
1983	138.0	45.4	6.2	30.8	13.1	133.2
1984	133.2	44.5	6.3	24.7	7.5	139.2
1985p	139.2	51.2	6.3	25.6	9.8	149.2

(a) Comprises statistics from abattoirs and other major slaughtering establishments and includes estimates of animals slaughtered on farms and by country butchers; also includes animals condemned or those killed for boiling down. (b) Balance item.

LAMBING

Year ended 31 March	Number of breeding ewes at start of season	Mating intentions at start of season	Actual matings	Ratio of actual matings to intended matings	Lambs marked	Ratio of lambs marked to actual matings	Ratio of lambs marked to breeding ewes
	million	million	million	per cent	million	per cent	per cent
1980	65.9	61.9	59.5	96	45.8	77	70
1981	66.5	60.3	58.1	96	43.7	75	66
1982	66.9	61.9	60.5	98	44.8	74	67
1983	68.5	64.6	60.9	94	45.3	74	66
1984	65.6	58.9	58.5	99	44.5	76	68
1985p	70.3	65.9	63.2	96	51.7	82	74

Pigs

Over the past 30 years there has been significant changes to the structure of the Australian pig industry. Initially pigs were raised as part of a dairying operation where there were abundant supplies of liquid skim milk. Today, however, with introduction of factory separation of milk and cream, coupled with the low grain prices of the 1960s, pig raising has become more and more associated with grain production.

In addition there has been a major move away from the so called extensive method of pig raising to the intensive conditions that apply today. This has meant an increase in the capital investment in the industry and a greater degree of specialisation in pig raising. The average pig production unit today would be based on approximately 300 sows with feeds being almost exclusively grain based. While the number of sows in Australia has remained fairly constant the number of pig farmers has decreased.

PIG NUMBERS
(⁰⁰⁰)

31 March	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	Aust. (incl. N.T., A.C.T.)
1980	829	422	510	398	293	63	2,518
1981	787	400	502	394	289	54	2,430
1982	766	406	513	374	263	47	2,373
1983	794	387	551	405	300	43	2,490
1984	799	404	556	417	300	48	2,527
1985p	783	403	555	399	273	47	2,463

Poultry

The commercial poultry industry comprising hatcherymen, egg producers and broiler growers is highly specialised, although a proportion of production comes from 'backyard' egg producers, roughly estimated at from 20 to 25 per cent of the total. There are also separate research schemes funded jointly by industry and government for the egg and meat chicken industries but close liaison exists. Both sectors are good examples of specialised, large scale, capital-intensive production.

POULTRY NUMBERS (a)
(⁰⁰⁰)

31 March	Chickens			Other poultry			Total all poultry
	Hens and pullets for egg production	Meat strain chickens (broilers)	Total chickens(b)	Ducks	Turkeys	Other poultry	
1980	14,846	29,967	46,749	272	1,016	218	48,255
1981	15,187	29,077	46,386	228	750	175	47,539
1982	14,930	27,478	44,761	317	713	213	46,004
1983	15,532	30,296	48,389	294	467	243	49,393
1984	14,075	31,318	47,529	370	535	239	48,673
1985p	13,159	37,557	53,576	265	717	275	54,833

(a) Data are for numbers of poultry on agricultural establishments as reported in the annual Agricultural Census.

(b) Includes breeding stock and data not available for separate publication.

For further details on pigs and poultry see the publication *Livestock and Livestock Products, Australia* (7221.0).

Meat production, slaughterings and other disposals

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

PRODUCTION OF MEAT BY TYPE (a)
(^{'000 tonnes})

Year	Carcass weight					Dressed weight(b)		
	Beef	Veal	Mutton	Lamb	Pig meat	Total meat	Chickens	Total all poultry(c)
1979-80	1,510	54	275	272	218	2,330	282	313
1980-81	1,418	50	299	279	233	2,278	276	303
1981-82	1,526	50	234	277	228	2,316	259	286
1982-83	1,481	61	250	280	239	2,313	283	313
1983-84	1,296	42	164	293	253	2,048	272	298
1984-85p	1,229	38	202	273	258	2,000	311	340

(a) Excludes offal.

(b) Dressed weight of whole birds, pieces and giblets.

(c) Includes other fowls, turkeys, ducks and drakes.

PRODUCTION OF MEAT: AUSTRALIA, 1939-40 TO 1984-85

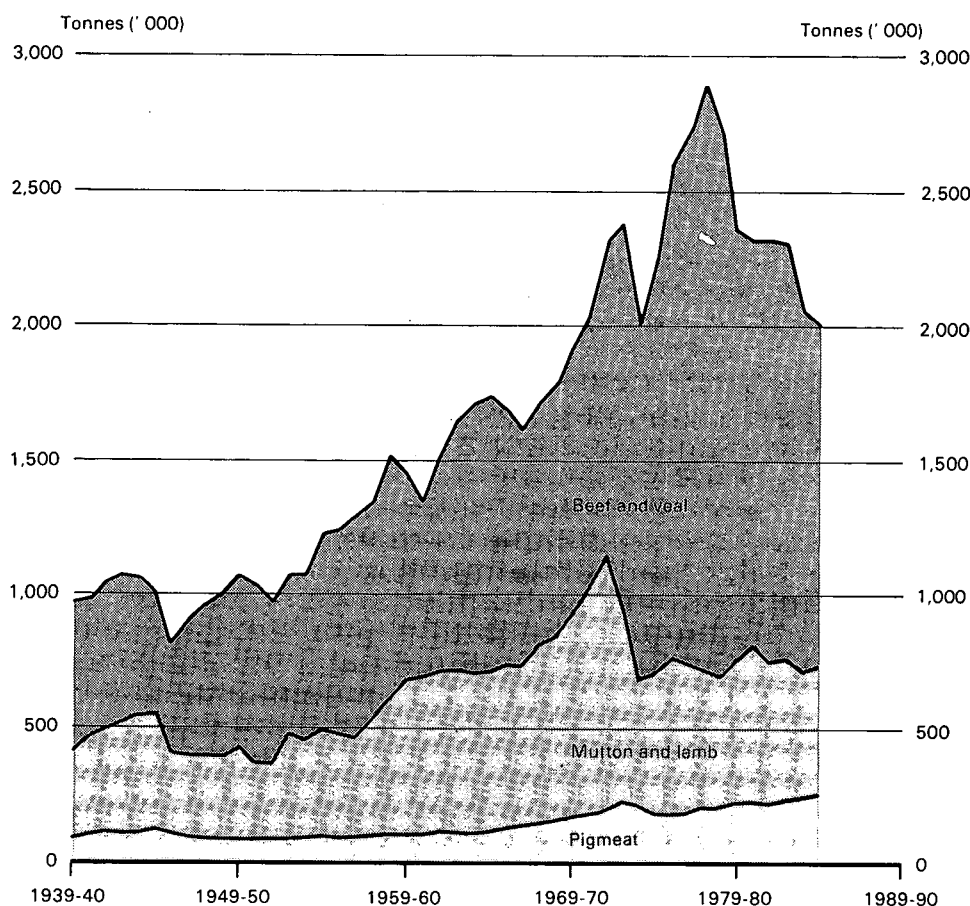


PLATE 35

NUMBERS OF LIVESTOCK AND POULTRY SLAUGHTERED FOR HUMAN CONSUMPTION
(Million head)

<i>Year</i>	<i>Cattle</i>	<i>Calves</i>	<i>Sheep</i>	<i>Lambs</i>	<i>Pigs</i>	<i>Chickens (a)</i>	<i>Other fowls (b) and turkeys</i>	<i>Ducks and drakes</i>
1979-80	7.4	1.5	14.1	16.4	3.9	222.5	11.3	2.2
1980-81	7.0	1.5	15.2	16.6	4.2	221.7	11.2	1.7
1981-82	7.2	1.5	11.9	16.3	4.1	205.9	10.0	2.0
1982-83	7.4	1.7	13.1	16.9	4.2	226.2	10.9	1.9
1983-84	6.0	1.3	8.1	16.9	4.4	216.3	10.2	1.7
1984-85p	5.6	1.2	9.9	16.2	4.4	241.9	10.4	2.1

(a) Comprises broilers, fryers and roasters.

(b) Comprises hens, roosters, etc.

Mutton and Lamb

Production of sheepmeats 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 sheepmeat 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.

There was a movement out of sheep raising in Australia early in the 1970s, principally as a result of low wool prices, and many producers diversified into cattle and grains. Flock numbers declined from a peak of 180 million in 1970 to a low of 131 million by 1978. After 1978, wool and sheepmeat prices improved and the trade in live sheep for slaughter overseas continued to expand. As a result the national flock size increased slightly to 136 million by March 1980. Since March 1980, flock numbers have fluctuated as a result of climatic and market conditions peaking at 138.0 million in March 1982, before dropping to 133.2 million in March 1983. Total Australian sheep flock in March 1985 is estimated at 149.2 million head.

Sheepmeat production declined rapidly from the high levels of the early 1970s, which were associated with flock reduction, to annual levels of between 400,000 and 600,000 tonnes from 1973-74. Lamb production has remained close to 280,000 tonnes per year, while mutton production has varied between 230,000-300,000 tonnes in recent years until 1983-84, when it declined to 164,000 tonnes. Production increased to 202,000 tonnes in 1984-85.

A high proportion of lamb is consumed in Australia with per capita consumption remaining steady at about 14-16 kilograms per year. A high proportion of mutton produced is exported. Australia is the world's largest exporter of mutton, with Japan and the Middle East being the main markets.

Live sheep and lamb exports for slaughter during 1984-85 totalled 6.3 million head. During 1983-84 live sheep and lambs exported for slaughter totalled 6.8 million head.

Beef and Veal

The cattle industry is very dependent on international trade in beef and is subject to great fluctuations. About half of Australia's beef and veal production is exported, with the U.S.A. and Japan the main outlets.

Beef and veal production in Australia rose markedly in the seventies, reaching peak levels of over 2 million tonnes in 1977-78 and 1978-79, but declining to 1.3 million tonnes in 1984-85. The increase in production followed the rapid expansion of the beef herd that had occurred during the late sixties and early seventies mainly in response to relatively profitable beef prices and increased demand from overseas markets.

In the mid 1970s, poor economic conditions and heavy domestic supplies of beef in major importing countries led them to impose severe restrictions on their imports. With reduced international demand and heavy supplies in Australia, saleyard prices fell greatly and remained low for about four years. The depressed conditions were accompanied by a severe reduction in the national herd.

Improved seasonal conditions during 1983, accompanied by strengthening overseas demand, resulted in a move towards herd rebuilding. However, the high level of drought induced slaughterings during 1982 had reduced the breeding herd base implying very slow herd expansion until 1986. The decline in production reflects a move towards herd rebuilding by producers. Cattle numbers are currently projected by the AMLC to steadily increase

throughout the 1980s. The lower levels of slaughter accompanying the rebuilding process suggest only modest increases in the levels of beef and veal production in coming years. Export demand for beef during 1984-85 improved, in part due to the depreciation of the Australian dollar. Saleyards prices of cattle firmed due to strong competitive demand between graziers and cattle fatteners for a limited supply of cattle.

Pigmeat

Significant changes have taken place in the pig producing industry in recent years. Capital investment and corporate takeovers have seen the emergence of a few large companies producing 30 per cent of all pigs sold in Australia. These moves on top of the trend to more intensive and efficient production techniques have seen pigmeat production rise steadily since 1982 to reach 258,000 tonnes in 1984-85. In addition, there has been an increase in the slaughter weights of pigs reflecting the demands of the fresh pork trade.

It is believed that about 60 per cent of production is processed into bacon, hams and smallgoods, with the rest sold as fresh pork. Less than 2 per cent of the industry's output is exported. The increasing production of pigmeat therefore reflects a steady increase in per capita domestic consumption over the past three years.

In recent years a small but useful market for the meat of feral pigs has been established in Europe.

Prices paid for pigs at auction have varied quite markedly in recent years. However, producers have benefitted from lower prices for feed grains which have prevailed over the past two years.

Poultry meat

The poultry meat industry developed rapidly in the 1970s with both output and consumption rising steeply although in recent years production has exceeded demand and excess production capacity in the industry continues. Genetic and technical improvements and the organisation of the industry into large-scale enterprises have raised efficiency and helped to reduce production costs relative to other meats. The price competitiveness of chicken meat compared with other meats, especially beef, continues to improve, consolidating the position of poultry meat as the second most important meat after beef in Australian diets.

EXPORTS OF FRESH, CHILLED OR FROZEN MEAT

Year	Beef	Veal	Mutton	Lamb	Pork	Poultry
QUANTITY (a) ('000 tonnes)						
1979-80	846.6	17.4	182.1	49.6	1.9	7.3
1980-81	753.7	13.6	241.5	39.4	2.4	7.7
1981-82	775.2	8.5	154.6	32.1	1.5	4.1
1982-83	817.2	10.1	201.1	36.9	1.8	2.2
1983-84	657.0	5.4	90.8	33.2	2.0	1.2
1984-85p	604.1	7.0	98.1	29.2	3.3	1.2
VALUE f.o.b. (\$ million)						
1979-80	1,295.6	31.9	172.6	62.4	3.7	10.6
1980-81	1,086.4	22.9	248.2	62.3	5.7	12.1
1981-82	1,009.8	14.4	155.3	50.7	3.1	7.3
1982-83	1,164.8	17.9	167.1	61.1	5.4	4.4
1983-84	1,108.3	11.9	84.0	53.4	6.2	2.5
1984-85p	1,061.4	16.1	91.7	51.1	11.9	2.5

(a) Quantity data on beef, veal, mutton and lamb exports are shown in carcass weight equivalents.

Exports of live animals

Countries of the Middle East continue to be the major importers of live sheep for slaughter with Kuwait and Saudi Arabia accounting for 69 per cent of the total. Exports of slaughter sheep declined from 6.8 million in 1983-84 to 6.3 million in 1984-85 while breeding sheep increased significantly from 403 in 1983-84 to 3,907 in 1984-85. A consignment of 2,398 crossbred ewes to Saudi Arabia accounted for most of this increase.

Live cattle exports from Australia totalled 48,775 head during 1984-85 compared with 81,687 head the previous year.

While the number of cattle exported for slaughter increased by 1,500 during 1984-85, exports of breeding cattle decreased by 35,000. This decrease reflected a decision by the South Korean Government to cease imports of breeding cattle. (South Korea imported

31,147 head from Australia in 1983-84.). Indonesia became the main buyer of breeding cattle taking 72 per cent of exports. Malaysia, with 18,026 head (up from 15,188), was the main destination for slaughter cattle.

For details of the regulation governing the export (and import) of live animals see Year Book No. 61 page 848.

EXPORTS OF LIVE ANIMALS

Year	Livestock			Poultry		
	Sheep and lambs	Total(a)		Day old chicks	Total	
		Number	Value f.o.b.		Number	Value f.o.b.
		—'000—	\$'000		—'000—	\$'000
1979-80	6,162	6,225	192,668	409	710	747
1980-81	5,740	5,842	208,483	862	974	832
1981-82	6,009	6,112	214,886	809	935	720
1982-83	6,992	7,086	212,277	370	415	565
1983-84	6,349	6,434	228,481	477	568	693
1984-85p	6,256	6,312	214,219	234	369	503

(a) Also includes cattle, calves, buffaloes and pigs.

PRODUCTION AND EXPORT OF BACON, HAM AND CANNED MEAT

Year	Production			Exports			
	Bacon and ham(a)		Canned meat(b)	Bacon and ham(c)		Canned meat(d)	
	Bone-in	Bone-out		Quantity	Value	Quantity	Value
	tonnes	tonnes	tonnes	tonnes	\$'000 f.o.b.	tonnes	\$'000 f.o.b.
1979-80	18,147	52,811	39,178	861	2,734	21,581	51,552
1980-81	18,878	55,564	36,431	528	1,991	17,400	42,139
1981-82	18,112	57,818	34,590	523	1,959	19,651	50,461
1982-83	17,051	55,634	n.a.	515	2,292	21,587	58,704
1983-84	17,973	59,023	n.a.	592	2,316	18,571	57,658
1984-85p	17,384	60,153	n.a.	316	1,322	17,714	54,267

(a) Production of bacon and ham 'on the bone' is shown in terms of 'bone-in' weight, while production of boneless bacon and ham is shown in terms of 'bone-out' weight. Production of canned bacon and ham, which is reported in terms of 'stated net weight of packs', is included in the 'bone-out' category. (b) Canned weight. Includes bacon, ham and meat and vegetables, but excludes rabbit, poultry and baby foods. (c) Cured carcass weight of smoked or cooked bacon and ham. Includes 'stated net weight of packs' of canned bacon and ham. (d) Canned weight; excludes canned bacon and ham.

GROSS VALUE OF LIVESTOCK SLAUGHTERINGS AND OTHER DISPOSALS(a)

(\$ million)

Year	Cattle and calves	Sheep and lambs	Pigs	Poultry	Total
1979-80	2,386.0	654.3	311.3	307.2	3,658.8
1980-81	2,056.5	718.9	337.5	361.4	3,474.3
1981-82	1,890.1	646.7	396.1	362.7	3,295.6
1982-83	2,076.2	548.0	414.9	413.1	3,452.2
1983-84	2,037.5	562.1	373.7	419.4	3,392.8
1984-85p	2,118.9	539.5	435.2	468.4	3,562.1

(a) Includes adjustment for net exports of live animals

Consumption

The methodology for calculating meat consumption has been revised for the years 1975-76 to 1983-84 and is now shown purely in carcass weight equivalent terms. Canned meat as such is not available. Carcass weight is defined as ex abattoir (ie bone in). Owing to diverse cutting practices by butchers and the difficulty in clearly defining 'retail weight of meat' it is considered impractical to derive a factor for the purpose of expressing estimated meat consumption in terms of retail weight. (Estimates of retail weight as a percentage of carcass weight range from 70 per cent for beef, 80 to 85 per cent for lamb and 80 per cent for pork.)

APPARENT CONSUMPTION OF MEAT AND MEAT PRODUCTS AS HUMAN FOOD

Year	Beef and veal	Mutton	Lamb	Pigmeat (a)	Offal	Total meat	Poultry meat
TOTAL ('000 tonnes)							
1979-80	729	77	226	213	57	1,302	295
1980-81	728	77	234	233	62	1,344	301
1981-82	786	57	245	228	66	1,382	294
1982-83	740	72	247	234	67	1,360	311
1983-84	685	80	258	256	62	1,340	309
1984-85p	664	93	239	256	68	1,320	342
PER CAPITA PER YEAR (kg)							
1979-80	49.9	5.2	15.5	14.6	3.9	89.2	20.2
1980-81	49.2	5.2	15.8	15.7	4.2	90.1	20.3
1981-82	52.2	3.8	16.3	15.2	4.4	91.8	19.6
1982-83	48.4	4.7	16.2	15.3	4.4	89.0	20.4
1983-84	44.3	5.1	16.7	16.5	4.0	86.7	20.0
1984-85p	42.7	6.0	15.4	16.4	4.3	84.8	22.0

(a) Includes pigmeat products such as bacon and ham.

NOTE: Beef, veal, mutton, lamb, pigmeat and offal are expressed in terms of carcass weight, and poultry meat in dressed weight.

For further details on meat production and slaughtering see the following publications: *Livestock and Livestock Products, Australia* (7221.0), *Value of Agricultural Commodities Produced, Australia* (7503.0) and *Apparent Consumption of Foodstuffs and Nutrients, Australia* (4306.0).

Australia Meat and Live-stock Corporation

Legislation was enacted to establish the Australian Meat and Live-stock Corporation (AMLC) from 1 December 1977. The Corporation, which regulates and promotes the export of both meat and livestock and the promotion of domestic consumption, replaced the Australian Meat Board.

In mid-1984 the Australian government introduced measures to restructure the administration of the Australian livestock and meat industry. Legislation enacted at the time, or foreshadowed, had three primary components:

- a restructured AMLC;
- establishment of the Australian Meat & Livestock Industry Policy Council (AMLIPC); and
- the foreshadowed replacement of the Australian Meat Research Committee (AMRC) with an incorporated body called the Australian Meat and Livestock Research and Development Corporation (AMLRDC).

The AMLC has the power to trade in meat and livestock in a manner which accords with adopted policy and with normal commercial practice. Its power is also extended to engaging in sole trading or to permitting restricted trading by a specified holder or holders of meat or livestock licences. The exercise of this sole or restricted trading power is limited to circumstances where: a monopoly buying power is, in the AMLC's opinion, distorting normal market forces; such action is necessary or desirable to ensure that producers receive a fair return for the meat or livestock exported to that market; the exercise of sole trading powers would be beneficial for the development or further development of that market; the exercise of sole trading powers would be in the best commercial interests of the industry.

In order to foster consultation, the AMLC may, for the purposes of considering any matter relating to the performance of its functions, make arrangements for consulting persons and bodies representative of different sectors of the industry.

The AMLC's main functions are: to improve the production of meat and livestock in Australia; to encourage and promote the consumption and sale of Australian meat, and the sale of Australian livestock, both in Australia and overseas; and to encourage, assist, promote and control the export of meat and livestock from Australia.

Exporters of meat and livestock are licensed by the AMLC and have to comply with its requirements in relation to export trading. The AMLC assists exporters in overseas market development and conducts meat promotion activities in Australia and abroad. It has authority also, to perform a wide range of other functions aimed at improving the production of meat and livestock for the general benefit of the meat and livestock industry.

Australian Meat and Livestock Industry Policy Council

The legislation referred to above established a new statutory body, the AMLIPC, to take over, from the AMLC, responsibility for the examination of all broad industry policy issues. It is intended that AMLIPC:

- facilitate the participation of industry in the *development and formulation of industry policies*;
- provide a *forum of consensus*, building between different sectoral interests within the industry; and
- provide opportunities, through AMLIPC Working Groups, for all interested parties to work together on the factual examination of industry problems, and to *present practical proposals to government for their solution*.

Wool

The Australian Sheep Flock contains nearly 20 per cent of the world's sheep, and produces over 26 per cent of the total annual production of wool. Approximately 75 per cent of the Australian Flock are of a single breed, the Merino, raised primarily for its heavy fleeces of fine quality wool.

Wool production

Wool as shorn from the sheep ('greasy wool') contains an appreciable amount of grease, dirt, vegetable matter and other extraneous material other than the clean wool fibre. The exact quantity of these impurities in the fleece varies between countries, differing climatic and pastoral conditions, with seasonal fluctuations and with 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.

Since the 1946-47 season, the average clean yield of Australian wool has been assessed annually. In the early years, the average clean yield was assessed on the basis of a small number of tests and subjective appraisal but in recent years the Australian Wool Corporation has calculated the clip average yield on the basis of laboratory tests of yield applied to nearly all wool offered for sale at auction in Australia. During the period of assessment the clean yield showed a continuous rise up to 1951-52, when it reached 57.5 per cent. It was 61.94 per cent in 1984-85.

Wool scoured and carbonised in Australia before export, however, has a somewhat lower clean yield than the whole clip, because much of the greasy wool treated locally for export in this form is dirty low-grade wool. The quantity of scoured and carbonised wool exported during 1984-85 was about 12 per cent of total raw wool exports in greasy terms. For the clean yield of Australian scoured wools exported a standard factor of 93 per cent has been adopted.

The following table shows details of total wool (i.e. shorn, dead, fellmongered and exported on skins) as well as the numbers of animals shorn, the average fleece weight and the gross value of the wool. A graph showing the production of wool in relation to the number of sheep appears on page 291.

SHEARING, WOOL PRODUCTION AND VALUE

Year	Sheep and lambs shorn	Average fleece weight	Wool production			
			Shorn wool	Other wool(a)	Total wool	
					Quantity	Gross value (b)
	million	kg	'000 tonnes	'000 tonnes	'000 tonnes	\$m
1979-80	148.5	4.33	642.4	66.1	708.5	1,651
1980-81	150.0	4.25	637.9	63.3	701.2	1,670
1981-82	155.2	4.26	661.0	56.2	717.2	1,789
1982-83	149.1	4.30	641.5	60.2	701.7	1,761
1983-84	152.4	4.41	672.6	56.3	728.9	2,016
1984-85p	166.8	4.43	738.5	61.3	800.0	2,321

(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.

SHEEP NUMBERS AND WOOL PRODUCTION: AUSTRALIA, 1880 TO 1985

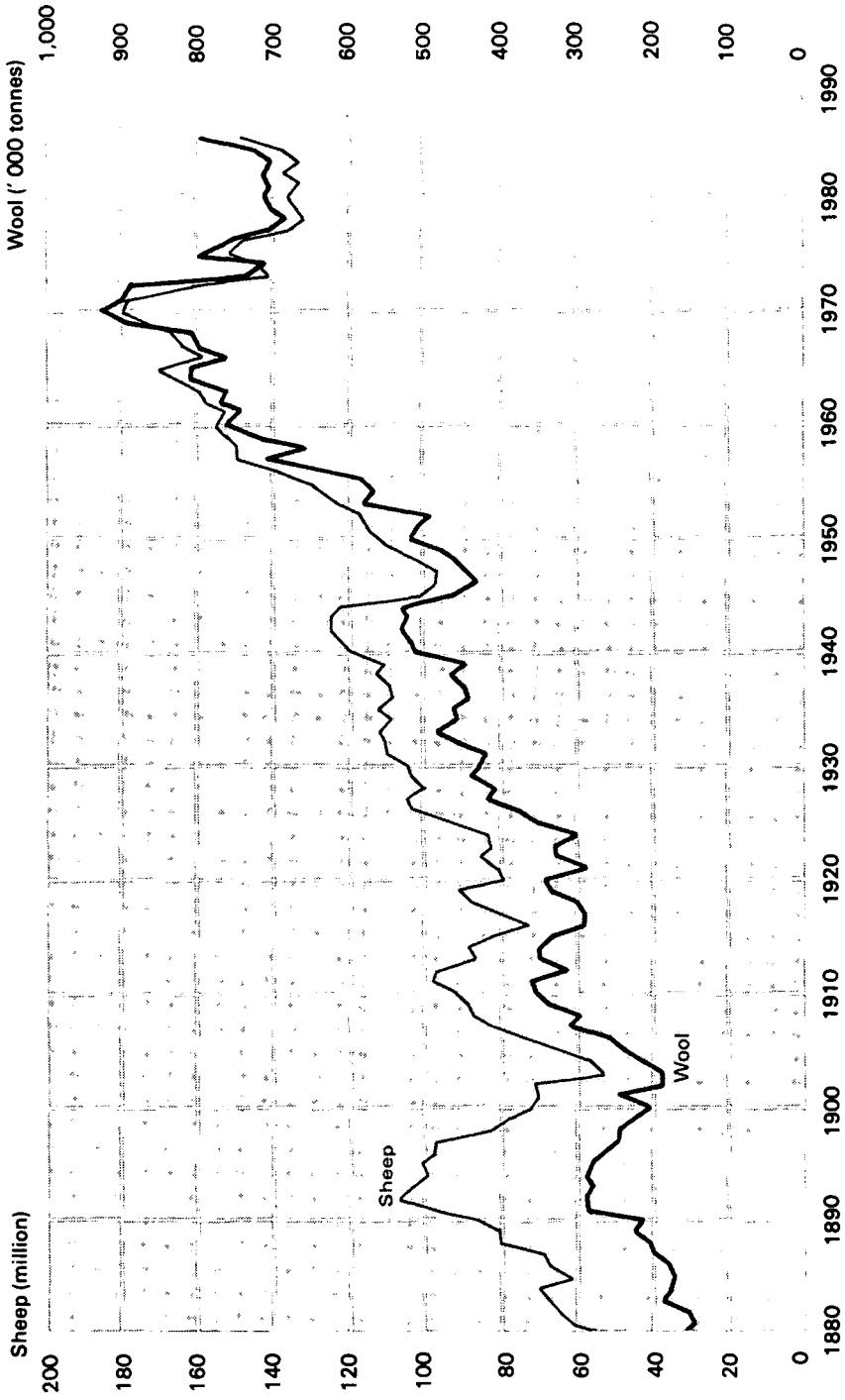


PLATE 36

The wool market

The principal method used by wool growers in selling their wool is through public auction. Individual wool growers consign their clips to one of a number of wool selling brokers who arrange for it to be stored, and sampled for laboratory specification, and who make arrangements for the wool to be valued and offered at a rostered sale.

The proportion of the clip sold at auction varies from year to year but is in the order of 80 per cent of all wool grown. It is at such sales that the Australian Wool Corporation provides reserve price support. The remaining 20 per cent is sold privately, a transaction price is agreed between buyer and seller and the sale concluded without the presence of other parties and without the direct protection of the Reserve Price Scheme. Private selling has the greatest following in Western Australia while New South Wales, Victoria and South Australia are also strong supporters.

Wool receivals

Under the terms of the Wool Tax Acts, all growers pay a tax on the gross value of shorn wool sales, to provide financial backing for wool promotion, research and the operation of a statutory Reserve Price Scheme. The ABS collects details of the total amounts of taxable wool received by wool selling brokers and dealers each year. These figures exclude wool received by brokers on which tax had already been paid by other dealers (private buyers) or brokers.

TAXABLE WOOL RECEIVALS

Year	Receivals		Brokers and dealers	Dealers as per cent of total receivals	Shorn wool production(b)
	Brokers (NCWSB)	Dealers(a)			
		—'000 tonnes—		per cent	'000 tonnes
1979-80	483.1	175.2	658.2	26.6	642.4
1980-81	523.8	134.2	658.0	20.4	637.9
1981-82	539.0	141.4	680.4	20.8	661.0
1982-83	516.0	141.2	657.2	21.5	641.5
1983-84	543.9	152.9	696.9	21.9	672.6
1984-85p	603.2	161.5	764.7	21.1	738.5

(a) Includes brokers who are not members of the National Council of Wool Selling Brokers of Australia (NCWSB).
from the annual Agricultural Census.

(b) Obtained

Wool marketing arrangements

The Australian Wool Corporation (AWC), a Commonwealth statutory authority, established on 1 January 1973 through the amalgamation of the former Australian Wool Commission and Australian Wool Board, performs a number of functions within the market aimed at encouraging the demand for Australian wool and assisting the efficient and orderly disposal of the national clip. Central to these activities is a Reserve Price Scheme, operated by the Corporation on behalf of the woolgrowing industry. This scheme was introduced with the formation of the Australian Wool Commission in November 1970. Its purpose is to provide a measure of stability in wool prices to the benefit of the industry.

Initially, the Reserve Price Scheme was operated on a flexible basis whereby the Commission, and later the Corporation, bought wool which failed to reach a reserve price determined on a day-to-day basis. Since September 1974, as part of the reserve price program, the Corporation has been authorised to operate a floor price scheme. Under the floor price arrangements the Government sets a minimum average price for wool at the beginning of each season, expressed in terms of the Australian Wool Corporation's Market Indicator, or clip average clean price. The Corporation sets minimum prices for each wool type based on the Government's indicator floor price and purchases wool at auction which does not attract bids above the level of the appropriate floor price for that type. The Corporation has, from time to time in the past, operated a flexible reserve price scheme above the level of the floor price to prevent 'pot-holes' in the market. The wool purchased by the Corporation is held in stock, some of it in Australia and some overseas, and sold when prices improve with a view to stabilising the market.

In order to finance losses arising from the Corporation's reserve price activities woolgrowers have, since September 1974, been paying 5 per cent of gross proceeds from the sale of shorn wool into a special Corporation administered fund called the Market Support Fund.

When the Fund was established, wool demand was extremely depressed. However, the market improved in subsequent years and the level of the Fund rose to about \$493 million

at the end of 1980-81. This balance was well in excess of requirements for market support purposes and the Government agreed to woolgrowers' strong requests for legislation to allow for a progressive return of contributions paid into the fund. Since June 1981, three separate refunds totalling \$317 million have been made to woolgrowers from the Fund, in respect of market support contributions paid in the years 1974-75 to 1976-77. Due to depressed market conditions during the latter part of the 1983-84 season, no refund was made from the Fund in 1984-85. A fourth refund of up to \$56.3 million, in respect of contributions paid in 1977-78, commenced in the latter part of 1985. The Market Support Fund at the end of the 1984-85 season, stood at \$890 million.

The Australian Wool Corporation has a number of other responsibilities which include wool promotion, wool research, participation in negotiations in respect of shipping freight rates, administration of wool stores and the encouragement of greater efficiency within the existing wool marketing system.

Wool testing

The Australian Wool Testing Authority came into existence in 1957 but its role became more prominent with the introduction, in 1971, of wool valuation techniques relying on objective specification of wool's main physical characteristics. From the first sales of wool in this manner in the early 1970s this technique has achieved universal acceptance and now more than 90 per cent of all wool sold at auction is accompanied by certified measurements for yield, (i.e. the amount of clean wool fibre), average fibre diameter and the percentage and type of vegetable fault.

At the direction of the Commonwealth Government, the Authority, which had operated as a division of the Corporation, was transferred to the private sector effective from the beginning of July 1982. The new company is known as AWT Ltd.

Wool promotion

The Australian Wool Corporation is responsible for the promotion of the greater use of wool in Australia while the International Wool Secretariat (IWS) is responsible for wool promotion overseas. The cost of promotion is shared by the Government and the woolgrowing industry. The woolgrowers' contribution for promotion is raised by means of a tax on wool sale proceeds which is currently at the rate of 2.5 per cent (part of a total 3 per cent levy used to finance both wool research and promotion). The Commonwealth's contribution to wool promotion for five years commencing 1983-84 has been set at 1.2 per cent of gross wool sales revenue, resulting in Government contributions of \$26.4 million in 1984-85, and it is expected that this could rise to over \$30 million in 1985-86. Most of the promotion funds are remitted to the IWS with headquarters in London. Australia provides approximately two thirds of the IWS budget.

Wool research

The wool research program covers five broad areas; research into wool production, wool harvesting and distribution, and economic and textile research. Wool research activities funded from the Wool Research Trust Fund (WRTF) are financed by growers and the Government on a 50:50 basis with the growers' contribution raised by means of a 0.5 per cent levy on wool sale proceeds (part of the total 3 per cent levy mentioned above). In addition to the wool research funded in this manner, the CSIRO, and the Bureau of Agricultural Economics, carry out considerable additional wool research funded from Consolidated Revenue.

Wool income

Fluctuations in wool prices have a marked effect on agricultural and national income. In 1945-46 the gross value of wool production was \$117.2 million, representing 17.4 per cent of the gross value of all agricultural commodities produced, while in 1950-51, when prices reached a peak during the Korean War, wool was valued at \$1,303.8 million, or 55.6 per cent of total agricultural industries. More recent figures for the contribution of wool income to total agricultural production and national exports reflect the growth in other commodities over the intervening years, rather than a decline in the fortunes of the wool industry.

WOOL INCOME (per cent)

<i>Year</i>	<i>Value of wool as a per cent of total agriculture</i>	<i>Value of wool exports as a per cent of total Australian exports</i>
1979-80	14.0	9.6
1980-81	14.4	10.2
1981-82	14.1	10.2
1982-83	15.0	8.5
1983-84	13.2	8.7
1984-85p	15.1	8.7

Stocks

Stocks shown below of raw and semi-processed wool were held by wool processors, scourers, fellmongers, brokers, dealers and the Australian Wool Corporation. They exclude wool on skins since this wool is not recorded as production until fellmongered in Australia or exported on skins.

WOOL STOCKS

('000 tonnes)

<i>At 30 June</i>	<i>Stocks of—</i>					
	<i>Raw Wool</i>		<i>Semi-processed wool</i>		<i>Total wool</i>	
	<i>Greasy</i>	<i>Clean</i>	<i>Greasy</i>	<i>Clean</i>	<i>Greasy</i>	<i>Clean</i>
1979	162.0	96.4	9.2	5.5	171.0	101.9
1980	168.7	101.1	11.3	6.9	180.1	108.0
1981	153.2	91.6	10.8	6.5	163.9	98.1
1982	206.4	124.5	8.5	5.0	214.6	129.5
1983	n.a	n.a	8.2	4.9	319.1	191.1
1984	n.a	n.a	9.6	5.9	376.6	250.9

Wool processing

Approximately 85 per cent of all wool passing through the Australian auction system comprises combing fleece and oddment types which are ultimately processed on the worsted system. The remaining 15 per cent, being the shorter or carding wools such as locks, crutchings, and lambs wool, is directed to the woollen system. This latter group is boosted some 5-10 per cent by noils combed out during worsted processing.

At present about two thirds of total carding types produced are processed in Australia.

During the 1970s there was a trend to increased early stage processing of Australian wool before export. Recently, however, early stage processing has stabilised at around 18 per cent of wool production. Over 95 per cent of total Australian wool production ultimately enters international trade.

The main scope for expanded domestic processing remains with worsted types for export in scoured or combed top form. Japanese processors initiated the export of scoured worsted types from Australia and Japan became Australia's major export market for scoured wool in 1973-74.

Before 1975 the wool processing industry was largely centralised in cities close to major ports. Since then, however, a general trend towards decentralised inland locations has occurred.

Wool consumption

Two series of calculations on Australian wool consumption are shown below.

1. Consumption of raw wool, which measures consumption in terms of scoured wool used by mills.
2. Consumption of processed wool, which is calculated from the usage of woollen and worsted yarn.

Raw wool comprises greasy, slipe, scoured and carbonised wool. This series has been included for comparison purposes with other countries.

This second series is considered to be a more satisfactory measure of Australian wool consumption, principally because allowance is made for significant quantities of wool tops exported. However, both series relate to consumption of wool by the wool textile industry, and should not be used as measures of consumption of wool at retail level. It has not been possible to estimate wool consumption at retail level because of the impracticability of obtaining reliable data concerning the wool content of the multiplicity of woollen and worsted piece-goods.

CONSUMPTION OF RAW AND PROCESSED WOOL

('000 tonnes)

Year	Consumption of raw wool		Consumption of processed wool					
			Worsted yarn used(a)		Woollen yarn used(b)		Total	
	Greasy	Clean	Greasy	Clean	Greasy	Clean	Greasy	Clean
1978-79	50.4	30.8	11.8	7.1	14.2	9.0	27.1	16.6
1979-80	52.3	30.9	11.7	6.8	14.7	9.0	27.5	16.3
1980-81	51.9	31.0	9.4	5.5	14.5	8.9	25.1	15.0
1981-82	55.5	33.1	8.7	5.1	15.3	9.5	25.1	15.1
1982-83	53.9	32.3	9.9	5.8	13.1	8.2	22.2	14.6
1983-84	55.0	32.8	10.2	6.0	14.6	9.0	25.9	15.6

(a) Wool content of yarns containing a mixture of wool and other fibres.

(b) Comprises pure and mixed woollen yarn.

Exports of wool

From its earliest days the Australian wool industry has been export oriented, and today approximately 95 per cent of total annual production of wool is exported.

The great bulk of this leaves the country in its natural 'greasy' state, but increasing quantities are being exported in part processed forms (i.e. scoured, carbonised, top and noil) and as wool on skins.

EXPORTS OF WOOL

Year	Selected exports ('000 tonnes: greasy basis)			Total exports	
	Greasy and slipe	Scoured and carbonised	Exported on skins	Greasy basis (a)	Value f.o.b.
				'000 tonnes	\$m
1979-80	505.3	93.2	59.5	681.4	1,744
1980-81	531.7	105.5	57.0	718.5	1,932
1981-82	497.6	96.4	50.6	671.3	1,920
1982-83	487.3	85.0	54.2	657.8	1,878
1983-84	497.3	100.1	50.7	673.9	2,053
1984-85p	552.4	115.5	55.4	751.1	2,541

(a) Includes processed wool.

For further details on sheep shorn, wool production and overseas trade see the following publications: *Livestock and Livestock Products, Australia* (7221.0), *Sheep Numbers, Shearing and Wool Production Forecast, Australia* (7211.0), *Shearing and Wool Production Forecast, Australia (Preliminary)* (7210.0), *Livestock Products Australia* (monthly) (7215.0), *Foreign Trade, Australia* (5409.0, 5410.0), *Production Bulletin No. 4: Australia* (8360.0) and *Value of Agricultural Commodities Produced, Australia* (7503.0).

Dairying

Dairying occurs in all States but is mainly concentrated in the south-eastern region of the mainland, and in Tasmania, where rainfall is ample and fairly reliable. It is predominantly coastal, but has also developed inland in small areas close to population centres and, on a larger scale, in some irrigated regions in the Riverina of New South Wales and northern Victoria.

Australian dairy cattle have shown steady improvement in quality, as demonstrated by milk yield, over the years. This is attributable to improved breeding associated with herd recording; the use of artificial insemination; better feeding resulting from the use of improved pastures and supplementary feed; better farming methods arising from the application of new

management practices and the use of the latest technology; and a contraction of the industry to climatically more favourable areas. Typical of the developments which have occurred are the almost total change from on-farm separation and delivery of cream to the collection of whole milk by milk tankers from on-farm refrigerated milk vats and the introduction of Herringbone and Rotary type dairies on farms.

The manufacturing and processing sections of the industry are well advanced technologically and certain techniques and equipment developed in Australia are being used overseas. State Agricultural Departments give advice on the most suitable methods of production and inspect animals, buildings and production, so that the latest advances in technology are passed on to the farmer and that hygiene standards are maintained at a high level.

MILK CATTLE NUMBERS

('000)

	<i>Bulls used or intended for service</i>	<i>Cows and heifers used or intended for production of milk or cream for sale</i>			
		<i>Cows (in milk and dry)</i>	<i>Heifers</i>	<i>Under 1 year</i>	<i>House cows and heifers (a)</i>
<i>31 March</i>			<i>1 year and over</i>		
1980	56	1,869	431	396	77
1981	54	1,819	460	393	74
1982	49	1,810	465	387	73
1983	47	1,792	460	390	69
1984	46	1,809	483	401	66
1985p.	46	1,817	477	415	65

(a) One year and over, kept for the establishment's own milk supply.

The economic position of the industry

Faced with a reduced demand on the domestic market and low prices on the export market, the industry contracted significantly during the seventies. Milk production fell from 7,249 ML in 1970-71 to 5,243 ML in 1980-81. The downturn in the world dairy trading environment was largely attributable to production policies adopted by the major producing and consuming countries, such as the EEC and USA which, coupled with protection of their domestic markets, resulted in world production of most dairy products in excess of profitable market opportunities.

During the first two years of the eighties, the industry temporarily prospered when domestic and export prices reached high levels. By 1983, however, the international dairy market again experienced strong downward price pressures, large stock levels and uncertainty. World market prices of major dairy products approached GATT minimum levels in 1984, and on 5 June 1985 the GATT minimum prices for butter, anhydrous milk fat and whole milk powder were reduced. Given the increase in domestic production in recent years, Australia has needed to sell a growing volume of exports on this depressed export market. As a result, the financial situation of dairy farmers, particularly those heavily reliant on returns from milk used for manufacturing purposes, has deteriorated significantly.

Government assistance

The downturn in the Australian dairy industry during the 1970s resulting largely from the low international prices for dairy products, led in 1976-77 to the introduction of new domestic marketing arrangements and a Government scheme to underwrite minimum prices for the major dairy products.

The voluntary equalisation arrangements which had operated in the dairy industry since 1923 were considered to be in danger of collapse because of the phasing out of a production bounty which had applied to butter and cheese.

Legislative backing for the levy/disbursement scheme became the basis for stabilisation/marketing arrangements. These were aimed at supporting the domestic price structure for prescribed dairy products and providing each manufacturer with an equalised return for domestic and export sales of such products. Prescribed dairy products include butter/butteroil, skim milk powder, whole milk powder, casein and certain types of cheese.

From 1976-77 to 1980-81 the Government underwrote minimum prices for prescribed products. These prices were set annually on the basis of a minimum return per kilogram butter-fat in manufacturing milk.

In June 1981, the Government announced the introduction of a new underwriting scheme for prescribed dairy products to apply for two years from 1 July 1981. Following a recommendation by the Industries Assistance Commission (IAC) this scheme was extended for a year, and subsequently, the Government agreed to continue this arrangement for the 1984-85 production year. The underwriting scheme was designed to protect the industry against unexpected and sharp falls in market returns without masking the underlying long term trends. While no Commonwealth contributions were required for the first two years of the scheme increasing domestic production and depressed export prices have led to significant Commonwealth outlays in respect of the 1983-84 and 1984-85 seasons. These are estimated at around \$11.8m for 1983-84 and \$6.7m for 1984-85.

The Government also assists by matching, on a dollar for dollar basis, expenditure of levy raised for the purpose of a program of research recommended by the Australian Dairy Research Committee.

Following a report by the IAC in November 1983, the Government conducted a comprehensive review of marketing and assistance arrangements for the dairy industry. State Governments and industry were closely involved with the review process, although the agreement of all parties to new arrangements was not reached. The Government subsequently announced in March 1985 a number of new marketing arrangements designed to be both more efficient and equitable. Under the new arrangements there is to be, inter alia, a reduction in Government regulation and a managed reduction in support levels over time. At the same time the industry would be encouraged to develop new products and markets. A proposal for a special dairy industry adjustment program was part of the of new arrangements.

Legislation to implement the new arrangements from 1 July 1985, was however, not passed by the Parliament. Consequently, the existing legislation continues to apply for the 1985-86 season. However, in taking decisions for 1985-86, account was taken, where possible, of the basic thrust of the rejected arrangements. In this context the Government implemented underwriting arrangements on an export returns, rather than a gross equalised returns, basis.

Adjustment

A Rural Adjustment Scheme (RAS) replaced the Rural Reconstruction Scheme on 1 January 1977 and incorporated most of the measures previously available under the Dairy Industry Adjustment Program. A new RAS Scheme was introduced from 1 July 1985. Adjustment in the industry has been continuing for many years with the number of dairy farms falling from around 38,000 in 1970 to around 18,500 in 1984.

PRODUCTION, UTILISATION AND GROSS VALUE OF WHOLE MILK

Year	Whole milk intake by factories (a)			
	Market milk sales by factories	Milk used in the manufacture of dairy products	Total intake	Gross value
	—million Litres—			(\$ million)
1979-80	1,511	3,887	5,398	676.0
1980-81	1,541	3,702	5,243	885.1
1981-82	1,552	3,716	5,268	1,033.9
1982-83	1,572	3,952	5,524	1,186.5
1983-84	1,572	4,351	5,923	1,153.2
1984-85p	1,593	4,446	6,039	1,082.2

(a) These milk intake figures have been collected (from milk factories) by the Australian Dairy Corporation and replace statistics of whole milk production and utilisation previously compiled by ABS.

Domestic Market

Over the decade to 1982-83 there had been a marked swing away from the production of butter and its by-products, skim milk powder and casein, to cheese and whole milk powder. This was accompanied by an increased percentage of total milk production going to the fluid milk (including flavoured milk) market and being used in the manufacture of short and shelf-life products such as yoghurt. However, the upsurge in production which began in 1983-84 and has continued to date, has almost totally been utilised in the production of bulk manufactured products for the export market.

Except for cheese, the domestic market is virtually entirely supplied from Australian produced dairy products. Cheese imports account for approximately 19 per cent of domestic cheese consumption.

Exports

Australia's export trade in dairy products has undergone considerable change in the last decade, in terms of both the volume and type of production exported and the direction of trade.

Between 1969-70 and 1980-81, there was a significant overall reduction in the volume of milk produced in Australia. Since 1980-81, however, milk output has increased significantly. In whole milk equivalent terms, total Australian exports of dairy products in 1984-85 accounted for approximately a quarter of total milk output.

The UK was Australia's major outlet for dairy products, particularly butter and cheese, until it joined the European Economic Community (EEC) in 1973. Australia's export markets are now more diversified and this has involved changes to the mix of products exported. Exports of butter, casein and, to a lesser extent, skim milk powder declined significantly between the early 1970s and the early 1980s. However since 1981-82, exports of these products have again expanded with the increasing quantity of milk available for manufacturing purposes.

Japan and South-East Asia are the principal markets for skim milk powder; USA and Japan for casein; USSR, South-East Asia and the Middle East for butter; South-East Asia for whole milk powder and the Middle East and Japan for cheese.

The international market is currently characterised by considerable uncertainty and depressed prices owing mainly to substantial surpluses of dairy products which have been accumulated in the EEC and USA. As a result, Australian exporters continue to encounter difficulties exporting product at remunerative prices.

PRODUCTION AND TRADE OF BUTTER AND CHEESE

Year	Butter			Cheese			Imports
	Factory production	Exports(a)		Factory pro- duction(c)	Exports(b)		
		Quantity	Value f.o.b.		Quantity	Value f.o.b.	
	'000 tonnes	'000 tonnes	\$m	'000 tonnes	'000 tonnes	\$m	'000 tonnes
1979-80	84.3	17.9	28.7	154.2	61.1	94.4	10.9
1980-81	79.4	12.0	23.1	136.7	54.1	103.7	13.3
1981-82	76.4	5.0	14.0	153.3	57.5	122.9	16.1
1982-83	88.3	15.5	41.1	158.2	54.5	134.6	19.7
1983-84	111.3	27.4	50.3	161.1	54.6	141.1	22.3
1984-85p	114.0	40.6	67.2	159.6	67.5	163.1	22.3

(a) Excludes ghee and butter concentrates.

(b) Includes processed cheese exports.

(c) Factory production is shown only for non-processed cheese.

Apparent consumption

CONSUMPTION OF MILK, BUTTER, CHEESE AND MARGARINE

Year	Apparent consumption Total			Apparent consumption Per capita per year			Margarine	
	Market milk	Butter	Cheese	Market milk	Butter	Cheese	Table	Other
	ML	'000 tonnes	'000 tonnes	Litres	kg	kg	kg	kg
1979-80	1,510	66	96	103.4	4.6	6.6	6.4	2.4
1980-81	1,540	64	98	104.0	4.3	6.6	6.7	2.5
1981-82	1,552	65	105	103.1	4.3	7.0	6.8	2.7
1982-83	1,572	61	113	102.9	4.0	7.4	6.8	2.8
1983-84	1,572	60	118	102.9	3.9	7.7	6.9	2.7
1984-85p	1,606	62	127	103.3	4.0	8.1	6.7	2.4

For further details on the dairying industry see the publications, *Livestock and Livestock Products, Australia* (7221.0), and *Production Bulletin No. 3: Food, Drink and Tobacco, Australia* (8359.0).

Beekeeping

The beekeeping industry consists of approximately 300-400 full-time apiarists, who produce approximately 70 per cent of Australian honey, 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 is significant.

In March 1985 the Government announced its acceptance of the recommendation by the Industries Assistance Commission that no further assistance to the honey industry was warranted. The inquiry by the IAC was the result of a submission by the industry to Government seeking a price stabilisation/equalisation scheme for honey exports.

A major review of the size, role and functions of the Australian Honey Board is being conducted. To facilitate this review the Commonwealth Department of Primary Industry produced a discussion paper, which has been circulated widely to the industry, to assist the consideration of the various issues raised in such a review.

NOTE: Statistics in the following table relate to apiarists with forty or more hives.

BEEKEEPING STATISTICS

Year	Number of apiarists	Honey produced				Beeswax produced		
		Number of beehives		Quantity	Average production per produc- tive hive	Gross value	Quantity	Gross value
		Productive	Total					
		'000	'000	'000 tonnes	kg	\$'000	tonnes	\$'000
1978-79	2,201	369	501	18.3	49.5	14,111	349	1,213
1979-80	2,141	402	511	25.0	62.0	19,050	464	1,719
1980-81	2,224	379	531	19.5	51.5	15,815	366	1,530
1981-82	2,263	405	552	24.8	61.3	18,211	482	1,978
1982-83	2,182	390	540	22.5	57.7	16,605	424	1,613
1983-84p	2,148	393	529	25.0	63.6	19,220	467	1,622

EXPORTS OF HONEY AND BEESWAX

Year	Honey		Beeswax	
	Quantity	Value f.o.b.	Quantity	Value f.o.b.
	'000 tonnes	\$'000	tonnes	\$'000
1979-80	11.4	11,572	218	917
1980-81	8.2	8,985	177	733
1981-82	12.8	10,596	303	1,216
1982-83	14.8	13,075	368	1,387
1983-84	11.0	11,152	256	963
1984-85p	17.6	16,829	390	1,589

Honey levy

The *Honey Levy Acts (Nos. 1 & 2) 1962* impose a levy on domestic sales of honey. The rate of levy is set by regulation up to a maximum of 2.70c per kg provided by the legislation. From 1 October 1983 the levy was increased from 2.05c per kg to 2.45c per kg.

The *Honey Export Charge Act 1973*, imposes a charge on exports of honey. The current rate of charge, set by regulation, is 0.75c per kg. The legislation provides for a maximum charge of 1.5c per kg.

0.25c per kg of both the levy and charge is the industry contribution to research while the remainder is used to finance the operations of the Australian Honey Board. A proposal to increase the research components of the levies from 0.25c per kg to 0.35c per kg is currently before the Government.

Honey exports

Honey exports in 1984-85 were at a record level of 17,622 tonnes, compared to the 1982-83 record of 14,830 tonnes. While this continues to reflect the high cost of storing honey the devaluation of the Australian dollar was the main reason for the record exports.

For further information, see the publication *Livestock and Livestock Products, Australia* (7221.0).

Eggs and egg products

Record commercial egg production in Australian States (incl. N.T. but excl. A.C.T.) in 1983-84 was 131.2 thousand tonnes (192.8 million dozen) compared with 131.6 in 1982-83. It is expected that falls will continue as all States endeavour to reach their goal of maintaining quota hen numbers at such levels as will result in production being very close to domestic needs with very little left over for export. Such action has been taken as the net return on exports of shell eggs and egg products has been well below the cost of production in past years. The industry adopted a five year plan to reduce the national surplus to a 3 per cent margin which should meet seasonal shortfalls and the relatively minor profitable sector of the export market by July 1987.

EGGS AND EGG PRODUCTION: SUPPLY AND UTILISATION (Eggs in shell weight)

Year	Production			Apparent consumption in Australia as human food		
	Recorded commercial	Total (a)		Exports	Processed food(b)	Total
		Quantity	Gross value			Per capita per year
	'000 tonnes	'000 tonnes	\$ million	'000 tonnes	'000 tonnes	'000 tonnes
1978 79	126.7	196.9	196.9	17.0	20.5	180.6
1979 80	128.0	194.7	216.1	11.2	18.0	182.8
1980 81	134.0	203.4	227.4	18.9	23.2	184.2
1981 82	128.2	199.3	253.4	11.5	17.9	188.3
1982 83	131.6	204.4	275.3	9.8	18.6	191.2
1983 84	131.2	206.0	295.2	14.6	20.7	192.3

(a) Includes estimates for uncontrolled commercial production and production by self-suppliers. (b) Includes egg products as pulp and powder; also includes wastage.

Exports

The Australian Egg Board, established by Commonwealth legislation in 1947, was responsible for co-ordinating export marketing arrangements. It was empowered to purchase surplus domestic supplies from State marketing authorities, if they so wished, and to arrange to sell such eggs or products on overseas markets.

Following reviews of the Board's operations, in the light of falling export quantities resulting from industry actions to reduce surplus production, the Commonwealth Government announced in August 1984 its decision to abolish the Australian Egg Board. Legislation was passed in both Houses of Parliament, late in 1984, to abolish the Board.

Any export marketing is now undertaken by the individual State Board concerned under the aegis of an Exporters Committee established by the Australian Egg Marketing Council (AEMC). The AEMC is a non-statutory body whose membership is made up of the members of the State Egg Marketing Boards.

Exports are predominantly in egg pulp form—white, yolk and whole egg. Export levels are expected to fall markedly in 1985-86, as all States (NSW in particular) cut back production to eliminate, wherever possible, the substantial losses being incurred by the industry with this trade.

EXPORTS OF EGGS AND EGG PRODUCTS

Year	Eggs in shell		Eggs not in shell		Dry	
	Quantity	Value f.o.b.	Liquid form		Quantity	Value f.o.b.
			Quantity	Value f.o.b.		
	'000 doz	\$'000	tonnes	\$'000	tonnes	\$'000
1979-80	1,364	779	5,833	5,816	74	322
1980-81	1,423	1,113	8,508	8,891	50	337
1981-82	1,143	1,095	5,013	6,400	62	219
1982-83	2,672	1,763	3,455	4,108	85	682
1983-84	6,734	3,541	6,892	6,112	95	312
1984-85p	1,938	1,821	3,696	4,463	203	1,058

Agricultural improvements

Fertilisers

Most Australian soils are deficient in phosphorus. Because of this and the significant but less widespread deficiency of sulphur in many soils, phosphatic fertilisers, particularly single superphosphate, account for the bulk of fertiliser usage. Nitrogen deficiency is also general

in Australian soils and the use of nitrogenous fertilisers is increasing. Potassium deficiency however is confined mainly to soils in the higher rainfall areas which are intensively cropped or used for irrigated pastures.

The pattern of fertiliser usage in Australia has changed dramatically in recent years. Prior to 1973-74 the usual consumption ratio of elemental N:P:K has been 2:6:1, but by 1983 the ratio had changed to almost 3:3:1. This variation has resulted from a combination of reduced consumption of phosphatic fertilisers with an increased consumption of nitrogenous fertilisers.

The domestic industry has sufficient manufacturing capacity to meet normal local demand for phosphatic fertilisers but not nitrogenous fertilisers. Australia is dependent on imports of potassic fertilisers, rock phosphate and sulphur. Imports of compounded high analysis fertilisers and specialised fertilisers were insignificant until 1982-83. Since then, however, imports have been rising strongly, largely as a result of oversupply and lower prices on the world market.

ARTIFICIAL FERTILISERS: AREA AND USAGE

Year	Area fertilised	Super- phosphate used	Nitrogenous fertilisers used	Other fertilisers used
	'000 ha	'000 tonnes	'000 tonnes	'000 tonnes
1978-79	25,403	2,651	485	398
1979-80	n.a.	2,969	365	620
1980-81	n.a.	2,947	392	609
1981-82	26,777	2,874	395	599
1982-83	n.a.	2,562	429	633
1983-84p	n.a.	2,482	415	721

Since the Second World War there has been a great expansion of the area of sown pasture accompanied by an increased use of fertilisers. New pasture varieties (including tropical species) have been developed, and nutrient or trace elements deficiencies in soils identified.

The main artificial fertiliser used in Australia is superphosphate, over half of which is used on pastures, mainly in areas with moderate to good rainfall. Large quantities are also used on cereal crops.

SUPERPHOSPHATE USAGE

<i>Selected crops and pastures</i>						
Year	<i>Sown and native pastures</i>	<i>Lucerne</i>	<i>Wheat</i>	<i>Other cereals</i>	<i>Sugar cane</i>	<i>Total</i>
AREA FERTILISED ('000 hectares)						
1978-79	12,079	379	8,004	4,220	266	25,403
1979-80	14,703	n.a.	8,607	n.a.	262	n.a.
1980-81	13,964	n.a.	8,723	n.a.	291	n.a.
1981-82	12,240	106	9,361	4,034	301	26,043
1982-83	10,711	n.a.	9,299	n.a.	300	n.a.
1983-84	10,175	n.a.	9,672	n.a.	292	n.a.
SUPERPHOSPHATE USED ('000 tonnes)						
1978-79	1,451	55	634	410	22	2,651
1979-80	1,820	n.a.	716	n.a.	26	2,969
1980-81	1,733	n.a.	756	n.a.	32	2,947
1981-82	1,518	21	801	416	31	2,874
1982-83	1,289	n.a.	777	n.a.	27	2,562
1983-84	1,229	n.a.	720	n.a.	23	2,482

PRODUCTION AND IMPORTS OF FERTILISERS

<i>Item</i>		1979-80	1980-81	1981-82	1982-83	1983-84	1984-85p
PRODUCTION							
Superphosphate (a)	'000 tonnes	4,202	3,557	3,464	2,877	2,668	n.y.a.
Mixed chemical fertilisers (including complete manures)	'000 tonnes	1,050	1,277	1,092	967	990	n.y.a.
Leaf and foliage type fertilisers (including dry and liquid form)	tonnes	3,758	n.p.	7,765	6,846	n.p.	n.y.a.
Manures (without added chemical fertilisers) (b)	tonnes	12,558	29,906	26,677	34,128	39,107	n.y.a.
IMPORTS							
Crude fertilisers (mainly natural phosphate)	'000 tonnes	2,181	2,294	2,772	2,148	1,689	1,772
	Value \$m	80.4	102.1	128.6	109.1	86.3	89.5
Manufactured, mineral or chemical fertilisers—							
Nitrogenous (c)	'000 tonnes	75	86	108	101	91	200
	Value \$m	9.4	12.7	16.2	15.6	14.8	41.8
Potassic (d)	'000 tonnes	215	213	255	203	228	234
	Value \$m	15.5	21.5	26.7	20.7	23.1	28.6
Other (e)	'000 tonnes	81	66	92	273	389	421
	Value \$m	7.2	14.8	19.1	53.1	87.8	110.4

(a) Includes double and triple superphosphate and ammonium phosphate in terms of single superphosphate. (b) Blood, bone and/or offal, and other material. (c) Mainly ammonium nitrate, ammonium sulphate, calcium ammonium nitrate, sodium nitrate and urea containing in the dry state more than 45 per cent by weight of nitrogen. (d) Mainly potassium chloride and potassium sulphate. (e) Includes phosphatic fertilisers and compounds of the main elements nitrogen, phosphorus and potassium (N.P.K. complete fertilisers).

Note: Production data are derived from the Annual Manufacturing Census and the recorded monthly production.

Aerial agriculture

Extensive use is made of aircraft for top-dressing and seeding, for spraying and dusting of crops and pastures, and for pest and vermin extermination. The statistics below have been compiled from returns collected from the operators of aircraft engaged in aerial agriculture. The collection, which was commenced in 1956, is now the responsibility of the Department of Aviation.

AERIAL AGRICULTURE

<i>Year ended 31 March</i>	<i>Area treated ('000 hectares)</i>			<i>Materials applied ('000 tonnes)</i>		<i>Productive hours flown ('000 hours)</i>
	<i>Top dressed and seeded</i>	<i>Sprayed</i>	<i>Total(a)</i>	<i>Super-phosphate</i>	<i>Seed</i>	
1979	3,212	2,956	6,224	374.5	5.9	101.2
1980	4,416	2,412	6,907	514.2	6.4	127.3
1981	2,727	2,054	4,850	489.5	4.6	98.7
1982	2,461	2,760	5,395	276.7	2.9	86.3
1983	1,643	1,638	3,448	193.7	3.2	62.5
1984	1,999	3,613	5,710	196.6	5.7	82.0
1985	1,732	3,505	5,679	168.9	5.4	77.5

(a) Includes other types of treatment (rabbit baiting, etc).

Irrigation on agricultural establishments

Irrigation is one of the factors by which agriculture is further developed. The variability in stream flow and annual rainfall means that successful irrigation of crops and pastures is dependent on storage. Ground water supplies are also used in areas where the quantity is adequate and the quality is suitable. The area of land irrigated (approximately 1.6 million hectares in 1983-84) forms about 9 per cent of the total area under crops and only 0.3 per cent of the total area of agricultural establishments.

Chapter 15, *Water Resources*, contains additional details of water conservation and irrigation with international, national and interstate aspects.

CROPS AND PASTURES IRRIGATED, BY METHOD OF IRRIGATION, (a) AUSTRALIA 1983-84
(^{'000} hectares)

Crops and Pastures	Method				Total
	Sprays	Furrows and/or Flood	Trickle	Other and multiple methods	
Pure Lucerne	53.6	25.9	n.a.	2.6	82.2
Other pastures (sown or native) . . .	119.2	643.5	n.a.	26.4	789.1
Cereals for all purposes	51.7	251.6	n.a.	12.2	315.5
Vegetables for human consumption . .	56.0	11.6	1.9	7.3	76.8
Total fruit	33.9	33.6	25.8	4.7	98.0
All other crops	77.0	171.2	1.4	13.8	263.3
Total	391.5	1,137.3	29.1	67.0	1,624.9

SOURCE AND USAGE OF WATER FOR IRRIGATION, AUSTRALIA

Irrigation— area irrigated, by source 1983-84(c)	Estimated annual water use in 1977 (b)				Total
	Irrigation	Rural (excl irrigation)	Urban industrial		
(^{'000})	percentage of total area irrigated %	—million cubic metres—			
Surface water—					
State irrigation schemes	914.2	56	n.a.		
Rivers, creeks, lakes	367.9	23			
Farm dams	107.3	7			
<i>Total surface water</i>	<i>1,389.5</i>	<i>86</i>	<i>11,554</i>	<i>742</i>	<i>2,493</i>
Town or country reticulated (d)	9.8	1			
Underground (ground water)	225.6	14	1,639	337	480
Total, all sources	1,624.9	100	13,256	1,348	3,187
					17,774

(a) Collected every 3 years. (b) Estimated for an average climatic year; data source is the first *National Survey of Water Use in Australia*, Department of National Development and Energy and Australian Water Resources Council, Occasional Papers Series No. 1, AGPS, 1981. The data in the original are shown by drainage division and provide a sound basis for the efficient utilisation of existing resources and for the planning of future projects. (c) Data source is the annual Agricultural Census and represents area actually irrigated. Total area will therefore agree with that shown in the table on crops and pastures irrigated by method of irrigation. (d) This source represents irrigation water which has come from either surface or underground sources.

Agricultural machinery on agricultural establishments

Statistics on the type of agricultural machinery on agricultural establishments were published in early issues of the Year Book. Additional information was published in the publication *Agricultural Land Use, Improvements and Labour, Australia, 1980-81* (7103.0). Details of the sales of new tractors for agricultural purposes are given in the quarterly publication *Sales and Stocks of New Tractors, Australia* (8507.0).

Employment in Agriculture

Employment on agricultural establishments

Prior to 1976 data on employment collected at the annual Agricultural Census differentiated between permanent full-time employees and temporary employees. Full-time workers excluded casual or seasonal workers and other persons working only part-time. Casual or seasonal workers were shown as temporary employees.

In the past it has been difficult to maintain comparability of employment on agricultural establishments from year to year because of the changing number of lessees and share farmers and because of the tendency of many farmers to include part-time family helpers as full-time workers in their returns. Since the Second World War there has been a decline in the percentage of people living in rural areas due, in part, to a rising standard of living accompanying the introduction of new techniques and increasing use of capital equipment, fuel, fertilisers, and pesticides. As a result, a smaller agricultural labour force is now producing a larger output of farm products.

EMPLOYED PERSONS IN AGRICULTURE AND SERVICES TO AGRICULTURE
(^{'000})

<i>Month of August</i>	<i>Males</i>	<i>Married females</i>	<i>All females</i>	<i>Persons</i>
1980	285.1	77.5	93.4	378.5
1981	281.9	87.1	104.6	386.5
1982	281.7	87.1	101.0	382.8
1983	290.2	80.2	94.1	384.2
1984	279.3	80.0	93.8	373.1
1985	287.4	89.5	107.1	394.5

Source: Monthly population survey conducted by the ABS throughout Australia. For further details see *The Labour Force, Australia* (6203.0).

Regulation of Australian agricultural industries

Year Book No. 61, pages 837–57, contains a summary of the means by which agricultural industries are assisted and regulated. It is not intended as a comprehensive statement of all the consultative and legislative assistance and control measures that exist, but rather as a description of the way in which these processes affect the crops, livestock and livestock products referred to earlier in this chapter.

Agricultural research by CSIRO

Agricultural research, conducted by the Commonwealth Scientific and Industrial Research Organization (CSIRO), is directed primarily to aspects of agricultural production which are of widespread significance and which require mid- to long-term research. It is aimed at establishing principles, practices and technologies that will improve the efficiency and long-term viability of Australian agriculture and its capacity to respond to changing needs. This work ranges from studies in basic biology to those designed to integrate new plant varieties, animal breeds and production technologies into sound production systems.

CSIRO's research is appropriate for attacking problems or developing opportunities that transcend State boundaries, are complex and require concentration of disciplinary effort for their solution, and may need sustained long-term effort before they yield practical results. CSIRO's agricultural research complements that of State Government departments and universities, and the Organization attaches considerable importance to collaborative research with them.

CSIRO's agricultural research makes up one-third of its overall research effort and covers the following research areas: plant improvement, plant physiology and biochemistry, soils and plant nutrition, crop and pasture pests and diseases, livestock production, livestock health, and agricultural systems. In addition, secondary industry research directly relevant to the agricultural industries covers the research areas of wool textiles, food handling, processing and storage, and agricultural and veterinary chemicals. There is also research directly relevant to the agricultural industries carried out within the research area of environmental protection and rehabilitation.

Most of CSIRO's agricultural research is carried out within the Institute of Animal and Food Sciences and the Institute of Biological Resources. The Institute of Animal and Food Sciences carries out scientific and technological research aimed at improving the efficiency of livestock production and the quality and safety of human foods. The Institute's activities include research on control of indigenous and exotic animal diseases; nutrition, reproduction, genetics and management of livestock; methods of processing, handling and storing meat, fish, dairy foods, fruit, vegetables and grain; and molecular and cellular biology and its application in the livestock and pharmaceutical industries. This research is performed by the following constituent units of the Institute—Divisions of Animal Health, Animal Production, Tropical Animal Science, Molecular Biology, Food Research, Australian National Animal Health Laboratory, and the Wheat Research Unit.

Research in the Institute of Biological Resources is directed to improvement of the productivity of Australia's rural industries and conservation of its biotic resources, recognising that the two are highly interdependent. Plants are sources of fibre and food, and the start of all human food chains. Research to optimise plant production is therefore of fundamental importance, and is directed to producing increased quantities of usable plant material of better quality and with least disruption to water resources, soils and fragile ecosystems. Work

to increase plant productivity is complemented by research to improve our understanding of the Australian environment. This research is performed by the following constituent units of the Institute—Divisions of Plant Industry, Tropical Crops and Pastures, Horticultural Research, Soils, Water and Land Resources, Wildlife and Rangelands Research, Entomology, and the Centre for Irrigation Research.

The Institute of Industrial Technology is also engaged in research of direct benefit to the agricultural industries. Wool textile and marketing research is performed by the Divisions of Protein Chemistry, Textile Physics, and Textile Industry, and research on the design and synthesis of potential agricultural chemicals is performed by the Division of Applied Organic Chemistry.

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