

CHAPTER 13

RURAL INDUSTRY

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); Financial statistics (provides estimates of the financial performance of business organisations engaged in agricultural activities); Value of agricultural commodities produced and indexes of quantum and average unit gross values; Apparent consumption of foodstuffs and nutrients; Land tenure and land utilisation; Crop statistics; Livestock statistics; Livestock products; Rural improvements and employment.

Introduction

The development of Australian rural 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 1950's, 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; the value of agricultural products exported was only 45 per cent of the total value of exports in 1977–78.

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. The index of quantum of agricultural production and output (see page 264) illustrates this by displaying a steady increase from approximately 70 in 1959–60 to 116 in 1976–77.

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. The number of males working permanently on rural holdings, for example, decreased from 356,000 in 1955 to 244,000 in 1975, 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 (previously called 'holdings') 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.

In the past three years the ABS has been gradually excluding from the statistics establishments whose contribution to agricultural production is small. While this has reduced the number of establishments appearing in publications, the effect on statistics of production of major commodities is minimal. Statistics of minor commodities normally associated with the smaller scale operations may be affected to a greater extent.

From 1976–77, establishments have been included in the statistics where the legal entities operating these establishments had Estimated Values of Operations (EVAO) from agricultural activity of \$1,500 or more. Details of the method used in the calculation of EVAO are contained in the publication *Structure of Operating Units* (7102.0).

For 1975-76 the EVAO criterion was the same as for 1976-77, but establishments with areas of 10 hectares or more were also included, even if EVAO was less than \$1,500. Prior to 1975-76, all agricultural establishments with areas of one hectare or more were included. In addition, establishments of less than one hectare tended to be included where significant agricultural activity was undertaken, e.g. poultry farms, commercial market gardens and nurseries.

Integrated Agricultural Register

The Agricultural Census is one of the sources of information used to update the Integrated Agricultural Register (IAR). The IAR contains information about the area, type, legal status, level of activity and location of units engaged in agriculture, and is used for the despatch of most of the agricultural statistical collections. The IAR was originally compiled by adding data in a special census of economic units conducted in 1974 to existing data relating to physical characteristics of agricultural establishments. Details of the structure of economic units engaged in agriculture are compiled from the IAR. These economic units, 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).

Establishment (the smallest economic unit). The establishment covers all operations carried out by one enterprise at a single physical location.

Agricultural Finance Survey (AFS)

The AFS collects detailed financial statistics from a sample of agricultural enterprises. The main purpose of the survey is to enable financial statistics related to the economic performance of the agricultural sector and its components to be made available on the same basis as statistics for other sectors of the economy.

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.

Structural statistics

The following tables provide information relating to the structure of operating units during 1976-77. 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 1969* (ASIC) (1201.0). This publication provides details of the methodology used in determining the industry class of an economic unit.

Estimated Value of 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 bulletin *Agricultural Sector: Part I. Structure of Operating Units, 1976-77* (7102.0).

NUMBER OF UNITS BY TYPE OF UNIT, 1976-77

Unit	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	Australia
Agricultural establishments . . .	50,890	47,822	33,073	19,498	16,042	5,912	173,625
Agricultural enterprises	49,586	46,788	32,297	18,921	15,691	5,768	169,754

AGRICULTURAL ENTERPRISES BY INDUSTRY AND ESTIMATED VALUE OF OPERATIONS: 1976-77

Industry of enterprise	Estimated value of operations (\$'000)											Total
	2-9	10-19	20-29	30-39	40-49	50-59	60-74	75-99	100-149	150-199	200+	
Cereal grains	1,756	2,469	2,773	2,568	2,266	1,752	1,791	1,626	1,336	484	364	19,185
Oilseeds (n.e.c.)	131	152	89	50	30	19	23	12	10	6	11	533
Sheep-cereal grains	1,091	3,189	3,691	3,461	2,600	2,021	2,173	2,127	1,605	539	421	22,918
Meat cattle-cereal grains	1,246	1,101	736	505	312	214	184	164	112	28	37	4,639
Sheep-meat cattle	3,722	3,390	2,101	1,236	755	462	475	369	253	84	86	12,933
Sheep	5,391	4,468	2,988	1,886	1,218	828	794	588	449	140	129	18,879
Meat cattle	19,134	4,478	1,579	718	431	237	208	155	122	42	92	27,196
Milk cattle	3,903	9,630	6,655	2,607	1,098	505	359	190	84	26	22	25,079
Pigs	1,229	775	509	318	236	150	146	140	92	46	57	3,698
Poultry	205	216	229	179	121	104	157	169	164	96	191	1,831
Fruit	3,679	3,840	2,514	1,370	711	432	327	263	213	57	76	13,482
Vegetables	2,048	1,781	1,068	704	475	334	322	316	217	85	129	7,479
Multi-purpose	124	86	91	50	22	23	23	18	14	2	5	458
Sugar cane	88	233	405	711	985	837	929	1,023	853	294	226	6,584
Peanuts	28	75	85	83	46	46	28	21	6	6	2	426
Tobacco	2	28	147	284	171	134	104	79	42	13	12	1,016
Cotton	1	2	2	2	1	2	9	6	16	13	54	108
Nurseries and specialised horticultural activities (except forest nurseries)	336	277	132	137	64	41	52	36	45	25	39	1,184
Agriculture (n.e.c.)	1,316	399	165	63	37	35	32	29	23	6	21	2,126
Total	45,430	36,589	25,959	16,932	11,579	8,176	8,136	7,331	5,656	1,992	1,974	169,754

AGRICULTURAL ENTERPRISES BY INDUSTRY, LEGAL STATUS AND ESTIMATED VALUE OF OPERATIONS: 1976-77

	Legal status						Total enterprises
	Sole operator	Family partnership	Other partnership	Private incorporated company	Public incorporated company	Other(a)	
Industry of enterprise—							
Cereal grains	5,495	12,186	424	635	7	438	19,185
Oilseeds (n.e.c.)	179	318	12	18	—	6	533
Sheep-cereal grains	5,110	16,016	438	867	14	473	22,918
Meat cattle-cereal grains	1,468	2,637	128	296	3	107	4,639
Sheep-meat cattle	4,766	6,789	325	675	16	362	12,933
Sheep	7,148	9,953	464	718	16	580	18,879
Meat cattle	12,227	12,169	699	1,341	35	725	27,196
Milk cattle	9,305	14,466	355	453	13	487	25,079
Pigs	1,360	2,119	74	93	2	50	3,698
Poultry	572	1,089	41	112	3	14	1,831
Fruit	4,987	7,848	230	304	7	106	13,482
Vegetables	2,724	4,405	146	152	6	46	7,479
Multi-purpose	148	284	7	11	—	8	458
Sugar cane	1,565	4,689	115	93	—	122	6,584
Peanuts	113	293	8	4	—	8	426
Tobacco	282	671	32	11	2	18	1,016
Cotton	18	57	9	22	—	2	108
Nurseries and specialised horticultural activities (except forest nurseries)	415	602	52	101	2	12	1,184
Agriculture (n.e.c.)	1,093	879	55	76	2	21	2,126
Total	58,975	97,470	3,614	5,982	128	3,585	169,754
Estimated value of operations (\$'000)—							
2-9	23,830	18,799	822	900	9	1,070	45,430
10-19	14,840	19,646	621	704	24	754	36,589
20-29	8,533	15,759	493	624	14	536	25,959
30-39	4,397	11,190	390	569	14	372	16,932
40-49	2,656	7,967	273	460	7	216	11,579
50-59	1,528	5,887	198	399	8	156	8,176
60-74	1,290	5,963	216	515	11	141	8,136
75-99	965	5,481	207	537	3	138	7,331
100-149	580	4,223	185	562	4	102	5,656
150-199	172	1,414	92	271	7	36	1,992
200 +	184	1,141	117	441	27	64	1,974
Total, all size groups	58,975	97,470	3,614	5,982	128	3,585	169,754

(a) Includes co-operative societies, trusts and estates.

**AGRICULTURAL ESTABLISHMENTS OPERATED BY AGRICULTURAL
AND NON-AGRICULTURAL ENTERPRISES BY INDUSTRY OF
ESTABLISHMENT: 1976-77**

<i>Industry of establishment</i>	<i>Operated by agricultural enterprises</i>	<i>Operated by non- agricultural enterprises</i>
Cereal grains	19,273	201
Oilseeds (n.e.c.)	537	9
Sheep-cereal grains	23,012	150
Meat cattle-cereal grains	4,676	94
Sheep-meat cattle	13,063	204
Sheep	19,050	186
Meat cattle	27,650	1,033
Milk cattle	25,148	160
Pigs	3,712	86
Poultry	1,835	51
Fruit	13,515	310
Vegetables	7,489	72
Multi-purpose	464	7
Sugar cane	6,598	48
Peanuts	426	5
Tobacco	1,021	6
Cotton	110	1
Nurseries and specialised horticultural activities (except forest nurseries)	1,191	37
Agriculture (n.e.c.)	2,136	59
Total	170,906	2,719

**AGRICULTURAL ESTABLISHMENTS OPERATED BY AGRICULTURAL ENTERPRISES BY INDUSTRY OF
ENTERPRISE AND INDUSTRY OF ESTABLISHMENT: 1976-77**

<i>Industry of enterprise</i>	<i>Industry of establishment</i>														<i>Total estab- lish- ments</i>
	<i>Cereal grains</i>	<i>Oil- seeds n.e.c.</i>	<i>Sheep- cereal grains</i>	<i>Meat cattle- cereal grains</i>	<i>Sheep- meat cattle</i>	<i>Sheep</i>	<i>Meat cattle</i>	<i>Milk cattle</i>	<i>Pigs</i>	<i>Poultry</i>	<i>Fruit</i>	<i>Vege- tables</i>	<i>Multi- pur- pose</i>	<i>Agri- culture n.e.c.</i>	
Cereal grains	19,224	1	22	6	18	22	43	1	4	-	2	3	-	1	19,347
Oilseeds (n.e.c.)	-	533	-	-	1	1	1	-	-	-	-	-	-	1	537
Sheep-cereal grains	11	-	22,960	4	11	34	15	2	1	-	3	-	-	1	23,042
Meat cattle-cereal grains	1	-	2	4,645	3	5	39	-	1	-	-	1	3	1	4,701
Sheep-meat cattle	4	-	8	6	12,979	32	47	3	-	-	1	-	-	1	13,081
Sheep	8	-	16	3	37	18,939	31	2	1	-	1	-	-	1	19,039
Meat cattle	7	-	3	7	8	9	27,387	7	3	1	2	-	2	3	27,439
Milk cattle	2	1	-	2	4	4	37	25,126	-	-	-	-	1	1	25,178
Pigs	1	-	1	-	-	-	-	3,700	-	-	-	-	1	-	3,703
Poultry	3	-	-	-	-	-	7	1	1	1,834	1	-	-	-	1,847
Fruit	2	1	-	-	1	3	9	2	-	-	13,503	1	-	-	13,522
Vegetables	5	-	-	1	-	1	7	2	-	-	-	7,483	-	-	7,499
Multi-purpose	1	-	-	-	-	-	-	-	1	-	-	1	456	1	460
Agriculture (n.e.c.) (a)	4	1	-	2	1	-	27	2	-	-	2	-	1	11,471	11,511
Total	19,273	537	23,012	4,676	13,063	19,050	27,650	25,148	3,712	1,835	13,515	7,489	464	11,482	170,906

(a) Includes sugar cane, peanuts, tobacco, cotton, nurseries and specialised horticultural activities and agriculture, n.e.c.

Financial statistics

The following tables show the main aggregates describing the economic performance of agricultural enterprises. The initials 'S.E.—' appearing in some of the tables stand for 'standard error %' which is a measure of the sampling error resulting from the use of sampling techniques as opposed to the results which would have been obtained from a comparable complete collection. A more detailed explanation of standard errors and other terms used in the tables, as well as more detailed statistics, are given in *Agricultural Sector: Part IV, Financial Statistics (7507.0)*.

**FINANCIAL STATISTICS, AGRICULTURAL ENTERPRISES,
1972-73 TO 1976-77**

Item	1972-73(a)		1973-74(a)		1974-75		1975-76		1976-77	
	\$m	S.E. %	\$m	S.E. %	\$m	S.E. %	\$m	S.E. %	\$m	S.E. %
Sales from crops	1,169.1	4	1,599.6	3	2,345.5	2	2,545.2	3	2,900.4	2
Sales from livestock	1,870.1	3	2,079.8	3	1,099.7	5	1,103.5	3	1,404.3	2
Sales from livestock products	1,598.2	3	1,661.5	3	1,382.7	2	1,461.4	3	1,632.4	2
Turnover	4,653.1	2	5,319.3	2	4,985.8	2	5,237.1	2	6,133.6	1
Purchases and selected expenses	2,094.3	2	2,550.4	2	2,278.1	2	2,514.4	3	2,690.4	1
Value added	2,551.5	n.a.	3,114.5	n.a.	2,897.3	3	2,783.1	5	3,310.0	1
Adjusted value added	2,280.4	n.a.	2,785.4	n.a.	2,576.0	4	2,449.1	2	2,924.6	2
Gross operating surplus	1,936.6	n.a.	2,356.9	n.a.	2,083.8	4	1,907.4	5	2,401.7	2
Cash operating surplus	1,731.2	n.a.	1,783.7	n.a.	1,658.7	3	1,594.1	3	2,291.8	2
Total net capital expenditure	596.7	4	643.8	4	620.0	4	801.7	4	820.9	3
Gross indebtedness	2,714.5	4	2,921.6	4	2,972.5	4	3,422.2	4	3,397.0	3

(a) Not strictly comparable with later years—see Explanatory Notes for bulletin *Agricultural Sector: Part IV, Financial Statistics, 1974-75* (7507.0).

FINANCIAL STATISTICS, AGRICULTURAL ENTERPRISES, 1976-77
(\$ million)

Item	N.S.W.	Vic.	Qld.	S.A.	W.A.	Tas.	Aust.(a)
Sales from crops	788.2	426.7	843.1	258.8	525.8	35.1	2,900.4
Sales from livestock	452.2	284.3	268.4	150.9	158.1	43.8	1,404.3
Sales from livestock products	507.9	392.1	189.9	175.6	282.7	57.7	1,632.4
Turnover	1,799.0	1,146.3	1,340.2	607.9	995.9	144.1	6,133.6
Purchases and selected expenses	818.0	526.0	554.2	259.7	418.5	67.8	2,690.4
Value added	948.6	562.8	797.5	327.8	537.5	77.9	3,310.0
Adjusted value added	818.7	479.1	723.7	293.6	492.3	69.2	2,924.6
Gross operating surplus	671.3	395.6	581.8	245.5	431.9	52.0	2,401.7
Cash operating surplus	630.8	396.7	519.3	246.2	443.1	41.7	2,291.8
Total net capital expenditure	244.4	123.0	187.8	80.2	157.6	18.2	820.9
Gross indebtedness	974.5	759.5	745.2	306.0	461.3	100.8	3,397.0

(a) Includes Northern Territory and Australian Capital Territory.

FINANCIAL STATISTICS, AGRICULTURAL ENTERPRISES, BY INDUSTRY (ASIC)(a): 1976-77
(\$ million)

Item	Cereal grains, oilseeds (n.e.c.) 0111-0112	Sheep— cereal grains 0113	Meat cattle— cereal grains 0114	Sheep— meat cattle 0115	Sheep 0116	Meat cattle 0117	Milk cattle 0118
Sales from crops	806.9	747.8	67.1	28.6	51.7	22.8	25.0
Sales from livestock	128.9	214.3	57.8	229.4	174.3	320.3	87.8
Sales from livestock products	74.2	350.5	6.7	195.9	393.0	10.7	446.6
Turnover	1,040.2	1,346.7	137.9	474.4	634.6	378.2	574.1
Purchases and selected expenses	403.0	528.2	68.2	221.2	304.6	202.0	259.3
Value added	614.2	765.3	66.6	231.0	313.6	174.6	302.5
Adjusted value added	551.4	696.0	53.6	187.8	269.1	132.7	265.3
Gross operating surplus	497.1	621.9	40.4	125.3	211.5	86.3	232.6
Cash operating surplus	480.6	633.7	32.7	124.0	212.7	54.5	205.5
Total net capital expenditure	214.1	201.6	19.2	39.2	61.4	30.4	51.7
Gross indebtedness	493.0	560.2	171.5	293.4	359.0	544.0	427.0

Item	Pigs 0119	Poultry 0121-0122	Fruit 0131-0133	Vegetables 0141-0142	Multi- purpose farming 0150	Other agriculture 0161-0166	All industries 01
Sales from crops	11.6	1.9	311.3	193.9	9.2	622.5	2,900.4
Sales from livestock	101.6	42.0	7.7	23.1	3.9	13.2	1,404.3
Sales from livestock products	6.5	120.2	1.1	9.5	0.9	16.5	1,632.4
Turnover	125.0	173.0	329.4	234.0	14.4	671.7	6,133.6
Purchases and selected expenses	80.1	114.4	144.3	104.8	7.2	253.1	2,690.4
Value added	47.9	58.3	183.5	125.5	7.2	419.8	3,310.0
Adjusted value added	43.1	52.5	166.2	113.1	6.2	387.6	2,924.6
Gross operating surplus	34.6	36.4	107.8	85.6	4.9	317.4	2,401.7
Cash operating surplus	27.7	33.4	102.4	86.0	4.1	294.6	2,291.8
Total net capital expenditure	15.8	12.2	40.7	36.4	2.1	95.9	820.9
Gross indebtedness	49.5	35.2	121.7	79.6	12.0	251.1	3,397.0

(a) Australian Standard Industrial Classification (1201.0).

Gross value of agricultural commodities produced and indexes of quantum and average unit gross values

Definitions

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

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

Local value of commodities produced (i.e. gross value of commodities produced valued at place of production) is ascertained by deducting marketing costs from the gross value.

Average unit gross values are calculated by dividing the gross value of each commodity produced by the total production of each corresponding commodity.

Indexes of quantum are the indexes of the gross value of commodities produced at constant prices, i.e. they are measures of change in value after the direct effects of price changes have been eliminated.

VALUES OF AGRICULTURAL COMMODITIES: 1976-77

	Gross production valued at principal markets	Marketing costs	Local value of production	Indexes of Agricultural Commodities produced and output (Base year: 1968-69 = 100)	
				Quantum	Average unit gross value
	\$m	\$m	\$m		
Crops	3,204.1	421.6	2,782.5	98.6	195.9
Livestock slaughterings and other disposals	1,684.7	167.8	1,516.9	176.4	124.9
Livestock products	1,884.8	135.6	1,749.2	83.1	170.3
Total agriculture	6,773.6	725.0	6,048.6	(a)115.6	(a)167.1

(a) Excludes seed, feed and fodder consumed or retained on farms.

Publications

Two preliminary estimates of value of commodities produced are published: *Gross Value of Agricultural Commodities Produced*, First Estimates (7501.0) and *Value of Agricultural Commodities Produced*, Second Estimates (7502.0). A final publication, *Value of Agricultural Commodities Produced* (7503.0), contains Indexes of Quantum and Average Unit Gross Value.

Indexes of Agricultural Commodities Produced

In issues of the Year Book prior to No. 60, these indexes were referred to as 'indexes of farm production'. In issue No. 60, they were referred to as 'indexes of agricultural production'. In these tables data show indexes of quantum of agricultural commodities produced, and unit value of agricultural commodities produced, by industrial group.

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* (7503.0).

GROSS VALUES OF AGRICULTURAL COMMODITIES

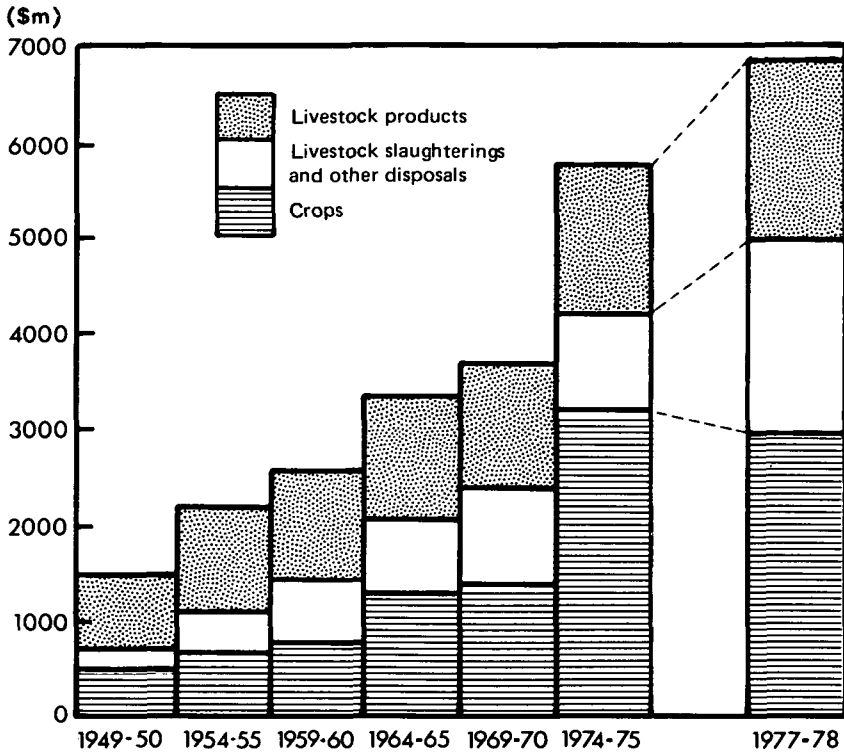


PLATE 27

RURAL INDUSTRY
GROSS VALUE OF AGRICULTURAL COMMODITIES
(\$ million)

	1973-74	1974-75	1975-76	1976-77	1977-78 ^p
Crops—					
Wheat for grain	1,312	1,256	1,249	1,051	913
Barley for grain	191	257	314	295	212
Sugar cane cut for crushing	219	491	436	472	410
Fruit	217	267	269	291	313
Grapevines	83	101	102	129	128
Vegetables	240	258	275	309	314
Pasture and grasses	178	150	129	148	663
Other crops	419	426	476	510	
<i>Total crops</i>	<i>2,859</i>	<i>3,206</i>	<i>3,250</i>	<i>3,204</i>	<i>2,953</i>
Livestock slaughterings and other disposals(a)—					
Cattle and calves	1,069	523	706	1,011	1,205
Sheep and lambs	321	178	204	298	351
Pigs	173	178	183	197	210
Poultry	133	140	153	178	215
<i>Total</i>	<i>1,696</i>	<i>1,019</i>	<i>1,246</i>	<i>1,685</i>	<i>1,981</i>
Livestock products—					
Wool	1,229	953	1,000	1,173	1,149
Dairy products	468	519	490	521	550
Eggs	148	172	179	182	195
Honey and beeswax	12	10	11	9	10
<i>Total</i>	<i>1,857</i>	<i>1,653</i>	<i>1,680</i>	<i>1,885</i>	<i>1,904</i>
Total agriculture	6,412	5,878	6,175	6,774	6,838

(a) Includes adjustment for net live exports of live animals.

INDEXES OF QUANTUM OF AGRICULTURAL COMMODITIES PRODUCED AND OUTPUT(a)
(Base of each index: Year 1968-69 = 100)

	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
Crops—						
Barley for grain	186.3	104.9	145.6	152.8	193.1	173.0
Oats for grain	74.6	43.0	64.7	51.1	66.7	62.7
Wheat for grain	58.0	43.2	80.3	76.6	80.9	79.7
Other grain cereals	220.7	192.0	209.1	187.1	223.6	222.8
Sugar cane(b)	103.6	101.2	102.9	108.8	117.3	124.5
Fruit and nuts	107.5	111.7	97.7	100.9	93.3	88.4
Grapevines	142.5	105.5	94.9	123.6	122.0	142.7
Vegetables	110.0	100.0	88.8	105.4	99.1	108.3
All other crops(c)	117.6	90.8	106.8	97.5	85.8	98.4
<i>Total</i>	<i>92.9</i>	<i>75.7</i>	<i>94.6</i>	<i>94.0</i>	<i>96.6</i>	<i>98.6</i>
Livestock slaughterings and other disposals—						
Cattle and calves(d)	124.4	154.7	140.7	164.8	196.9	212.9
Sheep and lambs	135.5	103.5	70.4	79.6	86.1	80.5
Pigs	119.9	145.6	130.1	108.0	107.2	114.1
Poultry	149.5	147.3	177.2	173.5	187.0	199.7
<i>Total(e)</i>	<i>127.9</i>	<i>143.4</i>	<i>128.5</i>	<i>143.2</i>	<i>165.7</i>	<i>176.4</i>
Livestock products—						
Wool	99.6	83.2	79.3	89.8	85.4	78.9
Milk	101.9	101.1	97.2	91.7	89.5	86.7
Eggs	113.7	110.5	105.0	106.7	105.5	95.8
<i>Total(f)</i>	<i>101.8</i>	<i>91.7</i>	<i>87.7</i>	<i>92.1</i>	<i>88.7</i>	<i>83.1</i>
Agricultural output(g)	105.0	97.6	100.6	107.0	113.4	115.6

(a) Indexes at value of constant price (i.e. at average unit gross value of the 3 years ended 1970-71). (b) Cut for crushing and planting. (c) Includes pastures and grasses; excludes crops for green feed and silage. (d) Includes dairy cattle slaughtered. (e) Component series based on carcass weight. (f) Includes honey and beeswax. (g) Excludes seed, feed and fodder consumed or retained on farms.

**INDEXES OF AVERAGE UNIT GROSS VALUE OF AGRICULTURAL COMMODITIES
PRODUCED AND OUTPUT(a)
(Base of each index: Year 1968-69 = 100)**

	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77
Crops—						
Barley for grain	94.5	122.8	185.5	238.4	230.4	241.7
Oats for grain	85.3	124.7	175.6	198.5	198.4	202.0
Wheat for grain	109.1	112.8	224.0	225.3	210.8	180.1
Other grain cereals	85.7	124.1	169.7	169.5	175.0	181.8
Sugar cane(b)	128.3	145.8	136.1	288.2	237.9	242.6
Fruit and nuts	104.7	123.2	136.6	163.8	184.8	206.4
Grapevines	105.7	138.9	203.4	180.4	186.2	201.1
Vegetables	102.3	130.1	198.5	178.0	202.1	209.0
All other crops(c)	85.9	129.5	133.0	144.7	156.7	175.9
<i>Total</i>	<i>103.6</i>	<i>123.8</i>	<i>182.6</i>	<i>204.4</i>	<i>199.7</i>	<i>195.9</i>
Livestock slaughtering and other disposals—						
Cattle and calves(d)	102.8	117.9	135.5	56.6	64.3	85.3
Sheep and lambs	84.5	157.3	257.5	126.7	129.9	203.3
Pigs	106.8	97.8	153.1	189.6	197.0	199.2
Poultry	92.6	94.9	115.3	124.2	126.0	137.7
<i>Total(e)</i>	<i>98.6</i>	<i>122.5</i>	<i>161.1</i>	<i>89.2</i>	<i>95.5</i>	<i>124.9</i>
Livestock products—						
Wool	79.0	178.1	184.8	126.5	139.6	177.2
Milk	117.7	118.5	123.7	144.8	139.9	154.2
Eggs	87.6	95.4	126.5	144.6	152.1	171.0
<i>Total(f)</i>	<i>91.1</i>	<i>153.7</i>	<i>162.2</i>	<i>133.6</i>	<i>141.0</i>	<i>170.3</i>
Agricultural output(g)	99.1	135.1	171.7	147.7	149.9	167.1

For footnotes see previous table.

Apparent consumption of foodstuffs and nutrients

APPARENT CONSUMPTION OF FOODSTUFFS PER HEAD OF POPULATION

(Kg—unless otherwise indicated)

Commodity	1972-73	1973-74	1974-75	1975-76	1976-77p
Grain products—					
Flour (including flour for bread making)	73.8	76.8	74.2	73.9	72.7
Rice, table	2.2	2.0	2.4	2.4	2.4
Breakfast foods	6.7	6.6	6.6	7.1	8.0
<i>Total grain products</i>	<i>82.9</i>	<i>85.7</i>	<i>83.2</i>	<i>83.6</i>	<i>83.0</i>
Sugar(a)	n.a.	54.4	53.7	55.6	53.5
Pulse and nuts—					
Peanuts (kernel equivalent)	1.2	0.9	0.8	1.3	n.y.a.
Tree nuts (kernel equivalent)	1.0	1.1	1.1	1.2	1.2
Vegetables—					
Potatoes, white	47.9	45.5	51.7	46.6	48.9
Other root and bulb vegetables	16.7	17.5	17.7	15.9	16.0
Tomatoes	16.9	14.9	10.1	14.3	14.6
Leafy and green vegetables	20.0	21.0	21.6	23.0	22.4
Other vegetables	14.9	15.0	15.1	14.4	14.9
<i>Total (fresh equivalent weight)</i>	<i>116.9</i>	<i>114.2</i>	<i>116.7</i>	<i>114.3</i>	<i>116.7</i>
Fruit and fruit products—					
Citrus fruit(b)	30.1	31.3	36.7	39.6	33.4
Other fresh fruit	35.7	33.5	32.7	33.3	33.1
Jams, conserves, etc.	2.5	2.2	2.5	1.9	2.0
Dried fruits	2.3	2.4	1.8	2.2	2.0
Canned and bottled fruit	10.3	10.2	10.1	9.7	10.1
<i>Total (fresh fruit equivalent)</i>	<i>90.1</i>	<i>89.4</i>	<i>91.2</i>	<i>95.7</i>	<i>88.9</i>

APPARENT CONSUMPTION OF FOODSTUFFS PER HEAD OF
POPULATION—*continued*

(Kg—unless otherwise indicated)

<i>Commodity</i>	<i>1972-73</i>	<i>1973-74</i>	<i>1974-75</i>	<i>1975-76</i>	<i>1976-77p</i>
Meat—					
Carcass meat (total)	82.1	71.9	96.2	97.3	93.5
Beef and veal	40.1	41.1	64.3	68.6	70.3
Mutton	15.7	8.6	9.0	7.5	4.3
Lamb	18.5	15.4	17.7	16.7	13.4
Pigmeat	7.7	6.7	5.1	4.4	5.4
Offal	5.7	4.4	5.2	5.9	6.1
Canned meat (canned weight) . .	2.5	2.4	2.3	1.7	1.7
Bacon and ham (cured carcass weight)	5.4	5.4	4.9	5.2	4.8
<i>Total (carcass equivalent weight)</i>	<i>98.6</i>	<i>86.7</i>	<i>111.1</i>	<i>112.4</i>	<i>108.1</i>
Poultry (dressed weight)	13.1	13.6	13.6	14.5	15.8
Eggs and egg products	12.4	12.4	12.4	12.5	12.4
Equivalent number of eggs . . .	218	219	219	220	219
Fish, fresh and frozen (edible weight)	3.4	3.8	2.9	3.1	3.1
Milk and milk products—					
Fluid whole milk (in litres) . .	120.6	114.5	106.6	101.1	104.8
Condensed, concentrated and evaporated milk	4.4	4.1	4.1	4.8	4.9
Powdered milk	6.0	4.9	5.4	5.2	3.6
Infants and invalids' food . . .	1.4	1.5	2.1	1.4	1.1
Cheese (natural equivalent weight)	5.1	5.3	5.2	5.7	5.3
Oils and fats—					
Butter	8.2	7.7	7.2	6.8	5.8
Margarine—Table	1.6	1.7	2.2	3.1	4.7
Other	4.0	4.0	3.8	3.9	3.5
Beverages—					
Tea	2.0	1.9	2.0	1.9	2.0
Coffee(c)	1.2	1.4	1.1	1.5	1.8
Aerated and carbonated waters (in litres)	64.7	63.4	59.6	65.0	68.1
Beer (in litres)	129.5	139.0	140.3	137.4	136.2
Wine (in litres)	9.8	11.0	12.3	13.1	13.6
Spirits (in litres alcohol) . . .	1.2	1.2	1.2	1.1	1.3

(a) In terms of refined sugar; includes the sugar content of syrups, honey, glucose and manufactured foods.
 (b) Includes fresh equivalent of manufactured foods. (c) Coffee and coffee products in terms of roasted coffee.

Apparent consumption

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. Consumption of foodstuffs is measured in general at 'producer' level and, as a result, no allowance is made for wastage before they are consumed. 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 head of population have been derived by dividing the total apparent consumption of each commodity or commodity group in a given year by the mean population of Australia in the same period.

More detailed information on the consumption of foodstuffs is contained in the bulletins *Apparent Consumption of Foodstuffs and Nutrients* (4306.0) and *Apparent Consumption of Tea and Coffee* (4307.0).

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 consumption per head of population.

ESTIMATED SUPPLY OF NUTRIENTS AVAILABLE FOR CONSUMPTION(a) (Per head per year)

<i>Nutrient</i>	<i>Unit</i>	<i>1973-74</i>	<i>1974-75</i>	<i>1975-76</i>	<i>1976-77</i>
Protein—					
Animal	g	60.5	69.6	70.8	71.3
Vegetable	g	33.0	32.2	27.6	26.4
<i>Total</i>	g	93.5	101.8	98.5	97.7
Fat (from all sources)	g	113.0	120.2	120.9	119.8
Carbohydrate	g	423.4	419.4	416.2	415.9
Calcium	mg	962.7	972.2	923.0	912.6
Iron	mg	13.4	15.2	15.7	15.8
Vitamin A (Retinol Activity)	µg	1,205.6	1,541.0	1,551.7	1,588.3
Vitamin C (Ascorbic Acid)	mg	89.4	103.3	98.7	99.4
Thiamin	mg	1.6	1.6	1.5	1.5
Riboflavin	mg	2.9	3.2	3.1	3.1
Niacin	mg	19.0	21.7	22.0	22.7
Energy value	kcal	3,223	3,313	3,309	3,301
Energy value	kJ	13,494	13,877	13,854	13,823

(a) Figures are based on conversion factors calculated from the revised and enlarged edition of 'Tables of Composition of Australian Foods' (Suey Thomas and Margaret Corden, Canberra, 1970).

Land tenure

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 and the List of Special Articles preceding the General Index in this Year Book).

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

LAND TENURES, 1977(a) (Million hectares)

<i>State or Territory</i>	<i>Private lands</i>		<i>Crown lands</i>		<i>Total area</i>
	<i>Alienated</i>	<i>In process of alienation</i>	<i>Leased or licensed</i>	<i>Other(b)</i>	
New South Wales	26.9	1.5	42.9	8.8	80.1
Victoria	13.7	0.1	2.4	6.5	22.8
Queensland	12.7	18.3	129.8	12.0	172.8
South Australia	6.7	0.1	59.9	31.8	98.4
Western Australia	15.5	3.2	100.1	133.8	252.6
Tasmania	2.8	0.2	2.2	1.7	6.8
Northern Territory	0.1	—	82.9	51.6	134.6
Australian Capital Territory(c)	—	—	0.1	0.2	0.2
Australia	78.3	23.3	420.3	246.4	768.4

(a) New South Wales and Northern Territory data are at 30 June 1977; Victoria, Tasmania and the Australian Capital Territory at 30 June 1976; Queensland, South Australia and Western Australia at 31 December 1976. (b) Occupied by Crown; reserved; unoccupied; unreserved. (c) Includes Jervis Bay.

Land utilisation in Australia

The table on Land Tenures in Australia, page 267, shows the proportions of Australia and of the States and Territories which are held under freehold tenure ('alienated or in process of alienation') or leasehold tenure ('leased or licensed'). The total area under tenure differs from the total area of rural 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 RURAL ESTABLISHMENTS: STATES

(Million hectares)

	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust. (incl. A.C.T.)
1973 . . .	68.8	15.8	155.1	65.4	114.0	2.6	78.0	499.8
1974 . . .	68.9	15.5	154.5	64.8	114.7	2.6	79.5	500.5
1975 . . .	68.9	15.2	154.2	63.8	115.6	2.5	79.3	499.6
1976 . . .	68.8	15.1	155.6	63.6	116.3	2.5	78.8	500.7
1977 . . .	66.0	14.5	155.0	63.1	115.2	2.3	75.4	491.5
1978p . . .	65.8	15.0	155.2	63.8	117.1	2.3	76.2	495.4

LAND UTILISATION: AUSTRALIA

(Million hectares)

At 31 March	Area used for crops(a)	Area under sown pastures and grasses	Balance (b)	Total	
				Area of establishments	Percentage of Australian land area (768,400,000 hectares)
1973	14.3	26.1	459.4	499.8	65.0
1974	15.1	27.2	458.2	500.5	65.1
1975	13.8	28.6	457.2	499.6	65.0
1976	14.5	27.7	458.4	500.7	65.2
1977	15.0	26.2	450.3	491.5	64.0
1978p	16.8	25.2	453.4	495.4	64.5

(a) Excludes duplication on account of area double cropped.

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

The total area of rural establishments in 1977-78 constituted 64.5 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 included 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 3.4 per cent of the area of rural establishments and emphasises the relative importance of the livestock industry in Australia—sheep in the warm, temperate, semi-arid lands and beef cattle in the tropics. The diminishing rural labour force (see page 313) 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 special 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 1977-78
(^{'000} hectares)

<i>Year</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>A.C.T.</i>	<i>Aust.</i>
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
1965-66 . . .	3,663	2,517	1,667	2,440	3,513	156	2	3	13,961
1966-67 . . .	5,027	2,738	1,863	2,626	3,568	180	2	4	16,007
1967-68 . . .	4,590	2,208	1,883	2,191	3,592	106	6	2	14,578
1968-69 . . .	5,509	2,529	2,071	2,596	3,839	110	6	3	16,665
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	1,968	1,985	2,312	3,714	67	7	1	14,240
1972-73 . . .	4,328	1,935	1,959	2,084	3,855	80	12	1	14,255
1973-74 . . .	4,628	1,980	1,786	2,451	4,133	74	5	1	15,059
1974-75 . . .	4,090	1,772	1,898	2,257	3,754	67	8	1	13,846
1975-76 . . .	4,285	1,852	2,010	2,116	4,208	60	8	1	14,540
1976-77 . . .	4,520	1,943	2,026	2,036	4,417	65	2	1	15,010
1977-78p . . .	4,990	2,204	2,110	2,569	4,902	69	1	1	16,846

(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 are excluded.

NOTE: From 1970-71 data exclude duplication on account of area double cropped.

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 and sorghum) are grown in all 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 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

Crop	Area ('000 hectares)			Production ('000 tonnes)			Gross value (\$m)		
	1975-76	1976-77	1977-78p	1975-76	1976-77	1977-78p	1975-76	1976-77	1977-78p
Cereals for grain—									
Barley	2,329	2,321	2,811	3,179	2,847	2,392	314	295	212
Grain sorghum	504	532	413	1,124	956	n.y.a.	96	80	n.y.a.
Maize	47	53	49	131	144	n.y.a.	12	13	n.y.a.
Oats	988	995	1,080	1,141	1,072	996	78	74	62
Rice	75	92	91	417	530	432	41	59	n.y.a.
Wheat	8,555	8,956	9,974	11,982	11,667	9,323	12,249	1,051	913
Legumes for grain	192	180	190	69	76	n.y.a.	23	25	n.y.a.
Crops for hay—									
Barley	13	17	18	31	36	31	1	1	n.y.a.
Oats	167	208	226	557	684	615	20	23	n.y.a.
Wheat	47	59	69	138	159	147	4	6	n.y.a.
Crops for green feed, silage—									
Barley	57	57	78	21,959	322	347	436	472	410
Forage sorghum	85	68	67						
Oats	500	464	576						
Wheat	32	39	59						
Sugar cane cut for crushing	257	288	295						
Tobacco	9	9	9	15	16	n.y.a.	51	56	n.y.a.
Cotton	30	35	41	80	83	n.y.a.	38	40	n.y.a.
Peanuts	27	31	28	35	32	n.y.a.	16	14	n.y.a.
Linseed	16	15	44	12	16	28	2	3	n.y.a.
Rapeseed	16		19	12	9	15	2	2	n.y.a.
Safflower	40	13	39	18	6	26	3	1	n.y.a.
Sunflower	137	135	207	80	75	n.y.a.	16	22	n.y.a.
Fruit	100	96	95	-	-	-	269	291	313
Orchard fruit	85	81	80	-	-	-	206	227	n.y.a.
Oranges	}	n.a.		362	322	347	46	52	n.y.a.
Apples				275	302	n.y.a.	74	83	n.y.a.
Pears				140	105	n.y.a.	20	22	n.y.a.
Peaches				79	66	61	18	16	n.y.a.
Berry and other				-	-	-	63	64	n.y.a.
Bananas	8	8	8	97	115	99	40	38	n.y.a.
Pineapples	6	6	6	103	112	117	14	16	n.y.a.
Grapevines	70	71	73	709	728	n.y.a.	102	129	128
Vegetables	106	108	107	-	-	-	275	309	314
Potatoes	34	34	34	696	728	n.y.a.	91	89	n.y.a.
Total, all crops (excluding pastures)	14,540	15,010	16,846	-	-	-	3,121	3,057	2,861

In the tables that follow, crop statistics are shown in these groupings: wheat, coarse grains, rice, oilseeds, sugar, vegetables, fruit, grapevines and other crops such as tobacco, mushrooms, nurseries and fodder crops. A further grouping shows farm consumption of cereals, etc., artificial fertilisers, aerial agriculture and irrigation from page 290.

Cereal grains

In Australia, cereals are conveniently divided into autumn-winter-spring growing ('winter' cereals) and spring-summer-autumn growing ('summer' cereals). Winter cereals such as wheat, oats, barley and rye are usually grown in rotation with some form of pasture such as subterranean clover, medics and clover. In recent years, alternative winter crops such as rapeseed, field peas and lupins have been introduced into cereal rotation in areas where they had not previously been grown. Rice, maize, sorghum and the millets are summer cereals and, except for rice, are also used for stock feed. In Northern Queensland 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 5 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.				
	\$m	\$m	\$m	\$m	per cent	per cent
1973-74	1,715.0	747.4	6,412	6,707	26.7	11.1
1974-75	1,701.3	1,466.4	5,878	8,457	28.9	17.3
1975-76	1,798.2	1,376.4	6,175	9,340	29.1	14.7
1976-77	1,583.3	1,264.9	6,774	11,376	23.4	11.1
1977-78p	1,329.0	1,265.8	6,876	12,248	19.3	10.3

(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 Sector—Part I, Structure of Operating Units (7102.0), *Rural Land Use: Improvements and Agricultural Machinery* (7103.0), *Agricultural Statistics of the A.C.T.* (7104.0), *Agricultural Statistics of the N.T.* (7105.0), *Principal Agricultural Statistics: First Estimates* (7201.0), *Principal Agricultural Statistics: Second Estimates* (7202.0), *Crop and Fruit Statistics (Preliminary)* (7301.0), *Crop Statistics* (7302.0), *Cereal Grains: Estimates of Intended Sowings* (7304.0), *Cereal Grains: Estimates of Area Sown* (7305.0), *Cereal Grains: Estimates of Production* (7306.0), *Wheat Statistics* (7307.0), *Gross Value of Agricultural Commodities Produced: First Estimates* (7501.0), *Value of Agricultural Commodities Produced: Second Estimates* (7502.0), *Value of Agricultural Commodities Produced* (7503.0).

Wheat

Wheat is grown extensively in all States except Tasmania, and is the most important crop in Australia in terms of area, production and value of exports.

The present limits of the wheat belt have been established after considerable fluctuations over the last half century. Prominent factors in the early development of the industry were the increase in population following the discovery of gold and the redistribution of labour after the surface gold had been won. The economic depression of 1893 interrupted its progress, but its subsequent recovery was assisted by the invention of mechanical appliances, the use of superphosphate as an aid to production, and the introduction of new and more suitable varieties of wheat for Australian conditions. The establishment of closer settlement schemes and the settling of returned soldiers and others on the land were additional factors in its expansion.

Two further factors which have contributed to the development of the industry are the organisation of overseas marketing and of research. As a large proportion of the wheat crop is exported, wheat marketing plays an important role. The Australian Wheat Board 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. The *Wheat Industry Stabilization Act* 1948 reconstituted the Australian Wheat Board to administer the first stabilisation plan, and the Board maintained the *Wheat Industry Stabilization Acts* 1954, 1958, 1963-66, 1968-73 and 1974-75 for the purpose of administering the second, third, fourth, fifth and sixth Five Year Stabilisation Plans. Details of the more recent plans were published in Year Book numbers 40, 44, 48, 54, 55 and 61.

World wheat

Under the influence of high prices and expansionary production policies, world producers have in recent years attempted to expand production to cope with a critically low level of wheat stocks and increasing wheat consumption. Forecasts of longer term prospects in the world wheat economy are extremely hazardous in view of the critical influence and unpredictability of the weather but, because of the need for longer term planning, wheat producers must consider the more important factors

likely to influence future development. The international wheat market is partly residual and sensitive to changes in the overall world supply/demand situation, and producers in Australia and the other main exporting countries need to react rapidly if they are to avoid surplus production, the building of excess stock and, hence, depressed prices.

Wheat delivery quota plan

In March 1969, the Australian Wheat Growers Federation put forward proposals for the allotment of quotas on wheat deliveries designed to bring marketable supplies of wheat more into line with available outlets. The proposals became effective following the record 1968-69 harvest of 14.8 million tonnes. Quotas were subject to annual review and, while wheat in excess of a quota was received if storage space was available, 'quota wheat' received preference. Only deliveries made within the established quotas received a first advanced payment. In an effort to stimulate output during the 1975-76 season (and so take advantage of the favourable international market situation), wheat delivery quotas were suspended and the first advanced payment to growers was announced well before planting. Producers reacted to the overall market conditions by increasing their plantings. A summary of quota allocation is given in Year Book No. 61, pages 842-3.

Wheat varieties and standards of wheat

The breeding of 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, better average yields, and a greater uniformity of sample, with which have accrued certain marketing advantages as well as an improvement in the quality of wheat grown. A detailed table of wheat varieties sown appears in the annual bulletin *Wheat Statistics* (7307.0). 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 wider rotations, increased mechanisation and superphosphate-increased pastures.

The quality of wheat (its flour yielding capacity, protein content, hardness and physical dough properties) is governed by a combination of the wheat variety and the climatic and growing characteristics of its region of origin. Since 1966-67, Australian wheat has been marketed under distinct classification. This practice of segregation has been widely employed to enhance the marketability of Australian wheat, and in recent years up to twenty-two separate grades have been made available for export. Within the Australian wheatbelt there exist wide ranges of soil fertility, rainfall, day length and ambient temperature, and, by developing varieties which complement the growing conditions, it has been possible to produce varieties with qualities suitable for virtually every commercial application. Particulars of Australian standard weights for the different grades of wheat may be found in the annual bulletin *Wheat Statistics* (7307.0).

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 Stabilisation—I.A.C. Inquiry

The Industries Assistance Commission was asked to report on whether assistance should be given to the wheat industry to stabilise its returns after the expiry of the Sixth Wheat Industry Stabilisation Plan on 30.9.79. It found that the Plan in its present form was of little value because it had a negligible impact on stability of prices or income received by growers. It recommended that after the 1978-79 season, Commonwealth Government assistance should be provided to growers for a limited period only when market realisations fell to levels which were low in relation to prices of the recent past without any grower contributions. It also recommended that the Australian Wheat Board retain complete control of the marketing of export wheat but that private traders be allowed to buy and sell on the domestic market.

High Court Action

In an action brought before the full High Court of Australia, four stock-feed traders contested the validity of State and Commonwealth Wheat Stabilisation legislation which gave the Board the right to demand all wheat be delivered to it rather than be sold interstate by the traders themselves. It was argued that this contravened Section 92 of the Commonwealth of Australia Constitution Act which guarantees freedom of trade between the States. The High Court ruled (September 1978) that the Wheat Industry Stabilisation scheme as provided in the various Acts was constitutionally valid, notwithstanding Section 92. It was held that the proper regulation of trade among the States does not necessarily contravene Section 92 even if the regulation has within it an element of prohibition.

WHEAT: AREA, PRODUCTION AND RECEIVALS

Season	Area		Production		Australian Wheat Board receipts(a)
	For grain	All purposes	Grain	Gross value	
	'000 ha	'000 ha	'000 tonnes	\$m	'000 tonnes
1973-74	8,948	9,066	11,987	1,311.9	11,200
1974-75	8,308	8,406	11,357	1,256.4	10,704
1975-76	8,555	8,633	11,982	1,249.2	11,266
1976-77	8,956	9,054	11,667	1,050.8	10,932
1977-78p	9,974	10,102	9,323	913.0	(b)8,535

(a) Australian Wheat Board receipts are for the season commencing 1 December; production data is for the year ending 31 March. (b) Receipts to 4 October 1978.

WHEAT FOR GRAIN: AREA AND PRODUCTION, BY STATE

	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	Australia
AREA ('000 hectares)							
1972-73	2,618	1,087	471	986	2,437	4	7,604
1973-74	2,883	1,258	395	1,432	2,978	3	8,948
1974-75	2,646	1,141	489	1,220	2,810	2	8,308
1975-76	2,774	1,073	576	958	3,171	2	8,555
1976-77	3,116	1,103	582	839	3,314	2	8,956
1977-78p	3,379	1,291	607	1,091	3,604	1	9,974
PRODUCTION ('000 tonnes)							
1972-73	1,954	1,405	405	815	2,003	8	6,590
1973-74	3,962	1,490	526	1,795	4,211	4	11,987
1974-75	3,809	2,091	692	1,486	3,277	2	11,357
1975-76	4,310	1,578	830	1,139	4,122	2	11,982
1976-77	5,141	1,647	794	832	3,249	4	11,667
1977-78p	3,846	1,445	574	511	2,945	2	9,323

A map showing the distribution of areas growing wheat for grain throughout Australia in 1962-63 appears on page 1013 of Year Book No. 50. Similar maps showing the distribution of wheat areas in 1924-25, 1938-39, 1947-48, and 1954-55 appeared respectively in Year Books No. 22, page 695; No. 34, page 451; No. 39, pages 977-8; and No. 43, page 833. A graph showing production of wheat from 1940-41 appeared in Year Book No. 61, page 756.

PRODUCTION AND DISPOSAL OF WHEAT FOR GRAIN

('000 tonnes)

Year ended 30 November	1972-73	1973-74	1974-75	1975-76	1976-77p
Production	6,590	11,987	11,357	11,982	11,667
Less balance held on farms for—					
Seed usage	547	505	511	539	604
Feed and other uses	604	282	143	177	131
Gross receipts	5,439	11,200	10,704	11,266	10,932
Opening stocks(a)	1,448	478	1,882	1,658	2,665
Total availability for sale	6,887	11,678	12,586	12,924	13,597
Export shipments—					
Wheat	3,855	7,124	8,254	7,962	9,502
Flour and wheat products(b)	282	294	296	271	261
Domestic sales—					
Flour	1,272	1,362	1,334	1,304	1,261
Stockfeed	923	911	1,006	620	380
Breakfast feeds	47	46	54	68	55
Total disposal	6,379	9,737	10,944	10,225	11,459
Availability (—) Disposals	508	1,941	1,642	2,699	2,138
Closing stocks	478	1,882	1,658	2,665	2,137
Apparent wastage	30	59	-16	34	1

(a) Includes the wheat equivalent of flour. (b) In terms of wheat.

NOTE: The Australian Wheat Board is the source of receipts, export shipments, domestic sales data, and opening and closing stocks; the ABS records other data.

Other wheat statistics

Prices. The *home consumption price* is the price of Australian Standard White (ASW) bulk wheat f.o.r. (ports) sold by the Australian Wheat Board on the home market. It includes a loading of a variable amount to meet freight charges on wheat shipped to Tasmania. Prior to 1973-74 the home consumption price varied according to the end usage, viz. human consumption, manufacture of flour for industrial use, basic stockfeed or stockfeed where the purchaser undertook to buy the entire season's requirements from the Wheat Board.

The *monthly export price* is the Wheat Board's basic export selling price for ASW bulk wheat f.o.b. Much of the wheat exported is sold under contract for delivery over lengthy periods and these prices do not necessarily reflect the prices received for all wheat shipped during those months.

For details of these price series see earlier issues of the Year Book and the latest issue of *Wheat Statistics* (7307.0).

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 *Wheat Statistics* (7307.0).

Wheat exports

International Wheat Agreement. Details of the first and second International Wheat Agreements operative from 1 August 1949 to 31 July 1953, and from 1 August 1953 to 31 July 1956 respectively were published in Year Book No. 42, pages 840-1 or previous issues. Details of the third, fourth and fifth International Wheat Agreements which covered the periods from 1 August 1956 to 31 July 1959, 1 August 1959 to 31 July 1962 and 1 August 1962 to 31 July 1968 were published in Year Books Nos.—43, page 836; 48, page 906; and 55, page 836, respectively.

Details of the third International Wheat Agreement, which came into force on 1 July 1971 and which was extended four times by protocol to expire on 30 June 1979 or earlier if the Wheat Trade Convention reaches a new agreement before then, will be found in the latest issue of *Wheat Statistics* (7307.0).

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

Year	Wheat for grain: Exports		Total Australian exports— all produce: Value f.o.b.	Export value of wheat for grain as a percentage of total Australian exports
	Quantity	Value f.o.b.		
	'000 tonnes	\$m	\$m	per cent
1973-74	5,128	517.1	6,707.0	7.7
1974-75	7,860	1,034.4	8,456.9	12.2
1975-76	7,567	922.5	9,339.6	9.9
1976-77	7,945	863.5	11,376.4	7.6
1977-78p	10,966	1,013.2	12,248.4	8.3

(a) These statistics exclude re-exports.

EXPORTS OF WHEAT AND FLOUR

Country of consignment	Quantity ('000 tonnes)			Value f.o.b. (\$m)		
	1975-76	1976-77	1977-78p	1975-76	1976-77	1977-78p
WHEAT						
Bangladesh	98.0	109.5	146.5	11.5	10.2	14.3
China—excl. Taiwan Province	1,082.9	745.2	4,603.1	120.2	74.1	376.4
Taiwan Province only	65.2	54.5	82.7	7.9	6.2	8.1
Cuba	—	—	122.5	—	—	13.8
Egypt, Arab Republic of	1,015.6	1,002.5	1,246.5	143.2	101.9	115.7
Indonesia	294.2	528.9	568.4	34.1	55.0	57.9
Iraq	302.7	524.2	537.3	53.4	61.3	56.8
Japan	1,065.4	1,075.9	1,158.0	124.3	114.9	116.0
Kuwait	135.7	143.2	178.8	15.7	16.0	18.1
Malaysia	316.8	339.7	376.9	36.6	35.4	37.8
Pakistan	120.8	15.8	229.9	14.7	1.5	21.4
Saudi Arabia	37.1	91.3	125.8	4.4	10.4	15.4
Singapore	127.6	208.8	219.6	13.4	20.7	21.1
Sri Lanka	100.1	114.3	102.7	12.9	12.4	9.7
USSR	1,309.6	363.1	225.1	166.0	48.5	27.2
Yemen Arab Republic	178.5	272.7	250.1	23.0	30.8	27.2
Other countries	1,316.9	2,355.5	792.3	141.2	264.2	76.3
Total	7,567.1	7,945.1	10,966.2	922.5	863.5	1,013.2
FLOUR(a)						
Burma, Socialist Rep.	—	3.9	—	—	0.7	—
Mauritius	16.0	22.2	18.3	2.9	4.0	3.1
New Caledonia	1.1	1.5	2.7	0.2	0.3	0.5
Papua New Guinea	19.8	22.1	16.5	3.7	3.9	3.0
Philippines	3.9	4.4	6.2	0.7	0.7	1.1
Samoa (Western)	2.8	3.5	3.9	0.5	0.6	0.6
Saudi Arabia	6.3	4.1	2.8	1.0	0.6	0.4
Solomon Islands	1.2	1.6	2.0	0.2	0.3	0.3
Sri Lanka	94.0	9.9	9.5	15.9	1.7	1.7
Tonga	2.3	3.3	5.1	0.4	0.6	0.8
United Arab Emirates	40.0	42.0	17.3	7.6	7.0	2.8
Vietnam	25.7	32.2	32.3	4.3	5.1	5.2
Other countries	14.4	19.2	16.6	2.7	3.1	2.8
Total	227.5	169.9	133.2	40.1	28.6	22.3

(a) Plain, white and self-raising flour, sharps and wheatmeal for baking.

WORLD WHEAT: AREA AND PRODUCTION

Source: International Wheat Council, *World Wheat Statistics* (various issues)

Unit: Area in million hectares; production in million tonnes

	1972-73		1973-74		1974-75		1975-76		1976-77	
	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.	Area	Prod.
Europe	27.7	82.0	26.5	82.2	27.3	90.7	25.3	76.8	26.8	85.3
E.E.C. (9)	11.1	41.4	10.8	41.4	11.2	45.4	10.5	38.0	11.2	39.2
U.S.S.R.	58.5	85.8	63.2	109.7	59.7	83.9	62.0	66.2	59.5	96.9
North & Central America	28.5	58.4	32.0	65.2	36.2	64.6	38.4	77.5	40.8	85.3
Canada	8.6	14.5	9.4	16.5	8.9	13.3	9.5	17.1	11.3	23.6
U.S.A.	19.1	42.1	21.9	46.6	26.5	48.5	28.6	57.8	28.6	58.3
South America	8.6	9.9	6.2	10.0	7.6	10.7	9.6	11.8	11.4	16.2
Asia	75.9	94.2	76.6	89.2	75.7	89.7	76.5	100.3	79.9	110.9
China(a)	29.1	35.0	28.7	36.0	29.0	37.0	30.0	41.0	31.0	43.0
India	19.1	26.4	19.5	24.7	18.6	21.8	18.0	24.2	20.5	28.8
Iran	5.5	4.5	5.9	4.6	5.9	4.7	6.0	5.5	5.6	6.0
Pakistan	5.8	6.6	6.0	7.4	6.1	7.6	5.8	7.7	6.1	8.7
Turkey	8.7	12.2	8.9	10.0	8.8	11.0	9.3	14.8	9.3	16.5
Africa	9.6	9.9	9.3	8.4	8.8	8.3	8.0	9.1	9.0	10.6
Oceania	7.7	7.0	9.0	12.2	8.4	11.5	8.7	12.3	9.1	12.1
Australia	7.6	6.6	8.9	12.0	8.3	11.4	8.6	12.0	9.0	11.7
Total world	216.7	347.1	222.9	376.8	223.7	359.4	228.5	354.1	236.5	417.3

(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 9 members of the E.E.C. are: Belgium, Denmark, France, Federal Republic of Germany, Ireland, Italy, Luxembourg, Netherlands and the United Kingdom.

Coarse grains

In the late sixties and early seventies, restrictions on wheat deliveries and low prices for output from sheep enterprises resulted in a resurgence of interest in coarse grain crops and the newer oilseed crops. Expanded plantings and productions resulted, but this expansion tended to fall off with improvements in the market prospects for wheat, wool and meat.

Oats

Oats is 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. It has excellent feed value and produces a greater bulk of growth than other winter cereals; it needs less cultivation and responds well to superphosphate and nitrogen. Oats has a variety of uses—as a pasture plant when rough sown into heavy stubble or heavy clover pastures, as a fodder crop when mown and baled or cut for chaff, or as a grain when stripped (the stubble then being grazed off). The grain is sold through voluntary pools in Victoria, South Australia and Western Australia. In New South Wales, a State Statutory Marketing Board was set up in 1971.

Oats is 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	Production			Exports	
	Area	Quantity		Quantity	Value f.o.b.
		'000 tonnes	Gross value		
	'000 ha	'000 tonnes	\$m	'000 tonnes	\$m
1973-74	1,182	1,107	66.8	184	13.6
1974-75	897	874	59.6	236	19.8
1975-76	988	1,141	77.8	359	32.9
1976-77	995	1,072	74.4	364	33.4
1977-78p	1,080	996	62.0	218	19.6

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 on pasture land worked up early in the year of sowing. In this way it forms an important phase in the rotation of crops. Like

oats, it may also be sown for fodder production or for grain. 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 (South Adelaide Plains, Eyre and Yorke Peninsulas), but considerable quantities are grown also in New South Wales, Victoria, Queensland and Western Australia.

Barley Boards

There are State statutory marketing boards operating in New South Wales, Victoria, Queensland and South Australia. The Western Australian Barley Marketing Board was abolished at the end of 1975 and the marketing of barley in Western Australia is now the responsibility of the Grain Pool of Western Australia. Pooled returns from sales are distributed to growers at standard rates for the individual grades and varieties delivered. The Victorian and South Australian crops are marketed by the Australian Barley Board (a joint board established by the two State Governments), and the Queensland and New South Wales Boards and the Grain Pool of Western Australia handle the crops of their respective 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
1972-73 . . .	2,140	1,441	286	1,727	90.9	804	38.5
1973-74 . . .	1,894	2,076	322	2,397	190.5	808	68.5
1974-75 . . .	1,826	2,272	243	2,515	256.9	1,760	186.7
1975-76 . . .	2,329	2,872	307	3,179	313.9	1,954	199.8
1976-77 . . .	2,321	2,627	220	2,847	294.8	2,100	222.5
1977-78p . . .	2,811	2,268	124	2,392	212.0	1,341	123.6

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.

The growing of grain sorghum on an extensive scale did not attain a position of prominence until the last two decades. Operations are highly mechanised and rapid increases in production have resulted in a substantial increase in exports. 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 sorghums. In Queensland, grain sorghum production is concentrated in the Burnett and Dawson-Callide areas and in the Central Highlands. In New South Wales, the north-western slopes and plains are the main areas.

In Central Queensland, orderly marketing of the crop is arranged through the Central Queensland Grain Sorghum Marketing Board and in Southern Queensland the Grain Sorghum Export Committee of the Queensland Grain Growers Association. A State statutory marketing board commenced operations in New South Wales with the marketing of the 1972 crop.

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
1973-74	539.7	1,060.6	80.4	747.9	54.3
1974-75	511.1	900.8	76.2	855.8	73.3
1975-76	504.0	1,123.7	96.1	815.0	71.8
1976-77	532.1	956.0	80.3	829.2	76.3
1977-78p	412.8	n.y.a.	n.y.a.	384.5	35.5

Maize

Like sorghum, maize is a summer cereal demanding specific soil and climatic conditions. For grain, growing is almost entirely confined to the south-east regions and Atherton Tablelands of Queensland and the north coast and northern tablelands of New South Wales. On the Atherton Tablelands in Queensland, and generally in New South Wales and Victoria, the cereal provides a stock feed for dairy cattle, fat stock, poultry and pigs. In times of drought it is used also as a sheep feed. In all States except South Australia, however, this crop is grown to some extent for green feed and silage, particularly in connection with the dairying industry. There is practically no difference between grain and fodder varieties.

There has been a continuing increase in recent years in the growing of maize from hybrid strains of seed. Varieties have been developed which are capable of producing yields per hectare considerably in excess of the older open pollinated types. The expansion in areas sown to hybrid maize has led to a parallel development in the specialised industry of growing hybrid strains for seed.

A State statutory board controls marketing in the Atherton Tablelands area of Queensland. In New South Wales in 1975 growers voted for the formation of a marketing board.

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
1973-74	45.6	105.8	9.0	2.7	0.2
1974-75	51.4	133.3	11.7	1.2	0.2
1975-76	46.8	131.5	12.2	10.8	1.0
1976-77	53.0	144.2	13.1	33.0	2.8
1977-78p	48.5	n.y.a.	n.y.a.	11.1	1.6

Rice

Rice is cultivated generally between latitudes 49° N and 35° S wherever sufficient water is available and where low temperatures do not limit growth and development. The principal rice-growing areas are confined almost entirely to Asia. In Australia, rice was first grown commercially in the Murrumbidgee Irrigation Area in 1924-25, and it was not long before a surplus became available for export. In the late 1960s, irrigation in the Burdekin area of northern Queensland enabled significant plantings to be made with two rice-growing seasons—a dry winter crop and a wet summer crop. In both the M.I.A. and the Burdekin Delta, limited irrigation water controls rice plantings.

RICE: AREA, PRODUCTION AND EXPORTS

Year	Area	Production		Exports	
		Quantity	Gross value	Quantity	Value f.o.b.
	'000 ha	'000 tonnes	\$m	'000 tonnes	\$m
1973-74	67.5	408.8	50.5	136.6	28.6
1974-75	75.6	388.3	35.9	164.3	43.0
1975-76	74.8	417.0	41.2	218.0	51.4
1976-77	92.0	529.8	59.4	256.5	57.1
1977-78p	90.9	481.6	n.y.a.	277.5	66.6

Oilseeds

The restrictions on wheat deliveries and low wool and meat prices in the late 1960s and early 1970s increased interest in the newer oilseed crops such as rapeseed. This was aided by a buoyant world market for oilseeds.

In Australia, sunflower, soybeans, rapeseed, linseed and safflower are grown specifically for crushing. These crops are located in the grain areas of several States and have shown spectacular increases in recent years. Peanuts, cottonseed and, to a lesser extent, maize are grown for other purposes, but oil is a by-product.

Linseed. Varieties of the summer-growing annual flax plant have been developed for the production of linseed which, when crushed, yields an industrial oil used in the manufacture of paint and linoleum. The introduction of synthetics into these fields has reduced the demand for linseed oils.

The main producing areas are the wheat belt of New South Wales, western and north-eastern districts of Victoria, the Esperance district of Western Australia, the Darling Downs in Queensland and the south-eastern district of South Australia.

Rapeseed. This is obtained from several varieties of brassica which are cultivated in temperate and warm temperate zones for their oil-producing seed. Rapeseed oil is used mainly as a salad and cooking oil with some minor amounts being utilised for industrial purposes. A protein meal is derived as a by-product in the crushing process. Rapeseed is winter growing and is produced mainly in the higher rainfall areas of southern New South Wales, Victoria, South Australia and Western Australia. From virtually nil production in 1967-68 it rose to a peak of 55,000 tonnes in 1971-72 but declined rapidly due partly to blackleg disease in Western Australian crops.

Safflower. Safflower is best cultivated either in the warm temperate zones or as a winter crop in the tropical or sub-tropical regions, on moderately fertile, weed-free, clay or sandy loams. Adequate moisture is required up to the flowering stage, after which it is relatively drought resistant. The soil preparation and sowing techniques are similar to those employed for small grains; it is usually harvested by headers when the seed is hard and dry. The oil, produced by crushing, is used in the manufacture of margarine, soaps, paints, varnishes, enamels, and textiles.

Sunflower. Sunflowers are summer growing annuals produced mainly under raingrown conditions in the three eastern mainland States of Australia. The cultivation of sunflowers has developed rapidly in recent years to make it the major oilseed crop.

The seed for which the plant is cultivated yields a high quality dual purpose oil and a by-product protein meal used for stockfeed. Main uses for the oil are in the manufacture of margarine, as a salad and cooking oil, and for industrial purposes.

Soybeans. The soybean is cultivated widely throughout the world in temperate zones where hot damp summers provide adequate growing conditions. Although large quantities of beans are directly consumed in countries such as Japan, China (excluding Taiwan Province) and Indonesia, the greater part of world output is crushed for meal and oil. Major soybean producing countries are the United States of America, Brazil and China (excluding Taiwan Province).

The greater part of Australian production takes place in the Darling Downs, Burnett and Lockyer districts of Queensland and in the Moree and Gunnedah districts of New South Wales.

Trends in the production of these specialised oilseed crops are closely tied to development in markets and prices not only for oilseeds but also for wheat, wool and meat. In 1975-76, due to lower world and domestic market prices and an increase in oil imports, the industry requested greater import protection. The Industries Assistance Commission is reviewing the assistance requirements of the fats and oils production sector as well as the seed producing industry. While any recommendations will have significant influence on the development of the oilseed industry, increased attention is being paid to alternative marketing arrangements and to research to improve technical and economic efficiency.

Peanuts. Peanuts, or groundnuts, are a sub-tropical legume (and hence summer growers), the pods of which mature beneath the surface of the soil. They thus require well drained, light textured soils. At harvest the plant is pulled, wind-rowed, field-cured for two to four weeks, and then threshed to recover the pods. The main products of the industry are nuts, peanut oil and oil cake.

In Australia, peanuts for crushing for oil arise as a by-product in the production of nuts for edible purposes. The oil is used extensively as a cooking and salad oil and in the manufacture of margarine.

The production of peanuts in Australia is confined mainly to Queensland, although small quantities are grown in New South Wales, the Northern Territory and, in some years, Western Australia.

Lupins. The lupin is an annual legume with a growing season closely following that of winter cereals. It prefers well drained soil but is otherwise fairly adaptable. In the past a small amount has been grown for grazing but a recent rapid expansion has followed the development in Australia of lupins with alkaloid-free seed. The seed has a high protein content and is finding use as a substitute for soya protein in human and animal food preparations. The main producing area is in the south-west of Western Australia.

RURAL INDUSTRY
SELECTED OILSEED CROPS: AREA, PRODUCTION AND GROSS VALUE

Year	<i>Specialised</i>				<i>Other</i>			
	<i>Linseed</i>	<i>Rapeseed</i>	<i>Safflower</i>	<i>Sunflower</i>	<i>Soybeans</i>	<i>Peanuts</i>	<i>Cotton(a)</i>	<i>Lupins</i>
AREA ('000 hectares)								
1973-74 . .	17.8	16.8	12.3	150.6	40.8	25.9	41.7	66.6
1974-75 . .	35.6	11.8	36.2	209.5	45.9	24.1	38.5	124.6
1975-76 . .	15.7	15.9	39.8	136.9	26.3	27.3	29.8	139.3
1976-77 . .	15.3	7.7	12.9	134.6	34.6	31.0	35.3	113.2
1977-78p . .	44.2	19.1	38.9	207.0	48.3	28.1	40.7	80.6
PRODUCTION ('000 tonnes)								
1973-74 . .	14.3	10.6	6.9	84.3	62.5	29.2	86.4	51.2
1974-75 . .	33.0	8.5	30.5	113.4	73.7	32.0	103.3	87.8
1975-76 . .	12.2	11.9	18.2	80.4	44.6	35.5	80.1	103.9
1976-77 . .	16.4	8.5	6.3	74.9	55.2	31.9	82.8	32.9
1977-78p . .	27.9	14.7	25.9	n.y.a.	n.y.a.	n.y.a.	n.y.a.	32.9
GROSS VALUE (\$ million)								
1972-73 . .	1.0	2.9	0.5	15.4	5.4	10.5	32.6	
1973-74 . .	3.1	1.5	1.0	19.4	11.2	10.9	26.6	
1974-75 . .	7.5	1.9	7.5	24.0	13.2	12.0	29.3	n.a.
1975-76 . .	2.1	1.9	2.7	15.7	7.2	15.8	37.5	
1976-77 . .	3.4	1.5	1.4	21.5	14.7	14.4	39.8	

(a) Additional data is shown below.

Cotton. This annual shrub requires a hot climate and inter-row weed control. Lint (long fibres) is extracted from the seed cotton in the ginneries and is used for yarn. The residue, consisting of linters (short fibres), kernels and hulls (outer seed coat), is treated in oil mills. Linters are used in the manufacture of felts and other materials where fibre length is of little importance. The kernels, when crushed, produce an oil which is used for food and for industrial purposes. The residual meal is a useful high protein stockfeed; the hulls may be used as fuel.

Apart from a few thousand hectares in Queensland, Australia's cotton crop is grown under irrigation. Most of the country's cotton is grown in the Namoi and Macquarie valleys in New South Wales with water provided from the Keepit and Burrendong dams. Cotton introduced into the Ord River area of Western Australia in 1963 had failed by 1975 due to rising production costs and insect infestation. Australian production currently satisfies all the requirements of local mills for short and medium staple cotton and should, in the future, supply the comparatively small quantities of longer staple combing cottons currently imported.

COTTON: AREA, PRODUCTION AND EXPORTS

Year	<i>Seed cotton (a)</i>			<i>Cotton seed</i>	
	<i>Area</i>	<i>Quantity</i>	<i>Gross value</i>	<i>Quantity</i>	<i>Export quantity</i>
	'000 ha	'000 tonnes	\$m	'000 tonnes	'000 tonnes
1972-73	43.6	96.6	32.6	51.3	6.3
1973-74	41.7	86.4	26.6	49.9	4.0
1974-75	38.5	103.3	29.3	53.8	3.3
1975-76	29.8	80.1	37.5	40.7	-
1976-77	35.3	82.8	39.8	46.6	-
1977-78p	40.7	n.y.a.	n.y.a.	(b) 59.7	n.y.a.

(a) Before ginning.

(b) Estimated by the Bureau of Agricultural Economics.

Sugar

The growing of sugar cane is restricted to the east coast (from Mossman in northern Queensland south to the Clarence River in northern New South Wales) which has suitable soil and where the average rainfall is over 1000 mm per year, or where irrigation water is available. Queensland accounts for 95 per cent of Australia's cane crop, most of which grows in the tropical zone where sugar is a major industry and source of employment. Cane farms average about 45 hectares.

Australia is the world's third largest exporter of raw sugar. It has a reputation as a reliable supplier and has always fulfilled its quota obligations under the system of quotas, which can be adjusted according to the availability of markets and the commitments under the various international marketing arrangements to which Australia has been a party. Each of the thirty-four mills is assigned a quota of sugar which is translated into cane quotas for growers.

The organisation of the industry is complex: the industry is subject to a degree of supervision by the Federal and Queensland governments, but is largely self-governing. The price of refined sugar for sale is fixed by agreements between the two regulating governments, with the Queensland government controlling raw sugar production and contracts for refining of home consumption needs, and arranging for export marketing of raw sugar.

The Australian sugar industry was the first in the world to introduce mechanical cultivation and harvesting techniques. By 1964 the entire industry was converted to bulk handling. Continuing improvements in bulk handling equipment have substantially increased the efficiency in bulk handling installations. The total storage capacity of the six Australian bulk sugar terminals is nearly one and a half million tonnes—the largest storage facilities in the world.

Production. Climatic conditions in some areas in New South Wales are such that the crop matures in from 20–24 months, whereas in Queensland a period from 12–16 months is sufficient. Allowance should be made in interpreting the figures below for the disparity in the maturing periods in the respective States.

SUGAR CANE: AREA, PRODUCTION AND YIELD

Year	New South Wales					Queensland				
	Sugar cane			Raw sugar		Sugar cane			Raw sugar	
	Area harvested	Production	Yield	Quantity	Yield	Area harvested	Production	Yield	Quantity	Yield
	'000 ha	'000 tonnes	t/ha	'000 tonnes	t/ha	'000 ha	'000 tonnes	t/ha	'000 tonnes	t/ha
1973–74	9.9	999.5	100.8	121.1	12.2	215.9	18,278.5	84.7	2,405.0	11.1
1974–75	9.9	996.7	100.6	121.0	12.2	243.2	19,421.1	79.9	2,727.5	11.2
1975–76	11.0	889.7	80.8	104.1	9.5	245.8	21,068.9	85.7	2,751.4	11.2
1976–77	11.6	1,074.2	92.6	132.3	11.4	276.6	22,269.4	80.5	2,973.4	10.8
1977–78p	14.7	1,162.4	79.0	n.y.a.	n.y.a.	280.4	22,330.8	79.6	n.y.a.	n.y.a.

The average yields of sugar per hectare has increased to 11 tonnes owing to the development of new varieties and improved practices.

For many years Australia sold its sugar in each of three distinct market categories—the domestic market, sales under formal agreement (Commonwealth Sugar Agreement and the U.S. Sugar Act), and the residual world free market. Following international failure to regulate and stabilise world sugar market prices, the loss of the United Kingdom to the EEC and the expiry of the U.S. Sugar Act, the industry developed long-term export contracts with the Near East. These long-term contracts and the domestic market provide secure outlets for about 65 per cent of the industry's capacity, the balance of the export sugar going on the free market.

SUGAR: AREA, PRODUCTION, EXPORTS AND CONSUMPTION

Year	Area harvested	Production			Exports		Apparent consumption in Australia(a)	
		Sugar cane		Raw sugar	Raw and refined sugar		Total	Per head
		Quantity	Gross value		Quantity	Value f.o.b.		
	'000 ha	mil. tonnes	\$m	mil. tonnes	mil. tonnes	\$m	'000 tonnes	kg
1973–74	225.9	19.3	218.9	2.5	1.8	222.3	664.5	49.3
1974–75	253.1	20.4	490.7	2.8	2.0	644.5	672.5	49.1
1975–76	256.8	22.0	435.6	2.9	2.0	569.7	708.2	51.1
1976–77	288.2	23.3	472.2	3.1	2.6	637.5	690.8	49.4
1977–78p	295.2	23.5	410.0	n.y.a.	2.5	536.6	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.

A brief outline of the development of the industry was included in earlier issues of the Year Book (see No. 38, page 985). In its latest *Situation and Outlook* paper, the Bureau of Agricultural Economics drew attention to the 1977 negotiation of a new International Sugar Agreement (ISA). To

apply for five years from 1 January 1978, the Agreement was negotiated against a background of large world stocks and the prospect of continuing depressed market prices. Consumption of sugar is relatively unresponsive to price changes but changes in the availability of sugar can lead to large price fluctuations. World sugar production currently exceeds consumption and world prices are consequently at depressed levels. There is little incentive for individual countries to reduce production to realise higher prices.

The ISA provides for an export supply control mechanism with special stock holding arrangements which come into operation at pre-determined price levels. The extent of the supply controls stipulated for member countries and the provisions for quantities to be stockpiled should help to reduce the current heavy supplies. Details of other sugar Agreements and marketing arrangements will be found in Year Book No. 61, page 843.

Vegetables

Vegetables for human consumption

The wide range of climate in Australia enables most vegetable varieties to be grown in some part of the country. The area sown to vegetables reached a peak of over 200,000 hectares during the last year of the Second World War, but has remained static at around 108,000 hectares since 1970. However yields from most vegetable crops have increased, due in part to irrigation and in part to the control of diseases and insect pests.

Because of the wide climatic range, 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.

Seed certification schemes or approvals which operate in most States provide supplies of seed. In Australia, potatoes are used almost entirely for human consumption or seed. Approximately 25 per cent of Australian potato consumption is in a processed form and this proportion is rising. The main processed potato products are crisps, frozen chips, dehydrated granule and flake, soup, baby foods, salads and canned potatoes.

Potato marketing. The majority of table potatoes are marketed through potato merchants and agents. In some instances they are marketed through a primary merchant and then a secondary merchant (wholesale). In South Australia and Western Australia, potato marketing is controlled by potato marketing boards.

Overall, probably more than half of the potatoes used for processing are purchased by forward contract made directly by the processor with the grower. The remainder of the processors' requirements are usually purchased from merchants and, in some instances, merchants' contracts with growers as agents for processors. Seed potatoes are purchased either through a merchant or directly from a seed grower.

APPARENT CONSUMPTION OF VEGETABLES

(Kilograms per head per year)

Year	Potatoes	Other root and bulb vegetables	Tomatoes	Leafy and green vegetables	Other vegetables	Total, fresh equivalent weight
1972-73	47.9	16.7	16.9	20.0	14.9	116.9
1973-74	45.5	17.5	14.9	21.0	15.0	114.2
1974-75	51.7	17.7	10.1	21.6	15.1	116.7
1975-76	46.6	15.9	14.3	23.0	14.4	114.3
1976-77p	48.9	16.0	14.6	22.4	14.9	116.7

VEGETABLES FOR HUMAN CONSUMPTION: AREA AND PRODUCTION

	<i>French and runner beans</i>	<i>Cabbages and brussel sprouts</i>	<i>Carrots</i>	<i>Cauli- flowers</i>	<i>Onions</i>	<i>Green peas</i>	<i>Potatoes</i>	<i>Tomatoes</i>	<i>Total vege- tables</i>
AREA ('000 hectares)									
1973-74 . . .	8.3	2.8	3.2	2.5	4.2	19.4	34.1	7.1	105.5
1974-75 . . .	8.6	2.9	3.5	2.5	4.4	18.5	37.6	7.9	110.5
1975-76 . . .	7.6	2.7	3.3	2.6	4.0	19.0	33.8	7.9	105.9
1976-77 . . .	7.3	2.8	3.3	2.6	4.3	19.0	33.9	8.6	107.7
1977-78p . .	n.y.a.	n.y.a.	n.y.a.	n.y.a.	4.0	n.y.a.	33.9	8.3	107.1

<i>Green peas</i>									
	<i>French and runner beans</i>	<i>Cabbages and brussel sprouts</i>	<i>Carrots</i>	<i>Cauli- flowers</i>	<i>Onions</i>	<i>Process- ing (shelled weight)</i>	<i>Sold in pod (pod weight)</i>	<i>Potatoes</i>	<i>Tomatoes</i>
PRODUCTION ('000 tonnes)									
1973-74 . . .	40.2	72.9	86.5	72.8	93.7	44.4	4.1	649.2	135.6
1974-75 . . .	40.9	84.6	97.6	71.9	108.1	52.1	4.6	741.9	168.9
1975-76 . . .	40.2	73.5	81.4	70.5	94.6	44.1	2.5	696.5	162.2
1976-77 . . .	36.4	73.8	85.6	70.8	105.3	60.8	2.5	728.5	178.1
1977-78p . .	n.y.a.	n.y.a.	n.y.a.	n.y.a.	107.1	n.y.a.	n.y.a.	n.y.a.	167.3

VEGETABLES FOR HUMAN CONSUMPTION: VALUE OF PRODUCTION AND VALUE OF EXPORTS

<i>Year</i>	<i>Gross value</i>	<i>Export value f.o.b.(a)</i>
	\$m	\$m
1973-74	239.7	7.2
1974-75	257.6	7.9
1975-76	275.4	7.9
1976-77	309.0	11.5
1977-78p	314.0	10.7

(a) Fresh, frozen, simply or otherwise preserved or prepared vegetables.

PROCESSED VEGETABLES: AUSTRALIAN PRODUCTION
(^{'000 tonnes—unless otherwise stated})

Item	1973-74	1974-75	1975-76	1976-77	1977-78
Quick frozen vegetables—					
Beans	25.5	26.8	23.5	20.9	17.3
Peas	39.0	43.6	35.5	53.1	34.5
Potatoes	20.9	15.5	36.0	45.4	43.6
Other	12.3	19.6	20.8	15.9	17.3
Vegetables preserved, canned or bottled (excluding pickles, etc.) (a)—					
Asparagus	4.7	3.6	3.4	n.p.	n.p.
Beans—Green	7.7	6.8	6.7	6.4	4.6
Baked (including pork and beans)	22.7	23.9	22.1	24.1	21.4
Beetroot	25.3	28.1	26.1	25.4	26.6
Cabbage (including sauerkraut)	1.6	1.4	1.3	1.2	1.7
Carrots	3.7	5.7	5.0	5.0	4.4
Cucumber (including pickled)	3.1	2.7	1.9	2.8	2.4
Gherkins—pickled	1.8	1.8	1.8	1.7	2.1
Olives—pickled	1.3	0.9	0.7	0.7	0.5
Onions (including pickled)	2.3	2.6	2.4	2.5	3.3
Peas—Green	14.8	10.6	10.5	12.9	9.3
Sweetcorn	9.8	10.8	6.8	n.p.	n.p.
Tomatoes (excluding canned pulp)	6.6	9.1	12.0	10.7	12.2
Tomato juice (million litres)	8.4	13.9	5.9	7.5	8.8

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

For further information on vegetables see the following publications: *Crop Statistics* (7302.0), *Production Bulletin No. 3—Food, Drink and Tobacco* (8359.0), *Apparent Consumption of Foodstuffs and Nutrients* (4306.0) and *Value of Agricultural Commodities Produced* (7503.0).

Fruit (excluding grapevines)

The varieties of fruit grown differ in various parts of the States, ranging from pineapples, papaws and mangoes in the tropics to strawberries, raspberries and currants in the colder parts of the temperate zone. In New South Wales, citrus fruit (oranges, lemons etc.) and bananas are the principal crops, although apples, peaches, plums, pears and cherries are grown extensively. The principal fruits grown in Victoria are apples, pears, peaches, oranges, and apricots. In Queensland, apples, pineapples, bananas, oranges, mandarins, peaches, and plums are the major fruits cultivated. In South Australia, in addition to oranges, apples, peaches, apricots and pears, almonds and olives are grown extensively. In Western Australia, apples, oranges, plums, and pears are the chief fruits. In Tasmania, apples are by far the most important type of fruit grown, but small fruits, such as currants, raspberries and gooseberries, are also grown extensively, the balance of the area being occupied mainly with pears and apricots.

Although fruit occupies less than 1 per cent of the total area planted to crops, the value of fruit production is currently about 10 per cent of the total value of crop production. Fruit exports in recent years peaked at \$90 million in 1972-73, although this has fluctuated due to price and quantity changes. With the loss of the U.K.'s market after its entry into the EEC and other factors such as rising shipping costs and improved storage techniques in the northern hemisphere, export markets have been reduced.

RURAL INDUSTRY
SELECTED FRUIT STATISTICS

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Year	Orchard fruit: number of trees ('000)				Berry and other fruits: area (ha)			Total area of fruit (ha)
	Apples	Oranges	Pears	Peaches	Bananas	Pineapples	Small, and berry fruit	
1973-74 . . .	7,701	5,193	2,248	2,092	8,880	6,224	1,158	108,803
1974-75 . . .	7,004	5,076	2,246	1,940	7,982	5,851	1,084	102,770
1975-76 . . .	6,520	5,059	1,853	1,844	7,694	5,873	984	99,822
1976-77 . . .	6,229	5,126	1,679	1,634	7,555	5,874	995	96,249
1977-78p . . .	5,928	5,329	1,715	1,560	7,541	5,984	994	94,642

Year	Apples	Apricots	Bananas	Cherries	Oranges	Peaches	Pears	Pine-apples	Plums and Prunes
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PRODUCTION ('000 tonnes)

1973-74 . . .	334.7	37.2	124.7	8.7	309.9	81.1	162.2	114.8	23.1
1974-75 . . .	368.0	27.3	118.3	9.8	340.8	90.5	158.0	110.5	23.2
1975-76 . . .	274.8	26.2	97.1	9.7	361.5	79.1	140.1	102.9	26.5
1976-77 . . .	301.6	26.8	115.1	6.7	321.7	66.3	105.3	111.5	22.2
1977-78p . . .	n.y.a.	24.5	99.1	7.2	346.6	61.3	n.y.a.	116.8	15.2

GROSS VALUE OF PRODUCTION (\$ million)

1972-73 . . .	63.5	9.2	28.2	5.7	33.6	17.7	23.9	12.2	6.0
1973-74 . . .	63.7	9.1	21.9	7.5	33.7	14.5	24.9	11.0	7.0
1974-75 . . .	73.6	9.0	31.3	10.3	43.3	24.2	26.2	11.9	8.5
1975-76 . . .	73.7	9.2	39.8	8.6	46.0	18.3	19.6	14.2	9.4
1976-77 . . .	83.3	10.0	38.1	7.9	52.4	16.3	22.0	16.5	9.4

Processed fruit and fruit products

After rapid expansion in the 1960s, output of canned fruit levelled off and then declined following reduced plantings of peaches and pears. Production of natural fruit juices has doubled in the last seven years and this has reflected improvements in marketing methods, effective promotion and public awareness of the nutritious value of natural juices. Rapidly rising packing and marketing costs for fresh citrus has also influenced the swing to processing.

PRODUCTION

Derived from the Annual Manufacturing Census and the recorded monthly production

	Unit	1973-74	1974-75	1975-76	1976-77	1977-78p
Fruit juice based cordials and syrups(a)	mil litres	70.0	60.1	72.9	68.4	73.1
Natural fruit juice(b)-						
Single strength	mil litres	166.3	179.8	187.8	n.y.a.	n.y.a.
Concentrated(c)	"	10.5	13.8	17.5	n.y.a.	n.y.a.
Cider and perry	"	11.1	10.5	10.5	n.y.a.	n.y.a.
Canned or bottled fruit (excl. canned pulp)	'000 tonnes	204.2	240.1	186.7	179.7	179.0
Jams	'000 tonnes	33.1	30.2	31.0	27.0	28.4

(a) Containing at least 25 per cent by volume of pure fruit juices. without artificial flavourings.

(b) Excludes fruit drinks consisting of diluted fruit juices with or

(c) Excludes grape must, and comprises actual quantity of concentrated juices.

APPARENT CONSUMPTION OF FRUIT

(Fresh fruit equivalent: kg per head per year)

Year	Fresh			Jams, conserves, etc.	Dried tree fruit	Canned and bottled fruit	Total, fresh equivalent weight
	Oranges	Other citrus	Other fresh fruit				
1972-73 . . .	24.8	5.3	35.7	2.5	0.6	10.3	90.1
1973-74 . . .	24.9	6.4	33.5	2.2	0.7	10.2	89.4
1974-75 . . .	30.8	6.0	32.7	2.5	0.5	10.1	91.2
1975-76 . . .	33.5	6.2	33.3	1.9	0.5	9.7	95.7
1976-77 . . .	26.7	6.6	33.1	2.0	0.4	10.1	88.9

Fruit exports

About a third of Australia's fruit export returns are from fresh and/or chilled apples, pears and oranges, while canned or bottled deciduous fruit—peaches, pears, etc.—are increasing in importance.

FRUIT EXPORTS: VALUE F.O.B.
(*\$ million*)

Year	<i>Fresh and chilled</i>			<i>Canned or bottled</i>					
	<i>Apples</i>	<i>Pears</i>	<i>Oranges</i>	<i>Apricots</i>	<i>Peaches</i>	<i>Pears</i>	<i>Peaches and pears</i>	<i>Pine-apples</i>	<i>Fruit salad</i>
1973-74 . . .	20.1	7.7	3.2	1.8	16.8	15.4	3.0	1.1	6.0
1974-75 . . .	16.1	8.2	2.1	1.5	9.7	11.9	3.1	1.3	5.7
1975-76 . . .	12.8	10.1	2.9	1.1	13.3	10.5	2.0	1.6	4.1
1976-77 . . .	9.4	8.1	1.0	0.9	14.5	16.1	2.1	1.7	4.5
1977-78p . . .	13.8	9.5	1.0	0.8	13.4	13.6	2.3	1.5	3.8

FRUIT: VALUE OF PRODUCTION AND EXPORTS
(*\$ million*)

Year	<i>Gross value</i>		<i>Exports(a) value f.o.b.</i>
	<i>Orchard fruit</i>	<i>Berry and other</i>	
1973-74 . . .	178	39	217
1974-75 . . .	215	51	267
1975-76 . . .	206	63	269
1976-77 . . .	227	64	291
1977-78p . . .	n.y.a.	n.y.a.	313

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

Fruit imports

Imports of fresh fruit are negligible, while most dried fruit imports consist of dates from Iran, the United States of America and China (excluding Taiwan Province).

Marketing and regulation of the fruit industry

Apples and pears. The Australian Apple and Pear Corporation replaced the Australian Apple and Pear Board in September 1974, absorbing that Board's export control and regulation functions. The Corporation has a wider role than the former Board, e.g. powers to trade under certain circumstances, to charter shipping for such trade, to borrow funds, subject to Government approval, for trading operations, and to promote and research both fresh and processed apple and pear products.

A Government-approved stabilisation scheme was introduced with the 1971 season. This plan establishes average seasonal returns for each variety, which are then compared with the agreed support price for each variety to determine the extent of the deficiency or surplus.

Fruitgrowing Reconstruction Scheme. For details see Year Book No. 61, pages 846-7.

Canned Fruit. For details on the operations of the Australian Canned Fruits Board and the Australian Canned Fruit Sales Promotion Committee see Year Book No. 61, page 847.

For further data on fruits and fruit products see the bulletins *Fruit Statistics* (7303.0), *Production Bulletin No. 3 Food, Drink and Tobacco* (8359.0), *Apparent Consumption of Foodstuffs and Nutrients* (4306.0) and *Value of Agricultural Commodities Produced* (7503.0).

Grapevines

Grapes require a warm hot climate 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. In Australia, wine is produced very largely from irrigated crops, as are dried fruits. Some of the better known wine producing areas are the Murray Valley (South Australia and Victoria), Barossa Valley and Southern Vales Areas (South Australia), the Murrumbidgee Irrigation Areas and the Hunter Valley (New South Wales), the Mildura, Rutherglen and Stawell districts (Victoria), and the Swan Valley (Western Australia). Nearly all the dried fruit is produced along the River Murray and its tributaries, with small localised areas in other States.

VITICULTURAL STATISTICS: AREA, PRODUCTION AND VALUE

Year	Production: grapes used for—					
	Area		Total(a)			
	Bearing	Total	Winemaking	Drying	Quantity	Gross value
	'000 ha	'000 ha	'000 tonnes fresh weight	'000 tonnes fresh weight	'000 tonnes fresh weight	\$m
1973-74	62.5	70.0	327.9	206.8	552.2	83.2
1974-75	64.0	71.3	424.6	280.5	727.8	101.4
1975-76	62.9	70.3	418.5	269.7	710.2	102.3
1976-77	64.4	71.1	457.4	250.0	728.4	128.5
1977-78p	n.y.a.	72.5	n.y.a.	n.y.a.	n.y.a.	128.0

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

The bearing area of grapes has risen by about 24 per cent since 1969-70 due mainly to substantial new plantings of specialised winegrapes. Grape production has increased markedly in winegrapes (34 per cent since 1969-70). However, with grapes dried, the quantity is the residual between multi-purpose grape production and winery requirements—weather permitting—and an increased diversion of grapes to winemaking has resulted in a decline in grapes dried. The production of multi-purpose grapes has not shown much change. Since the domestic consumption of dried vine fruit is stable at about 1.5 kg per head per year, reductions in grapes dried will result in lower exports. Legislation, presently before the Parliament will, when enacted, introduce a new stabilisation scheme for the dried vine fruits industry to cover the seasons 1978-80. The scheme is based on many of the principles of the 1971-76 scheme with significant modifications to particular elements of the former scheme. The new scheme covers sultanas only and will be reviewed at the end of the 1979 season.

Varietal Statistics: 1977 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 varieties used in the table below are those recommended by the Commonwealth Grape Advisory Subcommittee but have not as yet been corrected by recent research. These varieties have been classified by the Bureau of Agricultural Economics (October 1978) according to four categories—red wine grapes, white wine grapes, multipurpose grapes and other grapes. The data are aggregated from the states of New South Wales, Victoria, South Australia and Western Australia only.

VITICULTURE: AREA AND PRODUCTION BY VARIETY, 1977 SEASON

Variety	Area (hectares)		Production: grapes used for— (tonnes, freshweight)		
	Bearing	Total	Winemaking	Drying	Total(a)
Red Wine Grapes—					
Cabernet Sauvignon	3,284	4,253	22,636	—	22,659
Grenache	5,820	6,114	57,343	—	57,560
Malbec	390	440	3,850	—	3,850
Mataro	1,737	1,921	17,156	—	17,253
Shiraz	9,488	10,420	75,370	—	75,768
Other red wine grapes	448	525	3,373	—	3,373
Total	21,167	23,673	179,728	—	180,463
White Wine Grapes—					
Doradillo	2,144	2,285	36,913	—	36,950
Palomino	1,094	1,115	15,197	—	15,202
Pedro Ximenez	1,495	1,517	13,099	—	13,100
Rhine Reisling	2,295	3,289	14,039	—	14,039
Clare Reisling	1,071	1,124	11,157	—	11,160
Semillon	2,354	2,656	26,688	—	26,688
Trebbiano	1,287	1,658	17,023	—	17,023
Other white wine grapes	1,867	2,263	13,316	—	13,414
Total	13,607	15,907	147,432	—	147,576
Multipurpose Grapes—					
Currant	2,122	2,217	601	20,526	21,142
Muscat Gordo Blanco	3,681	4,200	52,151	11,006	64,483
Sultana	18,502	18,967	62,310	62,310	277,108
Waltham Cross	1,504	1,609	4,021	7,043	15,516
Total	25,809	26,993	119,083	249,825	378,249
Other Grapes(b)—					
Frontignan	411	442	3,277	—	3,279
Muscat Hamburg	542	591	1,709	—	2,987
Ohanez	281	295	378	90	1,969
Purple Cornichon	282	296	691	—	2,156
Other	997	1,342	4,882	106	6,379
Total	2,513	2,966	10,937	196	16,770
Total Grapevines	63,093	69,543	457,182	250,021	723,061

(a) Includes grapes used for table and other purposes. (b) With the exception of Frontignan (used predominantly in dessert wines) these grapes are specialist table grapes.

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
1973-74	3.4	40.6	3.6	47.5	25.6	1.2	26.9	17.7 1.7
1974-75	5.2	53.4	6.3	64.9	31.4	0.2	31.6	20.0 1.3
1975-76	5.6	55.3	4.3	65.2	51.3	2.4	53.7	27.1 1.6
1976-77	4.9	49.6	6.1	60.6	43.4	0.9	44.4	26.7 1.5
1977-78p	n.y.a.	n.y.a.	n.y.a.	n.y.a.	33.9	2.0	36.1	35.8 n.y.a.

Wine industry

Australia produces brandy and wine of every type. In recent years there has been a distinct trend towards greater consumption and production of unfortified or table wines. Until 1957-58 production of these wines (which include burgundy, claret, riesling, sauterne and sparkling wines) was less than half that of the fortified varieties (sherries, ports, etc.) By 1970, however, table wines had exceeded the volume of fortified wines.

PRODUCTION, CONSUMPTION AND EXPORT OF WINES

Year	Pro- duction	Exports		Consump- tion in Australia per head
		Quantity	Value f.o.b.	
	mil. litres	mil. litres	\$m	litres
1973-74	294.7	8.2	5.6	11.0
1974-75	361.2	6.5	5.3	12.3
1975-76	356.2	6.2	5.5	13.1
1976-77	383.1	5.0	5.4	13.7
1977-78p	n.y.a.	4.7	5.4	n.y.a.

For further details on viticulture, dried vine fruit, wine, etc. see the following publications: *Fruit Statistics* (7303.0), *Sales of Australian Wine and Brandy* (8504.0) and an unpublished limited circulation issue *Viticulture Statistics* which contains varietal data collected as an additional collection to the annual Agricultural Census.

Miscellaneous crops

The principal crops not covered above include fodder crops, tobacco, hops and nursery crops which, in 1976-77, had gross values as follows:

Crops	Gross value	Percent of total crop gross value
	\$m	%
Fodder crops (hay)	31.4	1.0
Tobacco	56.4	1.8
Hops	4.4	0.1
Mushrooms	9.9	0.3
Nurseries	57.7	1.9

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 comparatively unreliable nature of rainfall in Australian agricultural and pastoral 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
1973-74	325	1,034	29.9	1,097	888
1974-75	216	669	20.4	853	529
1975-76	230	738	25.5	752	392
1976-77	287	891	31.4	709	308
1977-78p	321	n.y.a.	n.y.a.	913	n.y.a.

(a) Principally oats and wheaten hay.

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

FARMSTOCKS OF CEREAL GRAINS, HAY AND SILAGE

('000 tonnes)

At 31 March	Cereal grains				
	Barley	Oats	Wheat	Hay	Silage
1973	570	798	839	5,309	1,040
1974	609	1,043	849	7,157	1,399
1975	442	861	731	6,582	1,250
1976	494	918	769	5,684	1,096
1977	487	890	803	5,014	841

ON FARM CONSUMPTION OF MAJOR GRAINS AND HAY: CONSUMED BY LIVESTOCK(a)

('000 tonnes)

Year	Cereal grains			Hay		
	Barley	Oats	Wheat	Cereal hay	Lucerne hay	Other hay
1971-72	415	537	436	1,130	1,026	3,261
1972-73	540	791	634	1,167	1,045	3,030
1973-74	474	591	458	762	664	2,539
1974-75	351	329	388	601	578	2,628
1975-76	337	406	317	684	571	2,845

(a) Not collected in 1976-77

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, almost 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), Ashford (New South Wales) and Wangaratta (Victoria). 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- factures	Unmanu- factured	Manu- factures
	'000 ha	'000 tonnes	\$'000	\$'000	\$'000	\$'000
1972-73	9.6	15.4	78	2,742	16,725	10,841
1973-74	9.3	14.9	79	3,044	20,701	12,161
1974-75	9.2	15.5	34	3,100	26,076	15,474
1975-76	9.2	14.9	27	3,824	30,315	18,994
1976-77	9.4	16.1	522	4,981	26,440	20,569
1977-78p	9.1	n.y.a.	823	7,601	38,640	24,072

Marketing. In 1965 the Commonwealth and State Governments agreed to a stabilisation plan and an overall marketing quota was decided upon. The plan is administered by the Australian Tobacco Board. Further information on tobacco marketing, research and factories may be found in Year Book No. 61, pages 845-6.

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 wire and coir trellises, from which they are later harvested. The green hops are kiln-dried and bleached with sulphur dioxides fumes, following which the cured hops are pressed into bales.

Hop growing in Australia is confined to the Derwent, Huon and Channel areas in the south-east and the Scottsdale-Ringarooma district in the north-east of Tasmania, and the Ovens and King Valleys in Victoria. A small area near Manjimup in Western Australia is under hops.

The area planted to hops is about 1,100 hectares, with over 60 per cent in Tasmania. Production is about 2,000 tonnes, most of which is used in breweries.

Mushrooms

Statistics of mushroom growing were collected for the first time in all States for the year ended 30 June 1975, with the exception of New South Wales where they have been collected since 1972-73.

MUSHROOMS: AREA, PRODUCTION, GROSS VALUE AND SPAWN USED

Year	Total area of beds (a) used during year (counted each time cropped)	Production		Total		Total quantity of spawn used during year
		For processing	For fresh market	Quantity	Gross value	
	'000 sq m	tonnes	tonnes	tonnes	\$m	tonnes
1972-73—						
New South Wales	336.7	2,344	1,531	3,875	3.9	94
1973-74—						
New South Wales	306.4	2,002	1,720	3,723	3.5	95
1974-75—						
New South Wales	338.1	2,329	1,789	4,118	4.8	141
Australia	501.3	(b)2,460	(b)3,463	6,007	7.1	(b)209
1975-76—						
New South Wales	339.7	2,028	2,452	4,480	5.7	139
Australia	481.1	2,136	5,294	7,525	10.0	(b)203
1976-77—						
New South Wales	361.0	2,353	2,503	4,857	7.0	150
Australia	555.9	(b)2,353	(b)2,503	7,130	9.9	(b)229

(a) For 'bag-grown' mushrooms, the area has been expressed in terms of the equivalent area of 15 cm fill beds. (b) Incomplete; some individual States' data is either not available for publication or was not collected.

PRODUCTION AND IMPORTS OF CANNED, BOTTLED OR DRIED MUSHROOMS

Year	Production (canned or bottled)	Imports			
		Dried		Canned or bottled	
		Quantity	Value f.o.b.	Quantity	Value f.o.b.
	tonnes	tonnes	\$'000	'000 litres	\$'000
1972-73	6,006	78	515	1,504	1,027
1973-74	5,712	119	928	2,494	1,563
1974-75	6,881	88	664	3,903	2,857
1975-76	5,416	50	438	3,159	2,466
1976-77	6,789	82	870	4,497	5,532
1977-78	6,611	97	998	5,030	6,855

For further details on mushrooms see *Mushroom Statistics* (7308.0).

Nurseries

AREA USED FOR NURSERY AND CUT FLOWER ACTIVITIES (Hectares)

Year	Area
1972-73	2,599
1973-74	2,910
1974-75	2,989
1975-76	3,290
1976-77	3,547

Additional information on nursery activities has been collected by some individual States and published by them but it was only for the year 1974-75 that the collection was extended to all States. All known private establishments which undertook the propagation, cultivation or growing-on of plants were included. Results of the 1977-78 Australia-wide collection are not yet available.

NURSERY STATISTICS: 1974-75

1974-75	Nursery products (\$'000)	
	Purchases	Sales
New South Wales	3,500	17,391
Victoria	2,996	17,659
Queensland	1,003	5,831
South Australia	899	5,176
Western Australia	925	4,682
Tasmania	276	1,160
Australia	9,599	51,899
Seeds and bulbs	1,658	2,892
Seedlings	1,121	8,492
Cut flowers (incl. orchids)	794	10,117
Cultivated turf	98	1,242
Fruit trees and vines	746	3,199
Rose bushes	462	2,745
Other shrubs and trees	4,719	23,214

For further details on nurseries see *Nursery and Flower Statistics* (7309.0).

Livestock

A detailed account of the various enumerations of livestock in Australia made prior to 1860 was given on page 748 of Year Book No. 35. Since 1861 annual enumerations 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 decennial intervals from 1861 to 1971, and then from 1973 on in single years, are given in the following table.

LIVESTOCK: AUSTRALIA, 1861 TO 1978
('000)

Year	Horses	Cattle	Sheep	Pigs	Year	Horses	Cattle	Sheep	Pigs
1861 .	432	3,958	20,135	351	1951 .	999	15,229	115,596	1,134
1871 .	717	4,276	41,594	543	1961 .	598	17,332	152,679	1,615
1881 .	1,069	7,527	62,184	816	1971 .	n.a.	24,373	177,792	2,590
1891 .	1,522	10,300	97,881	891	1973 .	n.a.	29,101	140,029	3,259
1901 .	1,610	8,640	70,603	950	1974 .	n.a.	30,839	145,175	2,505
1911 .	2,166	11,745	98,066	1,026	1975 .	n.a.	32,793	151,653	2,197
1921 .	2,416	13,500	81,796	674	1976 .	n.a.	33,434	148,643	2,173
1931 .	1,793	11,721	110,568	1,072	1977 .	n.a.	31,533	135,360	2,229
1941 .	1,666	13,256	122,694	1,797	1978 .	n.a.	29,379	131,442	2,219

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. These occurred in 1868, 1877, 1883-84, 1892, 1893, 1895, 1901-2, 1912, 1914, 1918, 1919, 1922-23, 1925-26, 1927-28, 1929-30, 1940-41, 1944-45 to 1946-47, and 1965-67. The years in which the numbers of livestock attained their peaks are as follows: horses, 1919 (2,527,000); 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 profitable dairy herds. While dairy cattle are restricted mainly to coastal districts, beef cattle are more widely distributed in areas such as the tropical area of northern Queensland, the Northern Territory and the Kimberley district in the north of Western Australia. Increasing numbers of beef cattle are being raised in conjunction with sheep. Although cattle numbers declined after 1957 because of drought conditions and heavy slaughtering, they began to increase in 1960 and in 1964 reached 19,055,000. Again because of drought in the eastern States, this figure declined to 17,936,000 in 1966. There was a continuous increase in the total number of cattle in Australia until 1976 followed in the next two years by a decline to the 1973 level.

CATTLE NUMBERS

('000)

31 March	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust. (incl. A.C.T.)
1974 . . .	8,456	5,840	10,297	1,692	2,330	884	1,321	30,839
1975 . . .	8,935	6,192	10,879	1,869	2,544	921	1,434	32,793
1976 . . .	9,138	5,868	11,347	1,891	2,654	909	1,603	33,434
1977 . . .	8,348	5,104	11,506	1,608	2,464	819	1,664	31,533
1978p . . .	7,372	4,572	11,490	1,242	2,271	734	1,681	29,379

Classification of cattle

CATTLE NUMBERS, BY AGE, SEX, PURPOSE

('000)

Classification	31 March				
	1974	1975	1976	1977	1978p
Milk cattle—					
Bulls used or intended for service	77	78	73	64	60
Cows, heifers and heifer calves	3,558	3,527	3,407	3,096	2,904
House cows and heifers	121	122	122	105	100
<i>Total, milk cattle</i>	<i>3,757</i>	<i>3,727</i>	<i>3,602</i>	<i>3,265</i>	<i>3,064</i>
Meat cattle—					
Bulls used or intended for service	651	702	687	628	572
Cows and heifers (1 year and over)	13,800	14,897	15,202	14,021	12,753
Calves under 1 year	7,079	7,751	8,055	7,385	6,526
Other cattle (1 year and over)	5,551	5,716	5,888	6,235	6,463
<i>Total, meat cattle</i>	<i>27,082</i>	<i>29,066</i>	<i>29,833</i>	<i>28,269</i>	<i>26,314</i>
Total, all cattle	30,839	32,793	33,434	31,533	29,379

Comparison with other countries

WORLD CATTLE NUMBERS(a)

(Millions)

(Source: Australian Meat and Livestock Corporation)

Country	1977	1978p	Country	1977	1978p
Argentina	58	57	India	242	243
Australia	32	29	Mexico	29	29
Brazil	97	100	United States of America	123	116
Colombia	24	24	U.S.S.R.	110	113
European Economic Community	77	78			

(a) Statistics are not shown for a number of Asian countries, including China.

Beef cattle production is often combined with cropping, dairying and sheep and has gained in importance, with good market prospects. In the north (north of the 26th parallel), cattle properties are very large, pastures are generally unimproved and fodder crops are rare. Beef is usually the only product and herd sizes are large. 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 Statistics* (7203.0).

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 in Australia in 1970. They then declined up to March 1973 as producers turned off large numbers for slaughter and moved from wool-growing towards beef production. By 1975 the numbers had increased to 151,653,000, but in March 1978 the numbers had fallen to 131,442,000, the lowest since 1955.

SHEEP NUMBERS (Millions)

31 March	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	Aust. (incl. N.T., A.C.T.)
1974	53.3	25.8	13.1	16.4	32.5	4.0	145.2
1975	55.0	26.4	13.9	17.6	34.5	4.1	151.7
1976	53.2	25.4	13.6	17.3	34.8	4.2	148.6
1977	49.7	21.9	13.3	15.1	31.2	4.0	135.4
1978p	48.0	22.0	13.4	14.1	29.8	4.0	131.4

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		
1974	1.8	70.0	5.8	34.6	32.9	145.2
1975	1.9	70.6	7.0	37.1	35.0	151.7
1976	1.9	68.5	7.7	37.5	33.1	148.6
1977	1.7	64.7	6.3	34.8	27.8	135.4
1978p	1.7	63.6	5.4	32.6	28.2	131.4

The sheep and wool industry is the most important rural industry in Australia; in 1977-78 provisional value of production data showed that the combined value of wool and sheep slaughtered accounted for over one-fifth the gross value of all agriculture. This proportion varies with wool and meat prices and seasonal conditions. In 1977 Australia had 15 per cent of the world's woolled sheep but produced 28 per cent of the world's greasy wool output. In addition, in 1977-78 the sheep industry produced half a million tonnes of mutton and lamb, a big decrease from the record production of 956,000 tonnes in 1971-72, which resulted from high slaughtering rates linked to very low wool prices prevailing at the time. The graph on page 295 shows the increasing importance of other rural industries such as wheat, sugar cane, beef and dairy products.

Comparisons with other countries

WORLD SHEEP NUMBERS AND WOOL PRODUCTION

(Compiled from the Commodities Division of the Commonwealth Secretariat)

World sheep numbers (millions)				Estimated raw wool production ('000 t, greasy)			
Country		1976	1977	1976	1977	Country	
Argentina	38	37	188	176	South Africa	24	24
Australia	149	135	754	703	Turkey	41	42
Brazil	25	25	35	35	United Kingdom	28	28
China (excl. Taiwan Province)	74	74	82	82	Uruguay	16	16
India	40	40	35	35	U.S.A.	13	13
Iran	35	35	28	28	U.S.S.R.	141	140
New Zealand	56	59	312	303	Total	928	917
							2,616
							2,508

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
1973	162.9	39.8	1.1	47.6	13.9	140.0
1974	140.0	43.0	1.1	27.1	9.7	145.2
1975	145.2	46.2	1.4	27.0	11.4	151.7
1976	151.7	44.1	1.8	31.4	13.9	148.6
1977	148.6	38.4	3.0	33.7	15.0	135.4
1978p	135.4	39.5	4.2	29.8	9.3	131.4

(a) Comprises statistics from abattoirs and other major slaughtering establishments and includes estimates of animals slaughtered on farms and by country butchers; does not include animals condemned or those killed for boiling down. (b) Balance item.

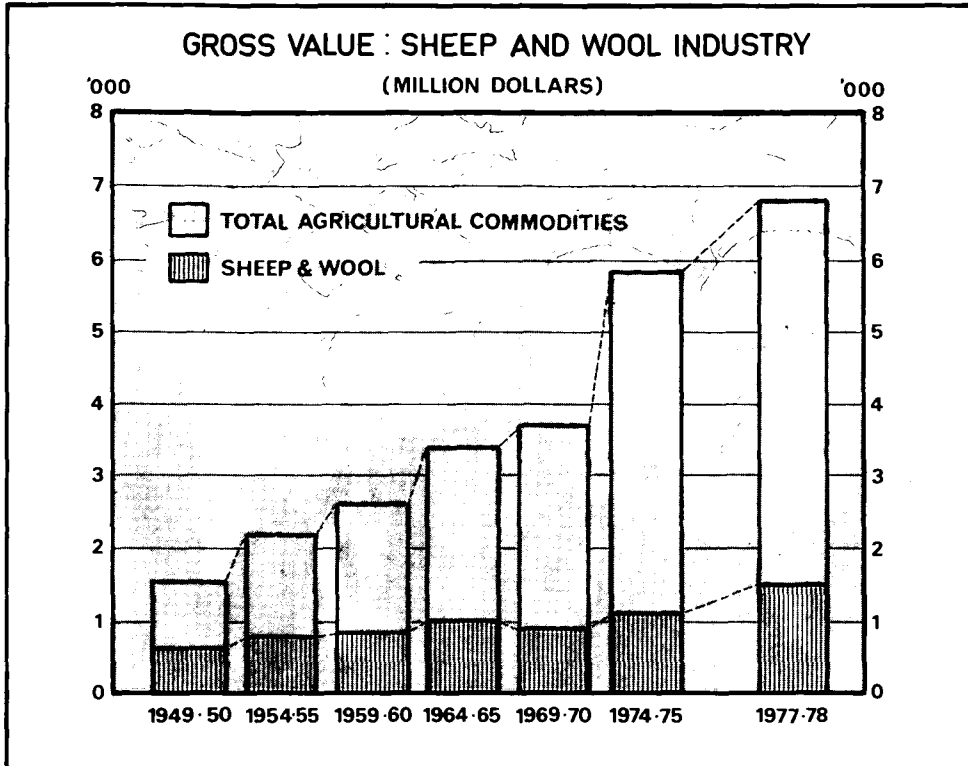


PLATE 28

LAMBING

Year ended 31 March	Number of breeding ewes at beginning 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
1973	75.6	66.8	59.1	89	39.8	67	53
1974	68.7	62.8	58.7	93	43.0	73	63
1975	70.0	65.2	60.9	93	46.2	76	66
1976	70.6	65.1	60.5	93	44.1	73	63
1977	68.5	63.0	58.0	92	38.4	66	56
1978	64.7	59.8	56.6	95	39.5	70	61

For further details on sheep, see the bulletins *Livestock Statistics* (7203.0) and *Wool Statistics* (7212.0).

Pigs

In line with the general trend of increased specialisation common to most rural industries, pig farming has developed into a separate industry, being no longer associated with the dairy industry. During the period of wheat quotas and generally low grain prices, pig raising became a profitable outlet for non-quota wheat, but later, higher grain prices led to some contraction in the pig industry. Pig raising became increasingly associated with inland areas, though most are raised on farms, usually in association with dairy and cereal production. Grains form the basis of most pig rations and this has assisted with the movement to inland grain-growing districts. This is less marked in coastal regions where skim milk, the traditional source of pig feed, is being diverted to other uses.

PIG NUMBERS
(^{'000})

<i>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>Aust. (incl. N.T., A.C.T.)</i>
1973	1,065	585	542	499	476	85	3,259
1974	835	424	441	385	344	68	2,505
1975	729	383	400	349	264	64	2,197
1976	709	393	409	326	260	70	2,173
1977	760	397	441	317	242	65	2,229
1978p	739	401	463	311	237	64	2,219

For further details on pigs see the bulletin *Livestock Statistics* (7203.0).

Poultry

Once part of the mixed farming sector, the poultry industry is now a highly specialised and distinct industry. The bulk of production is obtained from this commercial source, though many farm households and some private homes in suburban areas keep poultry to supply their domestic needs. Some supplies from this source are also marketed. Because the data from this latter sector is incomplete, total poultry numbers for Australia are not available. There is an increasing tendency for specialisation within the industry into hatcherymen, egg producers and broiler producers. These sectors of the industry each have separate statistics. There are also separate research schemes for the egg and meat chicken industries. Both sectors are good examples of the general movement towards specialised, large scale, capital-intensive production which is common to all rural industries.

POULTRY NUMBERS(a)
(^{'000})

<i>31 March</i>	<i>Hens and pullets for egg production</i>	<i>Meat strain chickens (broilers)</i>	<i>Other fowls and other chickens</i>	<i>Sub- total</i>	<i>Ducks</i>	<i>Turkeys</i>	<i>Other poultry</i>	<i>Total all poultry</i>
1973	15,580	23,497	2,661	41,738	310	645	(b)	42,693
1974	17,043	24,724	2,384	44,151	265	540	(b)	44,956
1975	16,409	22,592	1,758	40,759	164	413	(b)	41,336
1976	15,991	25,360	1,566	42,917	254	333	(b)	43,504
1977	16,118	27,256	(b)	43,374	187	347	397	44,305
1978	15,611	27,184	(b)	42,795	163	322	331	43,611

(a) Data are for numbers of poultry on rural establishments as reported in the annual Agricultural Census. (b) Not collected.

Hatchings. These details relate to all eggs set and to chicks hatched in commercial hatcheries whether for sale as day-old chicks or for replenishment of own flocks.

EGGS SET AND CHICKENS HATCHED IN COMMERCIAL HATCHERIES
(^{'000})

<i>Chickens hatched, intended for—</i>				
<i>Chicken meat</i>				
<i>Year</i>	<i>Eggs set(a)</i>	<i>Meat strains(b)</i>	<i>Egg strains(c)</i>	<i>Egg production(d)</i>
1972-73	217,557	125,822	1,853	16,078
1973-74	253,881	151,654	1,686	17,624
1974-75	225,610	140,139	856	15,634
1975-76	242,351	158,088	585	14,664
1976-77	260,697	168,724	515	15,578
1977-78p	277,327	186,807	468	13,937

(a) Includes meat and egg strains and eggs which failed to hatch. (b) Unsexed. (c) Crossbred and other cockerels; unsexed egg strain chickens are evenly distributed to chicken meat chickens and egg production chickens. (d) Pullets.

For further details on poultry see the bulletins *Livestock Statistics* (7203.0) and *Chicken Hatchings and Poultry Slaughtering* (7207.0).

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 relates only to slaughterings for human consumption and does 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)
1972-73	1,385	53	435	278	236	2,388	138	161
1973-74	1,279	43	231	236	211	2,000	171	193
1974-75	1,494	53	258	269	175	2,249	166	189
1975-76	1,759	82	326	262	174	2,602	184	204
1976-77	1,893	95	304	246	185	2,722	196	218
1977-78p	2,024	100	264	252	197	2,836	219	244

(a) Excludes offal.

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

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

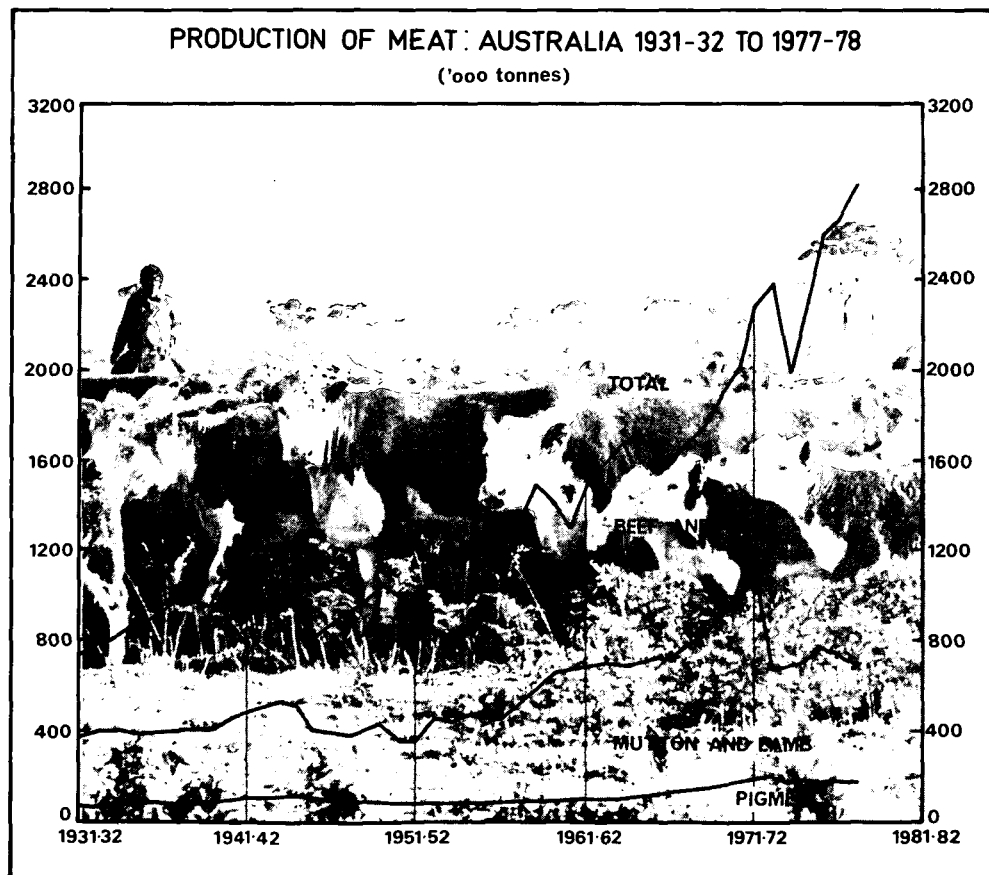


PLATE 29

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>
1972-73	6.8	1.4	23.2	17.9	4.7	113.2	10.1	1.3
1973-74	6.1	1.2	11.3	13.9	4.2	139.8	10.1	1.2
1974-75	6.9	1.5	12.7	16.0	3.4	134.2	10.5	1.3
1975-76	8.5	2.1	16.8	16.1	3.3	144.2	9.2	1.2
1976-77	9.5	2.4	16.3	15.3	3.5	155.1	9.8	1.3
1977-78p	10.1	2.5	13.9	15.2	3.7	174.0	10.6	1.7

(a) Comprises broilers, fryers and roasters.

(b) Comprises hens, roosters, etc.

Mutton and lamb

Wool production and meat production are closely related and movements in the prices of wool or sheepmeat can cause a shift from one to the other as relative profitability changes. The decline in wool prices after 1956-57, and after 1963-64 led to increases in prime lamb production as diversification occurred in wool-growing areas. These record slaughterings were followed by improved wool prices in 1972-73 which, together with a substantial fall in the total sheep flock, resulted in a sharp decline in sheepmeat production and sheep and lamb prices rose steeply. Exports of mutton peaked in the early seventies and there has been a noticeable increase in exports of boneless meats. Live sheep exports to the Middle East have increased from 800,000 in 1971-72 to over 4 million in 1977-78. Much of the expanded lamb production has been absorbed in the domestic market.

Beef and veal

The expansion in production of beef and veal has shown a steady annual increase in the last 20 years, although there have been wide fluctuations along the upward trend. The export market for beef increased dramatically after 1969-70, when exports exceeded Australian consumption, and a growing proportion of beef and veal output has been shipped to export markets.

Production is running at record levels, although 1977-78 cattle numbers decreased by about 7 per cent over the 1976-77 level. However, the depressed state of the beef industry in recent years is revealed by the steep fall in the indexes of average unit gross value from a peak of 135.5 in 1973-74 to 56.6 in 1974-75 and 64.3 in 1975-76. Statistics derived from the Agricultural Finance Survey also indicated the depressed state of the meat cattle industry by a negative cash operating surplus for the years 1974-75 and 1975-76. However, in 1976-77 the average unit gross value index has increased to 85.3 and the cash operating surplus has returned to positive (see pages 261, 265) indicating an improvement in the state of the industry.

Pigmeat

Over half the pigmeat produced is sold as pork, with the remainder as bacon, ham and small-goods. A relatively small amount of pigmeat is exported, with Japan taking significant amounts in some years.

Poultry

The poultry meat industry has developed rapidly since 1970 and both output and consumption have risen steeply. Genetic and technical improvements and the organisation of the industry into large-scale enterprises have raised efficiency and reduced production costs relative to other meats.

EXPORTS OF FRESH, CHILLED OR FROZEN MEAT

Year	Beef	Veal	Mutton	Lamb	Pork	Poultry
QUANTITY (a) ('000 tonnes)						
1972-73	826.5	26.6	156.8	31.7	20.1	4.0
1973-74	704.7	25.2	103.6	22.5	8.6	4.3
1974-75	601.2	10.2	120.7	24.6	1.1	5.1
1975-76	783.7	16.8	201.5	28.9	5.2	5.0
1976-77	919.7	17.1	241.5	59.8	3.1	4.7
1977-78p	1,092.3	19.8	198.8	56.2	1.3	5.6
VALUE f.o.b. (\$ million)						
1972-73	623.0	29.2	100.6	17.9	17.1	2.5
1973-74	610.6	25.1	62.5	16.7	8.1	3.3
1974-75	315.9	6.4	48.9	15.5	1.6	4.3
1975-76	475.3	11.5	81.2	20.3	7.6	4.3
1976-77	603.4	14.5	121.3	46.3	4.6	5.6
1977-78p	805.1	18.1	123.7	56.5	2.2	6.6

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

Exports of live animals

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
1972-73	1,135	1,146	15,343	360	380	170
1973-74	1,061	1,086	26,528	347	436	250
1974-75	1,449	1,461	22,931	204	253	166
1975-76	1,845	1,869	23,231	256	284	242
1976-77	3,388	3,431	57,109	279	329	205
1977-78p	4,124	4,188	98,069	503	584	387

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

PRODUCTION AND EXPORT OF BACON, HAM AND CANNED MEAT

Year	Production			Exports			
	Bacon and ham(a)			Bacon and ham(c)		Canned meat(d)	
	Bone-in	Bone-out	Canned meat(b)	Quantity	Value	Quantity	Value
	tonnes	tonnes	tonnes	tonnes	\$'000 f.o.b.	tonnes	\$'000 f.o.b.
1972-73	24,740	34,492	50,476	401	575	22,749	16,800
1973-74	23,143	37,802	55,760	492	813	22,517	25,289
1974-75	17,638	36,850	42,422	438	695	15,226	18,221
1975-76	16,042	38,218	45,193	386	761	20,605	24,541
1976-77	15,848	41,432	52,677	489	1,127	30,294	36,393
1977-78p	15,746	50,878	49,097	539	1,479	24,643	36,269

(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.

RURAL INDUSTRY

GROSS VALUE OF LIVESTOCK SLAUGHTERINGS AND OTHER DISPOSALS(a) (\$ million)

Year	Cattle and calves	Sheep and lambs	Pigs	Poultry	Total
1972-73	1,021.7	306.1	123.7	90.6	1,542.2
1973-74	1,069.1	321.4	173.0	132.5	1,696.0
1974-75	523.4	178.3	177.7	139.8	1,019.2
1975-76	706.3	203.9	183.3	152.9	1,246.4
1976-77	1,010.8	298.1	197.4	178.3	1,684.7
1977-78p	1,205.0	351.0	210.0	215.0	1,981.0

(a) Includes adjustment for net exports (overseas and interstate) of live animals.

Consumption

Owing to diverse cutting practices by butchers and because of the difficulty of clearly defining the term 'retail weight of meat', it is considered impractical to derive a satisfactory factor for the purpose of expressing estimated meat consumption in terms of retail weight. Depending on cutting practices employed and whether or not bones, etc. sold to customers are included in retail weight of meat, the following retail weights as a proportion of carcass weight are generally acceptable: beef, 60 per cent to 75 per cent; mutton and lamb, 80 per cent to 95 per cent; pork 90 per cent to 95 per cent.

APPARENT CONSUMPTION OF MEAT AND MEAT PRODUCTS AS HUMAN FOOD

Year	Beef and veal	Mutton	Lamb	Pigmeat(a)	Bacon and ham	Canned meat	Poultry meat
TOTAL ('000 tonnes)							
1973-74	555	116	208	90	73	33	184
1974-75	881	123	243	70	67	32	187
1975-76	950	104	231	61	72	23	201
1976-77p	984	61	188	62	77	24	221
1977-78p	976	55	195	61	n.y.a.	n.y.a.	238
PER HEAD PER YEAR (kg)							
1973-74	41.1	8.6	15.4	6.7	5.4	2.4	13.6
1974-75	64.3	9.0	17.7	5.1	4.9	2.3	13.6
1975-76	68.6	7.5	16.6	4.4	5.2	1.7	14.5
1976-77p	70.3	4.3	13.4	4.4	5.5	1.7	15.8
1977-78p	69.0	3.9	13.7	4.4	n.y.a.	n.y.a.	16.8

(a) Comprises pork and includes smallgoods and estimates for trimmings from baconer carcasses.

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

For further details on meat production and slaughtering see the following bulletins: *Meat Statistics*, monthly (7204.0), quarterly (7205.0) and annual (7206.0), *Chicken Hatchings and Poultry Slaughtering* (7207.0), *Value of Agricultural Commodities Produced* (7503.0) and *Apparent Consumption of Foodstuffs and Nutrients* (4306.0).

The Australian Meat and Livestock Corporation

Legislation was enacted to establish the Australian Meat and Livestock Corporation from 1 October 1977. This Corporation, which regulates and promotes meat and livestock exports, replaced the Australian Meat Board. (See Year Book No. 61, page 851 for particulars of that Board's functions).

Two groups—The Meat and Livestock Exporters and Abattoir Operators Consultative Group and the Livestock Producers Consultative Group—are responsible for nominating corporation members and will:

- advise the Corporation on important matters such as trade and market matters; and
- disseminate information on Corporation decisions and policies to people engaged in the meat and livestock industries.

In addition to the Consultative Groups, an Australian Meat Industry Conference has been established. It is representative of all parties with an interest in matters for which the Corporation is responsible and includes representatives of producers, exporters, meatworks, packers, processors, livestock agents, unions and consumers. The Conference, meeting annually, provides a forum in which organisations representing the diverse interests of the meat and livestock industries debate issues of concern to them.

The Corporation's main functions are to encourage, assist, promote and control the export of meat and livestock from Australia, and to promote the sale of meat in Australia. It has the authority, also, to perform a range of other functions aimed at improving the production of meat and livestock and for the general benefit of the meat and livestock industries.

Finance

As with the Meat Board, one component of the Livestock Slaughter Levy will be used to finance the Corporation's activities. The other components will continue for research and disease eradication in cattle.

The Beef Industry (Incentive Payments) Scheme

This Act was promulgated on 31 October 1977. Its purpose was to enable payments to be made to beef producers, provided they met certain conditions related to cattle husbandry procedures, including carrying out recognised disease control. The legislation provided for producers owning fifty or more marked cattle kept for beef production to make claims for recognised procedures taken between 23 September 1977 and 22 September 1978. Recognised disease control processes included:

- dipping and similar treatment for external parasites,
- drenching for internal parasites,
- brucellosis and tuberculosis eradication, and
- vaccinations.

The subsidy was limited to \$2,000 per producer, with companies, partnerships and trusts being treated as individual producers.

For further details on topics such as the Livestock Slaughter Levy, various meat research schemes and international agreements, *see* Year Book No. 61, pages 851–853.

Wool

With about one-seventh of the world's woolled sheep, Australia produces about one-third of the world's wool and more than half the world's fine-quality Merino wool. More than 90 per cent of the production is exported, mainly as greasy wool, although substantial amounts of scoured and carbonised wool, wool on sheep skins and small quantities of semi-manufactured wool are also shipped.

Wool production

Wool as shorn from the sheep contains an appreciable amount of grease, dirt and other extraneous matter, and is termed 'greasy wool'. The quantity of grease and other matter in a fleece differs not only between countries, but between districts in the same country. It fluctuates with the vagaries of the season, and with the breed and the condition of the sheep. To allow for this factor, the weight of greasy wool is sometimes given on a 'clean' basis, i.e. minus the estimated amount of impurities. The net wool fibre content of greasy wool, expressed as a percentage, is termed 'clean yield'.

From 1946–47 to 1952–53 the Australian Wool Realisation Commission, and from 1953–54 the Wool Statistical Service, has assessed annually the clean yield of the Australian wool clip. 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 59.93 per cent in 1977–78.

Wool scoured, washed and carbonised in Australia before export, however, has a somewhat lower clean yield than the whole clip, because the grade of greasy wool treated locally for export as scoured, washed or carbonised contains quantities of dirty and low-grade wool. The quantity of scoured and carbonised wool exported during 1977–78 was about 10.8 per cent of total raw wool exports in terms of greasy. 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 plate 30, page 302.

RURAL INDUSTRY
SHEARING, WOOL PRODUCTION AND VALUE

Year	Wool production					Gross value (b)
	Sheep and lambs shorn	Average fleece weight	Shorn wool	Other wool(a)	Total wool	
					Quantity	
	million	kg	'000 tonnes	'000 tonnes	'000 tonnes	\$m
1973-74	150.6	4.28	644.3	56.6	700.9	1,229
1974-75	161.9	4.48	725.3	68.2	793.5	953
1975-76	159.6	4.27	681.4	72.8	754.3	1,000
1976-77	145.8	4.28	623.9	78.8	702.7	1,173
1977-78p	143.0	4.22	603.0	70.7	673.7	1,149

(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.

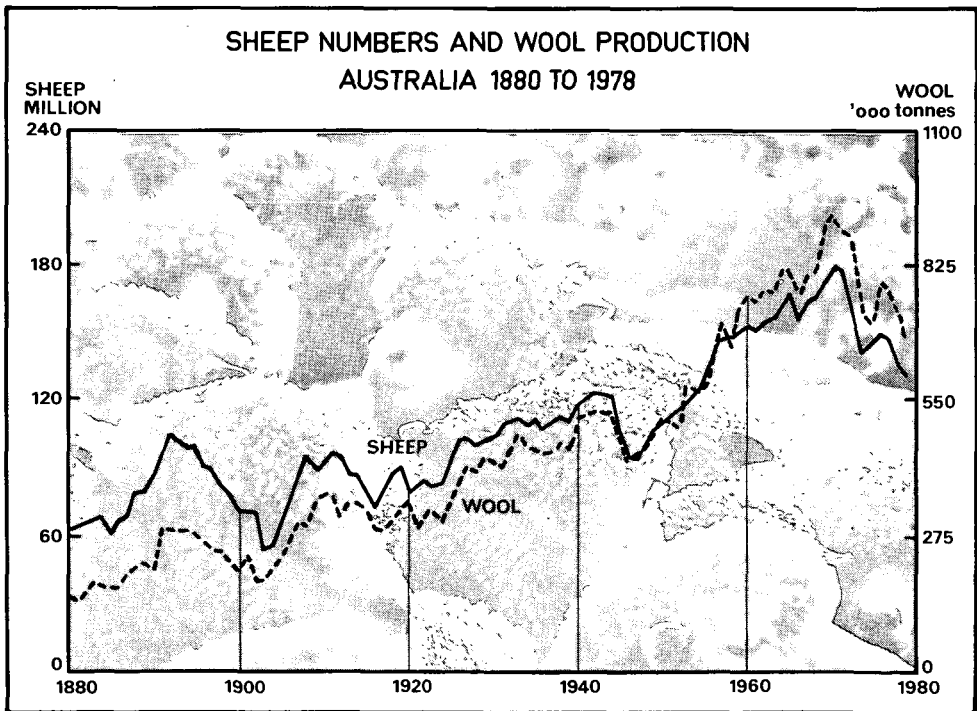


PLATE 30

Wool receipts

The ABS collects details of the amount of taxable wool received by brokers and dealers from wool producers; this excludes wool received by brokers on which tax has already been paid by other dealers (private buyers) or brokers.

TAXABLE WOOL RECEIVALS

Year ended 30 June	Receivals			Dealers as per cent of total receivals	Shorn wool production(a)
	Brokers (NCWSB)	Dealers	Brokers and dealers		
	—'000 tonnes—			per cent	'000 tonnes
1973	513.7	129.8	643.6	20.2	643.6
1974	507.3	117.1	624.4	18.8	644.3
1975	593.9	135.3	729.2	18.5	725.3
1976	525.2	161.6	686.9	23.5	681.4
1977	476.5	151.5	628.0	24.1	623.9
1978p	459.2	154.0	613.2	25.1	606.3

(a) Obtained from the annual Agricultural Census.

The large pastoral houses have been responsible for handling the bulk of Australian wool since the early years of the industry and they have done this through the auction system. Following the Second World War, private treaty trading has become a significant alternative method of disposal. In the 'seventies there has been a big increase in private trading reaching a quarter of the 1977-78 clip. The proportions vary between States, with Western Australian private buyers in 1972-73 taking 37 per cent of the total receivals in that State.

Prices

Fluctuations in Australian wool prices have a marked effect on rural and national income. In 1945-46 the gross value of wool 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 \$1303.8 million or 55.6 per cent of total agricultural industries.

Year	Value of wool production as a per cent of total agriculture	Value of wool exports as a per cent of total Australian exports
1973-74	19.2	18.6
1974-75	16.2	9.3
1975-76	16.2	12.3
1976-77	17.3	14.0
1977-78p	16.8	10.5

Stock

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})

At 30 June	Stocks of—					
	Raw wool(a)		Semi-processed wool		Total wool	
	Greasy	Clean	Greasy	Clean	Greasy	Clean
1973	114.5	63.7	11.3	6.4	125.8	70.1
1974	181.9	104.4	10.5	5.9	192.4	110.3
1975	450.3	268.8	7.5	4.3	457.8	273.1
1976	387.5	232.1	9.3	5.5	396.9	237.6
1977	266.4	159.5	8.5	5.1	274.9	164.6

(a) Includes from about 1971 or 1972 varying amounts of stock held by the Australian Wool Corporation: 1974, 5,600 tonnes greasy; 1975, 34,300 tonnes greasy; 1976, 35,600 tonnes greasy; 1977, 46,900 tonnes greasy.

Wool consumption

Two series of calculations on Australian wool consumption are shown below. The first measures consumption in terms of scoured wool used by mills (on the woollen and worsted systems) and for the manufacture of felt (including hats); this series has been included for comparison purposes with other countries. The second is calculated from the usage of woollen and worsted yarn (including

wool and other fibre mixtures) and scoured wool for felt manufacture (including hats). 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 in terms of retail purposes. It has not been possible to estimate wool consumption at the retail level because of the impracticability of obtaining reliable data concerning the wool content of the multiplicity of woollen and worsted piece-goods and finished articles exported and imported and held as stock by manufacturers, wholesalers and retailers.

CONSUMPTION OF RAW AND PROCESSED WOOL (^{'000 tonnes})

Year	Consumption of raw wool		Consumption of processed wool					
	Greasy	Clean	Worsted yarn used (a)		Woollen yarn used (b)		Total	
			Greasy	Clean	Greasy	Clean	Greasy	Clean
1972-73 . . .	56.2	32.2	18.9	10.7	17.5	10.4	37.5	21.6
1973-74 . . .	45.6	26.0	15.0	8.4	17.1	10.0	33.3	18.9
1974-75 . . .	31.2	17.8	10.4	6.3	14.6	8.6	26.0	15.4
1975-76 . . .	47.0	26.2	16.3	8.9	16.4	9.5	33.9	18.9
1976-77 . . .	48.9	27.3	13.1	7.1	14.3	8.3	28.6	15.9

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

(b) Comprises pure and mixed woollen yarn.

Exports of wool

In 1977-78, of the 493,600 tonnes of greasy and slipe wool exported, 145 thousand (29 per cent) went to Japan. Other large shipments were 16 per cent to the USSR, 9 per cent to both Italy and the Federal Republic of Germany and 7 per cent to France.

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
1973-74	488.1	41.4	52.6	593.3	1,248
1974-75	456.9	58.0	66.2	590.6	786
1975-76	583.5	68.0	72.8	735.6	1,032
1976-77	675.6	81.5	78.8	856.3	1,587
1977-78p	493.6	69.5	70.7	641.5	1,289

(a) Includes semi-processed wool.

Wool marketing

There is no Government control over the marketing of wool, but the Australian Wool Corporation, which is a statutory body, performs functions aimed at assisting the orderly and efficient disposal of wool as well as encouraging demand for wool. The Wool Corporation came into operation on 1 January 1973 through the amalgamation of the former Australian Wool Commission and Australian Wool Board.

The functions of the Corporation relate to wool marketing, wool use promotion, wool testing, wool research and the management of wool stores. In addition, the Corporation is required to enquire into methods of marketing wool and to report on matters relating to marketing. A comprehensive report on wool marketing was released on 17 January 1974 in which the Corporation recommended the adoption of procedures aimed at stabilising wool prices and regulating availability. The central recommendation of the report was that the Corporation acquire ownership of all wool for export. The proposal was submitted by the Corporation to the Commonwealth Government and is under study.

For the seasons 1974-75 to 1978-79, the Corporation was authorised by the Government to operate a minimum reserve (floor) price at wool auctions. Credit facilities for \$350 million were provided by the Government to the Corporation for this purpose. These are additional to credit available to the Corporation from commercial sources. Woolgrowers are required to pay a levy of 5 per cent on sales proceeds of shorn wool for a reserve against possible losses from the scheme.

Funds for other activities of the Corporation (notably wool promotion) are provided jointly by woolgrowers, through a levy on shorn wool proceeds (*see below*), and the Commonwealth Government. The Corporation has embarked on a limited offer to purchase scheme (LOPS) which is a trial of its commercial ability to purchase, handle and sell wool. Advantages of the scheme for

growers include an immediate reduction in standard handling charges, payment in full no later than 15 working days after receipt of the last bale of a clip or portion of a clip purchased, and a purchase price set on current market price. The scheme concentrates on efficiency in wool-store operations and the Corporation has not limited its total purchase for the scheme to particular clip sizes or lot sizes. If it wishes to receive part of a clip, the grower retains the right to require purchase of the whole clip.

A key part of the planning is the flexipack—a giant poly bag which can hold up to 450 kg of greasy wool in the shape of a giant 2.5 metres sausage. The flexipack is loaded in the woolshed, doing away with the need for either woolpress or conventional pack. It is then loaded onto a special truck by crane, and vacuum-shrunk by sucking the air out to bring it down to a more manageable size. Being an impervious plastic it needs no special storage and can be left in the open.

Objective measurement of wool. Sealed tender sales have been developed since the early 1970s and are based on an inspection sample which had been tested and certificated by the Australian Wool Testing Authority. These objective measurement certificates are also used in auction sales, replacing subjective testing by wool buyers.

Year Book No. 61 contains a description of some of the regulations, statutory bodies, levies, etc., operating in the wool industry. Topics covered include: the Australian Wool Industry Conference, the Randall Committee, Wool Levy, the Commonwealth Government's contribution to wool research and promotion, and the development of objective measurement of wool.

For further details on sheep shorn, wool production and overseas trade see the following bulletins: *Livestock Statistics* (7203.0), *Sheep numbers, shearing and wool production* (7211.0), *Wool production and shearing* (7210.0), *Wool Statistics* (7212.0), *Brokers and Dealers Receipts of Taxable Wool* (monthly) (7213.0), *Overseas Trade* (5409.0, 5410.0), *Production Bulletin No. 4* (8360.0) and *Value of Agricultural Commodities Production* (7503.0).

Dairying

Dairying in Australia occurs mainly 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, better feeding resulting from the use of improved pastures, and better farming methods arising from the development of modern farm machinery and the application of the results of research.

A significant development in recent years has been the shift away from on-farm separation and delivery of cream to factories to a widespread system of refrigerated bulk milk delivery. The Commonwealth Government encouraged this transformation by providing interest-free loans under the Australian Dairy Adjustment Program.

The manufacturing and processing sections of the industry are well advanced technologically and certain techniques and equipment developed in Australia are now being adopted overseas. State Agricultural Departments give advice on approved methods of production and inspect animals, buildings and marketable produce, to ensure 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>Cows and heifers used or intended for production of milk or cream for sale</i>					
	<i>Bulls used or intended for service</i>	<i>Cows (in milk and dry)</i>	<i>Heifers</i>		<i>House cows and heifers(a)</i>
			<i>1 year and over</i>	<i>Under 1 year</i>	
<i>31 March</i>					
1974	77	2,371	633	554	121
1975	78	2,355	634	537	122
1976	73	2,345	595	467	122
1977	64	2,174	537	385	105
1978p	60	2,057	480	367	100

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

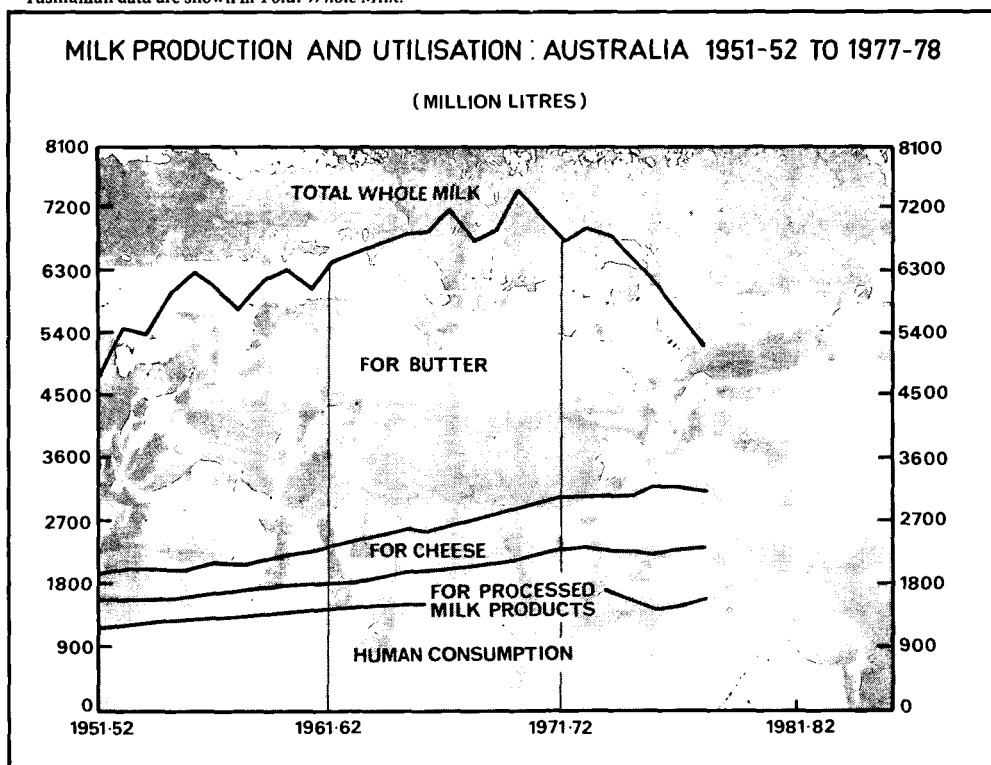
The late sixties and early seventies saw the elimination of many of the smaller, less productive herds, and the industry has increasingly concentrated in the environmentally more favoured regions. Typically, labour on dairy farms is provided by the owner operator and his family, but wide variations exist between regions and sectors.

In the past, fluctuations in milk production have been absorbed by the manufacturing sector, especially for butter production which, in 1949-50, accounted for 64 per cent of total milk output. Domestic consumption of butter has fallen from 11.4 kg per head per year in 1949-50 to 5.8 kg in 1976-77 and butter production now accounts for 39 per cent of total milk output. Cheese has now become the major growth product in dairying, with domestic consumption rising steadily from 2.9 kg per head per year in 1949-50 to 5.3 kg per head per year in 1976-77.

PRODUCTION, UTILISATION AND GROSS VALUE OF WHOLE MILK

Year	Whole milk used for—				Total whole milk
	Factory butter(a)	Non-processed cheese(a)	Processed milk products	Other purposes(a)(b)	
QUANTITY (million litres)					
1973-74	3,624	889	535	1,670	6,718
1974-75	3,345	936	627	1,589	6,497
1975-76	3,026	1,057	631	1,534	6,248
1976-77	2,447	991	734	1,601	5,773
1977-78p	2,008	917	701	1,558	5,185
GROSS VALUE (\$ million)					
1973-74	184.5	47.0	32.7	196.2	(c) 467.6
1974-75	191.1	61.6	39.0	217.7	(c) 518.5
1975-76	151.6	57.1	34.1	238.2	(c) 490.3
1976-77	(d)128.1	(d)54.3	(d)38.8	275.2	520.9
1977-78p	(d)139.6	(d)56.5	(d)44.0	291.5	550.0

(a) Prior to 1963-64 milk used to produce farm butter and cheese was included with factory production; subsequently milk used in farm production is included with human consumption and other purposes. (b) Principally fluid milk for domestic purposes. (c) Includes data not available for publication in the components. (d) Data are incomplete. Tasmanian data are shown in *Total Whole Milk*.



Exports

The United Kingdom has, in the past, been Australia's main butter market, but this market was effectively closed with Britain's joining the European Economic Community. There has been some diversification in the form of butter oil exports to South East Asia, in line with the development of milk recombining plants there. Japan has replaced the United Kingdom as the major outlet for Australian cheese.

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
1972-73	184.9	57.8	48.0	93.4	29.6	21.7	7.5
1973-74	175.5	37.9	27.2	95.8	38.0	28.9	7.4
1974-75	161.3	18.9	19.5	98.6	34.2	34.6	8.0
1975-76	147.6	52.5	42.2	112.6	31.5	35.2	10.0
1976-77	118.2	22.6	26.0	103.5	52.5	56.2	10.6
1977-78p	111.7	17.5	22.7	115.4	44.1	55.3	11.3

(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 head per year				
	Fluid whole milk	Butter	Cheese(a)	Fluid whole milk	Butter	Cheese(a)	Margarine	
							Table	Other
	mil. litres	'000 tonnes	'000 tonnes	litres	kg	kg	kg	kg
1972-73	1,602	109	68	120.6	8.2	5.1	1.6	4.0
1973-74	1,544	104	71	114.5	7.7	5.3	1.7	4.0
1974-75	1,460	98	71	106.6	7.2	5.2	2.2	3.8
1975-76	1,401	93	79	101.1	6.8	5.7	3.1	3.9
1976-77p	1,467	81	74	104.8	5.8	5.3	4.7	3.5
1977-78p	n.y.a.	71	n.y.a.	n.y.a.	5.0	n.y.a.	n.y.a.	n.y.a.

(a) Prior to 1971-72 cheese data comprised combined product and natural equivalent weight. Data since 1971-72 are expressed in natural equivalent weight.

The problems facing the industry can be reduced to contracting milk production, a dwindling domestic market, a continuation of exports at a fairly constant percentage of production to uncertain depressed markets characterised by price instability. Cheese and whole milk powder have relatively better market returns and prospects.

Wholesale prices of butter and cheese in Australia

These prices, in the past, were set by the Australian Dairy Industry Council (ADIC) in association with manufacturers. Since the inception of the Prices Justification Tribunal, the ADIC on behalf of the manufacturers, makes applications for increases in the domestic bulk wholesale (ex-factory) prices.

For further details on the dairying industry see the bulletins, *Dairying and Dairy Products* (7209.0), *Milk Statistics*, monthly (7208.0), *Production Bulletin No. 3, Food, Drink and Tobacco* (8359.0), and *Production of Non-Processed Cheese* (8307.0). Year Book No. 61, pages 854-857 contains a detailed description of the various bounties, stabilisation funds, schemes and programs that regulate the industry.

Beekeeping

Although practised as a separate industry, beekeeping is also carried on in conjunction with other branches of farming. A feature of the industry is that it consists mainly of apiarists operating on a large scale with mobile equipment. Some of these apiarists move as far afield as from Victoria to Queensland in an endeavour to provide a continuous supply of nectar from flora suitable for their bees.

NOTE: Statistics in the following table relate, for the years since 1974-75, to apiarists with forty or more hives. Information to 1973-74 covered the operations of apiarists with five or more hives (six or more in New South Wales).

BEEKEEPING STATISTICS

Year	Number of apiarists	Honey produced				Beeswax produced		
		Number of beehives		Quantity	Average pro- duction per productive hive	Gross value	Quantity	Gross value
		Productive	Total					
1972-73	5,926	'000	'000	'000 tonnes	kg	\$'000	tonnes	\$'000
1973-74(a)	5,779	395	528	18.1	45.7	8,130	261	294
1974-75	2,266	409	544	21.2	51.8	11,768	322	525
1975-76	2,266	381	491	20.6	54.2	9,292	326	515
1976-77	2,285	377	497	21.4	56.8	10,453	368	633
1976-77	2,274	374	493	14.9	39.9	8,405	352	777

(a) see Note above.

EXPORTS OF HONEY AND BEESWAX

Year	Honey		Beeswax	
	Quantity	Value f.o.b.	Quantity	Value f.o.b.
	'000 tonnes	\$'000	'000 tonnes	\$'000
1972-73	8.0	4,722	41	56
1973-74	4.7	3,505	234	356
1974-75	9.6	5,783	243	459
1975-76	11.5	6,325	217	399
1976-77	6.6	4,602	255	694

Honey levy

Under the *Honey Levy Act* 1962, a levy is imposed on domestic sales of honey for the purpose of financing the operations of the Australian Honey Board. The current rate of levy, which became effective on 1 October 1975, is 1.3 cents per kg; it can be increased by regulation to a maximum of 2.2 cents per kilogram.

In April 1974 an export charge of 0.3 cents per kg was introduced under the *Honey Export Charge Act* 1973 to provide necessary additional finance for the Honey Board to regulate Australian honey exports and undertake associated promotional and research activities. This levy may be increased by regulation to a maximum of 1 cent per kg.

For further information, see *Beekeeping, Australia* (72 14.0).

Eggs and egg products

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

Year	Production(a)		Exports	Processed food(b)	Apparent consumption in Australia as human food	
	Quantity	Gross value			Total	Per head per year
	'000 tonnes	\$ million	'000 tonnes	'000 tonnes	'000 tonnes	kg
1972-73	193.2	117.4	4.5	35.9	155.1	11.7
1973-74	189.0	147.8	2.1	31.5	157.5	11.7
1974-75	197.7	171.7	2.0	38.4	160.0	11.7
1975-76	196.3	178.5	1.8	32.5	161.7	11.7
1976-77p	192.7	182.2	0.9	28.3	163.4	11.7
1977-78p	n.y.a.	195.0	0.8	n.y.a.	n.y.a.	n.y.a.

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

Commercial egg production rose steeply following the introduction in 1965 of the Council of Egg Marketing Authorities of Australia (CEMA) Stabilisation Plan. However, disposals of eggs-in-the-shell lagged, and exports and stocks of egg pulp packed for export rose substantially. Average net returns to producers fell in 1971-72 to the lowest level since 1950-51. By 1972-73 producer returns

rose significantly through improved domestic and export prices, and, as part of a scheme to control commercial egg production, a national hen quota was agreed to by the States in October 1972. It was believed that hen quotas encouraged changes in husbandry practices which boosted average productivity of laying hens.

Egg consumption

There is a large section of the industry, including eggs produced in areas outside the control of the Egg Board and by backyard poultry keepers, for which production and consumption data are not available. This has been variously estimated at about 40 per cent of *recorded* production.

Exports

Egg pulp is Australia's major egg export product, with Japan being the most important market. As Japan is aiming at self-sufficiency, the prospects for expanding Australia's exports to Japan are not encouraging. Increased transport costs are likely to affect the export of shell eggs, particularly to the Middle East.

EXPORTS OF EGGS AND EGG PRODUCTS

Year	Eggs in shell		Eggs not in shell			
			Liquid form		Dry	
	Quantity	Value f.o.b.	Quantity	Value f.o.b.	Quantity	Value f.o.b.
	'000 doz	\$'000	tonnes	\$'000	tonnes	\$'000
1973-74	2,203	872	12,974	5,521	401	654
1974-75	2,343	951	11,627	7,229	96	121
1975-76	2,684	1,033	15,858	9,412	58	96
1976-77	1,293	655	12,693	9,151	35	96
1977-78	1,248	654	9,739	10,272	56	158

For further details on eggs and egg products *see* the monthly bulletin *Chicken Hatchings* (7207.0) and *Apparent Consumption of Foodstuffs and Nutrients* (4306.0).

Rural improvements

The Soils of Australia

Year Book No. 52 contains an article (pages 873-9) on the soils of Australia which deals with the following matters: nature and development of Australian soils, including the agricultural development of soils, and types of Australian soils. A soil map of Australia and illustrations are included on plates 47 to 51 of Year Book No. 52.

Fertilisers

The bulk of Australia's requirements of nitrogenous and phosphatic fertilisers is supplied by the domestic industry. Requirements of potassic fertilisers are primarily imported. Production of nitrogenous fertilisers is based on both Australian natural and refinery gas and imported naphtha feed-stocks. Production of phosphatic fertilisers is dependent upon imported phosphate rock but, with the development of domestic rock deposits, rock from these sources will be phased out of local manufacture.

As a result of widespread phosphate deficiency in Australian soils, phosphatic fertilisers account for a large proportion of usage both on crops and pastures.

Principal crops and pastures fertilised, etc.

Information regarding the principal crop and pasture areas treated with artificial fertilisers, and the quantity of artificial fertilisers (superphosphate, nitrates, etc.) used, is given in the following tables.

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
1972-73	26,076	3,522	276	392
1973-74	29,529	4,110	367	360
1974-75	24,858	3,367	335	360
1975-76	18,976	2,222	353	298
1976-77	21,266	2,303	326	429

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 element deficiencies in soils identified.

Up to 90 per cent of all artificial fertilisers used in Australia are made up of 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. The increased use of fertilisers, combined with improved grass and crop species, and more scientific methods of crop and pasture rotation, has probably succeeded in reversing the declining trend in the fertility of Australian soils, at least in the more developed regions.

SUPERPHOSPHATE USAGE

<i>Selected crops and pastures</i>						
<i>Year</i>	<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)						
1972-73	15,256	497	6,071	3,535	240	26,076
1973-74	17,994	495	7,147	3,258	236	29,529
1974-75	14,484	639	6,358	2,678	248	24,858
1975-76	8,568	346	6,276	3,092	267	18,976
1976-77	10,007	447	6,745	3,366	285	21,266
SUPERPHOSPHATE USED ('000 tonnes)						
1972-73	2,233	80	688	411	20	3,522
1973-74	2,709	89	804	402	21	4,110
1974-75	2,077	113	728	326	21	3,367
1975-76	1,031	53	665	354	26	2,222
1976-77	1,166	63	615	351	27	2,303

Pasture improvement

An article on pasture improvement, which includes notes on indigenous and introduced species of grasses and traces the development of pasture research in Australia, appears on pages 1001-1002 of Year Book No. 49.

Soil conservation

Year Book No. 49 contains an article (pages 1003, 1004) on soil conservation which deals with the following matters: land use and soil erosion, agents of erosion, prevention and control, and the activities of various Federal and State authorities which promote and co-ordinate research into the problems of soil erosion and the initiation of preventive measures.

The chief sources of Australia's supplies of natural phosphate are Nauru, Christmas Island (Indian Ocean), Gilbert and Ellice Islands and Morocco. Sodium nitrate is obtained chiefly from Chile and the U.S.A.

PRODUCTION AND IMPORTS OF FERTILISERS

Item		1973-74	1974-75	1975-76	1976-77	1977-78
PRODUCTION						
Superphosphate (a)	'000 tonnes	5,288	3,092	2,316	n.y.a.	n.y.a.
Mixed chemical fertilisers (including complete manures)	'000 tonnes	1,503	1,049	708	n.y.a.	n.y.a.
Leaf and foliage type fertilisers (including dry and liquid form)	tonnes	300	368	1,129	n.y.a.	n.y.a.
Manures (without added chemical fertilisers) (b)	tonnes	18,864	9,554	20,344	n.y.a.	n.y.a.
IMPORTS						
Crude fertilisers (mainly natural phosphate)	'000 tonnes	3,113	2,651	1,464	1,330	1,612
	Value \$m	35.5	74.6	18.4	42.5	55.6
Manufactured, mineral or chemical fertilisers—						
Nitrogenous (c)	'000 tonnes	7	12	6	22	23
	Value \$m	0.5	2.5	0.7	2.6	2.5
Potassic (d)	'000 tonnes	183	211	110	165	157
	Value \$m	5.2	9.5	7.3	9.6	9.1
Other (e)	'000 tonnes	7	5	18	71	35
	Value \$m	0.9	1.1	1.3	8.9	5.1

(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 N.P.K. complete fertilisers.

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.

AERIAL AGRICULTURE

Year ended 31 March	Area ('000 hectares)			Materials used ('000 tonnes)		Total flying time '000 hours
	Top dressed and seeded	Sprayed	Total(a)	Super- phosphate	Seed	
1973	3,359	1,355	4,788	446.2	1.6	89.4
1974	4,870	1,870	6,776	546.0	2.5	93.3
1975	3,378	1,544	5,080	473.8	4.8	89.2
1976	1,164	2,059	3,314	105.2	3.5	53.8
1977	1,381	1,624	3,064	151.5	2.5	49.6

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

Irrigation on rural holdings

Irrigation is one of the factors by which rural industry 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 (nearly 1.5 million hectares in 1975-76) forms about 10 per cent of the total area under crops and only 0.3 per cent of the total area of rural holdings.

CROPS AND PASTURES: AREA IRRIGATED(a)

('000 hectares)

Year	Sown and native pastures (including lucerne)	Cereals for all purposes	Sugar cane	Vegetables for human consump- tion	Fruit	Grapevines	All other	Total	Percent of total crops
1972-73	1,099.7	250.8	70.9	64.9	59.5	44.9	94.9	1,685.5	11.8
1973-74	983.5	177.4	66.2	59.2	54.6	44.3	85.4	1,470.6	9.7
1974-75	955.1	183.7	74.0	68.9	56.1	44.9	86.3	1,469.0	10.6
1975-76	920.4	252.7	73.3	63.4	52.9	45.6	66.6	1,474.9	10.1

(a) Irrigation statistics were not collected in 1976-77.

Sources of irrigation water

Most irrigation areas in Australia are supplied with water by a State authority, although there are also private schemes operating. The major reasons for expansion of the area irrigated have been public investment in the building of dams and major reservoirs and private investment by farmers in irrigation plant and earthworks. Sources of irrigation water are collected irregularly. The data may differ slightly from the previous table.

SOURCES OF IRRIGATION WATER: 1971-72 AND 1974-75

('000 hectares)

<i>Surface water</i>						
<i>State</i>	<i>State irrigation schemes</i>	<i>Other(a)</i>		<i>Underground water supply(b)</i>	<i>Town or country reticulated water supply</i>	<i>Total</i>
		<i>Direct from rivers creeks, lakes, etc.</i>	<i>From farm dams</i>			
1971-72						
New South Wales . . .	436.3	239.9	12.4	58.0	1.2	747.8
Victoria	500.8	67.0	18.8	14.2	3.3	604.2
Queensland	21.7	43.6	12.5	105.4	0.3	183.6
South Australia . . .	21.7	18.7	2.4	32.7	0.6	76.1
Western Australia . .	18.0	3.7	5.1	4.3	0.1	31.3
Tasmania	n.a.	9.7	9.8	0.2	0.1	19.9
Australia	998.6	382.5	61.1	214.9	5.7	1,662.7
1974-75						
New South Wales . . .	264.1	226.3	12.5	33.9	1.6	538.4
Victoria	421.9	68.1	54.1	30.6	18.5	593.1
Queensland	25.1	48.4	14.2	109.3	0.1	197.1
South Australia . . .	20.6	18.9	3.0	35.6	0.8	78.9
Western Australia . .	12.9	4.2	5.9	4.5	0.6	28.1
Tasmania	0.8	9.9	12.3	0.4	0.2	23.7
Australia	745.4	375.9	101.9	214.4	20.1	1,457.8

(a) Includes private group schemes.

(b) E.g. bore, well, spear.

Agricultural machinery on rural holdings

Statistics on the type of agricultural machinery on rural holdings were published in early issues of the Year Book. Additional information was published in the bulletin *Rural Land Use, Improvements, Agricultural Machinery and Labour*, 1974-75 (7103.0). Details of the sales of new tractors for agricultural purposes are given in the quarterly publication *Receipts, Sales and Stocks of New Tractors* (8507.0).

Rural employment

Employment on rural holdings

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 rural 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 rural labour force is now producing a larger output of farm products.

RURAL EMPLOYMENT(a)
(Source: annual Agricultural Census)

<i>Males, permanent ('000)</i>					<i>Persons working more than 15 hours a week ('000)</i>		
<i>31 March</i>	<i>Owners, lessees or share farmers</i>	<i>Relatives, etc.</i>	<i>Employees (b)</i>	<i>Total</i>	<i>Males</i>	<i>Females</i>	<i>Persons</i>
1972	194.9	8.8	65.3	269.0	n.a.	n.a.	n.a.
1973	189.3	7.8	62.6	259.6	n.a.	n.a.	n.a.
1974	185.9	7.3	62.2	255.4	n.a.	n.a.	n.a.
1975	181.6	7.0	55.0	243.6	n.a.	n.a.	n.a.
1976	n.a.	n.a.	n.a.	n.a.	256.0	80.3	336.3

(a) Employment statistics were not collected in 1976-77.

EMPLOYMENT IN AGRICULTURE

<i>Month of May</i>	<i>Males</i>	<i>Married women</i>	<i>All females</i>	<i>Persons</i>
1973	305.1	54.7	65.3	370.4
1974	305.9	48.9	59.9	365.8
1975	297.6	52.1	62.4	360.0
1976	284.2	57.1	67.8	352.0
1977	290.2	63.4	75.2	365.4
1978(a)	265.3	66.6	80.4	345.7

(a) Statistics are based on the 1976 Census of Population and Housing benchmarks and adjusted for a revised sample and questionnaire.

Source: Quarterly population survey conducted by the ABS throughout Australia. For further details see *The Labour Force* (6203.0, 6204.0).

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.

Many of the processes are also referred to in this Year Book in the relevant section of the chapter. For details on the operations of the Australian Agricultural Council, the Rural Reconstruction Scheme and the agricultural extension services provided by the States' Departments of Agriculture see Year Book No. 61, pages 837-839.

