CHAPTER 13

AGRICULTURAL INDUSTRIES

This chapter is divided into the following major parts:—Introduction; Sources of statistics and definitions of units; Structural statistics (provides data on the legal arrangements, size and industry class of the business organisations operating within the agricultural sector); Financial statistics (provides estimates of the financial performance of business organisations engaged in agricultural activities); Value of agricultural commodities produced and index of values at constant prices; Apparent consumption of foodstuffs and nutrients; Land utilisation; Crop statistics; Livestock statistics; Livestock products; Agricultural improvements and employment.

Introduction

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

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

Sources of statistics and definitions of units

Agricultural Census

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

The ABS excludes from the Census those establishments which make only a small contribution to overall agricultural production. Thus, establishments with agricultural activity have been included in the 1982–83 Census if they had, or were expected to have, an estimated value of agricultural operations of $2,500 or more. In previous years the value cut off was applied at the enterprise level—for 1981–82 the value was $2,500 and for earlier years, $1,500.

While these changes have resulted in some changes in the counts of numbers of establishments appearing in publications, the effect on the statistics of production of major commodities is small. Statistics of minor commodities normally associated with small scale operations may be affected to a greater extent.

Details of the method used in the calculation of the estimated value of agricultural operations are contained in the publication *Agricultural Industries: Structure of Operating Units, Australia* (7102.0). 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 Integrated Agricultural Register contained information about the area, type, legal status, level of activity and location of units engaged in agriculture and was originally compiled by adding data in a special census of economic units conducted in 1974 to existing data relating to physical characteristics of agricultural establishments. Details of agricultural units for 1982–83 will be derived from the Intergrated Register Information System (IRIS) which has absorbed the IAR. Details of the structure of economic units engaged in agriculture, in hierarchical order, are:

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

Agricultural Finance Survey (AFS)

The triennial AFS collects detailed financial statistics from a sample of agricultural enterprises. The main purpose of the survey is to produce estimates of the financial performance of the agricultural sector and its component industries.

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 1981–82. Although the definitions of the operating units have been provided above, the following terminology is also used:

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

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

NUMBER OF UNITS BY TYPE OF UNIT, 1981–82(a)

Unit	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*Aust.(b)*
Agricultural establishments . .	52,695	46,167	38,820	19,170	16.613	5,664	174,166
Agricultural enterprises . . .	50,872	44,873	32,342	18,699	15,354	5,439	168,309

(*a*) Not comparable with figures for previous periods. Prior to 1981–82 an enterprise was not tabulated if the estimated value derived was less than $1,500: for 1981–82 this estimated value was increased to exclude enterprises below $2,500. For direct comparisons with previous periods refer to Explanatory Notes to the publication *Agricultural Industries: Structure of Operating Units, Australia,* 1981–82 (7102.0). (*b*) Includes enterprises in the Northern Territory, Australian Capital Territory and multi-State enterprises.

AGRICULTURAL ENTERPRISES, INDUSTRY AND ESTIMATED VALUE OF OPERATIONS: 1981–82

ASIC Code	Industry of enterprise Description	Estimated value of operations ($'000) 3–9	10–19	20–29	30–39	40–49	50–59	60–74	75–99	100–149	150–199	200 and more	Total enterprises
0124	Poultry for meat	46	61	98	81	78	66	71	62	45	17	34	659
0125	Poultry for eggs	80	61	59	41	38	41	51	98	133	116	305	1,023
0134	Grapes	680	807	823	758	513	356	283	216	108	33	30	4,607
0135	Plantation fruit	270	447	387	255	197	148	103	94	78	30	43	2,052
0136	Orchard and other fruit	1,369	1,058	911	675	533	402	442	460	469	160	266	6,745
0143	Potatoes	76	116	120	123	133	140	165	225	244	117	168	1,627
0144	Vegetables (except potatoes)	849	932	588	404	304	190	252	309	344	189	384	4,745
0181	Cereal grains (incl. oilseeds n.e.c.)	965	1,120	1,055	1,062	1,173	1,068	1,606	2,286	2,787	1,517	2,141	16,780
0182	Sheep-cereal grains	446	1,040	1,547	1,961	1,998	2,011	2,780	3,568	3,847	1,739	2,003	22,940
0183	Meat cattle-cereal grains	488	693	611	535	478	383	475	587	551	230	329	5,360
0184	Sheep-meat cattle	1,398	1,821	1,642	1,431	1,186	916	1,047	1,187	1,109	491	637	12,865
0185	Sheep	3,400	3,024	2,497	2,096	1,649	1,261	1,407	1,545	1,419	542	570	19,410
0186	Meat cattle	11,814	7,592	3,644	2,185	1,450	940	934	985	931	441	731	31,647
0187	Milk cattle	758	1,672	2,872	3,931	3,448	2,339	1,964	1,404	818	162	123	19,491
0188	Pigs	466	470	331	249	202	180	191	230	265	121	185	2,890
0191	Sugar cane	38	75	122	231	365	522	903	1,245	1,389	601	662	6,153
0192	Peanuts	9	29	23	43	44	48	44	80	73	39	43	475
0193	Tobacco	2	6	27	44	94	114	186	162	113	26	21	795
0194	Cotton	5	1	2	2	4	2	8	14	35	49	154	276
0195	Nurseries	337	257	162	150	126	120	105	88	122	66	152	1,685
0196	Agriculture n.e.c.	2,457	1,452	688	418	280	199	162	159	132	59	78	6,084
	Total (ASIC Code 01)	**25,953**	**22,734**	**18,209**	**16,675**	**14,293**	**11,446**	**13,179**	**15,004**	**15,012**	**6,745**	**9,059**	**168,309**

AGRICULTURAL ENTERPRISES, INDUSTRY, LEGAL STATUS AND ESTIMATED VALUE OF OPERATIONS: 1981–82

ASIC Code	Industry of enterprise Description	Legal status Sole operator	Family partnership	Other partnership	Private incorporated company	Public incorporated company	Other(a)	Total enterprises
0124	Poultry for meat	132	415	29	71	1	11	659
0125	Poultry for eggs	223	607	47	121	5	20	1,023
0134	Grapes	1,202	3,080	134	147	5	39	4,607
0135	Plantation fruit	675	1,250	61	46	2	18	2,052
0136	Orchard and other fruit	1,961	4,163	209	346	3	63	6,745
0143	Potatoes	463	1,040	47	64	—	13	1,627
0144	Vegetables (except potatoes)	1,389	3,008	117	193	2	36	4,745
0181	Cereal grains (incl. oilseeds n.e.c.)	3,686	11,222	569	898	20	385	16,780
0182	Sheep-cereal grains	4,246	16,262	728	1,188	14	502	22,940
0183	Meat cattle-cereal grains	1,393	3,329	201	325	8	104	5,360
0184	Sheep-meat cattle	3,775	7,176	704	861	15	334	12,865
0185	Sheep	5,947	11,043	859	1,048	13	500	19,410
0186	Meat cattle	12,567	15,270	1,230	1,750	49	781	31,647
0187	Milk cattle	4,952	13,170	425	589	11	344	19,491
0188	Pigs	811	1,820	101	124	6	28	2,890
0191	Sugar cane	1,269	4,444	132	187	3	118	6,153
0192	Peanuts	114	336	4	14	1	6	475
0193	Tobacco	153	571	34	21	2	14	795
0194	Cotton	39	146	21	58	2	10	276
0195	Nurseries	460	821	151	227	1	25	1,685
0196	Agriculture n.e.c.	2,685	2,681	315	323	9	71	6,084
	Total (ASIC Code 01)	**48,142**	**101,854**	**6,118**	**8,601**	**172**	**3,422**	**168,309**
	Estimated value of operations ($'000)							
	3 9	12,144	11,602	943	734	21	509	25,953
	10 19	9,767	11,095	646	721	15	490	22,734
	20 29	6,704	10,101	497	524	9	374	18,209
	30 39	5,096	10,295	473	478	10	324	16,676
	40 49	3,648	9,448	394	510	10	284	14,294
	50 59	2,659	7,715	403	454	9	203	11,443
	60 74	2,510	9,240	519	651	16	245	13,181
	75 99	2,409	10,791	622	919	12	253	15,006
	100 149	1,834	10,865	712	1,251	21	327	15,010
	150 199	687	4,835	334	722	6	161	6,745
	200 and more	684	5,867	575	1,637	43	252	9,058
	Total all size groups	**48,142**	**101,854**	**6,118**	**8,601**	**172**	**3,422**	**168,309**

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

AGRICULTURAL ESTABLISHMENTS OPERATED BY AGRICULTURAL AND NON-AGRICULTURAL ENTERPRISES BY INDUSTRY OF ESTABLISHMENT: 1981–82

ASIC Code	*Industry of establishment*	*Operated by agricultural enterprises*	*Operated by non-agricultural enterprises*
0124	Poultry for meat	668	16
0125	Poultry for eggs	1,042	11
0134	Grapes	4,633	141
0135	Plantation fruit	2,060	23
0136	Orchard and other fruit	6,798	137
0143	Potatoes	1,636	17
0144	Vegetables (except potatoes)	4,781	56
0181	Cereal grains (incl. oilseeds n.e.c.)	17,092	185
0182	Sheep-cereal grains	23,297	148
0183	Meat cattle-cereal grains	5,433	71
0184	Sheep-meat cattle	13,021	250
0185	Sheep	19,848	286
0186	Meat cattle	32,768	1,152
0187	Milk cattle	19,652	131
0188	Pigs	2,937	64
0191	Sugar cane	6,249	37
0192	Peanuts	482	4
0193	Tobacco	796	1
0194	Cotton	283	3
0195	Nurseries	1,707	63
0196	Agriculture n.e.c.	6,288	199
	Total (ASIC Code 01)	**171,471**	**2,995**

AGRICULTURAL ESTABLISHMENTS OPERATED BY AGRICULTURAL AND NON-AGRICULTURAL ENTERPRISES BY INDUSTRY OF ENTERPRISE AND INDUSTRY OF ESTABLISHMENT: 1981–82

ASIC Code	Industry of enterprise / Description	Industry of establishment														
						Cereal grains-sheep-cattle and pigs (ASIC Code 018)										
		Poultry (012)	Fruit (013)	Vege-tables (014)	Total (012)-(014)	Cereal grains, (incl. oilseeds (0181)	Sheep, cereal grains (0182)	Meat cattle-cereal grains (0183)	Sheep-meat cattle (0184)	Sheep (0185)	Meat cattle (0186)	Milk cattle (0187)	Pigs (0188)	Total (018)	Other agri-culture (019)	Total estab-lishments (01)
A	Agriculture, Forestry, Fishing and Hunting															
01	Agriculture															
012	Poultry	1,706	3	1	1,710	5	5	-	-	2	10	2	1	25	8	1,743
013	Fruit	-	13,427	8	13,435	4	4	-	-	4	25	4	-	41	12	13,488
014	Vegetables	-	6	6,392	6,398	2	-	2	2	2	21	4	1	34	17	6,449
	Total (ASIC Codes 012-014)	*1,706*	*13,436*	*6,401*	*21,543*	*11*	*9*	*2*	*2*	*8*	*56*	*10*	*2*	*100*	*37*	*21,680*
018	Cereal grains, sheep, cattle and pigs															
0181	Cereal grains (incl. oilseeds)	2	8	-	10	16,886	99	22	17	43	77	7	11	17,162	25	17,197
0182	Sheep-cereal grains	-	12	1	13	92	23,109	9	44	168	47	12	6	23,487	14	23,514
0183	Meat cattle-cereal grains	-	1	1	2	20	5	5,356	7	10	63	1	3	5,465	7	5,474
0184	Sheep-meat cattle	-	8	-	8	14	18	4	12,866	69	94	7	2	13,074	9	13,091
0185	Sheep	-	6	1	7	17	34	3	42	19,501	47	2	1	19,647	24	19,678
0186	Meat cattle	2	10	4	16	20	7	25	37	35	32,180	18	11	32,333	54	32,403
0187	Milk cattle	-	2	2	4	14	10	6	3	4	103	19,589	2	19,731	11	19,746
0188	Pigs	-	2	-	2	1	2	-	1	2	6	1	2,897	2,910	3	2,915
	Total (ASIC Code 018)	*4*	*49*	*9*	*62*	*17,064*	*23,284*	*5,425*	*13,017*	*19,832*	*32,617*	*19,637*	*2,933*	*133,809*	*147*	*134,018*
019	Other agriculture	-	6	7	13	17	4	6	2	8	95	5	2	139	15,621	15,773
	Total (ASIC Code 01)	*1,710*	*13,491*	*6,417*	*21,618*	*17,092*	*23,297*	*5,433*	*13,021*	*19,848*	*32,768*	*19,652*	*2,937*	*134,048*	*15,805*	*171,471*
02	Services to agriculture	-	2	-	2	7	4	2	18	24	24	11	3	93	5	100
03	Forestry and logging	-	1	-	1	1	-	-	9	4	23	5	-	42	3	46
04	Fishing and hunting	-	1	-	1	2	1	-	1	2	12	-	-	18	4	23
	Total (ASIC Division A)	*1,710*	*13,495*	*6,417*	*21,622*	*17,102*	*23,302*	*5,435*	*13,049*	*19,878*	*32,827*	*19,668*	*2,940*	*134,201*	*15,817*	*171,640*
B	Mining	-	2	-	2	2	-	1	2	1	11	-	2	19	-	21
C	Manufacturing	16	81	3	100	9	7	4	16	19	102	8	5	170	34	304
D	Electricity, Gas and Water	-	-	-	-	-	-	-	1	-	6	-	-	7	-	7
E	Construction	1	28	7	36	26	16	9	28	40	159	27	5	310	36	382
F	Wholesale and Retail Trade	5	108	36	149	73	65	34	86	96	336	35	36	761	121	1,031
G	Transport and Storage	-	16	14	30	18	19	5	19	28	120	18	7	234	17	281
H	Communication	-	-	-	-	-	2	-	1	-	2	1	-	6	-	6
I	Finance, Property and Business Services	1	24	8	33	22	12	9	21	32	153	5	1	255	35	323
J	Public Administration and Defence	-	4	2	6	4	1	-	1	7	-	4	-	17	3	26
K	Community Services	2	21	1	24	13	11	5	37	25	149	10	4	254	27	305
L	Recreation, Personal and Other Services	2	13	2	17	8	10	2	10	8	55	7	1	101	22	140
	Total all industries	**1,737**	**13,792**	**6,490**	**22,019**	**17,277**	**23,445**	**5,504**	**13,271**	**20,134**	**33,920**	**19,783**	**3,001**	**136,335**	**16,112**	**174,466**

Financial statistics

Estimates of selected financial aggregates of enterprises predominantly engaged in agricultural activity are shown in the following tables. The estimates have been derived from the triennial Agricultural Finance Survey. Up to 1977–78 the survey was conducted on an annual basis. The notation 'S.E.%' stands 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, is given in the publication *Agricultural Industries, Financial Statistics, Australia, 1980–81* (7507.0). The next Agricultural Finance Survey will be conducted in 1984–85 with reference to the year 1983–84.

ESTIMATES OF SELECTED FINANCIAL AGGREGATES OF AGRICULTURAL ENTERPRISES, 1974–75 TO 1977–78 AND 1980–81

	1974–75		*1975–76*		*1976–77*		*1977–78*		*1980–81*	
	$m	*S.E. %*	*$m*	*S.E. %*	*$m*	*S.E. %*	*$m*	*S.E. %*	*$m*	*S.E. %*
Sales from crops	2,345.5	2	2,545.2	3	2,900.4	2	2,281.5	2	4,543.7	1
Sales from livestock	1,099.7	5	1,103.5	3	1,404.3	2	1,677.8		3,134.6	2
Sales from livestock products	1,382.7	2	1,461.4	3	1,632.4	2	1,682.0	1	2,422.2	2
Turnover	4,985.8	2	5,237.1	2	6,133.6	1	5,874.2	1	10,439.7	1
Purchases and selected expenses	2,278.1	2	2,514.4	3	2,690.4	1	2,838.7	1	5,283.5	1
Value added	2,897.3	3	2,783.1	5	3,310.0	1	2,869.9	1	5,034.9	2
Adjusted value added	2,576.0	4	2,449.1	2	2,924.6	2	2,472.6	2	4,471.7	2
Gross operating surplus	2,083.8	4	1,097.4	5	2,401.7	2	1,896.4	2	3,669.1	2
Cash operating surplus	1,658.7	3	1,594.1	3	2,291.8	2	1,801.6	2	3,419.1	2
Total net capital expenditure	620.0	4	801.7	4	820.9	3	772.7	3	1,301.3	3
Gross indebtedness	2,972.5	4	3,422.2	4	3,397.0	3	3,395.8	3	4,941.0	3

ESTIMATES OF SELECTED FINANCIAL AGGREGATES OF AGRICULTURAL ENTERPRISES, 2 1980–81 ($ million)

	N.S.W	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*Aust. (a)*
Sales from crops	1,048.8	737.5	1,413.4	559.3	710.6	49.1	4,543.7
Sales from livestock	989.2	658.2	617.7	278.1	372.1	97.3	3,134.6
Sales from livestock products	667.1	715.5	249.2	281.9	407.9	81.4	2,422.2
Turnover	2,798.3	2,166.2	2,383.7	1,143.5	1,536.9	238.2	10,439.7
Purchases and selected expenses	1,570.3	1,030.3	1,151.7	515.2	800.8	135.0	5,283.5
Value added	1,136.8	1,121.1	1,192.8	651.8	727.7	115.1	5,034.9
Adjusted value added	961.6	998.2	1,079.6	594.6	659.3	100.3	4,471.7
Gross operating surplus	750.7	852.0	869.7	508.7	569.7	71.3	3,669.1
Cash operating surplus	733.4	797.9	834.2	448.7	514.0	44.9	3,419.1
Total net capital expenditure	312.8	223.4	334.4	184.4	200.2	31.3	1,301.3
Gross indebtedness	1,320.7	870.3	1,030.7	571.0	870.6	171.3	4,941.0

(a) Included Northern Territory and Australian Capital Territory and estimates for multi-state enterprises.

ESTIMATES OF SELECTED FINANCIAL AGGREGATES OF AGRICULTURAL ENTERPRISES, BY INDUSTRY, 1980–81
($ million)

2

	Poultry (0124–0125)	*Fruit (0134–0136)*	*Vege-tables (0143–0144)*	*Cereal grains oilseeds (n.e.c.) (0181)*	*Sheep-cereal grains (0182)*	*Meat cattle-cereal grains (0183)*	*Sheep-meat cattle (0184)*
Sales from crops	6.3	508.0	357.4	1,083.5	1,133.5	173.5	37.6
Sales from livestock	67.0	9.1	26.2	173.5	442.1	156.8	580.1
Sales from livestock products	199.9	2.2	5.6	87.5	528.7	5.8	311.4
Turnover	290.6	549.7	399.1	1,372.7	2,151.7	349.1	964.5
Purchases and selected expenses	193.2	242.4	203.2	684.8	1,046.7	185.7	520.1
Value added	98.5	307.3	197.0	701.6	1,084.1	152.0	366.2
Adjusted value added	88.0	278.3	182.3	634.4	979.9	131.1	297.7
Gross operating surplus	60.6	187.7	135.3	575.3	885.3	110.8	191.3
Cash operating surplus	52.2	175.6	125.5	496.5	830.3	111.4	241.5
Total net capital expenditure	20.9	66.0	39.4	202.3	297.0	53.7	85.8
Gross indebtedness	81.8	198.5	103.2	801.0	1,018.5	163.4	483.6

ESTIMATES OF SELECTED FINANCIAL AGGREGATES OF AGRICULTURAL ENTERPRISES, BY INDUSTRY—*continued*
1980–81
($ million)

	Sheep (0185)	*Meat cattle (0186)*	*Milk cattle (0187)*	*Pigs (0188)*	*Other agriculture (0191–0196)*	*All Industries (01)*
Sales from crops	82.5	38.2	32.3	10.0	1,080.9	4,543.7
Sales from livestock	351.5	906.8	195.9	187.3	38.3	3,134.6
Sales from livestock products	513.2	25.2	714.2	14.7	13.8	2,422.2
Turnover	970.9	1,013.2	965.1	217.4	1,195.8	10,439.7
Purchases and selected expenses	511.0	595.6	447.9	157.7	495.1	5,283.5
Value added	463.1	362.6	535.4	64.4	702.7	5,034.9
Adjusted value added	403.7	283.8	486.5	56.4	649.7	4,471.7
Gross operating surplus	320.4	188.2	432.7	39.3	542.1	3,669.1
Cash operating surplus	271.1	214.7	371.1	26.1	502.9	3,419.1
Total net capital expenditure	99.3	123.8	101.9	26.1	184.9	1,301.3
Gross indebtedness	514.0	525.2	550.0	105.2	396.4	4,941.0

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

Definitions

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

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

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

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

VALUES OF AGRICULTURAL COMMODITIES: 1981–82

	Gross value of agricultural commodities produced	*Marketing costs*	*Local value of commodities produced*	*Index of values at constant prices of agricultural commodities produced(a) (Base year: 1979–80 = 1000)*
	$m	$m	$m	
Crops	6,311.9	933.1	5,378.8	1054
Livestock slaughterings and other disposals	3,295.6	265.2	3,030.4	990
Livestock products	3,100.6	196.0	2,904.6	993
Total agriculture	**12,708.2**	**1,394.4**	**11,313.8**	**1021**

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

Publications

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

Index of Agricultural Commodities Produced

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

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

GROSS VALUE OF AGRICULTURAL COMMODITIES PRODUCED

($m)

	1977–78	*1978–79*	*1979–80*	*1980–81*	*1981–82*	*1982–83p*
Crops—						
Barley for grain	205.0	339.1	449.8	380.9	463.4	270.3
Oats for grain	69.1	100.5	98.8	139.5	155.7	119.3
Wheat for grain	934.9	2,295.8	2,478.0	1,684.1	2,599.4	1,543.0
Other cereal grains	145.5	222.3	218.9	327.6	294.1	248.9
Sugar cane cut for crushing	420.5	396.5	548.2	799.7	590.2	484.0
Fruit and nuts	324.0	387.7	406.6	459.8	464.4	499.4
Grapes	141.6	150.1	231.1	178.2	222.8	207.1
Vegetables	324.4	403.4	402.3	509.0	554.3	507.4
All other crops (*a*)	482.0	617.2	707.3	827.2	967.6	922.0
Total crops	*3,047.0*	*4,912.5*	*5,540.8*	*5,305.9*	*6,311.9*	*4,801.4*
Livestock slaughterings and other disposals (*b*)—						
Cattle and calves (*c*)	1,176.9	2,154.6	2,386.0	2,056.5	1,890.1	1,984.9
Sheep and lambs	344.8	445.1	654.3	718.9	646.7	454.2
Pigs	212.7	253.8	311.3	337.5	396.1	412.4
Poultry	220.0	244.2	307.2	361.4	362.7	414.4
Total livestock slaughterings and other disposals	*1,954.4*	*3,097.7*	*3,658.8*	*3,474.3*	*3,295.6*	*3,265.9*
Livestock products—						
Wool	1,206.3	1,374.5	1,651.4	1,669.5	1,788.7	1,763.9
Milk	553.3	627.7	676.0	(*d*) 885.1	(*d*) 1,033.9	(*d*) 1,060.0
Eggs	196.3	196.9	216.1	(*d*) 227.4	(*d*) 253.4	(*d*) 274.0
Total livestock products (e)	*1,970.4*	*2,214.5*	*2,564.3*	*2,803.8*	*3,100.6*	*3,119.7*
Total value of agricultural commodities produced	**6,971.8**	**10,224.7**	**11,763.9**	**11,584.1**	**12,708.2**	**11,187.0**

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

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

(*Base year:* 1979 - 80 = 1000)

	1976–77	*1977–78*	*1978–79*	*1979–80*	*1980–81*	*1981–82*
Crops—						
Barley for grain	769	644	1082	1000	724	932
Oats for grain	760	702	1250	1000	799	1146
Wheat for grain	732	579	1127	1000	663	1017
Other cereal grains	970	821	1207	1000	1233	1417
Sugar cane (*b*)	1135	1146	984	1000	1121	1165
Fruit and nuts	903	851	1022	1000	1069	994
Grapes	800	801	783	1000	825	984
Vegetables	877	913	998	1000	1011	1056
All other crops (*c*)	737	766	1009	1000	970	1111
Total	*812*	*729*	*1068*	*1000*	*839*	*1054*
Livestock slaughterings and other disposals—						
Cattle and calves (*d*)	1271	1396	1290	1000	938	1005
Sheep and lambs	860	863	830	1000	1014	955
Pigs	843	906	904	1000	1061	1038
Poultry	697	785	866	1000	968	893
Total (e)	*1111*	*1206*	*1138*	*1000*	*965*	*990*
Livestock products—						
Wool	992	956	994	1000	990	1012
Milk	1045	948	1031	1000	947	964
Eggs	990	1046	1017	1000	959	927
Total (f)	*1003*	*959*	*1004*	*1000*	*974*	*993*
Total agricultural commodities produced	**947**	**929**	**1076**	**1000**	**908**	**1021**

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

Apparent consumption of foodstuffs and nutrients

Estimates of consumption in Australia are compiled by deducting net exports from the sum of production and imports and allowing for recorded movement in stocks of the respective commodities. The term 'consumption' is used in a specialised sense, since the quantities actually measured are broadly the quantities available for consumption at a particular level of distribution, ie ex-market, ex-store or ex-factory depending on the method of marketing and/or processing. Because consumption of foodstuffs is measured, in general, at 'producer' level no allowance is made for wastage before they are consumed. The effect of ignoring wastage is ultimately to overstate consumption but it is believed that more efficient distribution and storage methods in recent years have cut down wastage. Furthermore, it is likely that many of the foodstuffs are being supplemented by householders self-supplies over and above the broad estimate already made.

The estimates of consumption per capita have been derived by using Estimated Resident Population (ERP), which is compiled according to the place of usual residence of the population and includes an estimate for those persons temporarily overseas. Following intercensal revisions of ERP, data in the following two tables have been extensively revised.

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

APPARENT PER CAPITA CONSUMPTION OF FOODSTUFFS

(Kg—unless otherwise indicated)

Commodity	*1977–78*	*1978–79*	*1979–80*	*1980–81*	*1981–82*
Meat—					
Carcass meat—					
Beef and veal	*67.5*	*55.1*	*46.4*	*44.7*	*49.4*
Beef	61.9	51.6	43.8	42.4	46.7
Veal	5.6	3.4	2.5	2.3	2.6
Lamb	13.7	14.0	15.7	16.0	16.3
Mutton	3.7	4.5	5.0	4.9	3.5
Pigmeat	4.5	3.8	4.8	5.6	5.8
Total carcass meat	*89.4*	*77.4*	*71.8*	*71.3*	*75.0*
Offal and meat, n.e.i.	6.4	5.1	4.0	4.3	4.5
Canned meat (canned weight)	1.7	1.4	1.4	1.5	1.2
Bacon and ham (cured carcass weight)	6.0	6.5	6.3	6.8	6.3
Total meat (converted to carcass equivalent weight)	**106.1**	**93.0**	**85.8**	**86.6**	**89.8**
Poultry—					
Poultry (dressed weight)	16.8	18.8	20.2	20.3	19.1
Seafood—					
Fresh and frozen (edible weight)—					
Fish—					
Australian	1.6	1.6	1.3	1.3	1.3
Imported	1.7	1.5	1.9	2.1	1.4
Crustacea and molluscs	0.8	0.9	0.4	0.9	0.9
Seafood otherwise prepared (product weight)—					
Australian	0.5	0.6	0.7	1.0	0.7
Imported—					
Fish	1.8	1.6	1.9	1.8	1.9
Crustacea and molluscs	0.4	0.3	0.3	0.4	0.5
Total seafood	**7.0**	**6.6**	**6.6**	**7.5**	**6.6**
Milk and Milk Products—					
Market milk (fluid whole)(a) (litres)	100.3	100.6	103.4	104.0	103.1
Condensed, concentrated and evaporated milk—					
Full cream sweetened	0.8	0.7	0.7	0.9	0.6
Full cream unsweetened	2.3	2.5	2.2	2.7	2.5
Skim	1.5	1.6	1.4	1.0	1.1
Powdered milk—					
Full cream	1.4	0.9	0.8	0.9	0.9
Skim	3.0	3.2	3.7	3.1	2.8
Infants' and invalids' food	1.3	1.1	1.1	1.0	1.3
Cheese (natural equivalent weight)	5.6	6.0	6.6	6.6	7.0
Total (converted to milk solids, fat and non-fat)	**22.5**	**22.5**	**23.5**	**23.1**	**23.0**

APPARENT PER CAPITA CONSUMPTION OF FOODSTUFFS—*continued*

(Kg—unless otherwise indicated)

Commodity	*1977–78*	*1978–79*	*1979–80*	*1980–81*	*1981–82*
Fruit and Fruit Products—					
Fresh fruit (incl. fruit for fruit juice)—					
Citrus	35.4	35.5	40.2	41.4	39.1
Other	33.2	34.4	39.3	35.8	40.0
Jams, conserves, etc	1.8	2.3	1.5	1.5	1.8
Dried fruit	1.9	2.1	2.5	2.2	2.5
Processed fruit	10.7	10.5	12.4	12.7	10.8
Total (fresh fruit equivalent)	**91.1**	**93.0**	**106.1**	**103.3**	**104.1**
Vegetables—					
White potatoes	50.4	51.5	54.9	54.9	57.6
Other root and bulb vegetables	16.9	17.2	17.3	17.5	18.7
Tomatoes	13.1	13.7	14.5	15.5	16.9
Leafy and green vegetables	22.5	27.5	25.1	22.3	20.7
Other vegetables	17.7	19.5	17.6	17.5	16.9
Total (fresh equivalent weight)	**120.6**	**129.4**	**129.4**	**127.6**	**130.8**
Grain Products—					
Flour(b)	67.0	69.7	70.5	70.7	72.0
Breakfast foods—					
Oatmeal and rolled oats	0.6	0.9	0.3	0.7	0.7
Other (from grain)	7.4	7.4	6.9	7.0	7.2
Total breakfast foods	*7.9*	*8.3*	*7.2*	*7.7*	*7.9*
Table rice	2.4	2.5	2.5	2.9	2.9
Total grain products	**77.4**	**80.5**	**80.2**	**81.3**	**82.8**
Bread	47.7	46.8	48.0	46.1	47.5
Eggs and Egg Products—					
Total (eggs in shell weight)	12.3	12.5	12.5	12.4	12.5
Equivalent number of eggs	218	221	219	219	222
Nuts (in shell)—					
Peanuts	2.7	0.9	1.6	1.7	1.2
Tree nuts	3.1	2.6	2.9	3.2	3.3
Oils and fats—					
Butter	5.1	4.5	4.6	4.3	4.3
Total margarine	*8.6*	*8.9*	*8.9*	*9.2*	*9.5*
Table margarine	5.6	5.9	6.4	6.7	6.8
Other margarine	2.9	2.9	2.4	2.5	2.7
Total (fat content)(c)	**21.6**	**21.4**	**21.5**	**21.5**	**21.8**
Sugar—					
As refined sugar	14.7	14.1	12.8	13.7	12.5
In manufactured foods	34.6	35.1	34.6	35.0	34.8
Total	*49.3*	*49.2*	*47.4*	*48.7*	*47.2*
Honey	1.0	0.8	0.9	0.6	0.8
Total(d)	**53.6**	**53.2**	**51.6**	**52.9**	**51.4**
Beverages—					
Tea	1.6	1.7	1.6	1.5	1.6
Coffee(e)	1.3	1.7	1.7	1.9	2.0
Aerated and carbonated waters (litres)	68.4	66.1	63.9	67.6	64.2
Beer (litres)	134.6	130.7	132.2	129.2	128.9
Wine (litres)	14.2	16.4	17.3	18.2	19.1
Spirits (litres alcohol)	1.3	1.1	1.0	1.1	1.2

(*a*) Prior to 1978 79 was known as Fluid Whole Milk. (*b*) Includes flour used for breadmaking. (*c*) Includes an estimate for vegetable oils and other fats. (*d*) Includes sugar content of syrups and glucose. (*e*) Coffee and coffee products in terms of roasted coffee.

Nutrients

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

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

ESTIMATED SUPPLY OF NUTRIENTS AVAILABLE FOR CONSUMPTION(*a*)
(Per capita per day)

Nutrient	*Unit*	*1977–78*	*1978–79*	*1979–80*	*1980–81*	*1981–82*
Protein—						
Animal	g	69.8	65.9	64.5	64.8	65.6
Vegetable	g	31.7	32.0	32.4	32.8	33.1
Total	*g*	*101.5*	*97.9*	*96.9*	*97.6*	*98.7*
Fat (from all sources)	g	152.1	144.2	142.8	145.4	147.6
Carbohydrate	g	389.3	394.5	395.1	399.8	399.4
Calcium	mg	892.1	902.8	925.8	916.2	918.2
Iron	mg	15.6	15.1	14.5	14.7	15.1
Vitamin A activity	μg	1,636.5	1,550.1	1,434.9	1,499.4	1,522.3
Vitamin C (*b*)—						
Unadjusted	mg	101.2	105.6	108.7	109.0	108.4
Adjusted	mg	72.7	75.6	80.3	80.3	80.6
Thiamin (*b*)—						
Unadjusted	mg	1.8	1.7	1.7	1.8	1.8
Adjusted	mg	1.5	1.5	1.5	1.5	1.5
Riboflavin	mg	2.8	2.7	2.6	2.6	2.7
Niacin (*b*)—						
Unadjusted	mg	24.1	22.6	22.2	22.5	22.7
Adjusted	mg	41.0	38.9	38.4	37.8	39.1
Energy value	kJ	14,505	14,226	14,164	14,357	14,470

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

Land tenures

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

Disposal of crown lands

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

Closer settlement and war service settlement

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

Alienation and occupation of crown lands

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

Land utilisation in Australia

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

AREA OF ESTABLISHMENTS WITH AGRICULTURAL ACTIVITY

(Million hectares)

At 31 March	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	N.T.	Aust. (incl. A.C.T.)
1978	64.8	14.7	155.1	62.5	114.5	2.3	75.5	489.4
1979	65.1	14.4	156.3	62.7	116.2	2.2	76.2	493.2
1980	65.0	14.7	157.7	62.8	114.9	2.2	78.2	495.6
1981	65.2	14.7	157.5	62.4	115.8	2.2	77.6	495.4
1982	63.4	14.4	157.1	62.9	113.5	2.2	77.1	490.8
1983p	64.9	14.4	157.2	62.8	114.7	2.2	76.0	492.1

LAND UTILISATION: AUSTRALIA

(Million hectares)

	Area of			Total	
Year	crops(a) (b)	sown pastures and grasses (b)	Balance (c)	Area of establishments	Percentage of Australian land area (768,284,000 hectares)
1977-78	16.8	26.6	446.0	489.4	63.7
1978-79	17.4	27.7	448.0	493.2	64.2
1979-80	18.0	27.1	450.6	495.6	64.5
1980-81	18.3	24.9	452.3	495.4	64.5
1981-82	19.6	26.9	444.2	490.8	63.9
1982-83p	19.4	25.8	446.6	492.1	64.1

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

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

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

The total area of agricultural establishments in 1982–83 constituted 64.1 per cent of the Australian land area, the remainder being urban areas, State forests and mining leases, with an overwhelming proportion of unoccupied land (mainly desert). The balance data includes large areas of arid or rugged land held under grazing licences but not always used for grazing. Balance data also includes variable amounts of fallow land.

The crop area data represent up to 4.0 per cent of the area of agricultural 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 agricultural labour force (*see* pages 308-309) 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 1981–82

('000 hectares)

Year	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*A.C.T.*	*Aust.*
1860–61 . . .	100	157	2	145	10	62	–	–	475
1870–71 . . .	156	280	21	325	22	64	–	–	868
1880–81 . . .	245	627	46	846	26	57	–	–	1,846
1890–91 . . .	345	822	91	847	28	64	–	–	2,197
1900–01 . . .	990	1,260	185	959	81	91	–	–	3,567
1910–11 . . .	1,370	1,599	270	1,112	346	116	–	–	4,813
1920–21 . . .	1,807	1,817	316	1,308	730	120	–	1	6,099
1930–31 . . .	2,756	2,718	463	2,196	1,939	108	1	2	10,184
1940–41 . . .	2,580	1,808	702	1,722	1,630	103	–	2	8,546
1949–50 . . .	2,295	1,881	832	1,518	1,780	114	–	4	8,424
1954–55 . . .	2,183	1,904	1,049	1,711	2,069	122	–	2	9,040
1959–60 . . .	2,888	1,949	1,184	1,780	2,628	130	1	3	10,564
1964–65 . . .	4,182	2,621	1,605	2,414	3,037	163	2	4	14,028
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	1,925	2,017	2,278	3,751	67	7	1	14,231
1972–73 . . .	4,329	1,943	1,963	2,122	3,814	80	12	1	14,265
1973–74 . . .	4,628	1,981	1,786	2,451	4,133	74	6	1	15,060
1974–75 . . .	4,089	1,772	1,898	2,257	3,754	67	7	1	13,845
1975–76 . . .	4,285	1,851	2,010	2,116	4,208	60	8	1	14,539
1976–77 . . .	4,520	1,943	2,026	2,036	4,417	65	2	1	15,010
1977–78 . . .	4,984	2,163	2,107	2,564	4,910	70	1	1	16,800
1978–79 . . .	5,020	2,209	2,307	2,827	4,993	80	2	1	17,438
1979–80 . . .	5,243	2,243	2,334	2,771	5,281	79	2	1	17,954
1980–81 . . .	5,208	2,180	2,481	2,772	5,547	84	1	1	18,273
1981–82 . . .	5,744	2,184	2,765	2,865	5,963	90	2	1	19,613
1982–83p . .	5,160	2,250	2,681	2,794	6,412	100	3	1	19,401

(*a*) The classification of crops was revised in 1971 72 and adjustments made to statistics back to 1967 68. After 1966 67 lucerne for green feed, hay and seed, and pasture cut for hay and harvested for seed or green feed are excluded.

NOTE: From 1970 71 to 1980 81 figures related to area 'used for' crops, ie, an area used for more than one purpose during the year was counted only once. From 1981 82, an area double cropped has been counted separately each time used.

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

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

CROPS: AREA, PRODUCTION AND GROSS VALUE

Crop	*Area ('000 hectares)*			*Production ('000 tonnes)*			*Gross value ($m)*		
	1980–81	*1981–82*	*1982–83p*	*1980–81*	*1981–82*	*1982–83p*	*1980–81*	*1981–82*	*1982–83p*
Cereals for grain									
Barley	2,451	2,685	2,454	2,682	3,450	1,798	381	463	270
Grain sorghum	658	649	698	1,204	1,317	n.y.a.	152	140	134
Maize	56	61	59	173	212	n.y.a.	26	30	16
Oats	1,093	1,388	1,213	1,128	1,617	829	139	156	119
Rice	104	123	83	728	854	n.y.a.	138	104	77
Wheat	11,283	11,885	11,546	10,856	16,360	8,901	1,684	2,599	1,543
Legumes for grain	186	267	409	168	261	n.y.a.	32	44	60
Crops for hay									
Oats	220	275	270	613	788	627	41	59	n.y.a.
Wheat	79	79	112	169	201	207	14	14	n.y.a.
Crops for green feed, silage									
Barley	76	59	107						
Forage sorghum	104	77	120	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Oats	684	628	741						
Wheat	73	32	134						
Sugar cane cut for crushing	288	316	319	23,976	25,094	24,785	800	590	484
Tobacco	7	7	7	15	13	n.y.a.	62	59	68
Cotton	78	92	84	259	325	n.y.a.	147	182	167
Peanuts	27	33	37	43	58	n.y.a.	37	37	13
Linseed	10	7	n.y.a.	7	6	n.y.a.	2	2	–
Rapeseed	24	16	n.y.a.	17	15	n.y.a.	4	3	2
Safflower	18	33	10	8	20	4	2	5	2
Sunflower	198	178	169	139	115	n.y.a.	34	28	25
Fruit (excl. grapes)	99	102	103	–	–	–	460	464	499
Fruit									
Orchard	83	85	86	–	–	–	366	365	n.y.a.
Oranges				424	376	n.y.a.	86	90	n.y.a.
Apples	n.a.	n.a.	n.a.	307	294	n.y.a.	119	124	126
Pears				146	110	n.y.a.	41	31	42
Peaches				79	65	64	26	23	21
Bananas	8	8	7	124	130	131	60	61	64
Pineapples	7	7	6	123	126	111	20	21	27
Grapes	70	68	69	743	885	750	178	223	207
Vegetables	103	107	103	–	–	–	509	554	507
Potatoes	36	36	38	866	919	n.y.a.	170	181	154
Total, all crops (excluding pastures)	**18,273**	**19,613**	**19,401**	–	–	–	**5,066**	**5,998**	**4,506**

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

Cereal grains

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

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

CEREAL GRAINS IN AUSTRALIA: A PERSPECTIVE

Year	Cereal grains(a)		Total agriculture	Total Australian exports— all produce	Gross value of cereal grains as a	Export value of cereal grains as a
	Gross value	Export value f.o.b.	gross value	value f.o.b.	percentage of gross value of agriculture	percentage of total Australian exports
	$m	$m	$m	$m	per cent	per cent
1977-78	1,354.8	1,261.9	6,972	12,270	19.4	10.3
1978-79	2,957.6	1,082.0	10,225	14,247	28.9	7.6
1979-80	3,245.4	2,764.7	11,764	18,870	27.6	14.7
1980-81	2,532.0	2,160.6	11,610	19,169	21.8	11.3
1981-82	3,512.6	2,367.9	12,708	19,581	27.6	12.1
1982-83p	2,181.5	1,669.7	11,187	22,205	19.4	7.5

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

For more up-to-date and detailed information on cereals for grain *see* the following publications: *Agricultural Industries: Structure of Operating Units, Australia* (7102.0), *Agricultural Land Use and Selected Inputs, Australia* (7411.0), *Principal Agricultural Commodities, Australia (Preliminary)* (7111.0), *Selected Agricultural Commodities, Australia (Preliminary)* (7112.0), *Crops and Pastures, Australia* (7321.0), *Cereal Grains: Estimates of Intended Sowings, Australia* (7304.0), *Cereal Grains: Estimates of Area Sown, Australia* (7,312.0), *Value of Agricultural Commodities Produced: Australia, First Estimates* (7501.0), *Value of Agricultural Commodities Produced: Australia, Second Estimates* (7502.0), *Value of Agricultural Commodities Produced, Australia* (7503.0).

Wheat

Wheat is grown in all States except the Northern Territory, and is the most important crop in Australia in terms of area, production and value of exports. Factors which have contributed to the development of the industry are the increasing demand from and the organisation of overseas markets as well as research and the availability of suitable cropping land. As a large proportion of the wheat crop is exported, wheat marketing arrangements play 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 major purpose in founding the Australian Wheat Board with responsibility for acquiring and marketing the Australian wheat crop was the protection of wheat farmers by lowering financial risks on each crop. The strength of the Australian Wheat Board is derived from its ability to act as the single Australian authority responsible for marketing of wheat domestically and abroad and to use that function as a basis for careful co-ordination of sales efforts and market development. The *Wheat Industry Stabilization Act* 1948 reconstituted the Australian Wheat Board to administer the first stabilisation plan, the concept of which was to provide growers with a 'guaranteed price' for a specific quantity of exported wheat. Until 1978 there were six Five Year Stabilisation Plans.

Wheat marketing and pricing arrangements: 1979–80 to 1983–84

On 29 November 1979 the *Wheat Marketing Act* 1979 received Royal Assent and new wheat marketing and pricing arrangements became operative for five seasons commencing from 1 October 1979. The basic elements of the new arrangements were negotiated between the Australian Wheatgrowers' Federation and Commonwealth and State Governments and necessitated the enactment of complementary Commonwealth and State legislation. Amendments to this legislation have since been made in late 1982 and early 1983.

The current wheat marketing and pricing arrangements carry forward a number of features of the previous Stabilization Plan. In this respect the main features are: the Australian Wheat Board (AWB) is maintained as the sole statutory authority responsible for the marketing of wheat in Australia and of wheat and flour sold overseas; the constitution and general powers of the Wheat Board remain largely unchanged; the legislation applies to a seven-year period except for the pricing provisions which run for five years.

The following are important features introduced in the current plan.

Guaranteed Minimum Price. Shortly after acquisition of wheat by the Australian Wheat Board, wheatgrowers receive a first payment at the Guaranteed Minimum Price (GMP) increased or decreased for such allowances as wheat quality, varietal characteristics and storage, handling and transportation charges, and for contributions to research (wheat tax) and to the Wheat Finance Fund (wheat levy). Growers may take this payment as a lump sum or as two or more payments by agreement with the Board. Adjustments to the initial allowances can also be made by the Board when the final level of such allowances has been determined. The GMP is set at 95% of the average of the net pool returns for the previous two seasons and an estimate of the net pool return for the season in question and is guaranteed by the Commonwealth Government in the sense that any deficiency between the net pool return and the GMP would be met by the Government. This has not been necessary to date. Movements in the GMP from one season to the next are subject to a limit of 15 per cent up or down.

These arrangements provide the industry with support from the Government that is designed to help it overcome any short-run down-turn in producers' returns, modified with longer-run adjustments in market returns whether these adjustments be for a rising or a falling market. The GMP for 1982–83 is $141.32 per tonne for Australian Standard White (ASW) wheat.

It is the intention that the GMP be announced around the commencement of each season on 1 October. However the Act also provides for an interim payment to be made to growers who deliver wheat to the Board prior to the determination of the GMP for that season.

Financial Arrangements. The Reserve Bank Act provides that the Board may borrow not only from the Rural Credits Department (RCD) of the Reserve Bank of Australia but also, subject to the approval of the Minister for Primary Industry, from commercial sources, both in Australia and overseas, the latter subject to Loan Council approval. Traditionally the AWB has borrowed from the RCD to obtain funds to make first advances to growers and to meet pool marketing expenses. Under the Reserve Bank Act RCD advances are for a maximum period of one year and the Board is required to repay these borrowings by 31 March in the year following the conclusion of the season.

With the introduction of GMP, it was necessary to develop commercial funding techniques to enable the Board to raise sufficient moneys from the Australian short term money market to pay growers upon delivery of their wheat. In the 1982–83 season, these borrowings amounted to $1,200 million from the domestic market and under the Act the Government was requested to meet any borrowing costs additional to those that would have been incurred had the borrowing been from the RCD. In 1983 following an amendment to the Act, the Loan Council approved the Board's borrowing overseas up to 50 percent of its prospective net borrowing requirements for 1983–84 and subsequent seasons, and the Government's requirement to meet additional borrowing costs ceased on 30 June. In the 1983–84 season the Board expects to borrow between $600 million and $1,000 million under these facilities.

The Wheat Finance Fund established by the *Wheat Marketing Act* 1979 is a $100 million revolving fund of growers' monies. The $80 million previously held in the former Wheat Prices Stabilization Fund was transferred into the Finance Fund and is supplemented by the proceeds of a levy each season (presently $2.50 per tonne) of all wheat delivered to or sold by the Board. Any excess above $100 million in the Fund is returned to growers on a first-in-first-out basis. The Wheat Finance Fund provides a source of funds from which the Board is able to re-finance any outstanding debt to the Reserve Bank on a season's pool. Borrowings from the Fund if they were ever required, would be made at a rate of interest determined by the Minister from time to time.

Amendments to legislation. During 1982 a number of amendments were proposed to the existing wheat marketing legislation. These amendments agreed to by all States and the Commonwealth Parliament expand the powers of the Board in such areas as operating on futures markets, to accumulate reserves for specific purposes, to offer optional arrangements for the payment of the GMP as well as machinery amendments designed to increase the efficiency and flexibility of the Board.

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

The 1982–83 season price for Australian Standard White wheat for human consumption sold domestically is $203.46 per tonne. This amount includes a $3.39 per tonne component as the Tasmanian freight loading (see later). The price is determined according to a formula which takes account of movements in export prices and an index of prices paid by farmers while providing, over time, a margin above export prices. Movements in the formula price from year to year are subject to a limit of 20 per cent.

A loading is included in the price of wheat for human consumption and is paid into the Tasmanian Freight Fund, which is used exclusively to cover the cost of shipping wheat from the mainland to Tasmania each season.

The domestic prices for industrial and stockfeed wheats are quoted by the Board in the light of its commercial judgment and having regard to orderly marketing considerations. Prices are quoted each day and buyers may enter into contracts to fix the price of wheat for delivery up to six months in advance. Under the provisions of the *Wheat Marketing Act* 1979 the Board has appointed two Consultative Groups representing grower and user interests. The function of the Groups is to provide relevant and up to date information and assessments to be taken into account by the Board, in determining prices for wheat sold for stockfeed and industrial purposes, having regard to the aims of balancing the commercial interests of producers and users and maintaining the orderly marketing of wheat. The Groups do not recommend price levels. The information received by the Board from the Groups, its assessment of this information and its subsequent pricing decisions are reviewed by the Australian Agricultural Council.

Domestic Marketing Arrangements. The Australian Wheat Board exercises sole authority for the export marketing of wheat and flour and for the marketing of wheat domestically and overseas. The Board also has the power to import wheat. The Board is also authorised to issue permits to enable wheatgrowers to deliver their wheat, subject to certain conditions, other than to an authorised receiver of the Board. It is permitted to issue permits to growers:

(i) to sell seed wheat;
(ii) to sell inferior quality wheat including screenings unacceptable for receival by the Board;
(iii) to deliver wheat from a property on which it is grown to another farm under the same or joint ownership for use on the latter; or
(iv) to deliver wheat to a miller for gristing and return the produce of the gristing to the farm on which it was grown for use on that farm; or
(v) to sell wheat under authorized grower-to-buyer direct delivery transactions. Under these arrangements the Board is authorised to grant a permit for delivery by a grower direct to a buyer subject to conditions the Board determines as to price, freight allowance and the quality of the wheat. The proceeds of sale of the wheat involved are incorporated in the Board's pooling arrangements and the provisions for payments to growers apply as if the wheat had in fact been delivered to the Board's pool. However, provision is made for any quality differential agreed by the grower and buyer and for any cartage cost adjustment to be passed back to the buyer. Provision is also made for the Board to deduct from the payment to the grower a charge (covering capital, depreciation and costs of maintaining capital equipment) relating to costs associated with the bulk handling authority relevant to the particular grower. The specific charge is determined under State legislation.

Wheat which is retained by a grower on a farm on which it is grown for use on that farm does not come under the control of the Wheat Board.

IAC Reference

A reference on the wheat industry was sent to the Industries Assistance Commission in July 1982. The Commission was asked to report by 30 September, 1983 on whether assistance should be provided to the wheat industry following the 1983–84 season and, if so, the nature and extent of such assistance. The Commission was requested to have particular regard to the marketing and pricing arrangements applying to the industry.

The final IAC report was made public on 14 October, 1983. The report contained 15 recommendations. The major recommendations related to domestic marketing arrangements, to the level of underwriting and to the first advance payment. The IAC recommended that private traders be permitted to operate on the domestic market in competition with the AWB and that the price of all wheat sold on the domestic market to be longer administered. The IAC further recommended changes to the present method of underwriting the wheat price and to the determination of the payment, made upon delivery, to growers. The IAC recommended that average FOB (Fee on Board) returns to the AWB from the export of wheat in any one fiscal year be underwritten at 85 per cent of the average FOB export returns from the lowest of 3 of the preceding 4 fiscal years, and that the Minister for Primary Industry determine the first advance payment to be made to growers who deliver wheat to the AWB.

The other recommendations related to the establishment of separate pools for the 4 main classes of Australian wheat, to various administrative and reporting arrangements for the AWB, the abolition of the Wheat Finance Fund and that the AWB not be permitted to trade in futures contracts.

PLATE 34

Harvesting Wheat, New South Wales

Australian Information Service

Wheat varieties and standards of wheat

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

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

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

Australian wheats are classified into two broad categories, namely the milling and non-milling Classes. Since 1974 there have been five Classes of Australian wheats suitable for milling purposes:

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

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

Central Grain Research Laboratory

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

WHEAT: AREA, PRODUCTION AND RECEIVALS

Season	Area		Production		Australian Wheat Board receivals(a)
	For grain	All purposes	Grain	Gross value	
	'000 ha	'000 ha	'000 tonnes	$m	'000 tonnes
1977-78	9,955	10,078	9,370	934.9	8,540
1978-79	10,249	10,321	18,090	2,295.8	17,456
1979-80	11,153	11,249	16,188	2,478.0	15,327
1980-81	11,283	11,436	10,856	1,684.1	10,058
1981-82	11,885	11,996	16,360	2,599.4	15,545
1982-83p	11,546	11,792	8,901	1,543.0	(b)7,937

(a) Australian Wheat Board receivals are for the season commencing 1 October; production data is for the year ending 31 March. (b) Receivals to 30 September 1983.

WHEAT FOR GRAIN: AREA AND PRODUCTION, BY STATE

Season	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	Australia
AREA ('000 hectares)							
1977-78	3,377	1,270	607	1,090	3,609	1	9,955
1978-79	3,162	1,337	747	1,295	3,706	1	10,249
1979-80	3,415	1,457	733	1,424	4,121	2	11,153
1980-81	3,345	1,431	727	1,445	4,333	2	11,283
1981-82	3,600	1,322	941	1,427	4,593	1	11,885
1982-83p	3,153	1,345	806	1,352	4,890	1	11,546
PRODUCTION ('000 tonnes)							
1977-78	3,846	1,497	569	511	2,945	2	9,370
1978-79	6,640	2,998	1,962	2,086	4,400	3	18,090
1979-80	6,000	3,250	846	2,349	3,739	4	16,188
1980-81	2,865	2,538	485	1,650	3,315	3	10,856
1981-82	5,910	2,467	1,482	1,695	4,803	2	16,360
1982-83p	1,457	419	801	692	5,531	2	8,901

PRODUCTION AND DISPOSAL OF WHEAT FOR GRAIN

('000 tonnes)

Season	*1976–77*	*1977–78*	*1978–79*	*1979–80*	*1980–81*	*1981–82*
Production	11,800	9,370	18,090	16,188	10,856	16,360
Less balance held on farms for—						
Seed usage	598	616	634	861	798	815
Feed and other uses	270	212				
Gross receivals	10,932	8,542	17,456	15,327	10,058	15,545
Opening stocks(*a*)	2,670	2,071	816	4,646	4,268	2,044
Total availability for sale	13,602	10,613	18,272	19,973	14,326	17,589
Export shipments—						
Wheat	9,502	7,918	11,526	13,049	9,451	10,890
Flour and wheat products(*a*)	261	180	167	148	163	178
Domestic sales—						
Flour(*a*)	1,261	1,259	1,298	1,371	1,402	954
Stockfeed	380	438	621	1,068	1,179	563
Breakfast feeds etc. (*a*)	55	43	41	45	49	58
Total disposal	11,459	9,838	13,653	15,681	12,244	12,643
Availability (—) Disposals	2,143	775	4,619	4,292	2,082	4,946
Closing stocks(*a*)	2,071	816	4,629	4,268	2,044	4,932
Apparent wastage	72	−41	−10	24	38	14

(*a*) Wheat and flour in terms of wheat.

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

Wheat pools

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

International Wheat Agreement

A number of Agreements have operated since 1949 to provide a valuable framework for continuing international consultation and co-operation on world wheat matters, including the regular monitoring of the world wheat situation. The 1971 International Wheat Agreement (the first expiring on 30 June 1974) has been extended seven times by protocol, the most recent extension expiring on 30 June 1986. It comprises two separate legal instruments, the Wheat Trade Convention and the Food Aid Convention, linked by a common preamble. Negotiations towards a new Agreement were held in January 1978 and January–February 1979 under the auspices of the U.N. Conference on Trade and Development (UNCTAD). No consensus was reached on an Agreement with economic provisions designed to bring about a measure of price stability by the accumulation and release of internationally co-ordinated nationally-held reserve stocks. The 1979 conference was adjourned indefinitely. Subsequently, in 1980 and 1981, the International Wheat Council considered other possible bases for an Agreement with its attention focussing on a more flexible approach to stockholding with reserve stock action being taken on the basis of a consensus within the Council rather than applying automatically at a particular time as a result of price movements. With strong opposition of the U.S. Administration to the international co-ordination of holding of wheat, this approach proved not negotiable. However, the Council agreed, in December 1981, on immediate steps to strengthen the operation of the existing Agreement. The Council also decided that it was imperative to continue the search for an agreed basis for a new Agreement, keeping in view the paramount objectives of market stability and food security. While there has been no progress on a basis for a new Agreement, the current Agreement has been extended to 1986.

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
	7,945	863.5	11,652	7.4
1977–78	10,949	1,011.1	12,270	8.2
1978–79	6,824	794.2	14,247	5.6
1979–80	14,876	2,176.8	18,870	11.5
1980–81	10,552	1,729.4	19,169	9.0
1981–82	10,912	1,719.7	19,581	8.8
1982–83p	8,022	1,343.1	2,220.5	6.0

(a) These statistics exclude re-exports.

EXPORTS OF WHEAT AND FLOUR

Country of consignment	*Quantity ('000 tonnes)*			*Value f.o.b. ($m)*		
	1980–81	*1981–82*	*1982–83p*	*1980–81*	*1981–82*	*1982–83p*
WHEAT						
Bangladesh	132.7	124.2	50.0	22.5	19.2	7.6
China—excl. Taiwan Province	1,421.3	1,361.0	1,210.0	236.5	212.0	182.0
Egypt, Arab Republic of	1,788.7	1,575.2	1,852.8	285.0	246.9	303.6
India	—	782.9	—	—	123.2	—
Indonesia	494.7	480.3	168.8	76.5	75.5	28.6
Iran	666.1	544.3	847.9	108.9	83.8	136.0
Iraq	134.8	750.5	443.8	20.9	119.8	77.8
Japan	780.9	995.1	1,000.0	125.7	156.4	167.7
Kuwait	653.1	228.6	238.6	102.7	33.9	41.0
Malaysia	292.5	294.2	160.5	46.4	44.4	26.7
Saudi Arabia	166.9	122.2	166.3	28.6	21.5	28.9
Singapore	174.9	50.7	103.6	26.5	7.6	17.1
Sri Lanka	170.8	129.8	31.0	28.0	20.8	5.4
U.S.S.R.	2,479.9	2,408.0	1,017.6	421.7	386.0	196.3
Yemen Arab Republic	257.1	332.0	119.3	42.7	51.2	18.6
Other countries	937.6	733.4	611.8	156.8	117.5	105.8
Total	**10,552.0**	**10,912.4**	**8,022.0**	**1,729.4**	**1,719.7**	**1,343.1**
FLOUR(a)						
Kenya	—	—	14.9	—	—	4.2
Mauritius	16.3	21.2	16.4	3.9	5.9	4.6
New Caledonia	7.4	8.1	6.6	1.8	1.9	1.5
Papua New Guinea	12.9	0.5	0.4	3.5	0.1	0.1
Polynesia (FR)	2.7	3.2	2.6	0.7	0.8	0.7
Samoa (Western)	4.3	5.0	4.7	1.0	1.1	1.1
Solomon Islands	3.4	3.0	4.4	0.9	0.7	1.1
Sudan	14.6	—	—	—	—	—
Tonga	3.6	4.9	3.7	0.9	1.1	0.9
Other countries	24.2	15.7	16.0	6.6	4.1	4.5
Total	**89.4**	**61.6**	**69.7**	**23.4**	**15.7**	**18.7**

(a) Meal and flour of wheat and flour of meslin.

WORLD WHEAT: AREA AND PRODUCTION

Source: International Wheat Council, *World Wheat Statistics, 1983*

	Area (million hectares)			*Production (million tonnes)*		
	1980–81	*1981–82*	*1982–83p*	*1980–81*	*1981–82*	*1982–83p*
Europe	26.2	25.4	26.3	99.1	91.4	103.1
EEC (10)	12.6	12.7	13.0	55.1	54.4	59.9
U.S.S.R.	61.5	59.2	57.3	98.2	80.0	85.0
North & Central America	40.6	46.1	45.6	86.6	104.2	108.7
Canada	11.1	12.4	12.6	19.2	24.8	27.6
U.S.A.	28.7	32.8	31.9	64.6	76.2	76.4
South America	8.9	8.7	11.1	11.8	11.5	18.1
Asia	79.5	79.5	79.9	128.3	140.5	150.1
China(*a*)	28.5	28.0	28.0	54.2	59.7	68.4
India	22.0	22.1	22.5	31.6	36.3	37.8
Iran	5.8	5.9	6.0	5.7	6.6	6.5
Pakistan	6.9	7.0	7.1	10.8	11.5	11.1
Turkey	9.1	9.5	9.4	16.6	17.0	17.5
Africa	8.0	8.0	8.0	8.7	8.8	9.8
Oceania	11.4	12.0	11.6	11.2	16.7	9.0
Australia	11.3	11.9	11.5	10.9	16.4	8.9
Total world	**236.0**	**239.0**	**239.6**	**444.0**	**453.2**	**484.0**

(*a*) Excludes Taiwan Province; FAO estimates.

NOTE 1. Crop years shown cover northern hemisphere harvests combined with those of the southern hemisphere which immediately follow.
2. The 10 members of the EEC are: Belgium, Denmark, France, Federal Republic of Germany, Greece, Ireland, Italy, Luxembourg, Netherlands and the United Kingdom.

Coarse grains

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

Oats

Oats 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 a high 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 two main uses—as a fodder crop, following sowing or fallow or rough sowing into stubble or clover pastures or as a main crop. Fodder crops can either be grazed and then harvested for grain after removal of live stock or else mown and baled or cut for chaff. Oats produced in New South Wales are marketed through a statutory board while the Victorian Oatgrowers' Pool and Marketing Company Ltd and private merchants market the bulk of oats produced in Victoria. In South Australia the Barley Marketing Act was amended in 1977 to give the Australian Barley Board powers over oat marketing in that State. Under the legislation amendments the Board controls export sales and grain resold on the local market; however, direct sales between producers and consumers are outside the Board's supervision. In Western Australia, oats are marketed under a warehousing system operated by Co-operative Bulk Handling Ltd.

Oats 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

		Production		*Exports*	
Year	*Area*	*Quantity*	*Gross value*	*Quantity*	*Value f.o.b.*
	'000 ha	'000 tonnes	$m	'000 tonnes	$m
1977–78	1,076	990	69.1	218	19.6
1978–79	1,359	1,763	100.5	290	24.9
1979–80	1,123	1,411	98.8	472	43.8
1980–81	1,093	1,128	139.5	196	27.7
1981–82	1,388	1,617	155.7	153	24.1
1982–83p	1,213	829	119.3	83	13.2

Barley

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

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

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

BARLEY FOR GRAIN: AREA, PRODUCTION AND EXPORTS

		Production				*Exports*	
				Total			
Year	*Area*	*2-row*	*6-row*	*Quantity*	*Gross value*	*Quantity*	*Value f.o.b.*
	'000 ha	—'000 tonnes—			$m	'000 tonnes	$m
1977-78	2,803	2,261	123	2,383	205.0	1,325	121.8
1978-79	2,785	3,787	220	4,006	339.1	1,744	149.5
1979-80	2,482	3,545	159	3,703	449.8	2,962	353.5
1980-81	2,451	2,563	119	2,682	380.9	1,598	242.7
1981-82	2,685	3,252	198	3,450	463.4	1,577	241.3
1982-83p	2,454	1,643	155	1,798	270.4	834	131.4

Grain sorghum

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

Grain sorghum has been grown extensively only in the last two decades. Rapid increases in production have resulted in a substantial increase in exports over this period. The grain is used primarily as stockfeed and is an important source for supplementing other coarse grains for this purpose.

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

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

GRAIN SORGHUM: AREA, PRODUCTION AND EXPORTS

		Production		*Exports*	
Year	*Area*	*Quantity*	*Gross value*	*Quantity*	*Value f.o.b.*
	'000 ha	'000 tonnes	$m	'000 tonnes	$m
1977-78	394.1	714.4	59.5	384.5	35.4
1978-79	468.7	1,125.2	97.4	516.3	45.5
1979-80	518.6	922.0	96.1	580.4	59.8
1980-81	657.9	1,203.9	152.0	462.7	57.5
1981-82	648.6	1,316.7	140.1	1,270.9	152.8
1982-83p	697.9	n.y.a	133.8	445.0	53.9

Maize

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

A statutory board controls the marketing of maize in the Atherton Tablelands area of Queensland while the Queensland Graingrowers' Association markets maize grown in the south-east. In New South Wales, the Yellow Maize Marketing Board for the State of New South Wales (established in 1976) which handled the marketing of maize, ceased operation on 30 September 1981. A large proportion of the crop is sold directly to food processors.

MAIZE: AREA, PRODUCTION AND EXPORTS

		Production		*Exports*	
Year	*Area*	*Quantity*	*Gross value*	*Quantity*	*Value f.o.b.*
	'000 ha	'000 tonnes	$m	'000 tonnes	$m
1977-78	45.4	130.1	12.2	11.1	1.6
1978-79	50.0	168.8	15.6	16.9	1.3
1979-80	54.1	150.9	19.8	7.7	0.9
1980-81	56.5	172.8	26.1	29.1	3.4
1981-82	61.0	212.4	29.6	14.2	1.9
1982-83p	58.6	n.y.a	16.4	18.3	2.4

Rice

In Australia, rice was first grown commercially in 1924–25 in the Murrumbidgee Irrigation Area, one of three irrigation areas in southern New South Wales where rice is now produced. Today, about 96 per cent of Australia's rice is grown in New South Wales. The remainder is grown in the Burdekin River basin and at Mareeba in Northern Queensland with small quantities grown in the Ord River region of Western Australia.

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

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

RICE: AREA, PRODUCTION AND EXPORTS

		Production		*Exports*	
Year	*Area*	*Quantity(a)*	*Gross value*	*Quantity*	*Value f.o.b.*
	'000 ha	'000 tonnes	$m	'000 tonnes	$m
1977-78	91.4	489.7	61.1	277.5	66.6
1978-79	110.2	692.2	97.8	241.2	66.2
1979-80	116.4	613.2	93.8	457.3	129.9
1980-81	103.9	727.5	138.2	281.3	99.9
1981-82	122.9	853.9	103.5	596.3	195.4
1982-83p	82.9	521.8	77.4	404.6	120.3

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

Oilseeds

Specialised Oilseeds

Despite significant growth in the oilseeds industry during the late 1960's and 1970's, oilseeds remain a relatively young industry in Australian agriculture.

In recent years, production levels of the specialist oilseed crops has declined reflecting mainly the effects of drought conditions but also the rapid expansion in cotton production and farmer preference for more traditional crops such as wheat and coarse grains. The expected profitability of oilseeds relative to these crops will continue to influence future production levels in the industry. This

profitability will be related to domestic and international markets for protein meals and vegetable fats and oils.

The specialist oilseed crops grown in Australia are, sunflower, soybeans, rapeseed, safflower and linseed. Sunflower and soybeans are summer grown whilst the others are winter crops. In Australia, oilseeds are crushed for their oil, which is used for both edible and industrial purposes and protein meals for livestock feeds.

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

Sunflower

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

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

Soybeans

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

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

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

Rapeseed

The main use of rapeseed oil has been in salad and cooking oils with a small amount being used for industrial purposes. However, the use of rapeseed oil with a maximum erucic acid content of five per cent to be used in margarine production has been permitted in New South Wales since late 1981.

The major production area is the south east of South Australia followed by the tablelands and slopes of New South Wales. Smaller levels of production also occur in Victoria, mainly in the Western Districts and in the south coast region of Western Australia.

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

Safflower

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

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

Linseed

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

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

SELECTED OILSEED CROPS: AREA, PRODUCTION AND GROSS VALUE

Year	Sunflower	Soybeans	Rapeseed	Safflower	Linseed	Total	Peanuts
			Area ('000 hectares)				
1977-78	220.4	49.9	19.1	39.0	43.8	372.2	30.3
1978-79	260.7	53.7	22.3	74.7	13.1	424.5	36.9
1979-80	221.1	56.5	41.6	53.6	17.2	390.0	31.7
1980-81	197.7	39.6	23.6	18.3	10.0	289.2	27.1
1981-82	177.5	40.5	15.7	33.4	6.6	273.7	33.4
1982-83p	169.1	45.7	n.y.a	9.6	n.y.a	n.y.a	36.6
			Production ('000 tonnes)				
1977-78	158.3	76.5	15.7	26.3	27.9	304.7	39.0
1978-79	186.2	98.7	23.4	57.7	12.9	378.9	62.3
1979-80	141.7	82.0	41.1	30.0	14.4	309.2	38.9
1980-81	139.0	73.2	17.2	8.1	7.4	244.9	43.2
1981-82	115.1	77.1	14.5	19.6	6.0	232.3	57.6
1982-83p	n.y.a	n.y.a	n.y.a	4.0	n.y.a	n.y.a	n.y.a
			Gross Value ($ million)				
1977-78	36.6	17.6	3.0	5.4	5.0	67.6	20.2
1978-79	45.8	24.6	4.8	11.0	2.6	88.8	28.7
1979-80	36.3	21.6	9.1	6.0	3.1	76.1	22.3
1980-81	34.3	22.4	4.5	2.2	2.2	65.6	36.6
1981-82	28.3	19.8	3.3	5.2	1.6	58.2	37.0
1982-83p	24.8	n.y.a	1.9	2.3	0.5	n.y.a	12.6

Other Oilseeds

Peanuts and cottonseed are summer crops grown primarily for human consumption and fibre purposes respectively. The rapid expansion of the cotton industry in recent years has resulted in cottonseed becoming the major oilseed in Australia.

Peanuts

Peanut oil is used extensively as cooking and salad oil and in the manufacture of margarine.

The production of peanuts in Australia is centred on the Burnett and Atherton Tableland regions of Queensland. A small amount of production also occurs in New South Wales. Peanut production has been rising gradually for a number of years and 1978–79 was a record year due mainly to record yields. The 1982–83 peanut crop, which was severely affected by drought and floods, is estimated to be down to about 25,000 tonnes from 58,000 tonnes in the previous year.

Cotton

This annual shrub requires a hot climate and careful management, particularly in relation to weed, disease and insect 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.

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

Exports from the 1982–83 crop will account for about 85 per cent of production, and are expected to be about 85,000 tonnes of raw cotton (or lint), valued at around $160 million, with Japan and Hong Kong being the main markets.

A further expansion in Australian cotton plantings is expected in 1983–84. It is unlikely that local yarn spinners will increase production significantly in the medium term. Consequently any further growth in production is likely to be accompanied by a growth in cotton exports.

PLATE 35
Interior of a cotton gin at Wee Waa, N.S.W.

Australian Information Service

COTTON: AREA, PRODUCTION AND EXPORTS

	Seed cotton (a)					*Raw cotton export*	
Year	*Area*	*Quantity*	*Gross value*	*Cottonseed(b)*	*Lint(c)*	*Quantity*	*Value f.o.b.*
	'000 ha	'000 tonnes	$m	'000 tonnes	'000 tonnes	'000 tonnes	$m
1977-78	41.6	131.5	61.2	72.1	44.2	9.8	10.9
1978-79	49.8	155.2	76.0	78.5	53.0	23.6	28.9
1979-80	75.0	243.7	135.3	135.8	83.2	48.5	66.9
1980-81	77.9	236.6	147.2	161.2	98.9	58.7	92.1
1981-82	92.3	324.9	182.0	219.0	134.0	79.2	117.2
1982-83p	84.3	n.y.a.	167.0	164.0	101.0	129.2	197.6

(*a*) Before ginning. (*b*) Estimated by the Bureau of Agricultural Economics. (*c*) Provided by the Raw Cotton Marketing Advisory Committee.

Sugar

Sugar cane is grown commercially in Australia along the east coast over a distance of some 2,100 kilometres in a number of discontinuous areas from Maclean in northern New South Wales to Mossman in Queensland. The geographical spread contributes to the overall reliability of the sugar cane crop and of Australia's record as a reliable sugar supplier.

Approximately 95 per cent of production occurs in Queensland, with some 75 per cent of the crop grown north of the Tropic of Capricorn in areas where rainfall is reliable and the warm, moist and sunny conditions are ideal for the growing of sugar cane. The total area of land allocated to cane growing, among the 6,500 farms in 1982–83 is 373,000 hectares. Farm sizes range between 20-70 hectares.

Australian cane farmers are regarded as amongst the most efficient in the world and employ a high degree of mechanisation in ploughing, planting, harvesting, and transportation activities. The Aus-

tralian industry was the first in the world to introduce mechanical cultivation and harvesting techniques and by 1964 the entire industry had converted to bulk handling.

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

The organisation of the Australian sugar industry is complex. It is subject to a degree of broad overall supervision, and legislation of, by the Commonwealth and Queensland Governments, but is largely self-governing. The price of domestic refined sugar for sale to wholesalers and manufacturers is fixed annually under a formula contained in the Sugar Agreement between the Commonwealth and Queensland Governments. The Queensland Government controls the quantity of raw sugar produced through a system of mill peaks which is translated into cane quotas for growers. In addition the Queensland Government contracts with CSR Limited and Millaquin Sugar Company Pty Limited for the refining, marketing and distribution of home consumption needs, arranges through CSR Limited the export marketing of raw sugar, and regulates the division of industry proceeds between growers and millers.

There are 33 raw sugar mills located throughout the growing regions: 30 are located in Queensland and the remaining 3 in New South Wales. Refineries are located in each mainland capital city and at Bundaberg. The six bulk sugar export terminals located in Queensland are at present capable of storing 1.91 million tonnes. While raw sugar is the main product from mills, important by-products are bagasse (fibre) molasses, ash and filter mud.

Area, production and yield levels for sugar cane from 1977-78 to 1982-83 are provided in the following table.

SUGAR CANE: AREA, PRODUCTION AND YIELD

	New South Wales					*Queensland*				
	Sugar cane cut for crushing			*Raw sugar(a)*		*Sugar cane cut for crushing*			*Raw sugar(a)*	
Year	*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
1977 78	14.7	1,162.4	79.0	134.4	9.1	280.4	22,330.8	79.6	3,209.3	11.4
1978 79	14.1	1,321.5	94.1	152.7	10.9	237.7	20,135.5	84.7	2,748.9	11.6
1979 80	11.8	1,291.5	109.1	155.8	13.2	255.4	19,859.6	77.8	2,807.2	11.0
1980 81	14.0	1,435.3	102.4	181.2	12.9	274.3	22,540.4	82.2	3,148.5	11.5
1981 82	14.3	1,505.9	105.4	184.7	13.4	301.7	23,587.9	78.2	3,250.4	10.8
1982 83p	16.0	1,660.8	103.8	175.9	11.2	302.5	23,124.6	76.4	3,324.1	11.0

(*a*) In terms of 94 net litre.

The domestic market is reserved entirely for sugar produced in Australia. This is achieved by an embargo on the import of sugar.

Domestic sales account for about 780,000 tonnes annually or approximately twenty per cent of the total industry sales. Granulated sugars account for about 75 per cent of the total domestic sales with liquid sugars (15 per cent), castor sugar (5 per cent), and raw sugar taking up the bulk of the remainder. About two-thirds of the sales of refined sugar products go to processed food and drink manufacturers.

The Australian sugar industry sells in excess of three quarters of its annual raw sugar production to customers overseas. Sales are usually made on a c.i.f. or c and f basis. Australia is one of the world's largest sugar exporters. In 1982 Australia exported 2.50 million tonnes compared with exports from Cuba of 7.73, Brazil 2.79 and the EEC of 5.58 million tonnes (raw) respectively.

In 1982–83 the domestic market and long-term contracts with, Korea, Malaysia, Singapore, New Zealand and China provided secure outlets for approximately 50 per cent of the industry's capacity, the balance of export sugar being sold on the free market.

Failure to re-negotiate a long-term contract with Japan (previous contract expired June 1981) has resulted in increased uncertainty for long-term sales to that market, although an interim arrangement was entered into for Australia to supply 700,000 tonnes of sugar to Japan over 18 months from 1 July 1981.

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

SUGAR: AREA, PRODUCTION, EXPORTS AND CONSUMPTION

Year	Production			Exports			Apparent consumption in Australia(a)	
	Sugar cane		Raw sugar	Raw and refined sugar				
	Area harvested	Quantity	Gross value	Quantity	Quantity	Value f.o.b.	Total	Per head
	'000 ha	mil. tonnes	$m	mil. tonnes	mil. tonnes	$m	'000 tonnes	kg
1977 78	295.2	23.5	420.5	3.3	2.5	536.6	704.0	49.7
1978 79	251.7	21.5	396.5	2.9	1.8	448.2	710.1	49.5
1979 80	267.2	21.5	548.2	3.0	2.2	666.9	692.5	47.7
1980 81	288.3	24.0	799.7	3.3	2.6	1,146.2	721.4	49.0
1981 82	315.9	25.1	590.2	3.4	3.4	777.7	710.8	47.2
1982 83p	318.2	24.8	484.0	3.5	4.1	562.6	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.

Australia has regularly participated in arrangements to regulate the international sugar market and is a signatory to the current International Sugar Agreement (ISA) which runs until December 1984. The joint Agreement seeks to regulate the flow of sugar onto the world free market and achieve agreed price objectives through a system of export quotas and stocks. Domestic controls on the sugar industry are an important adjunct in complying with ISA conditions. In November 1982 the sugar industry was subject of a reference to the Industries Assistance Commission (IAC) for inquiry and report as to whether assistance should be provided to the Australian sugar industry and if so, the nature, extent and duration of such assistance. The IAC provided a final report on the matter in November 1983.

Vegetables

Vegetables for human consumption

The area sown to vegetables reached a peak of over 200,000 hectares in 1945, but has remained static at around 106,000 hectares since 1975–76. However, yields from most vegetable crops have increased due to variety breeding for increased yields, greater use of irrigation and better control of disease and insect pests.

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

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

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

Potato marketing. Seventy per cent of total production is sold through fresh market outlets with the remaining 30% going to processing. The principal forms of potato processing are canning, drying and freezing. The majority of processing potatoes are purchased by the three frozen french fry potato processors who operate in Tasmania and Victoria. Processors negotiate contracts directly with growers. South Australia and Western Australia have marketing authorities which monitor production, pricing and the sale of potatoes. Other States rely on potato merchants and agents for marketing.

Potato trading. Exports of fresh potatoes, and potato flour, meal and flakes have shown an overall increase in the last decade. Imports of processed potatoes are generally insignificant.

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

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

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

APPARENT CONSUMPTION OF VEGETABLES

(Kilograms per capita per year)

Year	Potatoes	Other root and bulb vegetables	Tomatoes	Leafy and green vegetables	Other vegetables	Total, fresh equivalent weight
1976–77	48.3	15.9	13.6	22.7	16.4	116.9
1977–78	50.4	16.9	13.1	22.5	17.7	120.6
1978–79	51.5	17.2	13.7	27.5	19.5	129.4
1979–80	54.9	17.3	14.5	25.1	17.6	129.4
1980–81	54.9	17.5	15.5	22.3	17.5	127.6
1981–82	57.6	18.7	17.0	20.6	16.9	130.8

VEGETABLES FOR HUMAN CONSUMPTION: AREA AND PRODUCTION

Year	French and runner beans	Cabbages	Carrots	Cauli-flowers	Onions	Green peas	Potatoes	Tomatoes	Total vege-tables
				AREA ('000 hectares)					
1977–78	7.0	2.5	3.3	2.6	3.8	13.9	36.1	8.5	105.4
1978–79	8.1	2.7	3.5	3.1	3.7	15.7	34.6	8.2	107.4
1979–80	7.1	2.5	3.6	3.3	4.0	14.5	36.7	8.5	106.5
1980–81	(a)6.3	2.4	3.7	(a)2.8	4.0	(a)10.8	35.7	9.1	103.0
1981–82	7.1	(a)2.4	3.9	3.1	4.0	12.1	(a)36.1	9.1	106.7
1982–83p	n.y.a.	n.y.a.	n.y.a.	n.y.a.	4.0	n.y.a.	(a)37.7	8.4	103.2

Year	French and runner beans	Cabbages	Carrots	Cauli-flowers	Onions	Green peas: Processing (shelled weight)	Green peas: Sold in pod (pod weight)	Potatoes	Tomatoes
				PRODUCTION ('000 tonnes)					
1977–78	33.4	77.7	91.9	86.4	106.8	42.7	2.4	772.4	182.5
1978–79	45.0	127.6	105.0	116.4	105.2	51.4	2.4	794.6	172.6
1979–80	34.3	74.7	101.6	94.6	119.9	43.0	2.1	857.4	196.9
1980–81	(a)34.0	76.1	112.6	(a)79.2	114.8	(a)32.6	(a)1.5	865.8	216.8
1981–82	34.6	(a)71.0	112.5	85.4	127.4	38.4	1.7	(a)918.6	228.4
1982–83p	n.y.a.	n.y.a.	n.y.a.	n.y.a.	125.4	n.y.a.	n.y.a.	n.y.a.	218.0

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

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

Year	*Gross value*	*Export value f.o.b.(a)*
	$m	$m
1977–78	324.4	10.4
1978–79	403.4	12.5
1979–80	402.3	20.4
1980–81	509.0	23.9
1981–82	554.3	30.6
1982–83p	507.4	39.0

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

PROCESSED VEGETABLES: AUSTRALIAN PRODUCTION

('000 tonnes—unless otherwise stated)

Derived from the recorded monthly production of the Manufacturing Census

Item	*1977–78*	*1978–79*	*1979–80*	*1980–81*	*1981–82*	*1982–83p*
Quick frozen vegetables—						
Beans	17.3	25.9	16.1	19.2	22.5	16.2
Peas	34.5	46.3	38.9	35.5	47.3	42.4
Potatoes	43.6	58.2	65.8	77.9	94.3	94.8
Other	17.3	25.1	28.3	25.2	34.3	25.5
Vegetables preserved, canned or bottled (excluding pickles, etc.) (a)—						
Beans—Green	5.0	4.9	3.7	3.4	5.7	4.1
Baked (including pork and beans)	21.4	22.9	26.1	21.3	25.0	27.4
Beetroot	26.7	28.4	25.9	23.3	26.1	n.a.
Carrots	5.1	5.1	6.1	4.4	3.7	4.4
Cucumber (including pickled)	2.4	1.4	1.0	1.6	2.6	n.a.
Gherkins—pickled	2.1	2.2	1.9	2.3	2.2	2.0
Olives—pickled	0.5	0.6	0.3	0.5	0.5	0.5
Onions (including pickled)	3.4	3.9	4.1	4.9	3.4	3.5
Peas—Green	9.2	15.1	9.7	9.4	11.2	13.7
Tomatoes (excluding canned pulp)	13.0	11.8	13.1	15.3	15.4	9.9
Tomato juice (million litres)	8.8	7.4	9.3	7.0	8.3	4.5

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

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

Fruit (excluding grapes)

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

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

cent of the bananas grown in Australia. Banana production on the sub-tropical north coast of New South Wales is equivalent to that of Queensland with the remaining 8 per cent of production grown in Western Australia. Other tropical fruits grown mainly in Queensland are passionfruit, papaws, mangoes, avocadoes, custard apples and macadamia nuts. Olives are grown mostly in Victoria and South Australia. Almonds and figs are grown mainly in South Australia. Of the berry fruits, strawberries are widely grown, with heaviest production in Victoria and Queensland. Other berries (currants and raspberries) are grown predominantly in Tasmania.

SELECTED FRUIT STATISTICS

Year	*Orchard fruit: number of trees ('000)*				*Tropical, berry and other fruits: area (ha)*			*Total area of fruit (ha)*
	Apples	*Oranges*	*Pears*	*Peaches*	*Bananas*	*Pineapples*	*Small, and berry fruit*	
1977 78	5,933	5,239	1,622	1,557	7,041	6,001	995	94,126
1978 79	5,964	5,299	1,602	1,531	8,062	6,390	1,015	96,998
1979 80	6,113	5,532	1,601	1,570	8,136	6,784	1,210	98,451
1980 81	6,099	5,872	1,622	1,649	8,558	6,583	1,240	100,516
1981 82	6,065	6,055	1,703	1,669	8,740	6,373	1,494	102,068
1982 83p	5,971	6,166	1,595	1,609	8,483	5,912	1,420	102,312

Year	*Apples*	*Apricots*	*Bananas*	*Cherries*	*Oranges*	*Peaches*	*Pears*	*Pine-apples*	*Plums and Prunes*
	PRODUCTION ('000 tonnes)								
1977 78	258.4	24.8	97.8	7.3	356.5	62.2	108.0	98.6	18.6
1978 79	344.9	31.0	113.1	6.8	368.6	64.8	127.6	105.1	28.9
1979 80	298.8	26.4	125.1	(a) 3.9	392.1	71.5	124.3	123.3	(a) 15.0
1980 81	306.9	30.6	124.3	6.5	424.5	79.2	145.6	123.3	20.8
1981 82	294.5	27.1	129.6	5.4	376.3	64.6	(a) 109.7	125.5	16.4
1982 83p	n.y.a	27.2	130.6	4.3	420.8	64.4	n.y.a.	111.3	20.1
	GROSS VALUE OF PRODUCTION ($ million)								
1977 78	81.3	11.0	49.7	7.9	63.4	16.6	24.6	16.1	9.4
1978 79	100.1	13.5	50.8	9.3	74.1	20.6	31.7	18.4	15.3
1979 80	107.7	13.9	45.9	5.8	77.9	24.0	36.5	20.2	10.6
1980 81	118.9	16.9	59.5	10.0	86.0	25.7	41.4	19.8	15.2
1981 82	124.2	18.1	61.4	13.2	89.6	23.0	(a) 30.8	20.5	11.2
1982 83p	126.3	n.y.a.	64.3	n.y.a.	n.y.a.	21.0	41.5	26.7	n.y.a.

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

Processed fruit and fruit products

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

FRUIT PRODUCTION

Derived from the Annual Manufacturing Census and the recorded monthly production

	Unit	*1977–78*	*1978–79*	*1979–80*	*1980–81*	*1981–82*	*1982–83p*
Fruit juice based cordials and syrups(*a*)	mil litres	77.7	73.6	76.3	77.8	80.4	77.4
Natural fruit juice(*b*)—							
Single strength	mil litres	197.6	186.2	208.4	232.6	n.y.a	n.y.a.
Concentrated(*c*)	"	17.8	15.7	25.4	25.3	n.y.a.	n.y.a.
Cider and perry	"	11.7	14.7	17.1	15.0	n.y.a.	n.y.a.
Canned or bottled fruit (excl. canned pulp)	'000 tonnes	184.3	224.9	257.5	226.4	146.7	168.4
Jams	'000 tonnes	28.4	31.8	21.8	29.1	32.6	29.3

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

APPARENT CONSUMPTION OF FRUIT

(kg per capita per year)

Year	Fresh			Jams, conserves, etc.	Dried tree fruit	Processed fruit	Total, fresh equivalent weight
	Oranges	Other citrus	Other fresh fruit				
1976-77	26.4	6.1	36.1	2.0	0.4	10.3	91.6
1977-78	29.1	6.3	33.2	1.8	0.7	10.7	91.1
1978-79	28.1	7.4	34.4	2.3	0.4	10.5	93.0
1979-80	33.8	6.4	39.3	1.5	0.6	12.4	106.1
1980-81	33.8	7.7	35.8	1.5	0.4	12.7	103.3
1981-82	32.1	7.0	40.0	1.8	0.6	10.8	104.1

Fruit exports

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

Value of exports of fresh, dried and preserved fruit in recent years peaked at $90 million in 1972-73, trending downwards since that time although exports of preserved fruit showed some revival in 1976-77.

Fresh apple exports to Europe have been reduced in recent years mainly because of rising shipping costs and improved storage techniques in Europe. On the other hand, there has been some expansion to markets in other areas such as South East Asia and the Middle East. Fresh pear exports to Europe have also declined but not to the same extent as apples. Other export markets for pears have shown substantial development. Exports of citrus, predominantly oranges, have been relatively steady in recent years but are sensitive to competition from the U.S.A. Effects of the E.E.C. import regime have shown in a decrease in processed fruit exports to Europe, although the U.K. remains Australia's main market.

FRUIT EXPORTS: VALUE F.O.B.

($ million)

Year	Fresh and chilled			Canned or bottled					
	Apples	Pears	Oranges	Apricots	Peaches	Pears	Peaches and pears	Pine-apples	Fruit salad
1977-78	13.8	9.5	4.3	0.8	13.4	13.6	2.3	1.5	3.8
1978-79	15.6	15.7	5.6	0.8	12.2	17.2	1.9	1.2	4.3
1979-80	20.1	18.3	9.9	1.5	19.3	20.0	3.6	3.1	7.6
1980-81	15.3	20.0	8.0	1.3	16.0	20.6	3.0	3.5	9.6
1981-82	19.0	13.7	8.9	1.0	15.4	13.7	2.1	3.6	7.5
1982-83p	15.6	17.9	12.6	1.1	13.8	16.5	2.4	2.2	9.8

FRUIT: VALUE OF PRODUCTION AND EXPORTS

($ million)

Year	Gross value			Exports(a) value f.o.b.
	Orchard fruit	Tropical, berry and other	Total	
1977-78	246	78	324	79
1978-79	306	82	388	95
1979-80	325	82	407	131
1980-81	366	94	460	131
1981-82	365	99	464	122
1982-83p	n.y.a.	n.y.a.	499	135

(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, China (excluding Taiwan Province) and the U.S.A. Imports of orange juice in recent years have fluctuated between 21 and 61 million litres. On average, imports of orange juice accounted for around 30 per cent of Australian requirements.

Marketing and regulation of the fruit industry

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

The Stabilization Scheme for apples, which gives support for "at risk" exports to Europe, is being phased-out over the four export seasons 1981 to 1984. The Stabilization Scheme for pears was terminated at the end of the 1980 season. Separate underwriting schemes for all exports of apples and pears have been introduced to cover the five export seasons 1981 to 1985 to protect the industry from sudden serious downturns in returns from the export of apples and pears. Under these schemes, the Government guarantees a minimum return of 95 per cent of the weighted average returns for all apple or all pear exports over the preceding four seasons. During the period stabilisation for apples is being phased out; any stabilisation payment that may be due will be reduced by the amount of any underwriting payments.

Canned Fruit. On 29 November 1979 the Commonwealth enacted legislation restructuring the industry's marketing arrangements. Similar complementary legislation has been enacted by the three major canned deciduous fruit producing States of New South Wales, Victoria and South Australia.

Under the legislation the Australian Canned Fruits Corporation (replacing the Australian Canned Fruits Board) is empowered to acquire and sell the production of canned apricots, peaches and pears and is responsible for determining prices, terms and conditions for sales in both Australian and export markets. Sales are made through markets nominated by canners and approved by the Corporation. Markets are classified as Pool and Non-Pool with returns from Pool markets equalised by the Corporation. Entitlements for sales in Pool markets are allocated to canners prior to the start of each season.

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

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

For further data on fruits and fruit products *see* the publications *Fruit, Australia* (7322.0), *Production Bulletin No. 3: Food, Drink and Tobacco, Australia* (8359.0), *Apparent Consumption of Foodstuffs and Nutrients, Australia* (4306.0) and *Value of Agricultural Commodities Produced, Australia* (7503.0).

Grapes

Grapes are a temperate crop which requires warm to hot summer conditions for ripening and predominantly winter rainfall. Freedom from late spring frosts is essential. They are grown for wine-making, drying and, to a minor extent, for table use. Some of the better known wine producing areas are Sunraysia (N.S.W. and Victoria); Barossa, Clare, Riverland, Southern Districts and Coonawarra (S.A.); North Eastern Victoria and Great Western (Vic.), Hunter and Riverina (N.S.W.); Swan Valley and Margaret River (W.A.).

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

VITICULTURAL STATISTICS: AREA, PRODUCTION AND VALUE

	Area		Production: grapes used for—			
					Total(a)	
Year	Bearing	Total	Winemaking	Drying	Quantity	Gross value
	'000 ha	'000 ha	'000 tonnes fresh weight	'000 tonnes fresh weight	'000 tonnes fresh weight	$m
1977-78	64.9	71.1	430.3	236.3	693.6	141.6
1978-79	65.8	70.6	465.6	227.1	716.4	150.1
1979-80	65.2	69.7	502.5	339.2	865.3	231.1
1980-81	64.7	69.5	473.1	248.1	743.4	204.6
1981-82	63.7	68.3	499.9	361.7	884.9	222.8
1982-83p	61.8	69.3	428.4	295.3	749.7	207.1

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

The bearing area of vines fell by 6 per cent between 1978–79 and 1982–83. Area of vines not yet bearing has also decreased slightly from 1980–81 to 1981–82. Production of wine grapes has remained at around 500,000 tonnes in recent vintages, except for a reduced 1983 vintage of 428,000 tonnes due to adverse climatic conditions. Production of wine grapes has increased by over 65 per cent since 1972–73. The multipurpose grape production base has not shown much change over this period, apart from annual variations due to seasonal conditions. Multipurpose grapes are used predominantly for winemaking and drying, the latter process being particularly susceptible to any adverse seasonal conditions. There was a diversion of multipurpose grapes to winemaking during most of the past decade and this resulted in a decline in the volume of grapes dried. However, in the early 1980s, there has been some reversal in this trend, and production of dried vine fruit in 1980, 1982 and 1983, while assisted by seasonal conditions, reached higher levels than had prevailed since the late 1960s. Since the domestic consumption of dried vine fruit is stable at about 1.7 kg per head per year, variations in the quantity of grapes dried, result in variations in the quantity available for export. At the time of writing (September 1983), the world market situation was uncertain. However, larger northern hemisphere production has depressed prices in recent years and a large 1983 crop is again expected in northern hemisphere producing countries where harvest commences about the beginning of October. Trade with the European Economic Community, which has taken some 40 per cent of Australia's dried fruit exports in recent years, has been affected. by an EEC support regime for dried fruit which was complemented by a Minimum Import Price arrangement instituted in October 1982. The Australian Dried Fruits Corporation is the body responsible for the organisation of the export trade in dried vine fruits. The Corporation also administers the statutory Dried Vine Fruits Equalisation Scheme and the Dried Sultana Production Underwriting Scheme.

Varietal Statistics: 1982 Season

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

VITICULTURE: AREA AND PRODUCTION BY VARIETY, 1982 SEASON

	Area of vines at harvest			Grubbings (actual and/or intended)	Production: Grapes used for—			
	Bearing	Not yet bearing	Total		wine-making	Drying	Table	Total
	—hectares—			hectares	—tonnes (fresh weight)—			
Red Grapes—								
Cabernet Sauvignon	3,832	233	4,065	167	27,945	—	87	28,032
Currant (incl. Carina)	1,739	85	1,824	53	211	22,720	25	22,956
Grenache	4,527	35	4,562	396	52,353	—	188	52,541
Mataro	1,324	9	1,333	129	14,730	—	215	14,945
Shiraz	7,862	87	7,949	591	64,608	—	177	64,785
Other red grapes	2,131	255	2,386	146	12,314	12	4,868	17,194
Total red grapes	*21,413*	*704*	*22,119*	*1,482*	*172,161*	*22,732*	*5,560*	*200,453*
White grapes—								
Chardonnay	608	630	1,238	23	4,139	—	2	4,141
Doradillo	1,811	34	1,845	155	33,841	372	167	34,380
Muscat Blanc	446	102	548	13	4,289	—	97	4,386
Muscat Gordo Blanco	4,222	370	4,592	96	64,153	12,991	565	77,709
Palomino and Pedro Ximenes	2,453	63	2,516	116	37,495	—	35	37,530
Rhine Riesling	3,908	811	4,719	28	33,205	—	17	33,222
Semillon	2,642	254	2,896	78	30,164	—	13	30,177
Sultana	17,546	637	18,183	202	51,042	312,257	5,871	369,170
Waltham Cross	1,428	34	1,462	31	2,762	13,536	4,549	20,847
Other white grapes	5,752	820	6,572	178	66,526	42	2,831	69,399
Total white grapes	*40,816*	*3,755*	*44,571*	*920*	*327,616*	*339,198*	*14,144*	*680,958*
Total grapes	**62,231**	**4,460**	**66,691**	**2,401**	**499,777**	**361,930**	**19,704**	**881,411**

DRIED VINE FRUIT: PRODUCTION, EXPORTS AND CONSUMPTION

(Dried weight)

	Production				Exports				Consumption of dried vine fruit
							Total		
Year	Raisins	Sultanas	Currants	Total	Raisins/ sultanas	Currants	Quantity	Value f.o.b.	
	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	'000 tonnes	$m	kg
1977–78	5.4	50.9	4.3	60.6	34.1	2.0	36.1	35.8	1.3
1978–79	4.7	46.4	5.5	56.6	45.6	1.9	47.5	46.9	1.7
1979–80	5.3	71.8	5.8	82.8	39.2	2.3	41.5	55.1	1.9
1980–81	5.7	50.7	4.8	61.1	50.1	1.9	52.0	75.5	1.8
1981–82	5.2	70.4	5.3	80.9	38.5	0.8	39.4	49.5	1.8
1982–83p	n.y.a.	n.y.a.	n.y.a.	n.y.a.	57.1	2.4	59.7	60.4	n.y.a.

Wine industry

Australia produces a wide range of wine and brandy. In recent years there has been a distinct trend towards greater production and consumption 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 1968, however, table wine production had exceeded that of fortified wine and by 1981–82 table wines represented 83 per cent of total wine production. The Australian Wine and Brandy Corporation, which commenced operation on 1 July 1981, replacing the Australian Wine Board, is the body responsible for the control of the export trade in grape products. Like its predecessor, the Corporation has the power to regulate exports as well as promotion and publicity functions in export markets and in Australia. The Corporation has the power to trade with the approval of the Minister for Primary Industry but, to date, this power has not been invoked.

PRODUCTION, CONSUMPTION AND EXPORT OF WINES

Year	Production	Exports		Consumption in Australia per capita
		Quantity	Value f.o.b.	
	mil. litres	mil. litres	$m	litres
1977-78	339.6	4.7	5.4	14.2
1978-79	335.1	5.3	6.3	16.4
1979-80	414.2	6.1	8.4	17.3
1980-81	374.3	7.5	11.9	18.2
1981-82	402.7	8.4	14.0	19.1
1982-83p	n.y.a.	8.0	13.4	19.9

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

Miscellaneous crops

The principal crops not covered above include fodder crops, tobacco, hops, and mushrooms which, in 1981-82, had gross values as follows:

Crops	Gross value	Per cent of total crop gross value
	$m	%
Fodder crops (hay)	77.1	1.2
Tobacco	59.3	0.9
Hops	8.8	0.1
Mushrooms	21.7	0.3
Other (incl. nurseries)	178.6	2.8

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 areas.

FODDER CROPS: AREA AND PRODUCTION

Year	Hay(a)			Green feed or silage(b)	
	Production				
	Area	Quantity	Gross value	Area	Silage made
	'000 ha	'000 tonnes	$m	'000 ha	'000 tonnes
1977-78	313	795	35.4	862	210
1978-79	293	955	40.2	823	335
1979-80	265	819	39.1	947	270
1980-81	320	826	58.3	1,096	338
1981-82	380	1,033	77.1	936	413
1982-83p	404	864	96.5	1,301	n.y.a.

(a) Principally oaten 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			Hay	Silage
	Barley	Oats	Wheat		
1977	487	890	803	5,016	842
1978	463	819	760	3,928	709
1979	637	1,256	880	5,355	753
1980	542	1,207	815	4,872	722
1981	518	933	860	4,764	578
1982	628	1,356	832	4,941	502

Tobacco

Tobacco is a summer-growing annual which requires a temperate to tropical climate, adequate soil moisture and frost-free period of approximately five months. In Australia, all tobacco is grown under irrigation. Because of specialised requirements, production is limited to areas with suitable soils and climate. The main centres of production are the Mareeba-Dimbulah districts of north Queensland and Myrtleford in north-eastern Victoria. Other areas where tobacco is grown include Bundaberg, Beerwah and Texas (Queensland), Ashford (New South Wales) and Gunbower (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)	
			Unmanufactured	Manufactured	Unmanufactured	Manufactured
	'000 ha	'000 tonnes	$'000	$'000	$'000	$'000
1977-78	8.5	15.1	823	7,601	38,640	24,072
1978-79	8.1	15.0	693	7,074	36,148	23,588
1979-80	7.5	15.1	4,161	9,138	42,394	25,234
1980-81	7.1	14.5	2,893	8,559	44,007	31,129
1981-82	6.6	13.3	2,080	8,551	46,268	23,187
1982-83p	6.8	n.y.a.	4,835	9,667	52,916	30,420

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

Following a review by the Industries Assistance Commission of the tobacco industry in 1982, the government announced a new 5 year stabilisation scheme to begin in 1984. The new scheme is designed to rationalise marketing arrangements in the industry.

Hops

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

The area planted to hops in Australia is about 1,300 hectares. Nearly 60 per cent of plantings are in Tasmania (confined to the Derwent, Huon and Channel areas in the southeast, the Scottsdale-Ringarooma district in the north east, and the Gun Plains in the northwest of the state). The other hop producing areas are the Ovens and King Valleys in Victoria and a small area near Manjimup in Western Australia.

Australian hop production is about 2,100 tonnes, approximately 50 per cent of which is used by domestic breweries, with the remainder being exported.

Mushrooms

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

MUSHROOMS: AREA, PRODUCTION, GROSS VALUE AND IMPORTS

Year	Total production			Imports				
				Canned or bottled production	Dried		Canned or bottled	
	Area	Quantity	Gross value		Quantity	Value f.o.b.	Quantity	Value f.o.b.
	hectares	tonnes	$m	tonnes	tonnes	$'000	'000 litres	$'000
1977 78	55	7,289	12.6	6,611	97	998	5,030	6,855
1978 79	53	7,806	14.7	5,718	88	964	3,738	4,723
1979 80	57	8,340	16.9	4,793	93	1,082	4,482	5,486
1980 81	56	8,265	18.5	3,743	93	1,140	5,864	7,120
1981 82	57	9,382	21.7	n.p.	120	1,478	6,413	8,454
1982 83p	n.y.a.	n.y.a.	n.y.a.	n.p.	58	895	5,845	8,447

Livestock

Since 1861, annual enumerations of livestock have been made based, with few exceptions, on actual collections made through the agency of the State police or by post. Particulars concerning the numbers of each of the principal kinds of livestock in Australia at ten-yearly intervals from 1861 to 1971, and then from 1978 on in single years, are given in the following table.

LIVESTOCK: AUSTRALIA, 1861 TO 1983

('000)

Year	Cattle	Sheep	Pigs	Year	Cattle	Sheep	Pigs
1861	3,958	20,135	351	1951	15,229	115,596	1,134
1871	4,276	41,594	543	1961	17,332	152,679	1,615
1881	7,527	62,184	816	1971	24,373	177,792	2,590
1891	10,300	97,881	891	1978	29,330	131,445	2,217
1901	8,640	70,603	950	1979	27,112	134,222	2,301
1911	11,745	98,066	1,026	1980	26,203	135,985	2,518
1921	13,500	81,796	674	1981	25,168	134,407	2,430
1931	11,721	110,568	1,072	1982	24,553	137,976	2,373
1941	13,256	122,694	1,797	1983p	22,471	133,186	2,498

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

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

1864-66 All States were affected except Tasmania.

1880-86 Southern and eastern mainland States were affected.

1888 All States were hit except Western Australia.

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

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

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

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

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

1972 Widespread drought occurred throughout Australia.

Much of eastern Australia experienced one of the worst droughts on record in 1982 and early 1983. Widespread and soaking rains during the autumn months of 1983 greatly alleviated the situation and

by late 1983 only pockets of drought remained. Tasmania remains the worst affected State, but drought declarations are expected to be lifted soon in most areas.

For further details of droughts in Australia *see* Yearbook No. 54, pages 991-96 *'Droughts in Australia'* and the Bureau of Meteorology's 'Commentary on Meteorological aspects of the current drought' issued in September 1982.

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

Cattle

Cattle-raising is carried out in all States, the main object in certain districts being the production of stock suitable for slaughtering purposes and in others the raising of dairy herds. While dairy cattle are restricted mainly to southern and to coastal districts, beef cattle are more widely distributed. Cattle numbers in Australia increased slowly during the 1960s and 1970s, despite seasonal vicissitudes and heavy slaughterings, to a peak of 33.4 million in 1976. Since then, there has been a continuous decline, aggravated by drought conditions, to 22.5 million in 1983.

Beef cattle production is often combined with cropping, dairying and sheep. In the north (north of the 26th parallel), cattle properties and herd size are very large, pastures are generally unimproved, fodder crops are rare and beef is usually the only product. The industry is more intensive in the south because of the more favourable environment including more improved pasture.

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

CATTLE NUMBERS

('000)

31 March	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*N.T.*	*Aust. (incl. A.C.T.)*
1978 . . .	7,330	4,572	11,490	1,242	2,271	733	1,674	29,330
1979 . . .	6,484	4,134	10,859	1,086	2,092	657	1,785	27,112
1980 . . .	6,097	4,252	10,332	1,067	2,065	649	1,727	26,203
1981 . . .	5,459	4,313	9,925	1,091	2,034	659	1,675	25,168
1982 . . .	5,429	4,121	9,782	1,013	1,942	628	1,624	24,553
1983p . . .	4,940	3,463	9,328	843	1,751	565	1,571	22,471

Classification of cattle

CATTLE NUMBERS, BY AGE, SEX, PURPOSE

('000)

	31 March					
Classification	*1978*	*1979*	*1980*	*1981*	*1982*	*1983p*
Milk cattle—						
Bulls used or intended for service	60	55	56	54	49	47
Cows, heifers and heifer calves	2,902	2,733	2,697	2,672	2,661	2,644
House cows and heifers	99	78	77	74	73	70
Total, dairy cattle	*3,062*	*2,867*	*2,830*	*2,799*	*2,783*	*2,761*
Meat cattle—						
Bulls used or intended for service	571	544	545	533	527	499
Cows and heifers (1 year and over)	12,728	11,774	11,727	11,269	11,032	9,903
Calves under 1 year	6,513	5,837	5,445	5,135	5,023	4,658
Other cattle (1 year and over)	6,456	6,090	5,656	5,431	5,188	4,650
Total, beef cattle	*26,268*	*24,245*	*23,373*	*22,368*	*21,770*	*19,710*
Total, all cattle	**29,330**	**27,112**	**26,203**	**25,168**	**24,553**	**22,471**

Sheep

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

producers turned off large numbers for slaughter and moved from wool-growing towards grain and beef production. By 1975, the numbers had again increased to 151,653,000, but in March 1978 the numbers had fallen to 131,442,000, the lowest since 1955. Improved seasonal conditions during 1978 and 1979 enabled producers to begin rebuilding their flocks. By March 1980, numbers had risen to 136.0 million. Subsequently, high levels of drought-induced slaughter led to a decline in numbers to 134.4 million by March 1981. Numbers rose to 138.0 million in March 1982 with improved seasonal conditions and the attractiveness of sheep enterprises relative to cattle contributing to the growth in numbers. Subsequently, drought conditions saw the flock reduce to 133.2 million in March 1983.

SHEEP NUMBERS
(Millions)

31 March	*N.S.W.*	*Vic.*	*Qld*	*S.A.*	*W.A.*	*Tas.*	*Aust. (incl. N.T., A.C.T.)*
1978	48.0	22.0	13.4	14.1	29.8	4.0	131.4
1979	48.4	22.8	13.6	14.9	30.3	4.2	134.2
1980	48.6	24.4	12.2	16.0	30.4	4.2	136.0
1981	46.0	25.5	10.6	17.1	30.8	4.4	134.4
1982	48.7	25.3	12.3	16.7	30.3	4.5	138.0
1983p	48.0	22.7	12.1	15.5	30.2	4.5	133.2

SHEEP, BY AGE AND SEX
(Millions)

	Sheep: 1 year and over					
31 March	*Rams*	*Breeding ewes*	*Other ewes*	*Wethers*	*Lambs and hoggets (under 1 year)*	*Total, sheep and lambs*
1978	1.7	63.6	5.4	32.6	28.2	131.4
1979	1.7	65.9	4.7	31.6	30.4	134.2
1980	1.7	66.5	5.0	30.5	32.3	136.0
1981	1.8	66.9	4.8	30.1	30.8	134.4
1982	1.8	68.5	4.8	30.5	32.4	138.0
1983p	1.7	65.8	5.4	28.7	31.5	133.2

In 1981–82 provisional value of production data for the sheep and wool industry showed that the combined value of wool and sheep slaughtered accounted for about one-fifth the gross value of all agriculture. This proportion varies with wool and meat prices and seasonal conditions. Australia has about 15 per cent of the world's woolled sheep but produces around 25 per cent of the world's greasy wool output. In addition, in 1982–83 the sheep industry produced over 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. Since 1973–74 there has been a strong growth in exports of live sheep for slaughter, exports reaching a record 6.9 million head in 1982–83.

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*
1978	135.4	39.5	4.2	30.1	9.1	131.4
1979	131.4	42.5	3.7	26.9	9.1	134.2
1980	134.2	45.8	5.3	30.2	8.5	136.0
1981	136.0	43.7	6.1	31.4	7.8	134.4
1982	134.4	44.8	6.3	28.1	6.8	138.0
1983p	138.0	45.6	6.4	30.2	13.9	133.2

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

LAMBING

Year ended 31 March	Number of breeding ewes at start of season	Mating intentions at start of season	Actual matings	Ratio of actual matings to intended matings	Lambs marked	Ratio of lambs marked to actual matings	Ratio of lambs marked to breeding ewes
	million	million	million	per cent	million	per cent	per cent
1978	64.7	59.8	56.6	95	39.5	70	61
1979	63.6	58.5	57.1	98	42.5	74	67
1980	65.9	61.9	59.5	96	45.8	77	70
1981	66.5	60.3	58.1	96	43.7	75	66
1982	66.9	61.9	60.5	98	44.8	74	67
1983p	68.5	64.6	61.3	95	45.6	74	67

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

Pigs

Until the early 1950s the majority of pigs were reared in dairy areas where the on-farm separation of cream, associated with butter production, provided an abundant supply of skim milk; a traditional cheap and nutritious pig feed. With the virtual disappearance of on-farm cream separation and the introduction of wheat delivery quotas and generally low grain prices in the late 1960s, pig raising became increasingly associated with grain growing areas. Today most pigs are raised under intensive or semi-intensive conditions in large scale piggeries and fed on grain based rations. Pig numbers have remained fairly stable over the past decade, although there has been a decrease in the number of holdings raising pigs as pig production becomes more specialised.

PIG NUMBERS
('000)

31 March	N.S.W.	Vic.	Qld	S.A.	W.A.	Tas.	Aust. (incl. N.T., A.C.T.)
1978	737	401	463	311	237	64	2,217
1979	759	390	487	330	271	61	2,301
1980	829	422	510	398	293	63	2,518
1981	787	400	502	394	289	54	2,430
1982	766	406	513	374	263	47	2,375
1983p	800	406	537	405	300	49	2,498

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

Poultry

Once part of the mixed farming sector, the poultry industry is now a highly specialised and distinct industry. The bulk of egg production is obtained from this commercial source, though many farm households and some private homes in suburban areas keep poultry to supply their domestic egg 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. There are also separate research schemes funded jointly by industry and government for the egg and meat chicken industries but close liaison exists. Both sectors are good examples of the general movement towards specialised, large scale, capital-intensive production which is common to many agricultural industries.

POULTRY NUMBERS(*a*)
('000)

31 March	Chickens: Hens and pullets for egg production	Chickens: Meat strain chickens (broilers)	Chickens: Total chickens(*b*)	Other poultry: Ducks	Other poultry: Turkeys	Other poultry: Other poultry	Total all poultry
1978	15,773	26,681	42,637	163	322	330	43,452
1979	16,189	26,825	43,214	247	448	321	44,229
1980	14,846	29,967	46,749	272	1,016	218	48,255
1981	15,187	29,077	46,386	228	750	175	47,539
1982	14,930	27,478	44,761	317	713	213	46,004
1983p	14,624	27,558	44,353	450	577	176	45,556

(*a*) Data are for numbers of poultry on agricultural establishments as reported in the annual Agricultural Census. (*b*) Includes breeding stock and data not available for separate publication.

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

Meat production, slaughterings and other disposals

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

PRODUCTION OF MEAT BY TYPE(*a*)
('000 tonnes)

Year	Carcass weight: Beef	Veal	Mutton	Lamb	Pig meat	Total meat	Dressed weight(*b*): Chickens	Total all poultry(*c*)
1977–78	2,080	104	261	253	199	2,897	220	246
1978–79	1,948	71	239	253	199	2,708	244	271
1979–80	1,510	54	275	272	218	2,330	282	313
1980–81	1,418	50	299	279	233	2,278	276	303
1981–82	1,523	50	230	276	228	2,307	253	279
1982–83p	1,482	62	246	271	234	2,297	274	304

(*a*) Excludes offal. (*b*) Dressed weight of whole birds, pieces and giblets. (*c*) Includes other fowls, turkeys, ducks and drakes.

PRODUCTION OF MEAT : AUSTRALIA, 1931-32 TO 1982-83

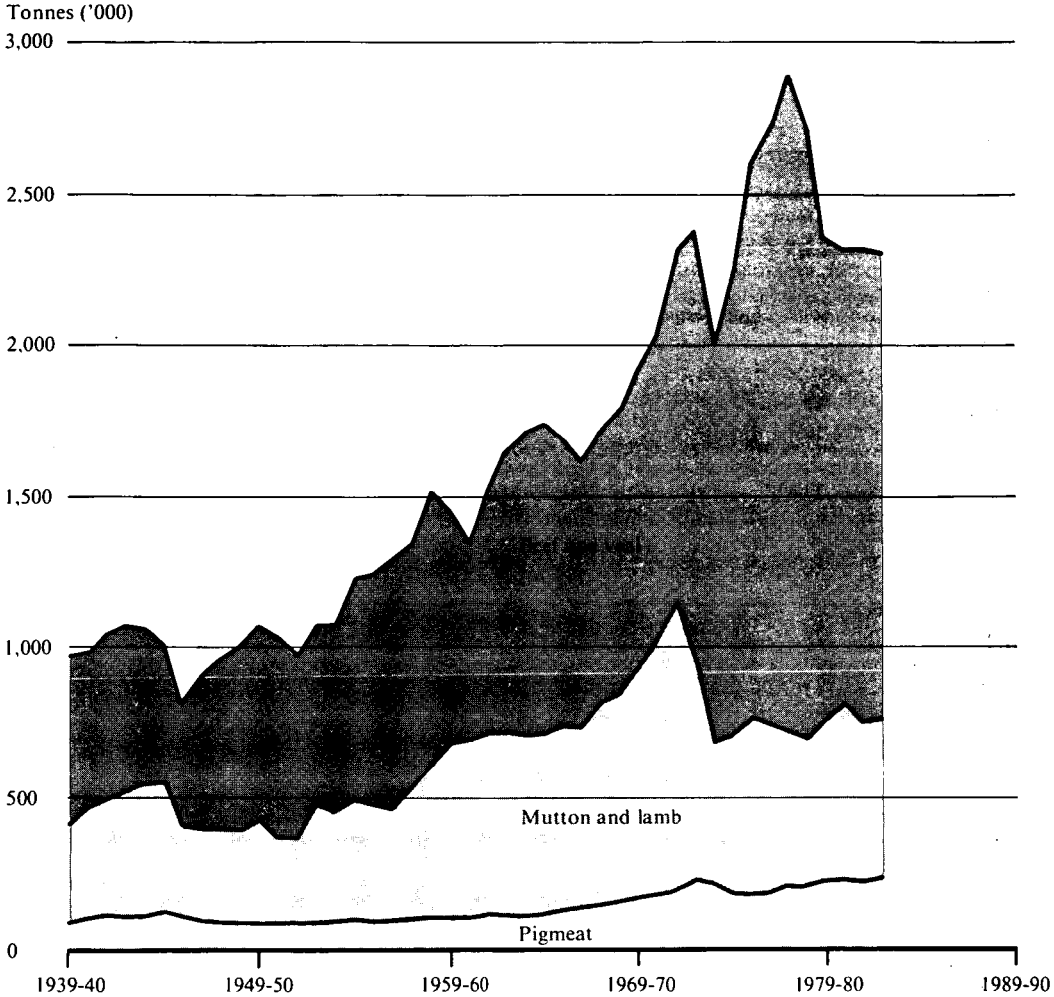

PLATE 36

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

Year	*Cattle*	*Calves*	*Sheep*	*Lambs*	*Pigs*	*Chickens (a)*	*Other fowls (b) and turkeys*	*Ducks and drakes*
1977 78	10.4	2.5	13.8	15.3	3.7	174.7	10.7	1.7
1978 79	9.5	1.8	12.0	14.8	3.6	191.2	10.8	1.8
1979 80	7.4	1.5	14.1	16.5	3.9	222.5	11.3	2.2
1980 81	7.0	1.5	15.2	16.7	4.2	221.7	11.2	1.7
1981 82	7.2	1.5	11.7	16.3	4.1	204.0	9.9	2.0
1982 83p	7.3	1.7	12.9	16.5	4.1	220.0	10.7	1.9

(*a*) Comprises broilers, fryers and roasters. (*b*) Comprises hens, roosters, etc.

Mutton and Lamb

Production of sheepmeats in Australia is closely associated with the wool industry. Sheep grazing often occurs on mixed farms in conjunction with beef and/or grain enterprises and in some areas producers specialise in lamb production. The supply of sheepmeat depends greatly on seasonal conditions,

decisions to build up or reduce flock numbers, expectations of wool prices, live sheep exports and the pattern of domestic consumption of meat.

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

Sheepmeat production declined rapidly from the high levels of the early 1970s, which were associated with flock reduction, to annual levels of between 400,000 and 600,000 tonnes from 1973–74. Lamb production has remained close to 270,000 tonnes per year in recent years, while mutton production has varied greatly between 215,000 tonnes and 270,000 tonnes.

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

Live sheep exports for slaughter have increased from almost one million head in 1973–74 to nearly 7 million in 1982–83, equivalent to 24,000 tonnes of carcass mutton in 1973–74 and 173,000 tonnes in 1982–83 and representing 44% of all carcass sheep meat (lamb, etc.) exported in 1982–83.

Beef and Veal

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

Beef and veal production in Australia rose markedly in the seventies, reaching peak levels of over 2 million tonnes in 1977–78 and 1978–79, but declining to 1.5 million tonnes in 1982–83. The increase in production followed the rapid expansion of the beef herd that had occurred during the late sixties and early seventies mainly in response to relatively profitable beef prices and increased demand from overseas markets.

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

Improved seasonal conditions during 1983, accompanied by strengthening overseas demand, resulted in a move towards herd rebuilding. However, the high level of drought induced slaughterings during 1982 had reduced the breeding herd base implying very slow herd expansion until 1986. Accordingly, beef and veal production will decline throughout the eighties.

Pigmeat

Specialisation has given producers greater opportunity to concentrate on the quality of their product. Pigmeat production has risen steadily since 1975 to reach 234,000 tonnes in 1982–83. Average slaughter weights have also risen over the past ten years, reflecting the increased quantities of pigmeat going to canning and curing and the expanding sales of heavier pigs (between 50 and 70 kilograms) for the fresh pork trade.

Approximately 65 per cent of production is processed into bacon, hams and smallgoods, the rest is sold as fresh pork. Slightly over 1 per cent of the industry's output is currently exported. The increasing production of pigmeat therefore reflects a steady increase in per capita domestic consumption over the past five years.

Poultry meat

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 helped to reduce production costs relative to other meats. The price competitiveness of chicken meat compared with other meats, especially beef, continues to improve consolidating the position of poultry meat as the second most important meat after beef in Australian diets.

EXPORTS OF FRESH, CHILLED OR FROZEN MEAT

Year	*Beef*	*Veal*	*Mutton*	*Lamb*	*Pork*	*Poultry*
	QUANTITY (*a*) ('000 tonnes)					
1977–78	1,095.5	19.8	199.0	57.0	1.3	5.6
1978–79	1,193.7	23.0	169.2	46.5	1.9	6.7
1979–80	846.6	17.4	182.1	49.6	1.9	7.3
1980–81	753.7	13.6	241.5	39.4	2.4	7.7
1981–82	775.2	8.5	154.6	32.1	1.5	4.1
1982–83p	861.8	10.1	201.0	36.9	1.8	5.4
	VALUE f.o.b. ($ million)					
1977–78	853.7	18.1	123.7	57.2	2.2	6.6
1978–79	1,339.2	26.6	135.2	52.0	3.1	8.0
1979–80	1,295.6	31.9	172.6	62.4	3.7	10.6
1980–81	1,086.4	22.9	248.2	62.3	5.7	12.1
1981–82	1,009.8	14.4	155.3	50.7	3.1	7.3
1982–83p	1,266.6	17.8	167.0	61.1	2.2	4.4

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

Exports of live animals

During the 1970's exports of live sheep to the Middle East for slaughter have substantially increased from 762,000 in 1971–72 to 6.8 million in 1982–83. Over the last five years a substantial trade in cattle for slaughter has developed, primarily with Asian countries. Exports of breeding cattle especially had picked up substantially in the two years prior to 1982-83 but have since fallen drastically due to reduced exports to Indonesia, which had previously accounted for over 60 per cent of total exports. Export of cattle for either breeding or slaughter purposes had fallen from 109,900 head in 1981–82 to 81,800 head in 1982–83.

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

EXPORTS OF LIVE ANIMALS

	Livestock			*Poultry*		
		Total(a)			*Total*	
Year	*Sheep and Lambs*	*Number*	*Value f.o.b.*	*Day old chicks*	*Number*	*Value f.o.b.*
	—'000—		$'000	—'000—		$'000
1977–78	4,124	4,188	98,069	503	584	387
1978–79	3,865	3,955	110,611	448	624	626
1979–80	6,162	6,225	192,668	409	710	747
1980–81	5,740	5,842	208,483	862	974	832
1981–82	6,009	6,112	214,886	809	935	720
1982–83p	7,004	7,097	212 950	370	497	661

(*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.
1977-78	15,746	49,030	49,347	539	1,479	24,643	35,660
1978-79	18,545	51,682	44,775	564	1,734	25,202	45,197
1979-80	18,147	52,811	39,178	861	2,734	21,581	51,552
1980-81	18,878	55,564	36,431	528	1,991	17,400	42,139
1981-82	18,112	57,818	34,619	523	1,959	19,651	50,461
1982-83p	17,051	55,634	n.a.	515	2,292	20,150	53,987

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

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

Year	Cattle and calves	Sheep and lambs	Pigs	Poultry	Total
1977-78	1,176.9	344.8	212.7	220.0	1,954.4
1978-79	2,154.6	445.1	253.8	244.2	3,097.7
1979-80	2,386.0	654.3	311.3	307.2	3,658.8
1980-81	2,056.5	718.9	337.5	361.4	3,474.3
1981-82	1,890.1	646.7	396.1	362.7	3,295.6
1982-83p	1,984.9	454.2	412.4	414.4	3,265.9

(a) Includes adjustment for net exports 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)						
1977-78	964	52	195	65	86	25	240
1978-79	795	66	202	55	93	21	271
1979-80	677	73	229	69	91	21	295
1980-81	663	73	238	83	100	22	301
1981-82	743	53	245	87	95	18	288
1982-83p	640	69	235	87	n.y.a.	n.y.a.	301
	PER CAPITA PER YEAR (kg)						
1977-78	67.5	3.7	13.7	4.5	6.0	1.7	16.8
1978-79	55.1	4.5	14.0	3.8	6.5	1.4	18.8
1979-80	46.4	5.0	15.7	4.8	6.3	1.4	20.2
1980-81	44.7	4.9	16.0	5.6	6.8	1.5	20.3
1981-82	49.4	3.5	16.3	5.8	6.3	1.2	19.1
1982-83p	42.2	4.5	15.5	5.7	n.y.a.	n.y.a.	19.9

(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 publications: *Livestock and Livestock Products, Australia* (7221.0), *Value of Agricultural Commodities Produced, Australia* (7503.0) and *Apparent Consumption of Foodstuffs and Nutrients, Australia* (4306.0).

Australian Meat and Live-stock Corporation

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

The Corporation has the power to trade in meat and live-stock in a manner which accords with its adopted policy and with normal commercial practice. An amendment to the Act, passed in 1982 but yet to be proclaimed, extends the powers of the Corporation, subject to the approval of the Minister, to engaging in sole trading or to permitting restricted trading by a specified holder or holders of meat or live-stock licences and entering into transactions by way of meat futures or live-stock futures contracts. The exercise of this sole or restricted trading power, is limited to circumstances where a monopoly buying power is, in the Corporation's opinion, distorting normal market forces, and to circumstances where such action is necessary or desirable to ensure that live-stock producers receive a fair return in respect of meat or live-stock exported.

Statutory arrangements provide for three industry consultative groups to serve as a link between the Corporation and relevant industry interests: the Meat Exporters and Abattoir Operators Consultative Group, the Live-stock Exporters Consultative Group and the Live-stock Producers Consultative Group. These groups:

- advise the Corporation on trade and market matters; and
- disseminate information on Corporation decisions and policies to people engaged in the meat and live-stock industries.

The Corporation's main functions are to encourage, assist, promote and control the export of meat and live-stock from Australia, and to promote the consumption and sale of Australian meat, and the sale of Australian live-stock, both in Australia and overseas. Exporters of meat and live-stock are licensed by the Corporation and have to comply with its requirements in relation to export trading. The Corporation assists exporters in overseas market development and conducts meat promotion activities in Australia and abroad. It has authority, also, to perform a wide range of other functions aimed at improving the production of meat and live-stock and for the general benefit of the meat and livestock industries.

Wool

The Australian Sheep Flock contains nearly 12 per cent of the world's sheep, and produces over 26 per cent of the total annual production of wool. Approximately 75 per cent of the Australian Flock are of a single breed, the Merino, raised primarily for its heavy fleeces of fine quality wool.

Wool production

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

Since the 1946–47 season, the average clean yield of Australian wool has been assessed annually. This work was initiated by the former Australian Wool Realisation Commission and is carried on by the Australian Wool Corporation. In the early years, the average clean yield was assessed on the basis of a small number of tests and subjective appraisal while in later years an increasing proportion of the Australian wool clip has been subjected to laboratory tests. 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 62.32 per cent in 1982–83.

Wool scoured and carbonised in Australia before export, however, has a somewhat lower clean yield than the whole clip, because much of the greasy wool treated locally for export in this form is dirty low-grade wool. The quantity of scoured and carbonised wool exported during 1982–83 was about 9 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 37.

SHEEP NUMBERS AND WOOL PRODUCTION : AUSTRALIA, 1880 TO 1983

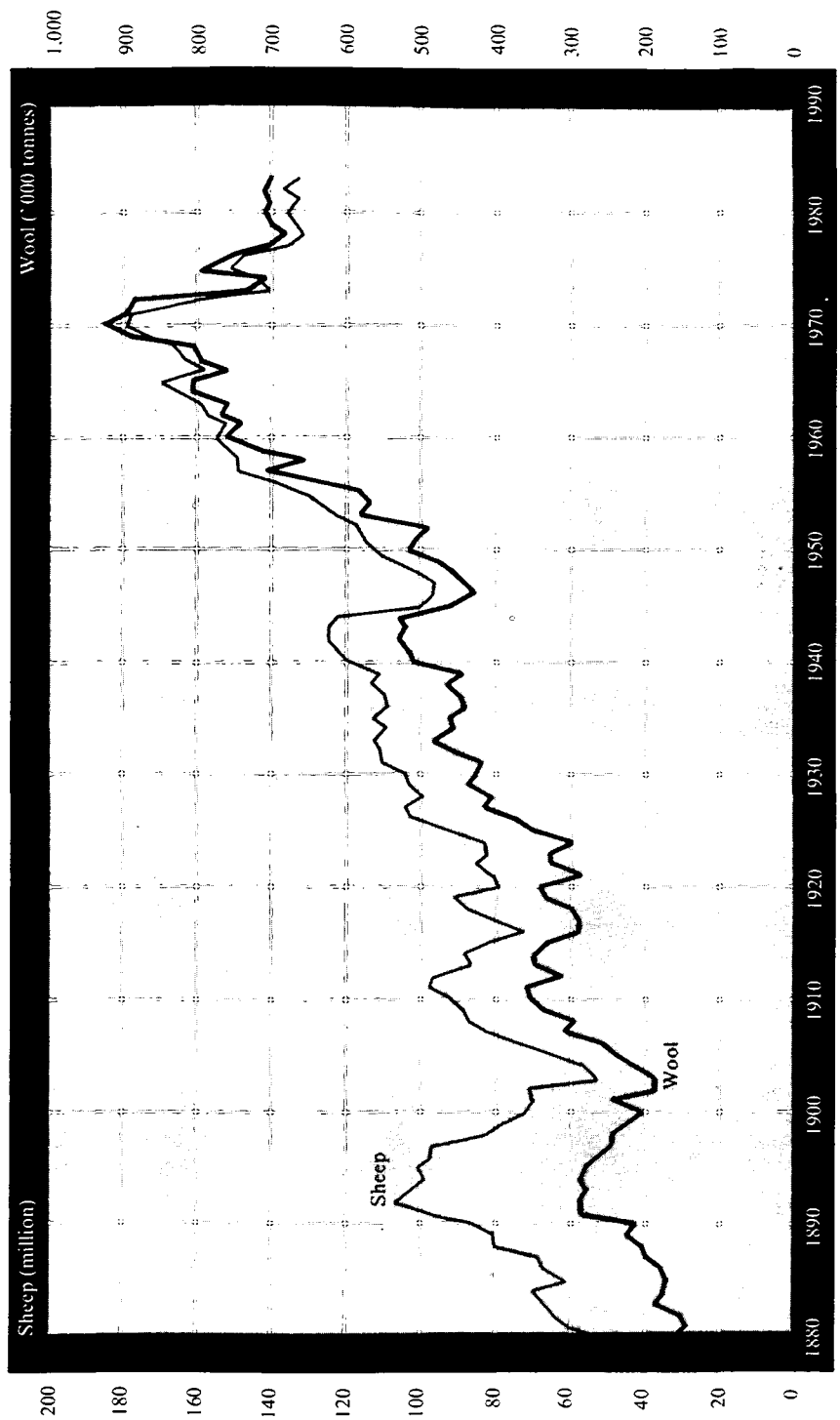

PLATE 37

SHEARING, WOOL PRODUCTION AND VALUE

Year	Sheep and lambs shorn	Average fleece weight	Wool production			
			Shorn wool	Other wool(a)	Total wool	
					Quantity	Gross value (b)
	million	kg	'000 tonnes	'000 tonnes	'000 tonnes	$m
1977-78	143.5	4.22	605.5	71.6	677.0	1,206
1978-79	146.9	4.38	643.6	60.6	704.3	1,374
1979-80	148.5	4.33	642.4	66.1	708.5	1,651
1980-81	150.0	4.25	637.9	63.3	701.2	1,670
1981-82	155.2	4.26	660.9	56.2	717.2	1,670
1982-83p	149.9	4.26	638.0	62.3	700.3	1,789

(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.

The wool market

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

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

Wool receivals

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

TAXABLE WOOL RECEIVALS

Year	Receivals			Dealers as per cent of total receivals	Shorn wool production(b)
	Brokers (NCWSB)	Dealers(a)	Brokers and dealers		
	—'000 tonnes—			per cent	'000 tonnes
1977-78	459.7	155.2	614.9	25.2	605.5
1978-79	481.4	164.8	646.2	25.5	643.6
1979-80	483.1	175.2	658.2	26.6	642.4
1980-81	523.8	134.2	658.0	20.4	637.9
1981-82	539.0	141.4	680.4	20.8	660.9
1982-83p	518.9	141.2	660.2	21.4	638.0

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

Wool marketing arrangements

The Australian Wool Corporation (AWC), established on 1 January 1973 through the amalgamation of the former Australian Wool Commission and Australian Wool Board, performs a number of functions within the market aimed at encouraging the demand for Australian wool and assisting the efficient and orderly disposal of the national clip. Central to these activities is a reserve price scheme, operated by the Corporation on behalf of the woolgrowing industry and with the support of the Commonwealth Government. This scheme was introduced with the formation of the Australian Wool Commission in November 1970. Its purpose is to provide a measure of protection to wool growers against unduly low prices resulting from temporary variations of demand at auctions.

The reserve price scheme has two component parts, a fixed and published 'floor' price for each wool type, and a flexible or floating reserve which is not disclosed.

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

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

When the Fund was established, wool demand was extremely depressed. However, the market improved in subsequent years and the level of the Fund rose to about $493 million at the end of 1980-81. This balance was well in excess of requirements and the Government agreed to woolgrowers' strong requests for legislation to allow for a progressive return of contributions paid into the Fund. In June 1981, the Minister for Primary Industry declared 1974-75 to be the first such refund period and almost $42 million of the available $43.6 million paid into the Fund in 1974-75 was refunded to woolgrowers during 1981-82. By June 1983 an amount of $44.1 million paid into the fund in 1975-76 was refunded to woolgrowers. It is expected that $56.1 million paid into the fund in 1976-77 will be available for refunding to woolgrowers in 1983-84.

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

To provide direct experience with all aspects of wool handling and marketing and demonstrate cost savings and handling efficiencies, the Corporation began a Wool Marketing Service (WMS) to growers in July 1980 on a trial basis. It was approved by the Minister for Primary Industry as a permanent service in July 1982.

In operation, the Wool Marketing Service purchases wool direct from growers with the valuation based on full laboratory measurement. The wool is then prepared for re-sale and shipment by the Corporation in a variety of ways, though the auction system remains the principal selling option.

Wool testing

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

At the direction of the Commonwealth Government the Authority which had operated as a division of the Corporation, was transferred to the private sector, effective from the beginning of July 1982. The new company, known as AWTA Ltd, draws its directors from the Australian Wool Corporation, Wool Council of Australia, Australian Council of Wool Buyers, Federal Council of Private Treaty Wool Merchants, National Council of Wool Selling Brokers of Australia, Wool Scourers and Carbonisers Association of Australia and Wool Textile Manufacturers of Australia. In matters of significant policy, woolgrower interests have a majority vote.

AWTA Ltd, was incorporated in Victoria on 5 May 1982.

Wool promotion

The Australian Wool Corporation is responsible for the promotion of the greater use of wool both in Australia and overseas. The cost of promotion is shared by the Government and the woolgrowing industry. The woolgrowers' contribution for promotion is raised by means of a tax on wool sale proceeds which is currently at the rate of 2.5 per cent (part of a total 3 per cent levy used to finance both wool research and promotion). The Commonwealth's contribution to wool promotion has been set at $20 million annually for the 3 years commencing 1981-82. Most of the promotion funds are remitted to the International Wool Secretariat (IWS) with headquarters in London. Australia provides approximately two thirds of the IWS budget.

Wool research

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

Wool income

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

Year	*Value of wool as a per cent of total agriculture*	*Value of wool exports as a per cent of total Australian exports*
1977–78	17.3	10.5
1978–79	13.4	11.2
1979–80	14.0	9.2
1980–81	14.4	10.1
1981–82	14.1	9.8
1982–83p	15.8	8.5

Stocks

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

WOOL STOCKS
('000 tonnes)

	Stocks of—					
	Raw Wool		*Semi-processed wool*		*Total wool*	
At 30 June	*Greasy*	*Clean*	*Greasy*	*Clean*	*Greasy*	*Clean*
1977	265.6	156.3	8.6	5.1	274.2	161.4
1978	222.0	132.2	8.7	5.2	230.7	137.4
1979	162.0	96.4	9.1	5.5	171.0	101.9
1980	168.7	101.1	11.3	6.9	180.1	108.0
1981	153.2	91.6	10.8	6.5	163.9	98.1
1982	206.8	124.5	8.1	4.9	214.8	129.4

Wool processing

Approximately 86 per cent of all wool passing through the Australian auction system comprises combing fleece and oddment types which are ultimately processed on the worsted system. The remaining 14 per cent, being the shorter or carding wools such as locks, crutchings, and lambs wool, is directed to the woollen system. This latter group is boosted some 5-10 per cent by noils combed out during worsted processing.

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

Over recent years there has been a trend to increased early stage processing of Australian wool before export. Approximately 95 per cent of total Australian wool production enters international trade.

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

Within Australia, in 1980-81 there were 28 operating establishments involved in early stage processing. Before 1975 the wool processing industry was largely centralised in cities close to major ports. Since then, however, a general trend towards decentralised inland locations has occurred.

It is anticipated that processed wool could represent 30-35 per cent of total wool exports in the late 1980's.

The principal factors responsible for this trend are:

Costs of effluent treatment or discharge are widely regarded as the most important.

Freight rates favour export in processed form, despite shipping concessions for greasy wool packed at higher densities.

Energy costs: electricity, coal and natural gas all cost less in Australia than in Japan and Europe.

Government policies such as the Export Expansion Grant Scheme and decentralization subsidies.

Wool consumption

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

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

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

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

CONSUMPTION OF RAW AND PROCESSED WOOL
('000 tonnes)

	Consumption of raw wool		*Consumption of processed wool*					
			Worsted yarn used (a)		*Woollen yarn used (b)*		*Total*	
Year	*Greasy*	*Clean*	*Greasy*	*Clean*	*Greasy*	*Clean*	*Greasy*	*Clean*
1976-77	49.1	27.0	12.6	6.8	15.0	8.5	28.7	15.9
1977-78	47.5	28.0	11.9	6.9	14.2	8.7	27.3	16.2
1978-79	51.0	30.0	11.9	6.8	14.7	9.0	27.7	16.4
1979-80	56.1	30.9	12.4	6.7	15.8	9.0	29.3	16.3
1980-81	51.6	30.7	8.8	5.2	14.7	9.1	24.7	14.8
1981-82	47.7	30.0	8.0	4.9	14.8	9.7	23.9	15.1

(*a*) Wool content of yarns containing a mixture of wool and other fibres. (*b*) Comprises pure and mixed woollen yarn.

Exports of wool

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

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

EXPORTS OF WOOL

Year	Selected exports ('000 tonnes: greasy basis)			Total exports	
	Greasy and slipe	Scoured and carbonised	Exported on skins	Greasy basis (a)	Value f.o.b.
				'000 tonnes	$m
1977-78	493.6	70.7	64.4	647.0	1,289
1978-79	568.4	89.0	54.6	711.9	1,593
1979-80	505.3	93.2	59.5	658.1	1,734
1980-81	529.4	105.5	57.0	694.2	1,935
1981-82	497.6	96.3	50.6	644.5	1,925
1982-83p	488.9	85.0	56.1	629.9	1,886

(a) Includes processed wool.

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

Dairying

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

Australian dairy cattle have shown steady improvement in quality, as demonstrated by milk yield, over the years. This is attributable to improved breeding associated with herd recording; the use of artificial insemination; better feeding resulting from the use of improved pastures and supplementary feed; and better farming methods arising from the application of new management practices and the use of the latest technology; and a contraction of the industry to climatically more favourable areas. Typical of the developments which have occurred are the almost total change from on-farm separation and delivery of cream to the collection of whole milk by milk tankers from on-farm refrigerated milk vats and the introduction of Herringbone and Rotary type dairies on farms.

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

MILK CATTLE NUMBERS
('000)

31 March	Bulls used or intended for service	Cows and heifers used or intended for production of milk or cream for sale			
		Cows (in milk and dry)	Heifers		House cows and heifers (a)
			1 year and over	Under 1 year	
1978	60	2,056	480	367	99
1979	55	1,921	442	369	78
1980	56	1,869	431	396	77
1981	54	1,819	460	393	74
1982	49	1,810	465	387	73
1983p	47	1,795	458	390	70

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

The economic position of the industry

During much of the 1970's the Australian dairy industry faced reducing demand and low export prices for dairy products which resulted in considerable contraction and rationalisation of all sectors of the industry. The downturn in the economic and trading environment was attributable to production policies adopted by major producing and consuming countries such as the EEC and USA coupled with protection of their domestic markets, which resulted in world production of most dairy products in excess of market opportunities.

Following a period of over a decade of gradual decline, milk production in Australia appeared by 1981 to have stabilised. This largely reflected improved domestic and export prices which together had significantly improved producers' returns. At 1981 production levels, the industry was not as heavily reliant on the export market as in the past. Depressed prices in international trade seemed, therefore, less likely to significantly affect Australian producers' returns than previously.

By 1983, however, prospects for the dairy industry were again being affected by increasing milk production, despite a lack of growth in domestic market demand and an international dairy market characterised by strong downward price pressure, large stock levels and considerable uncertainty.

Adjustment

The Rural Adjustment Scheme replaced the Rural Reconstruction Scheme on 1 January 1977 and incorporates most of the measures previously available under the Dairy Adjustment Program. Assistance approved for dairy farmers to 30 June 1983 totalled $32.9m (including $2.953m in 1982–83).

Herd improvement

The Australian Dairy Herd Improvement Scheme was formerly known as the National Dairy Herd Improvement Scheme. The objective of the scheme is to increase productivity per cow by better evaluation and selection of bulls and cows for breeding purposes through the provision of more accurate genetic information.

Government assistance

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

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

Legislative backing for a levy/disbursement scheme has become the basis for stabilised marketing arrangements. It is aimed at protecting the domestic price structure for prescribed dairy products from disruptive price competition and providing each manufacturer with an equalised return for its domestic and export sales of such products. Prescribed dairy products include butter/butteroil, skim milk powder, wholemilk powder, casein and certain types of cheese.

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

In June 1981, following agreement with the dairy industry, the Government announced the introduction of a new underwriting scheme for prescribed dairy products to apply for two years from 1 July 1981. Upon the recommendation of the Industries Assistance Commission (IAC), this scheme was extended in June 1983 to cover the 1983–84 production year. The objective of the new scheme is to protect industry revenue against the unexpected and sharp falls in market returns without masking the underlying long term trends. Under-written levels for 1983–84 in $'s per tonne are: butter $2,020, skim milk powder $915, casein $2,196, cheese $1,709 and wholemilk powder $1,269.

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

During 1983, the IAC conducted a comprehensive review of Government assistance to the dairy industry. Future government policy on assistance will be decided following a study of the IAC's Report on its findings. The Report became available in November 1983.

PRODUCTION, UTILISATION AND GROSS VALUE OF WHOLE MILK

Year	*Whole milk intake by factories*			
	Market milk sales by factories	*Milk used in the manufacture of dairy products*	*Total intake*	*Gross value*
	—million litres—			($ million)
1978-79	1,504	4,144	5,648	627.7
1979-80	1,511	3,887	5,398	676.0
1980-81	1,541	3,702	5,243	885.1
1981 82p	1,552	3,716	5,268	1,033.9
1982-83p	1,572	3,953	5,525	1,060.0

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

Domestic market

Over the past decade there has been a marked swing away from the production of butter and its by-products, skim milk powder and casein, to cheese and whole milk powder. This has been accompanied by an increased percentage of total milk production going to the fluid milk (including flavoured milk) market and being used in the manufacture of products such as yoghurt and table cream.

Increased emphasis is being placed by manufacturers on meeting the requirements of the domestic market and efforts are being made to supply the consumer with a more readily usable product. Recent developments include the introduction of ultra high temperature (UHT) treated milk products and butter-vegetable oil blends. Recognition of the importance of the domestic market has also been reflected in the introduction of improved new packaging and an increasing level of promotion of dairy products.

Except for cheese, the domestic market is virtually supplied from Australian produced dairy products. Cheese imports account for approximately 17 per cent of domestic cheese consumption.

Exports

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

Between 1969-70 and 1980-81, there was a significant overall reduction in the volume of milk produced in Australia. Since 1980-81, however, milk output has shown a small upward trend. Nevertheless the overall availability of dairy products for export has declined from the levels of a decade ago. In wholemilk equivalent terms, total Australian exports of dairy products in 1982-83 amounted to approximately half the volume of exports in 1972-73.

Britain was Australia's major outlet for dairy products, particularly butter and cheese, until it joined the EEC in 1973. Australia's export markets are now more diversified and this has involved changes in the mix of products exported. Exports of butter, casein and, to a lesser extent, skim milk powder have declined significantly from the level recorded in the early 1970s. On the other hand, exports of cheese and wholemilk powder have tended to increase sharply over the last decade, although the volume of wholemilk powder exported in recent years has declined again.

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

The International market is currently characterised by considerable uncertainty and depressed prices owing mainly to the substantial surplus of dairy products which have been accumulated in the EEC and US. As a result, Australian exporters are encountering increasing difficulty in exporting product onto the world market.

PRODUCTION AND TRADE OF BUTTER AND CHEESE

Year	Butter: Factory production	Butter: Exports (a) Quantity	Butter: Exports (a) Value f.o.b.	Cheese: Factory production(c)	Cheese: Exports (b) Quantity	Cheese: Exports (b) Value f.o.b.	Cheese: Imports
	'000 tonnes	'000 tonnes	$m	'000 tonnes	'000 tonnes	$m	'000 tonnes
1977-78	111.7	17.5	22.7	115.6	47.0	55.6	11.3
1978-79	104.8	28.2	37.8	141.8	51.4	69.0	12.1
1979-80	84.3	17.9	28.7	154.2	61.1	94.4	10.9
1980-81	79.2	12.0	23.1	136.7	54.1	103.7	13.3
1981-82	75.4	5.0	14.0	153.3	57.5	122.9	16.1
1982-83p	88.3	7.7	21.1	159.6	54.4	133.5	18.3

(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: market milk	Apparent consumption Total: Butter	Apparent consumption Total: Cheese	Apparent consumption Per capita per year: market milk	Apparent consumption Per capita per year: Butter	Apparent consumption Per capita per year: Cheese	Apparent consumption Per capita per year: Margarine Table	Apparent consumption Per capita per year: Margarine Other
	mil. litres	'000 tonnes	'000 tonnes	litres	kg	kg	kg	kg
1977 78	1,432	72	80	100.3	5.1	5.6	5.6	2.9
1978 79	1,452	65	87	100.6	4.5	6.0	5.9	2.9
1979 80	1,510	66	96	103.4	4.6	6.6	6.4	2.4
1980 81	1,540	64	98	104.0	4.3	6.6	6.7	2.5
1981 82	1,552	65	105	103.1	4.3	7.0	6.8	2.7
1982 83p	1,571	62	115	103.5	4.1	7.6	6.9	2.9

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

Beekeeping

Beekeeping is practised by some producers as a separate industry, and is carried on by others in conjunction with other branches of agriculture. A feature of the industry is that many apiarists operate on a large scale with mobile equipment. Some of these apiarists move as far afield as from Victoria to Queensland in an endeavour to obtain a continuous supply of nectar for honey from suitable flora. While honey production remains the predominant sector of the industry, production of breeding stock and provision of pollination services is significant.

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

BEEKEEPING STATISTICS

Year	Number of apiarists	Number of beehives: Productive	Number of beehives: Total	Honey produced: Quantity	Honey produced: Average production per productive hive	Honey produced: Gross value	Beeswax produced: Quantity	Beeswax produced: Gross value
		'000	'000	'000 tonnes	kg	$'000	tonnes	$'000
1976 77	2,274	348	493	14.9	42.9	8,405	275	777
1977 78	2,151	363	479	18.6	51.2	13,480	329	1,096
1978 79	2,201	369	501	18.3	49.5	14,111	349	1,213
1979 80	2,141	402	511	25.0	62.0	19,050	464	1,719
1980 81	2,224	379	530	19.5	51.6	15,815	366	1,530
1981 82	2,263	402	544	24.8	61.8	18,211	481	1,978

EXPORTS OF HONEY AND BEESWAX

Year	Honey		Beeswax	
	Quantity	Value f.o.b.	Quantity	Value f.o.b.
	'000 tonnes	$'000	tonnes	$'000
1977–78	4.3	4,228	145	542
1978–79	5.7	6,124	194	743
1979–80	11.4	11,572	218	917
1980–81	8.2	8,985	177	733
1981–82	12.8	10,596	303	1,216
1982–83	14.7	13,075	368	1,387

Honey levy

The *Honey Levy Acts* (Nos. 1 & 2) 1962 impose a levy on domestic sales of honey. The current rate of levy is 2.45 cents per kg; it can be increased by regulation to a maximum of 2.70 cents per kg.

Additionally the *Honey Export Charge Act* 1973, imposes a levy on exports of honey. The current rate is 0.75 cents per kg; which may be varied by regulation up to 1.5 cents per kg.

Within the levy/export charge is the industry contribution to research of 0.25 cents per kg and the remainder is used to finance the operations of the Australian Honey Board.

Honey Exports

During 1982–83 the main feature of the export honey market was a firming of prices around the middle of the year resulting from the devaluation of the Australian dollar against major trade currencies. This plus the high cost of domestic stock holding due to high interest rates resulted in record exports and substantial reductions in the high levels of uncommitted stocks held at the beginning of the year.

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

Eggs and egg products

Recorded commercial egg production in mainland Australian States in 1982–83 is estimated to have increased by 2 per cent in comparsion with 1981–82. Management of production through hen quotas continued in all States and was directly responsible for the containment of production. Queensland and Western Australian production is estimated to have increased with falls in all other States.

While there will be some variation between the States in 1982–83 it is anticipated that aggregate mainland production will be in the order of 192 million dozen, compared with 188 million dozen for 1981–82.

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 capita per year
	'000 tonnes	$ million	'000 tonnes	'000 tonnes	'000 tonnes	kg
1976–77	192.7	178.6	22.2	22.4	173.1	12.4
1977–78	200.7	196.3	20.8	26.7	176.0	12.4
1978–79	195.7	196.9	16.3	20.5	180.2	12.6
1979–80	194.6	216.1	11.2	18.0	182.4	12.5
1980–81	202.4	227.4	18.9	23.2	183.3	12.4
1981–82	199.7	253.4	11.5	17.9	188.7	12.4

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

Egg Consumption

Egg production and consumption data is not available for areas of Australia which fall outside the control of State Egg Boards or for "backyard" production. On the basis of State Egg Board data, domestic consumption is estimated to have risen by 2 per cent, compared with 1981–82, to around 177 million dozen.

Exports

Exports from Australia are predominantly in egg pulp form—white, yolk and whole egg—with Japan continuing to be the principal market. Over-supply on world markets and the emergence of additional countries into the world export trade have resulted in increasing competition with detrimental effect on available prices. Rising production, processing, packaging and freight costs in conjunction with price competition operate as an incentive to contain egg production as close as possible to levels of domestic demand. Such is the objective of hen quota controls operated by the States and while present export conditions prevail, export availability will continue to trend towards absolute minimums.

EXPORTS OF EGGS AND EGG PRODUCTS

			Eggs not in shell			
	Eggs in shell		*Liquid form*		*Dry*	
Year	*Quantity*	*Value f.o.b.*	*Quantity*	*Value f.o.b.*	*Quantity*	*Value f.o.b.*
	'000 doz	$'000	tonnes	$'000	tonnes	$'000
1977-78	1,249	655	9,739	10,272	56	158
1978-79	962	514	8,200	9,790	99	374
1979-80	1,364	779	5,833	5,816	74	322
1980-81	1,423	1,113	8,508	8,891	50	337
1981-82	1,143	1,095	5,013	6,400	62	219
1982-83p	2,672	1,763	3,455	4,108	85	682

For further details on eggs and egg products *see* the publication *Apparent Consumption of Foodstuffs and Nutrients, Australia* (4306.0).

Agricultural improvements

Fertilisers

Most Australian soils are deficient in phosphorus. Because of this and the significant but less widespread deficiency of sulphur in many soils, phosphatic fertilisers, particular single superphosphate, account for the bulk of fertiliser usage. Nitrogen deficiency is also general in Australian soils and the use of nitrogenous fertilisers is increasing. Potassium deficiency however is confined mainly to soils in the higher rainfall areas which are intensively cropped or used for irrigated pastures.

The bulk of Australia's requirements for phosphatic and nitrogenous fertilisers is manufactured locally, although in recent years imports of phosphatic and nitrogenous fertilisers have increased significantly. Production of phosphatic fertilisers is dependent upon imported rock phosphate and sulphur. Australia's sources of supply of rock phosphate are Christmas Island, Nauru, and USA (Florida), and while some sulphur is produced locally as a by-product of smelting operations, the bulk is imported mainly from Canada and USA. The two most widely used nitrogenous fertilisers—urea and ammonium nitrate—are manufactured from natural gas. Sulphate of ammonia is mainly a by-product of smelting operations. Potassic fertilisers are all imported. No suitable reserves of potash ores have been found in Australia.

Principal crops and pastures fertilised, etc.

Information regarding 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
1976–77	21,266	2,303	326	428
1977–78	24,324	2,538	490	383
1978–79	25,403	2,651	485	398
1979–80	n.a.	2,969	365	620
1980–81	n.a.	2,947	392	609
1981–82	26,777	2,874	395	599

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.

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

SUPERPHOSPHATE USAGE

Year	Selected crops and pastures: Sown and native pastures	Lucerne	Wheat	Other cereals	Sugar cane	Total
	AREA FERTILISED ('000 hectares)					
1976–77	10,007	447	6,745	3,366	285	21,266
1977–78	11,325	469	7,827	3,960	289	24,324
1978–79	12,079	379	8,004	4,220	266	25,403
1979–80	14,703	n.a.	8,607	n.a.	262	n.a.
1980–81	13,964	n.a.	8,723	n.a.	291	n.a.
1981–82	12,240	106	9,361	4,034	301	26,043
	SUPERPHOSPHATE USED ('000 tonnes)					
1976–77	1,166	63	615	351	27	2,303
1977–78	1,335	67	635	392	25	2,538
1978–79	1,451	55	634	410	22	2,651
1979–80	1,820	n.a.	716	n.a.	26	2,969
1980–81	1,733	n.a.	756	n.a.	32	2,947
1981–82	1,518	21	801	416	31	2,874

PRODUCTION AND IMPORTS OF FERTILISERS

Item		1977–78	1978–79	1979–80	1980–81	1981–82	1982–83p
		PRODUCTION					
Superphosphate (*a*)	'000 tonnes	3,388	3,680	4,202	3,770	3,568	2,968
Mixed chemical fertilisers (including complete manures)	'000 tonnes	828	993	1,050	1,277	n.y.a.	n.y.a.
Leaf and foliage-type fertilisers (including dry and liquid form)	tonnes	n.p.	n.p.	3,758	n.p.	n.y.a.	n.y.a.
Manures (without added chemical fertilisers) (*b*)	tonnes	11,472	12,678	12,558	29,906	n.y.a.	n.y.a.

PRODUCTION AND IMPORTS OF FERTILISERS—*continued*

Item		*1977–78*	*1978–79*	*1979–80*	*1980–81*	*1981–82*	*1982–83p*
		IMPORTS					
Crude fertilisers (mainly natural phosphate)	'000 tonnes	1,612	2,381	2,181	2,294	2,772	3,684
	Value $m	55.6	83.4	80.4	102.1	128.6	109.5
Manufactured, mineral or chemical fertilisers—							
Nitrogenous (*c*)	'000 tonnes	23	29	75	86	108	101
	Value $m	2.6	4.2	9.4	12.7	16.2	15.6
Potassic (*d*)	'000 tonnes	162	174	215	213	255	204
	Value $m	9.1	9.9	15.5	21.5	26.7	20.9
Other (*e*)	'000 tonnes	35	72	81	66	92	273
	Value $m	5.1	10.3	7.2	14.8	19.1	53.0

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

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

Aerial agriculture

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

AERIAL AGRICULTURE

Year ended 31 March	*Area treated ('000 hectares)*			*Materials applied ('000 tonnes)*		*Productive hours flown ('000 hours)*
	Top dressed and seeded	*Sprayed*	*Total(a)*	*Super-phosphate*	*Seed*	
1978	2,403	1,782	4,260	287.2	3.8	69.5
1979	3,212	2,956	6,224	374.5	5.9	101.2
1980	4,416	2,412	6,907	514.2	6.4	127.3
1981	2,727	2,054	4,850	489.5	4.6	98.7
1982	2,461	2,760	5,395	276.7	2.9	86.3
1983	1,643	1,638	3,450	193.7	3.2	62.2

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

Irrigation on agricultural establishments

Irrigation is one of the factors by which agriculture is further developed. The variability in stream flow and annual rainfall means that successful irrigation of crops and pastures is dependent on storage. Ground water supplies are also used in areas where the quantity is adequate and the quality is suitable. The area of land irrigated (approximately 1.6 million hectares in 1980–81) forms about 9 per cent of the total area under crops and only 0.3 per cent of the total area of agricultural establishments.

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 reservoirs and private investment by farmers in irrigation plant and earthworks. Irrigation statistics are collected irregularly. Chapter 15, Water Resources, contains additional details of water conservation and irrigation with international, national and interstate aspects.

CROPS AND PASTURES IRRIGATED, BY METHOD OF IRRIGATION, AUSTRALIA 1980–81
('000 hectares)

	Method				
Crops and Pastures	*Sprays*	*Furrows and/or Flood*	*Trickle*	*Other and multiple methods*	*Total*
Pure Lucerne	49.7	16.6	n.a.	1.2	67.9
Other pastures (sown or native)	115.4	664.3	n.a.	20.8	800.5
Cereals for all purposes	53.6	320.2	n.a.	9.1	383.0
Vegetables for human consumption	57.4	8.4	0.7	3.9	70.4
Total fruit	30.2	12.1	9.1	3.5	55.0
Grape vines	11.9	26.8	5.3	1.6	45.6
All other crops	77.3	141.4	0.6	12.9	232.1
Total	**395.5**	**1,189.9**	**15.7**	**53.2**	**1,654.2**

SOURCE AND USAGE OF WATER FOR IRRIGATION, AUSTRALIA

Irrigation—area irrigated, by source 1980–81(b)			*Estimated annual water use in 1977(a)*			
			Irrigation	*Rural (excl irrigation)*	*Urban industrial*	*Total*
	('000 ha)	percentage of total area irrigated %	—million cubic metres—			
Surface water—						
State irrigation schemes	941.3	57				
Rivers, creeks, lakes	370.6	22		n.a.		
Farm dams	90.8	5				
Total surface water	1,402.8	85	11,554	742	2,493	14,789
Town or country reticulated(c)	15.4	1	..	..	..	..
Underground (ground water)	236.1	14	1,639	337	480	2,486
Total, all sources	**1,654.2**	**100**	**13,256**	**1,348**	**3,187**	**17,774**

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

Agricultural machinery on agricultural establishments

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

Employment in Agriculture

Employment on agricultural establishments

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

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

EMPLOYED PERSONS IN AGRICULTURE AND SERVICES TO AGRICULTURE
('000)

Month of August	*Males*	*Married females*	*All females*	*Persons*
1978	274.9	63.7	78.1	353.0
1979	295.4	69.1	80.3	375.7
1980	285.9	77.1	92.4	378.3
1981	281.7	86.3	103.0	384.7
1982	282.5	87.0	100.1	382.5
1983	290.4	80.0	93.0	383.4

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

Regulation of Australian agricultural industries

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

Readers, however, are referred to the latest edition of *Rural Industry Information Papers* prepared annually by the Department of Primary Industry and published by the Australian Government Publishing Service. The *Papers* contain up-to-date information on production and market prospects for Australia's primary industries together with details of Government assistance measures.