

CHAPTER XVII.

AGRICULTURAL PRODUCTION.

NOTE.—Except where otherwise stated, the “agricultural” years hereinafter mentioned are taken as ending on the 30th June.

§ 1. Introductory.

1. **Early Attempts at Agriculture.**—The instructions issued to Captain Phillip on the 25th April, 1787, directed him, amongst other things, to proceed as soon as possible to the cultivation of the soil “under such regulations as may appear to be necessary and best calculated for securing supplies of grain and provisions.” When the settlers landed at Botany Bay, however, it was found that the glowing accounts published in England by members of Captain Cook’s expedition of the fertility of the soil in that locality were considerably overdrawn. Even when Phillip and his company moved round to Port Jackson on the 26th January, 1788, matters were for a time in no better case. The ground in the immediate neighbourhood of the settlement was not suitable for the cultivation of cereal crops, and when the time came to cultivate the soil it was found that there were very few who possessed the slightest acquaintance with the art of husbandry.

2. **The First Sowing.**—In his despatch of the 15th May, 1788, Captain Phillip states that it was proposed to sow 8 acres with wheat and barley, although, owing to the depredations of field mice and ants, he was doubtful of the success of the crops.

3. **Discovery of Suitable Agricultural Land.**—A branch settlement was formed at Rosehill, on the Parramatta River, towards the close of 1788, and here grain crops were successfully raised. In his despatch of 12th February, 1790, Phillip refers to the harvest at Rosehill at the end of December, 1789, as consisting of 200 bushels of wheat and 60 of barley, in addition to small quantities of oats, Indian corn, and flax. By the year 1791 there were 213 acres under crop in this locality. In 1792 a new settlement was formed at Toongabbie, about 3 miles westward of Parramatta, where Phillip states “there are several thousand acres of exceeding good ground.” The Hawkesbury Valley, which probably contains some of the richest land in the world, was first settled in 1794. For a long time agricultural operations in Australia were restricted to the narrow belt of country between the tableland and the east coast of New South Wales, as it was not until the year 1813 that a passage was discovered across the Blue Mountains to the fertile plains of the west.

§ 2. Progress of Agriculture.

1. **Early Records.**—In an “Account of Live Stock and Ground under Crop in New South Wales, 19th August, 1797,” Governor Hunter gives the acreage under crop as follows:—Wheat, 3,361 acres; maize, 1,527 acres; barley, 26 acres; potatoes, 11 acres; and vines, 8 acres.

At a muster taken in 1808 the following was the return of crops:—Wheat, 6,874 acres; maize, 3,389 acres; barley, 544 acres; oats, 92 acres; peas and beans, 100 acres; potatoes, 301 acres; turnips, 13 acres; orchards, 546 acres; and flax and hemp, 37 acres.

By the year 1850 the area under crop had increased to 491,000 acres, of which 198,000 acres were cultivated in what is now the State of New South Wales, and 169,000 acres in Tasmania. At the end of 1850 the area under cultivation in Victoria, which was then the Port Phillip District of New South Wales, was 52,190 acres.

The gold discoveries of 1851 and subsequent years had at first a very disturbing effect on agricultural progress, the area under crop declining from 491,000 acres in 1850 to 458,000 acres in 1854; the area under cultivation in New South Wales decreased by nearly 66,000 acres, while in Tasmania a falling-off of over 41,000 acres was experienced. The demand for agricultural products occasioned by the large influx of population was, however, soon reflected in the increased area cultivated, for at the end of 1858 the land under crop in Australia totalled over a million acres. The largest increase took place in Victoria, which returned an area of 299,000 acres. For the same year South Australia had 264,000 acres in cultivation, Tasmania 229,000 acres, and New South Wales 223,000 acres.

2. Progress of Cultivation.—(i) *General.* The following table shows the area under crop in each of the States and Territories of Australia at decennial intervals since 1860, and during each of the last five seasons. The area under permanent artificially-sown grasses is excluded in all the States, except for the years 1860 to 1879 in the case of New South Wales, where the acreage cannot be separated. During those years, however, the area laid down under permanent grasses could not have been very large.

AREA UNDER CROP, 1860 TO 1923-24.

Season.	N. S. W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1860-1	260,798	387,282	3,353	359,284	24,705	152,860	..	..	1,188,232
1870-1	426,976	692,840	52,210	801,571	54,527	157,410	..	..	2,185,534
1880-1	629,180	1,548,809	113,978	2,087,237	57,707	140,788	..	..	4,577,699
1890-1	852,704	2,031,955	224,993	2,093,515	69,678	157,376	..	..	5,430,221
1900-1	2,445,564	3,114,132	457,397	2,369,680	201,338	224,352	..	..	8,812,463
1910-11	3,386,017	3,952,070	667,113	2,746,334	855,024	286,920	360	..	11,893,838
1919-20	3,771,468	4,000,815	563,762	3,058,770	1,628,163	270,955	365	2,109	13,296,407
1920-21	4,465,143	4,489,503	779,497	3,231,083	1,804,987	297,383	296	1,966	15,069,858
1921-22	4,445,828	4,530,312	804,507	3,378,764	1,901,680	293,708	283	1,942	15,357,024
1922-23	4,694,287	4,862,548	863,755	3,575,452	2,274,938	298,611	427	2,172	16,572,250
1923-24	4,809,591	4,682,144	871,968	3,562,551	2,323,070	279,122	440	2,300	16,531,186

The progress of agriculture was uninterrupted from 1860 onwards, reaching its maximum in 1915-16, when 18,528,234 acres were cultivated. Following that year the decline in wheat-growing and the effects of the drought of 1918-19 reduced the acreage to 13,296,407 acres in 1919-20, a decrease of 5,231,827 acres in the space of four years. The obstacles to the disposal of the wheat crop having been removed, the area began to expand in 1920-21, and during the last four seasons the total acreage under cultivation increased by more than 3,000,000 acres. Wheat continues to be the most extensively-grown crop in Australia, the area thereunder for both grain and hay during 1923-24 amounting to nearly 67 per cent. of the total acreage under cultivation. The extension of the wheat area since 1919-20, despite intermittent adverse climatic and market conditions, is a happy augury for the continuance of agricultural development in Australia. The maximum area cultivated in 1915-16 was the result of a special war effort, and the results obtained far exceeded those for any previous year.

(ii) *Relation to Population.* The total area under cultivation per head of population reached its lowest point in recent years during 1919-20, but since that year the

total has increased at a much faster rate than the population. Details for the past five seasons are as follows :—

AREA UNDER CROP PER 1,000 OF POPULATION, 1919-20 TO 1923-24.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1919-20 ..	1,850	2,661	764	6,351	4,973	1,291	80	1,099	2,507
1920-21 ..	2,135	2,938	1,036	6,578	5,456	1,397	74	997	2,784
1921-22 ..	2,089	2,921	1,045	6,723	5,674	1,345	76	941	2,787
1922-23 ..	2,160	3,058	1,096	6,968	6,621	1,364	120	849	2,942
1923-24 ..	2,177	2,881	1,075	6,789	6,566	1,274	124	877	2,875

(iii) *Relation to Total Area.* The next table furnishes a comparison of the area under crop in the several States and Territories and Australia with the respective total areas. For Australia as a whole, the area under crop in 1923-24 represented only about 1 acre in every 115. In Victoria the proportion was about 1 acre in every 12, in New South Wales 1 in 41, in Tasmania 1 in 60, in South Australia 1 in 68, in Western Australia 1 in 269, in Queensland 1 in 492, in the Federal Territory 1 in 262, and in the Northern Territory about 1 in 761,629.

PERCENTAGE OF AREA UNDER CROP ON TOTAL AREA, 1919-20 TO 1923-24.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	%	%	%	%	%	%	%	%	%
1919-20 ..	1.904	7.113	0.131	1.257	0.261	1.615	..	0.351	0.698
1920-21 ..	2.255	7.982	0.182	1.328	0.289	1.772	..	0.327	0.792
1921-22 ..	2.245	8.054	0.187	1.389	0.304	1.751	..	0.323	0.807
1922-23 ..	2.370	8.645	0.201	1.470	0.364	1.780	..	0.361	0.871
1923-24 ..	2.429	8.324	0.203	1.465	0.372	1.664	..	0.382	0.868

In the Northern Territory the proportion which the area under crop bears to the total area is, at present, practically negligible.

3. *Artificially-sown Grasses.*—In all the States there are considerable areas under artificially-sown grasses mainly sown on uncultivated land after burning off the existing vegetation, and not included in "area under crops." Statistics regarding the areas under such grasses are as shown hereunder :—

AREA UNDER SOWN GRASSES, 1919-20 TO 1923-24.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1919-20	1,542,446	1,062,244	449,019	18,107	16,672	667,390	500	871	3,757,249
1920-21	1,816,104	1,051,290	450,780	14,805	17,265	660,000	500	71	4,010,815
1921-22	2,005,444	1,032,104	459,914	20,890	18,441	781,000	550	71	4,318,414
1922-23	1,925,432	957,454	475,226	22,278	25,377	857,581	510	18	4,263,876
1923-24	1,930,894	1,024,591	498,552	30,800	38,022	799,443	500	18	4,322,820

The increase in the area of the grass lands of Australia during recent years, is due in large measure to the development of the dairying industry referred to in the next chapter.

§ 3. Relative Importance of Crops.

1. Distribution of Crops.—The following table gives the areas in the several States under each of the principal crops for the season 1923-24 :—

DISTRIBUTION OF CROPS, 1923-24.

Crop.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat ..	2,945,040	2,454,117	51,149	2,418,415	1,656,915	14,503	..	295	9,540,434
Oats ..	86,402	520,654	216	176,299	241,608	51,460	..	291	1,076,930
Maize ..	166,933	29,104	120,092	94	43	..	..	41	316,307
Barley—									
Malting ..	2,039	39,588	589	166,824	4,744	3,829	..	..	217,613
Other ..	2,311	16,976	76	17,462	3,929	401	..	7	41,162
Beans and Peas ..	326	12,195	73	4,810	1,296	22,643	..	..	41,343
Rice ..	1,089	899	9	116	458	293	..	..	2,864
Other Cereals ..	..	..	..	..	66	..	..	..	66
Hay ..	1,022,118	1,277,606	46,909	631,267	329,534	97,183	10	1,599	3,406,226
Green Forage ..	429,765	107,371	306,693	55,282	51,754	10,389	50	7	961,311
Grass and other Seeds ..	..	3,448	610	405	..	629	..	..	5,092
Orchards and other Fruit Gardens ..	72,372	85,570	29,568	33,472	18,776	34,076	..	11	273,845
Vines—									
Productive ..	9,950	29,558	989	38,455	3,605	..	..	..	82,557
Unproductive..	4,609	13,041	280	10,848	1,630	..	..	..	30,408
Market Gardens..	8,526	16,212	1,719	1,448	2,259	478	..	17	30,659
Sugar Cane—									
Productive ..	6,733	..	138,742	..	..	..	..	..	145,475
Unproductive..	10,582	..	81,223	..	..	..	..	..	91,805
Potatoes ..	21,850	59,306	6,127	5,239	4,761	37,040	..	29	134,352
Onions ..	135	4,714	106	289	76	14	..	..	5,334
Other Root Crops ..	1,432	3,329	1,600	556	266	4,352	20	..	11,555
Tobacco ..	1,450	1,047	276	10	..	..	..	..	2,783
Broom Millet ..	3,746	2,626	457	..	..	..	..	..	6,829
Pumpkins and Melons ..	4,386	2,163	4,795	286	559	..	..	3	12,192
Hops ..	..	224	..	2	..	1,524	..	..	1,750
Cotton—									
Productive ..	544	5	40,821	9	37	..	100	..	41,516
Unproductive..	..	..	33,703	..	..	..	..	..	33,703
All other Crops ..	7,253	2,391	5,146	963	754	308	260	..	17,075
Total Area ..	4,809,591	4,682,144	871,968	3,562,551	2,323,070	279,122	440	2,300	16,531,186

2. Relative Areas of Crops in States and Territories.—Taking the principal crops, i.e., those in the case of which the cultivation in Australia amounts to more than 50,000 acres, the proportion of each in the various States and Territories to the total area under crop for the season 1923-24 is shown in the next table. In four of the States, viz., New South Wales, Victoria, South Australia, and Western Australia, wheat-growing for grain is by far the most extensive form of cultivation, while in the same States the hay crop is second in importance. In Victoria and Western Australia, the oat crop occupies third position, while green forage ranks third in New South Wales, and barley in South Australia. In Queensland, the principal crops in the order of importance are green forage, sugar-cane, maize, and wheat, while in Tasmania hay, oats, potatoes, and orchards and fruit gardens occupy the leading positions.

As pointed out previously, wheat is the main crop in Australia, the area thereunder for grain and hay representing in 1923-24 about 67 per cent. of the total area under cultivation.

RELATIVE AREAS UNDER CROP, 1923-24.

Crop.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	%	%	%	%	%	%	%	%	%
Wheat ..	61.23	52.41	5.87	67.89	71.32	5.20	..	12.83	57.71
Hay ..	21.25	27.29	5.38	17.72	14.19	34.82	2.27	69.52	20.60
Oats ..	1.80	11.12	0.02	4.95	10.40	18.44	..	12.65	6.51
Green Forage ..	8.94	2.29	35.17	1.55	2.23	3.72	11.36	0.31	5.82
Maize ..	3.47	0.62	13.77	0.00	0.00	..	..	1.78	1.91
Barley ..	0.09	1.21	0.08	5.17	0.37	1.51	..	0.30	1.57
Orchards and Fruit Gardens	1.51	1.83	3.39	0.94	0.81	12.21	..	0.48	1.66
Sugar-cane	0.36	..	25.23	..	..	..	..	..	1.44
Potatoes ..	0.45	1.27	0.70	0.15	0.20	13.27	..	1.26	0.81
Vineyards	0.30	0.91	0.15	1.38	0.23	..	..	..	0.68
All other ..	0.60	1.05	10.24	0.25	0.25	10.83	86.37	0.87	1.29
Total ..	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

3. Area of Chief Crops, Australia, 1919-20 to 1923-24.—The acreage under each of the principal crops in Australia during the last five seasons is shown below :—

AREA OF CHIEF CROPS.—AUSTRALIA, 1919-20 TO 1923-24.

Crop.	1919-20.	1920-21.	1921-22.	1922-23.	1923-24.
	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat ..	6,419,160	9,072,167	9,719,042	9,763,861	9,540,434
Hay ..	3,125,582	3,233,189	2,994,519	3,338,456	3,406,226
Oats ..	1,068,296	936,996	733,406	1,014,376	1,076,930
Green Forage ..	1,401,280	406,954	452,508	893,871	961,311
Maize ..	265,469	284,283	305,186	313,202	316,307
Orchards and Fruit Gardens ..	271,894	278,551	281,149	275,687	273,845
Barley ..	267,309	334,747	298,910	342,196	258,775
Sugar-cane ..	159,037	174,001	197,293	216,886	237,280
Potatoes ..	113,900	140,195	149,144	135,735	134,352
Vineyards ..	73,326	81,165	92,414	105,476	112,965
All other Crops	131,154	127,610	133,453	172,504	212,761
Total ..	13,296,407	15,069,858	15,357,024	16,572,250	16,531,186

During the period under review, the areas of the several crops, while reflecting seasonal and economic influences, have increased considerably, the most notable advance taking place in wheat. Of the other crops, sugar-cane, vineyards and maize have made the most consistent progress since 1919-20.

§ 4. Wheat.

1. *Progress of Wheat-Growing.*—(i) *Area and Production.* Wheat is the principal crop raised in Australia, and the development of wheat-growing during the past 30 years constitutes one of the most interesting features of Australian agriculture. Since 1895, when the area under wheat amounted to $3\frac{1}{2}$ million acres, an average of 240,000 acres has been added annually, until in 1924–25 no less than $10\frac{1}{2}$ million acres were cut for grain. The area and yield of wheat for grain are given below for each State for the five years ended 1923–24, and are shown from the year 1860 onwards in the graphs hereinafter. An estimate is also appended for the 1924–25 crop :—

WHEAT.—AREA AND PRODUCTION, 1919–20 TO 1924–25.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Fed. Cap. Ter.	Australia.
AREA.								
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1919–20 ..	1,474,935	1,918,269	46,478	1,926,915	1,041,827	11,497	139	6,419,160
1920–21 ..	3,128,775	2,295,865	177,320	2,167,646	1,275,675	28,284	602	9,072,167
1921–22 ..	3,194,408	2,611,198	164,670	2,384,012	1,336,228	27,985	541	9,719,042
1922–23 ..	2,942,339	2,644,314	145,492	2,453,086	1,552,868	25,244	518	9,763,861
1923–24 ..	2,945,040	2,454,117	51,149	2,418,415	1,656,915	14,503	295	9,540,434
1924–25(a) ..	3,543,860	2,705,323	177,779	2,499,852	1,867,614	13,320	..	10,807,748
YIELD.								
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bush.	Bushels.
1919–20 ..	4,387,209	14,858,380	311,638	14,980,413	11,222,950	213,589	813	45,974,992
1920–21 ..	55,610,993	39,468,625	2,707,357	34,258,914	12,248,080	565,874	14,007	145,873,850
1921–22 ..	42,759,389	43,867,596	3,025,786	24,946,525	13,904,721	577,178	7,611	129,068,806
1922–23 ..	28,660,824	35,697,220	1,877,836	28,784,767	13,857,432	569,587	7,176	109,454,842
1923–24 ..	33,171,300	37,795,704	243,713	34,551,955	18,920,271	305,628	4,700	124,993,271
1924–25(a) ..	59,785,000	47,364,495	2,712,214	30,528,625	23,887,367	267,000	..	164,544,748

(a) Preliminary figures.

The area devoted to the production of wheat for grain reached its maximum in 1915–16, when 12,484,512 acres were sown, largely as the result of a special war effort. After that year, however, there was a serious decline, brought about largely by war conditions and unfavourable seasons, and the area in 1919–20 fell to 6,419,160 acres, or only half that of 1915–16. The promise of remunerative Government guarantees, coupled with the prospects of high prices, was responsible for a marked advance in 1920–21, and the area was further extended during the next three years, the total gain for Australia since 1919–20 amounting to more than 3 million acres.

Although final figures for 1924–25 for all the States are not yet available, the data to hand indicate the total area under wheat for grain in Australia at about 10,807,748 acres, an increase of $1\frac{1}{2}$ million acres on the previous year's figure. The season was a bounteous one, and an estimated total of 164,544,701 bushels was harvested, giving the excellent average of 15.22 bushels to the acre.

The harvest of 179,065,703 bushels reaped in 1915–16 represents the maximum production of wheat in Australia. Yields exceeding 100,000,000 bushels have been recorded on nine occasions, all of which have occurred since 1913–14. The annual production of wheat during the seasons 1914–15 to 1923–24 averaged 110,213,671 bushels, and the amount by which this average may be exceeded depends to a great extent on seasonal conditions. During each of the last five seasons the yield has exceeded 100 million bushels, the average for the period being 134,791,094 bushels. This is the first occasion on which a succession of such bountiful harvests has occurred, the satisfactory returns being due to the good seasons and the extension of the practice of bare-fallowing.

(ii) *Average Yields.* In the next table will be found the average yield of wheat per acre in each of the last five seasons, and for the decennium 1914-24 :—

WHEAT.—YIELD PER ACRE, 1919-20 TO 1923-24.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1919-20 ..	2.98	7.75	6.71	7.77	10.77	18.58	5.85	7.16
1920-21 ..	17.79	17.19	20.91	15.80	9.60	20.01	23.27	16.08
1921-22 ..	13.39	16.80	18.37	10.46	10.41	20.62	14.07	13.28
1922-23 ..	9.74	13.50	12.91	11.73	8.92	22.56	13.85	11.21
1923-24 ..	11.26	15.40	4.76	14.29	11.42	21.07	15.93	13.10
Average 10 seasons, 1914-24	11.16	13.14	12.48	11.40	8.99	18.20	14.58	11.49

As the above figures show, there were considerable variations in the average yields, chiefly due to the vagaries of the seasons. For a series of years the yield in Australia generally averages about 11 bushels to the acre, the average yield for the period 1860 to 1923-24 amounting to 10½ bushels. The excellence of the 1920-21 season is reflected in the exceptional average of 16.08 bushels obtained in that year, an average which has been exceeded once only by the 16.35 bushels reaped as far back as 1866, when less than 1,000,000 acres were sown in relatively fertile areas.

(iii) *Relation to Population.* During the seasons embraced in the following table, the Australian production of wheat per head of population has varied between 8½ bushels in 1919-20 and 27 bushels in 1920-21. The State in which wheat-growing generally occupies the most important position relatively to population is South Australia, which in 1923-24 had a yield averaging 66 bushels per head. Queensland and Tasmania are the States in which the average production of wheat per head is least, the quantity raised being generally below that required for local consumption. Particulars for the past five seasons are as follows :—

WHEAT.—YIELD PER 1,000 OF POPULATION, 1919-20 TO 1923-24.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1919-20 ..	2,153	9,884	423	31,105	34,278	1,017	424	8,667
1920-21 ..	26,594	25,828	4,928	69,749	37,024	2,659	7,103	26,952
1921-22 ..	20,101	28,284	3,930	49,635	41,485	2,643	3,688	23,427
1922-23 ..	13,190	22,448	2,382	56,089	40,329	2,602	2,806	19,430
1923-24 ..	15,013	23,253	300	65,845	53,475	1,395	1,793	21,739

The normal annual consumption of wheat in Australia, exclusive of the requirements for seed, poultry and other live stock, is 302 lbs. (5.04 bushels) per head of population.

2. *Australian and Foreign Wheat Yields.*—(i) *Average Yield.* The next table gives the average return per acre in the principal wheat-growing countries of the world, ranging from Denmark with a maximum of 46 bushels per acre to Tunis, with a minimum of 5½ bushels per acre. Australia, with approximately 12½, occupies a relatively subordinate position.

WHEAT.—YIELD PER ACRE, VARIOUS COUNTRIES, 1919-1923.

Country.	Average Yield in Bushels per acre.		Country.	Average Yield in Bushels per acre.	
	Average, 1919-1921.	1923.		Average, 1919-1921.	1923.
Denmark ..	46.37	43.06	Rumania ..	13.35	15.19
Netherlands ..	39.76	39.78	Spain ..	13.31	14.98
Belgium ..	35.66	38.72	United States ..	13.10	13.48
Switzerland ..	31.10	34.38	Jugo-Slavia ..	(a)13.06	15.89
United Kingdom ..	31.06	32.88	Australia ..	12.73	13.10
New Zealand ..	30.88	23.23	Canada ..	12.66	20.92
Sweden ..	30.12	30.57	Argentine Republic	12.02	14.35
Germany ..	26.57	29.14	India ..	11.42	11.97
Egypt ..	24.89	26.45	Korea ..	11.23	9.26
Japan ..	21.82	23.65	Uruguay ..	10.79	12.76
Czecho-Slovakia ..	20.33	23.98	Greece ..	10.27	12.48
France ..	19.92	20.16	French Morocco ..	9.49	8.92
Chile ..	17.75	18.91	Union of South		
Hungary ..	(a)16.33	20.56	Africa ..	8.64	(b)6.62
Lithuania ..	15.40	14.70	Algeria ..	8.21	11.50
Austria ..	15.34	18.71	Portugal ..	8.07	11.54
Poland ..	15.34	19.78	Soviet Republics ..	7.02	9.72
Italy ..	14.97	19.46	Mexico ..	(c)6.24	7.22
Bulgaria ..	13.54	15.73	Tunis ..	5.41	6.36

(a) Average for two years. (b) Year 1921. (c) Single Year.

(ii) *Total Production.* The latest available official statistics of the production of wheat in various countries are given in the following table:—

WHEAT.—YIELD IN VARIOUS COUNTRIES, 1919-1923.

Country.	Yield in Bushels (000 omitted).		Country.	Yield in Bushels (000 omitted).	
	Average, 1919-1921.	1923.		Average, 1919-1921.	1923.
United States ..	864,426	785,754	Chile ..	22,180	27,521
India ..	302,835	369,152	Algeria ..	21,447	36,395
Canada ..	255,773	474,207	French Morocco ..	19,193	20,050
Soviet Republics ..	(c)255,124	330,335	Mexico ..	(a)14,594	8,217
France ..	249,165	275,572	Belgium ..	11,778	13,376
Argentine Republic	188,034	247,038	Greece ..	10,722	13,356
Italy ..	167,982	224,838	Sweden ..	10,670	11,082
Spain ..	137,673	157,112	Korea ..	9,703	8,101
Australia ..	106,979	124,993	Portugal ..	9,324	12,964
Germany ..	89,798	106,449	Denmark ..	8,153	8,825
Rumania ..	68,968	100,909	Uruguay ..	7,887	12,493
United Kingdom ..	66,649	59,370	Tunis ..	7,610	9,921
Jugo-Slavia ..	(a)47,411	61,069	New Zealand ..	7,330	4,250
Hungary ..	(a)45,322	67,706	Union of South		
Egypt ..	32,953	40,654	Africa ..	7,144	(b)6,027
Bulgaria ..	29,672	36,224	Netherlands ..	6,629	6,112
Japan ..	28,838	28,480	Austria ..	5,726	8,889
Czecho-Slovakia ..	26,805	30,126	Switzerland ..	3,732	3,594
Poland ..	25,302	49,735	Lithuania ..	2,562	2,965

(a) Average for two years. (b) Year 1921. (c) Exclusive of Turkestan, Transcaucasia and the Far East.

NOTE.—The harvests reported above for 1923 relate to the year 1923 for the Northern, and 1923-24 for the Southern Hemisphere.

The complete compilation of the world's production of wheat is not possible owing to the failure of certain countries to report their harvests. The Institute of Agriculture, Rome, has, however, compiled figures obtained from all the producing countries reporting, with the following results :—

WHEAT.—WORLD'S PRODUCTION (a), 1909-13 TO 1923.

Years.	Area.	Yield.	Yield per acre.
	Acres.	Bushels.	Bushels.
Average, 1909-1913 ..	264,110,000	3,706,491,000	14.03
1920	256,448,000	3,214,129,000	12.53
1921	254,686,000	3,312,930,000	13.01
1922	241,990,000	3,403,157,000	14.06
1923	254,082,000	3,804,973,000	14.98
Average, 1920-1923 ..	251,802,000	3,433,797,000	13.64

(a) From countries reporting.

It is stated in the Report of the Institute that if all countries for which progress data are lacking were taken into account, the world's total production of wheat may be approximately estimated at 4,500 million bushels.

The world's wheat yield in 1923 was extremely favourable. The increase of 401,816,000 bushels on the previous year's figures was due principally to the larger area sown and the higher yields obtained per acre. Weather conditions were generally propitious throughout the wheat-growing countries, and the yields were therefore superior to the average of the three previous years and to that of the pre-war period. The Australian contributions to the world's production during the past three years amounted to 3 per cent.

3. Prices of Wheat.—(i) *British Wheat.* Since the United Kingdom is the largest importer of Australian wheat, the price of wheat in the British markets is a matter of prime importance to the local producer. The table below gives the average prices per Imperial quarter realized for British-grown wheat :—

BRITISH WHEAT.—PRICES PER QUARTER, 1861 TO 1924.

Year.	Average for Year.	Highest Weekly Average.	Lowest Weekly Average.	Year.	Average for Year.	Highest Weekly Average.	Lowest Weekly Average.
	s. d.	s. d.	s. d.		s. d.	s. d.	s. d.
1861 ..	55 4	61 6	50 0	1918 ..	72 10	74 5	71 2
1871 ..	56 8	60 0	52 6	1919 ..	72 11	73 4	72 5
1881 ..	45 4	55 2	40 9	1920 ..	80 10	90 11	72 6
1891 ..	37 0	41 8	32 3	1921 ..	71 6	89 10	44 0
1901 ..	26 9	27 8	25 8	1922 ..	47 10	56 3	37 5
1911 ..	31 8	33 4	30 0	1923 ..	42 2	49 3	37 6
1917 ..	75 9	83 10	70 3	1924 ..	49 3	56 1	41 5

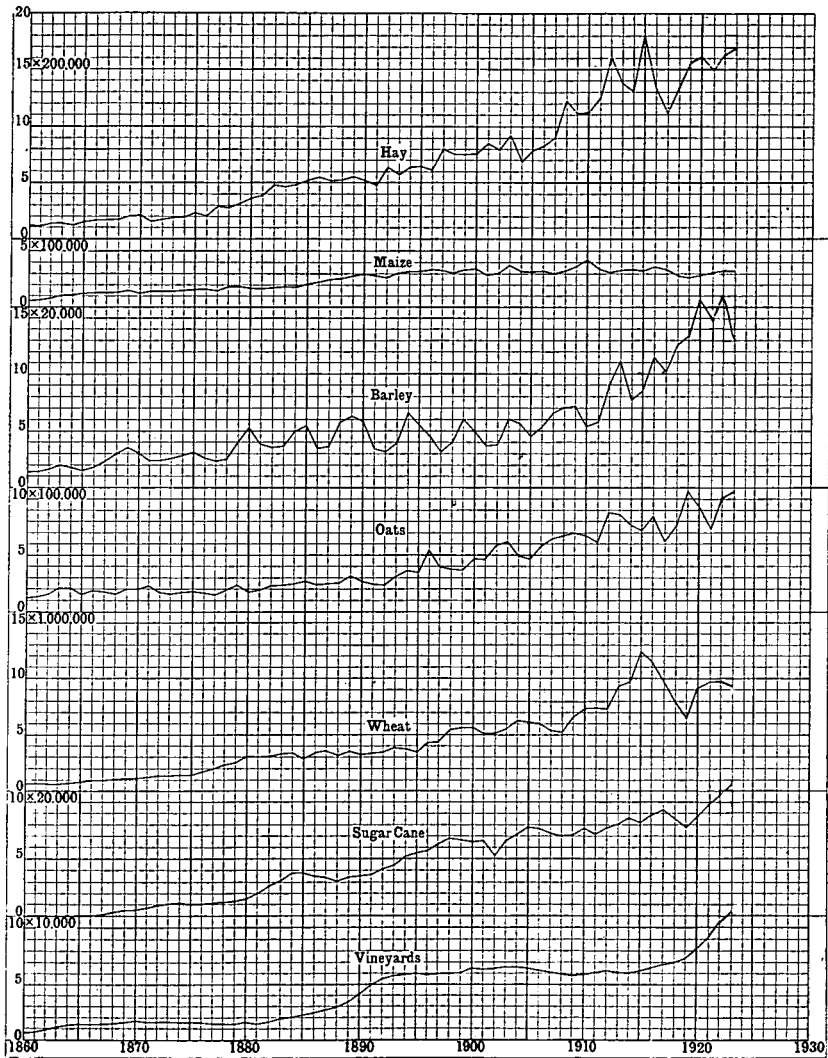
(ii) *Australian Export Values.* In the next table will be found a statement of the export values of Australian wheat during each of the last six years :—

AUSTRALIAN WHEAT.—EXPORT VALUES, 1919-20 TO 1924-25.

Heading.	1919-20.	1920-21.	1921-22.	1922-23.	1923-24.	1924-25.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Price per bushel ..	5 6	9 0	5 9	5 5	4 8	6 8

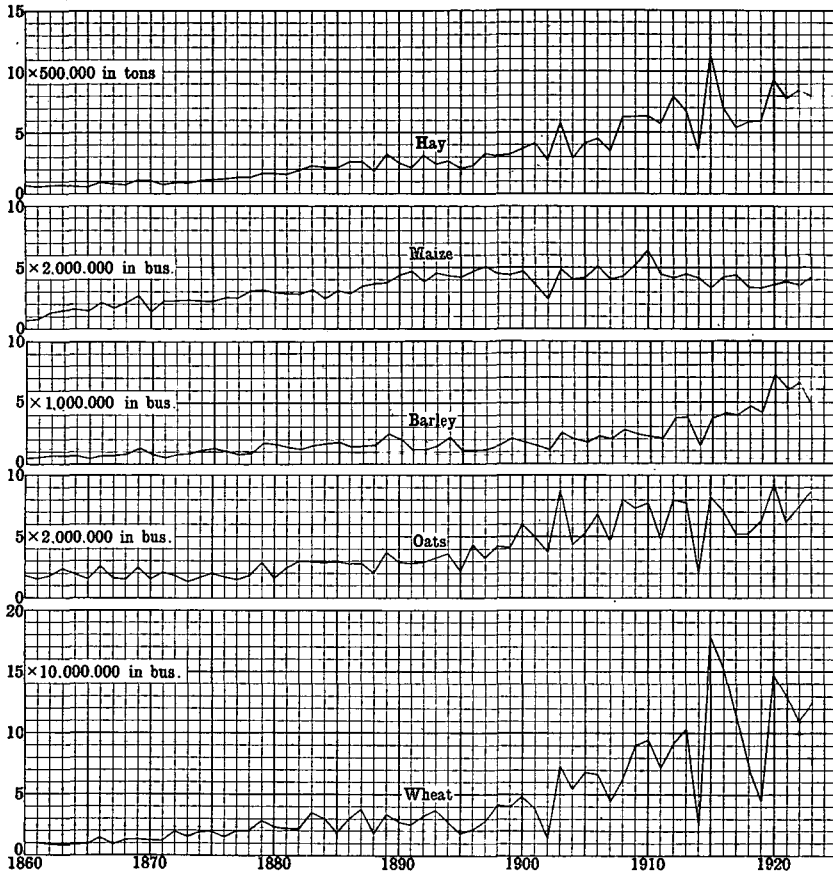
The export values here-shown are the values for the successive years in the principal markets of Australia.

AREA UNDER PRINCIPAL CROPS—AUSTRALIA, 1860 TO 1923-24.



EXPLANATION.—The base of each small square represents an interval of one year, while the vertical height represents a number of acres, varying with the nature of the crop in accordance with the scale given on the left of the graph. The height of each curve above its base line denotes, for the crop to which it relates, the total area under cultivation in Australia during the successive seasons.

PRODUCTION OF PRINCIPAL CROPS—AUSTRALIA, 1860 TO 1923-24.



EXPLANATION.—A separate base line is provided for each of the crops dealt with. In each instance the base of a small square represents an interval of one year, the vertical height of such square representing in the case of wheat, 10,000,000 bushels; oats, 2,000,000 bushels; barley, 1,000,000 bushels; maize, 2,000,000 bushels; and hay, 500,000 tons. The height of each curve above its base line denotes the aggregate yield in Australia of the particular crop during the successive seasons.

4. Imports and Exports of Wheat and Flour.—(i) *Quantities.* The table hereunder shows the imports, exports, and net exports of wheat and flour from 1919–20 to 1923–24. For the sake of convenience, flour has been expressed at its equivalent in wheat, 1 ton of flour being taken as equal to 48 bushels of grain. In ordinary seasons the Australian imports of wheat and flour are negligible. During the past five years the exports ranged between 50,446,320 bushels in 1922–23 and 117,214,455 bushels in 1921–22, the net exports for the period averaging 89,444,220 bushels.

WHEAT AND FLOUR.—IMPORTS AND EXPORTS, AUSTRALIA, 1919–20 TO 1923–24.

Year.	Imports.			Exports.			Net Exports.
	Wheat.	Flour.	Total.	Wheat.	Flour.	Total.	
	Bushels.	Eq. Bushels. ^a	Bushels.	Bushels.	Eq. Bushels. ^a	Bushels.	Bushels.
1919–20	285	4,128	4,413	82,470,658	24,854,112	107,324,770	107,320,357
1920–21	1,170	3,696	4,866	76,791,883	11,026,800	87,818,683	87,813,817
1921–22	247	1,728	1,975	99,947,223	17,267,232	117,214,455	117,212,480
1922–23	15,288	2,112	17,400	31,510,272	18,936,048	50,446,320	50,428,920
1923–24	203	1,920	2,123	59,910,480	24,537,168	84,447,648	84,445,525

(a) Equivalent in bushels of wheat.

(ii) *Destination of Exported Breadstuffs.* In the next two tables will be found a list of the principal countries to which Australia exported wheat and flour during each year of the period 1919–20 to 1923–24. The countries are as shown in the Australian Customs returns, but wheat ships are frequently instructed to call for orders at various ports, and the countries to which these ports belong cannot, therefore, always be considered as the ultimate destination of the whole of the wheat said to be exported to them.

WHEAT.—EXPORTS, AUSTRALIA, 1919–20 TO 1923–24.

Country to which Exported.	1919–20.	1920–21.	1921–22.	1922–23.	1923–24.	Total for Five Years.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
United Kingdom	50,074,725	38,709,680	40,914,035	10,762,600	23,017,707	163,478,747
Italy ..	1,397,738	2,219,143	18,447,762	11,647,165	6,483,732	40,195,540
Japan ..	6,381,738	7,332	7,497,943	3,711,211	13,067,907	30,666,131
France ..	13,010,455	8,921,645	3,341,835	1,284,924	3,562,313	30,121,172
Egypt ..	2,265,283	10,477,463	3,286,433	38,783	1,339,707	17,407,669
India ..	1,522,593	25,623	15,035,429	..	..	16,583,645
Union of South Africa ..	1,220,147	1,157,778	1,331,417	2,545,162	3,721,697	9,976,201
Belgium ..	..	5,754,723	1,312,480	178,930	622,283	7,868,416
Germany ..	..	2,504,690	2,996,292	397	110,770	5,612,149
Canary Islands(a)	624,425	3,532,793	236,807	..	..	4,394,025
New Zealand ..	2,393,667	602,843	73,539	..	1,247,362	4,317,411
Netherlands ..	..	2,202,653	1,192,977	..	142,753	3,538,383
Norway ..	1,645,125	342,510	960,855	117,012	106,415	3,171,917
Sweden ..	523,065	..	..	412,547	1,304,445	2,240,057
Peru ..	131,023	..	697,205	167,110	..	995,338
Ceylon ..	52,645	303	257,098	993	950	311,989
United States ..	73,293	112	..	..	..	73,405
Other Countries	1,154,736	332,592	2,365,116	643,500	5,182,439	9,678,383
Total ..	82,470,658	76,791,883	99,947,223	31,510,334	59,910,480	350,630,578

(a) For orders.

The exports of flour during the same period and the principal countries of destination were as follows :—

FLOUR.—EXPORTS, AUSTRALIA, 1919-20 TO 1923-24.

Country to which Exported.	1919-20.	1920-21.	1921-22.	1922-23.	1923-24.	Total for Five Years.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Egypt	92,537	61,502	108,550	127,072	182,938	572,599
United Kingdom	72,828	81,952	103,634	83,804	92,425	434,643
Netherlands East Indies	42,070	15,388	41,826	50,899	49,262	199,445
Union of South Africa	39,513	41,458	24,947	39,250	37,685	182,853
Malaya (British)	63,508	8,264	20,471	32,619	33,683	158,545
Philippine Islands	39,942	3,040	10,749	10,292	13,012	77,035
Hong Kong	36,506	368	10,003	6,318	11,739	64,934
Japan	24,876	480	6,555	1,664	15,430	49,005
France	33,407	..	..	..	..	33,407
Ceylon	8,191	755	6,282	7,681	10,142	33,051
Mauritius	4,532	3,320	5,639	8,757	8,569	30,817
China	1,199	77	4,391	260	12,905	18,832
New Caledonia	3,999	3,202	3,532	3,517	3,765	18,015
Portuguese East Africa	632	2,477	3,542	3,475	2,963	13,089
Fiji	2,257	1,362	2,484	2,602	3,024	11,729
Papua	879	636	322	378	780	2,995
India	486	4	657	1,063	130	2,340
Italy .. ..	..	..	..	112	2,025	2,137
New Zealand	256	137	95	84	294	866
Other Countries	50,176	5,303	6,055	14,654	30,420	106,608
Total	517,794	229,725	359,734	394,501	511,191	2,012,945

For the five years under review the export of wheat to the United Kingdom amounted to 163,478,747 bushels, or 46½ per cent. of the total export for the period, while the export of flour to the same destination aggregated 572,599 tons, or 28 per cent. of the total export. The country to which the largest consignments of flour were made during the last quinquennium was Egypt, followed by the United Kingdom, Netherlands East Indies, South Africa, and Malaya (British).

(iii) *Exports of Wheat and Flour.* From the foregoing returns it will be seen that the quantity of wheat exported in the form of flour during the past five years represents, on the average, about 22 per cent. of the total equivalent in wheat exported as wheat or flour from Australia.

A point of some interest in connexion with the export of wheat, and one which bears also on the proportion of wheat and flour exports just referred to, is that concerning the quantity of phosphoric acid which this export has the effect of removing from Australia, and the necessity which exists for the return to the soil of this substance in some form.

According to an estimate furnished by the chemist to the New South Wales Department of Agriculture (F. B. Guthrie, Esq., F.C.S., &c.), the proportions of milled product from a bushel (60 lbs.) of wheat are, approximately, 42 lbs. of flour, 9 lbs. of bran, and 9 lbs. of pollard, while the percentage of phosphoric acid contained in these products is as follows :—

Flour	0.32 per cent., or 0.13 lb. per bushel.
Bran	3.00 „ 0.27 „
Pollard	0.90 „ 0.08 „

The total amount of phosphoric acid contained in a bushel of wheat, is, therefore 0.48 lb., of which 0.13 lb. is in the flour and 0.35 lb. in the offal.

During the last ten years the net exports from Australia of wheat and its milled products have amounted to 499,011,559 bushels of wheat, 3,360,665 tons of flour, and 2,273,625 bushels of bran, pollard, and sharps. On the basis of the figures quoted above this export would contain no less than 254,884,199 lbs. of phosphoric acid, the value of which as a fertilizer would amount to more than one million pounds sterling.

5. Local Consumption of Wheat.—The estimated consumption of wheat for food and for seed purposes in Australia during the past ten years is given in the following tables:—

WHEAT.—HUMAN CONSUMPTION, AUSTRALIA, 1915 TO 1923-24.

Year.	Flour Milled.	Net Exports of Flour.		Net Quantity Available for Home Consumption.		Net Quantity Available per Head of Population.	
		Flour.	Flour in Biscuits Exported.	Flour.	Equivalent in Terms of Wheat.	Flour.	Equivalent in Terms of Wheat.
	Tons.	Tons.	Tons.	Tons.	Bushels.	Tons.	Bushels.
1915 ..	541,810	7,633	2,160	532,017	25,536,820	.1069	5.133
1915-16 ..	577,038	146,618	2,650	427,770	20,532,960	.0861	4.131
1916-17 ..	869,975	290,572	2,885	576,518	27,672,860	.1171	5.623
1917-18 ..	985,761	374,062	9,810	601,889	28,890,670	.1205	5.784
1918-19 ..	1,046,268	483,340	6,437	556,491	26,711,570	.1098	5.270
1919-20 ..	1,050,228	517,708	4,590	527,930	25,340,640	.1000	4.801
1920-21 ..	801,511	229,648	3,375	568,488	27,287,420	.1052	5.050
1921-22 ..	911,452	359,698	2,284	549,470	26,374,560	.0999	4.798
1922-23 ..	985,479	394,457	1,831	589,191	28,281,170	.1049	5.034
1923-24 ..	1,092,856	511,151	1,727	579,978	27,838,940	.1011	4.853
Aggregate 10 years	8,862,378	3,314,887	37,749	5,509,742	264,467,616	.1050	5.041

WHEAT USED FOR SEED.—AUSTRALIA, 1914 TO 1923.

Year.	Area for Grain and Hay.	Wheat for Seed Purposes.		
		Quantity.	Per Acre.	Per Head of Population.
	Acres.	Bushels.	Bushels.	Bushels.
1914 ..	11,012,679	10,059,000	.913	2.023
1915 ..	14,414,024	13,041,000	.905	2.624
1916 ..	12,894,917	11,523,000	.894	2.343
1917 ..	10,910,669	9,713,000	.890	1.949
1918 ..	9,428,398	9,054,000	.960	1.782
1919 ..	8,250,572	7,774,000	.942	1.466
1920 ..	10,271,055	9,471,000	.922	1.750
1921 ..	10,878,401	10,077,000	.926	1.847
1922 ..	11,253,078	10,456,000	.929	1.878
1923 ..	11,016,608	10,328,000	.937	1.816
Aggregate for 10 years ..	110,330,401	101,496,000	.920	1.948

In addition to the above, the quantity of grain fed to poultry and other live stock as well as that used as seed for green forage crops must be taken into consideration. These quantities vary from year to year according to the price of wheat and the nature of the season, and sufficient data are not available on which to base an annual estimate but, taken over a period, the amount so consumed has been estimated to range from one half to one bushel per head of population per annum. The flour available for human consumption necessarily fluctuates from year to year coincident with stocks. In some years the flour available per head of population, after deducting net exports from quantity milled, shows a substantial increase over the average for the previous year, this, however, being counterbalanced by a decline in the following year. The average quantity of

flour consumed per annum for the ten years under consideration was 0.1050 tons per head of population, which, expressed in equivalent terms in wheat, represents 5.041 bushels. The estimates of quantity of grain used for seed purposes are based on data supplied by the Agricultural Departments of the several States giving average quantities of seed used per acre for wheat sown either for grain or hay. The average annual quantity thus used during the ten years was 1.948 bushels per head of population, and 0.920 bushels or 55 lbs. per acre sown. For all purposes the consumption of wheat in Australia during the past three years averaged 42,647,000 bushels, or 7.57 bushels per head of the population.

6. **Value of the Wheat Crop.**—The estimated value of the wheat crop in each State and in Australia during the season 1923-24 is shown below :—

WHEAT.—VALUE OF CROP, (a) 1923-24.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	£	£	£	£	£	£	£	£
Aggregate value..	8,569,250	8,661,515	72,098	8,062,008	4,493,564	76,410	1,210	29,936,055
Value per acre ..	£2/18/2	£3/10/7	£1/8/2	£3/6/8	£2/14/3	£5/5/4	£4/7/1	£3/2/9

(a) Exclusive of the value of straw.

7. **Voluntary Wheat Pools.**—Reference to the operations of the Voluntary Wheat Pools in the various States during 1924-25 will be found in the Appendix at the end of this volume.

§ 5. Oats.

1. **Progress of Cultivation.**—(i) *Area and Yield.* Oats came next in importance to wheat amongst the grain crops cultivated last season, but while wheat grown for grain accounted for 57.71 per cent., oats represented only 6.51 per cent. of the area under crop in Australia. The progress in cultivation of oats for the last five years is shown in the table hereunder, and more fully in the graphs herein :—

OATS.—AREA AND YIELD, 1919-20 TO 1923-24.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Fed. Cap. Ter.	Australia.
AREA.								
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1919-20	75,893	559,547	363	192,153	191,931	48,185	224	1,068,296
1920-21	77,537	443,636	4,690	167,001	193,486	50,474	172	936,996
1921-22	69,619	318,681	2,274	125,148	162,866	54,642	176	733,406
1922-23	73,635	492,356	1,216	173,716	242,269	58,813	371	1,043,776
1923-24	86,402	520,654	216	176,299	241,608	51,460	291	1,076,930
YIELD.								
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1919-20	583,503	6,603,067	2,871	1,634,239	2,486,918	1,242,258	3,255	12,556,111
1920-21	1,640,552	10,907,191	103,933	2,331,067	2,022,031	1,514,155	2,148	18,521,077
1921-22	1,168,406	6,082,258	34,409	1,297,646	2,019,603	1,543,617	1,494	12,147,433
1922-23	1,243,198	8,093,459	19,499	1,681,783	2,261,863	1,674,751	7,602	14,982,155
1923-24	1,564,970	9,366,205	2,427	2,157,938	2,846,670	1,359,785	5,330	17,303,325

The oat crop exhibited little variation during the past decennium, ranging on the average around 13,000,000 bushels. The demand for the grain for making oatmeal is limited to about 2,000,000 bushels annually. It is mainly used as feed grain, and its value, particularly in good seasons, is not sufficient to warrant the increase in cultivation which may be expected when oats is marketed through live stock and more remunerative prices thereby realized than those now offering on the local market.

The principal oat-growing State is Victoria, which produces more than half the total quantity of oats grown in all States. For Australia as a whole the record yield of oats was obtained in 1920-21, when 18,521,077 bushels were harvested.

(ii) *Average Yield.* The average yield per acre of oats varies considerably in the different States, being highest in Tasmania and lowest in South Australia. Particulars as to average yield in each of the last five seasons, and for the decennium 1914-24 are given in the succeeding table :—

OATS.—AVERAGE YIELD PER ACRE, 1919-20 TO 1923-24.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1919-20 ..	7.71	11.80	7.91	8.50	12.96	25.78	14.53	11.75
1920-21 ..	21.16	24.59	22.16	13.96	10.45	30.00	12.49	19.77
1921-22 ..	16.78	19.09	15.13	10.37	12.40	28.25	8.49	16.56
1922-23 ..	16.88	16.44	16.04	9.68	10.56	28.48	20.49	14.77
1923-24 ..	18.11	17.99	11.24	12.24	11.78	26.42	18.32	16.07
Average for 10 seasons 1914-24	16.46	17.07	16.88	10.68	11.34	25.36	16.91	15.34

The smallest average yield per acre ever recorded for Australia was that experienced in the abnormally dry season 1914-15, viz., 5.60 bushels, while the largest in the past ten years was that of the season 1915-16, amounting to 22.92 bushels per acre.

(iii) *Relation to Population.* The State in which oat production occupies the most important position in relation to population is Tasmania, the yield for that State representing about 6½ bushels per head during the last five years, as compared with 2½ bushels per head for Australia as a whole. Particulars for the seasons 1919-20 to 1923-24 are furnished in the succeeding table :—

OATS.—YIELD PER 1,000 OF POPULATION, 1919-20 TO 1923-24.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1919-20 ..	286	4,393	4	3,393	7,595	5,917	1,696	2,367
1920-21 ..	785	7,138	138	4,746	6,112	7,114	1,089	3,422
1921-22 ..	549	3,922	45	2,582	6,026	7,067	724	2,205
1922-23 ..	572	5,090	25	3,277	6,583	7,650	2,973	2,660
1923-24 ..	708	5,762	3	4,112	8,046	6,207	2,033	3,009

2. *Comparison with Other Countries.*—(i) *Total Production.* A comparison of the Australian production of oats with that of the leading oat-producing countries of the world is furnished in the following table :—

OATS.—PRODUCTION IN VARIOUS COUNTRIES, 1919-1923.

Country.	Yield in Bushels (000 omitted).		Country.	Yield in Bushels (000 omitted).	
	Average, 1919-1921.	1923.		Average, 1919-1921.	1923.
United States ..	967,952	1,039,862	Hungary ..	(b)17,709	21,967
Canada ..	382,873	479,394	Netherlands ..	17,311	16,655
Soviet Republics ..	(a)335,005	405,922	Jugo-Slavia ..	(b)16,460	17,181
Germany ..	261,565	336,589	Australia ..	14,409	17,303
France ..	187,518	269,558	Austria ..	12,957	20,689
United Kingdom ..	(a)133,581	130,492	Lithuania ..	12,718	18,221
Poland ..	94,835	194,139	Norway ..	11,506	6,400
Sweden ..	58,421	59,337	Latvia ..	(b) 9,853	13,130
Czecho-Slovakia ..	47,958	73,348	Japan ..	8,830	8,774
Rumania ..	42,008	56,236	Algeria ..	7,449	15,399
Denmark ..	40,143	50,484	Estonia ..	6,551	6,353
Irish Free State ..	(a)32,671	28,123	New Zealand ..	6,157	4,095
Argentine Republic	29,961	65,165	Union of South		
Spain ..	28,348	32,348	Africa ..	5,760	(c)6,482
Italy ..	25,785	31,862	Bulgaria ..	5,187	7,351
Belgium ..	25,720	37,646	Portugal ..	4,368	6,478
Finland ..	20,493	17,031			

(a) Average 1920-1922.

(b) Average for two years.

(c) Year 1921.

(ii) *Yield per Acre.* The average yield per acre of oats is very low in Australia compared with other countries where its cultivation is more extensive. Arranging the countries contained in the foregoing table according to the magnitude of average yield for the years specified, the results are as follows:—

OATS.—YIELD PER ACRE, VARIOUS COUNTRIES, 1919-1923.

Country.	Average Yield in Bushels per acre.		Country.	Average Yield in Bushels per acre.	
	Average, 1919-1921.	1923.		Average, 1919-1921.	1923.
Netherlands ..	44.48	43.76	Austria ..	20.48	25.81
Belgium ..	44.09	57.55	Finland ..	20.06	16.08
Irish Free State ..	(a)37.88	35.78	Rumania ..	19.69	16.92
Denmark ..	37.65	45.01	Estonia ..	18.91	16.82
New Zealand ..	37.09	29.04	Lithuania ..	18.06	22.33
United Kingdom ..	(a)37.00	39.12	Spain ..	17.87	20.28
Germany ..	34.10	40.73	Latvia ..	(b)17.07	17.40
Norway ..	33.62	24.99	Bulgaria ..	16.21	19.86
Sweden ..	33.23	33.07	Jugo-Slavia ..	(b)16.20	18.52
Japan ..	(b)32.54	32.96	Australia ..	15.78	16.07
Czecho-Slovakia ..	27.13	35.25	Soviet Republics ..	(a)14.36	16.11
Poland ..	25.18	31.24	Argentine Republic	13.89	23.72
Canada ..	24.00	33.32	Algeria ..	13.47	25.68
France ..	23.44	31.87	Union of South		
United States ..	23.05	25.47	Africa ..	9.66	(c)12.22
Italy ..	22.18	26.05	Portugal ..	9.18	12.32
Hungary ..	(b)20.99	27.39			

(a) Average 1920-1922.

(b) Average for two years.

(c) Year 1921.

3. *Price of Oats.*—The average wholesale prices of oats in the markets of the several capitals for the year 1923 are given in the following table:—

OATS.—AVERAGE WHOLESALE PRICES, 1923.

Particulars.	Sydney.(a)	Melbourne.	Brisbane.	Adelaide.	Perth.	Hobart.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Average price per bushel ..	4 5½	3 8½	..	3 0½	3 3½	3 10

(a) Year ended 30th June, 1924.

4. Imports and Exports.—The production of oats in Australia has not yet reached sufficient proportions to admit of a regular export trade; in fact in certain years the imports have exceeded the exports, notably in 1903, 1906, 1908, 1910, in each of the four years prior to 1916-17, and in 1922-23. The quantities and values of oats imported into, and exported from Australia during the years 1919-20 to 1923-24 are given hereunder :—

OATS.—IMPORTS AND EXPORTS, AUSTRALIA, 1919-20 TO 1923-24.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1919-20 ..	146,700	41,759	290,323	83,175	143,623	41,416
1920-21 ..	139,728	30,057	865,588	143,874	725,860	113,817
1921-22 ..	14,880	2,569	325,792	49,980	310,912	47,411
1922-23 ..	557,523	90,255	35,895	7,506	—521,628	—82,749
1923-24 ..	108,260	18,624	190,453	41,647	82,193	23,023

NOTE.—(—) signifies net import.

The principal country from which imports of oats have been obtained is New Zealand, while the principal countries to which oats were exported during the period under review were New Zealand, Java, and the United Kingdom.

5. Oatmeal, etc.—Oatmeal, etc., is imported into Australia principally from the United Kingdom, the United States of America, and New Zealand. The total importations of oatmeal, wheatmeal, and rolled oats during 1923-24 amounted to 75,104 lbs., and represented a value of £1,572, while the exports amounted to 957,235 lbs., valued at £7,622, and were shipped mainly to Papua, Japan, New Zealand, and Pacific Islands.

6. Value of Oat Crop.—The estimated value of the oat crop of the several States of Australia for the season 1923-24 is as follows :—

OATS.—VALUE OF CROP, (a) 1923-24.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	£	£	£	£	£	£	£	£
Aggregate value..	326,040	1,561,034	394	323,691	471,480	249,290	1,110	2,933,039
Value per acre ..	£3/15/6	£3/0/0	£1/16/6	£1/16/9	£1/19/1	£4/16/11	£3/16/3	£2/14/6

(a) Exclusive of the value of straw.

§ 6. Maize.

1. States Growing Maize.—The only States in which maize is extensively grown for grain are those of New South Wales and Queensland, the area so cropped in these two States during the season 1923-24 being 287,025 acres, or nearly 91 per cent. of the total for Australia. Of the balance, Victoria contributed 29,104 acres, South Australia 94 acres, Western Australia 43 acres, and the Federal Capital Territory 41 acres. The climate of Tasmania prevents the growing of maize for grain. In all the States, maize is grown to a greater or less extent as green forage, particularly in connexion with the dairying industry.

2. *Progress of Maize-growing.*—(i) *Area and Yield.* Notwithstanding its valuable properties and its pre-eminence as the world's most extensively grown cereal, the cultivation of maize has decreased in Australia by about 25,000 acres during the past decennium. While increases in area were recorded in both Queensland and Victoria, the decline of nearly 50,000 acres in New South Wales was responsible for the reductions in the total for Australia. The maximum area sown to maize was 414,914 acres, as far back as 1910-11, which figure was considerably in excess of the average planted during the last ten years, which amounted to 312,681 acres. The area and yield of maize for grain in each State are given in the following table for the last five years. The fluctuations from year to year are shown more fully on the graph herein.

MAIZE.—AREA AND YIELD, 1919-20 TO 1923-24.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Nor. Ter.	Fed. Cap. Ter.	Australia.
AREA.								
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1919-20	136,509	23,474	105,260	165	11	50	..	265,469
1920-21	144,105	24,149	115,805	199	19	6	..	284,283
1921-22	146,687	23,227	135,034	186	43	9	..	305,186
1922-23	138,169	25,846	149,048	116	23	..	..	313,202
1923-24	166,933	29,104	120,092	94	43	..	41	316,307
YIELD.								
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1919-20	4,052,025	878,922	1,830,664	1,810	84	500	..	6,764,005
1920-21	4,176,000	1,065,880	2,012,864	3,738	240	60	..	7,258,782
1921-22	3,976,300	951,960	2,907,754	3,792	540	92	..	7,840,438
1922-23	3,287,500	879,915	3,217,848	2,716	335	..	..	7,388,314
1923-24	4,621,950	1,464,731	2,024,902	1,266	834	..	1,050	8,114,733

The maximum production of maize in Australia was recorded in 1910-11, when the harvest exceeded 13,000,000 bushels. This figure has not been approached in recent years, the average for the past decade amounting to 7,500,000 bushels.

The expansion of maize-growing is hindered by unstable local markets, and the development of dairying with its consequent increase in permanent pastures. It is, however, believed that the cereal will eventually become an important crop in Australia. Its suitability in crop rotation, coupled with the advance of closer settlement and irrigation, will doubtless lead to an extension in its cultivation. Moreover, the value of the grain for fattening stock is becoming more generally recognized, and the establishment of new industries which utilize it will foster an increased demand.

(ii) *Average Yield.* The following table gives particulars of the average yield per acre of the maize crops of the States for the seasons 1919-20 to 1923-24, and also for the decennium 1914-24 :—

MAIZE.—AVERAGE YIELD PER ACRE, 1919-20 TO 1923-24.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	N. Ter.	Fed. Cap. Ter.	Aus-tralia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1919-20 ..	29.68	37.44	17.39	10.97	7.64	10.00	..	25.48
1920-21 ..	28.98	44.14	17.38	18.78	12.63	10.00	..	25.53
1921-22 ..	27.11	40.99	21.53	20.39	12.56	10.22	..	25.69
1922-23 ..	23.79	34.04	21.59	23.41	14.57	..	..	23.59
1923-24 ..	27.69	50.33	16.86	13.47	19.40	..	25.61	25.65
Average for 10 seasons 1914-24	25.58	43.98	20.48	16.86	13.06	10.81	22.10	24.59

With the exception of Canada, the average yield of maize per acre in Victoria is the largest in the world. This is due, in large measure, to the fact that the area under maize in that State is comparatively small and is situated in districts peculiarly suited to its growth. The average yield in New South Wales exceeds that obtained in Queensland.

(iii) *Relation to Population.* During the past five seasons the Australian production of maize has averaged $1\frac{1}{2}$ bushels per head of population, while the average for Queensland, the State in which the production per head is highest, amounted to over 3 bushels. Details for the several States during the past five seasons are as follows:—

MAIZE.—YIELD PER 1,000 OF POPULATION, 1919-20 TO 1923-24.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	N. Ter.	Fed. Cap. Ter.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1919-20 ..	1,988	585	2,482	4	..	110	..	1,275
1920-21 ..	1,997	697	2,676	8	1	15	..	1,341
1921-22 ..	1,869	614	3,776	8	2	25	..	1,423
1922-23 ..	1,513	553	4,082	5	1	..	..	1,312
1923-24 ..	2,092	901	2,496	2	2	..	400	1,411

3. *Australian and Foreign Maize Production.*—(i) *Total Yield.* The United States of America is the most important maize-producing country of the world. On the average 100,000,000 acres are annually planted in that country, and 3,000,000,000 bushels reaped, representing nearly 70 per cent. of the world's production. Of the huge quantities raised, about 85 per cent. is fed to live stock on farms, 10 per cent. is used for human food, and only a very small fraction, viz., $1\frac{1}{2}$ per cent., enters into international trade. The yields of the various countries are as follow:—

MAIZE.—PRODUCTION IN VARIOUS COUNTRIES, 1919-1923.

Country.	Yield in Bushels (000 omitted).		Country.	Yield in Bushels (000 omitted).	
	Average, 1919-1921.	1923.		Average, 1919-1921.	1923.
United States ..	2,874,304	3,054,369	France ..	11,924	12,673
Argentine Republic ..	221,761	270,066	Portugal ..	10,949	10,219
Brazil ..	187,953	121,313	Belgian Congo ..	10,704	(a)7,283
Rumania ..	111,440	160,467	Salvador ..	(b)7,836	9,842
India ..	91,307	(a)76,080	Greece ..	7,820	(g)7,874
Italy ..	89,157	89,204	Australia ..	7,283	8,115
Jugo-Slavia ..	(d)88,020	84,782	Czecho-Slovakia ..	6,509	10,621
Mexico ..	(c)82,519	(a)68,261	Indo-China ..	(e)6,286	(f)5,733
Egypt ..	65,399	67,550	Japan ..	6,208	(a)6,164
Soviet Republics ..	(d)56,878	85,602	Uruguay ..	5,773	6,519
Dutch East Indies ..	55,375	46,636	Guatemala ..	4,448	7,874
Union of South Africa ..	41,496	(a)50,390	French Morocco ..	4,307	4,805
Hungary ..	(d)38,120	49,247	Madagascar ..	3,867	(g)4,240
Spain ..	26,048	23,925	Rhodesia ..	3,576	(a)5,179
Bulgaria ..	20,900	26,866	Poland ..	(d)3,042	3,831
Canada ..	15,396	13,608	Korea ..	(d)2,858	2,806
Philippine Islands ..	15,172	16,663	Austria ..	2,255	3,450

(a) Year 1922. (b) Average for two years. (c) Single year. (d) Average 1920-1922. (e) Average 1914-1918. (f) Year 1920. (g) Year 1921.

(ii) *Yield per Acre.* The average yield per acre of maize in Australia during 1923 was 25.7 bushels, which may be regarded as satisfactory when compared with those of other maize-producing countries, the yields per acre for which are shown in the following table:—

MAIZE.—YIELD PER ACRE IN VARIOUS COUNTRIES, 1919-1923.

Country.	Average Yield per acre in Bushels.		Country.	Average Yield per acre in Bushels.	
	Average, 1919-1921.	1923.		Average, 1919-1921.	1923.
Canada	54.14	42.83	Spain	17.27	20.52
Soviet Republics ..	(a)37.13	20.52	Greece	16.58	(d)15.93
Egypt	33.74	36.22	Portugal	15.23	13.60
United States ..	29.41	29.32	Salvador	14.70	(f)17.12
Madagascar ..	29.12	(d)18.87	Bulgaria	14.67	19.73
Argentine Republic	28.17	31.91	France	14.38	15.00
Brazil	(e)26.76	14.34	Poland	(b)13.99	20.32
Australia	25.57	25.65	Mexico	(c)13.54	(e)15.93
Czecho-Slovakia ..	24.84	23.86	Korea	(a)13.29	12.05
Italy	24.02	23.54	India (British) ..	13.01	(d)15.19
Japan	22.92	(d)24.79	Dutch East Indies	12.43	11.58
Austria	21.24	16.34	Philippine Islands	12.15	12.09
Rhodesia	19.81	(e)23.54	Union of South Africa ..	(b)10.38	(f)12.50
Hungary	(a)19.38	20.51	Uruguay	9.94	11.32
Jugo-Slavia	(a)18.78	19.04	Guatemala	8.68	17.22
Rumania	18.55	19.07	French Morocco ..	8.21	7.20
Indo-China	(g)18.29	(f)14.34			

(n) Average 1920-1922. (b) Average for two years. (c) Single year. (d) Year 1921. (e) Year 1922. (f) Year 1920. (g) Average 1914-1918.

4. Price of Maize.—The average wholesale price of maize in the Sydney market for each of the last five years is given in the following table :—

MAIZE.—AVERAGE PRICE, SYDNEY, 1919-20 TO 1923-24.

Particulars.	1919-20.	1920-21.	1921-22.	1922-23.	1923-24.
Average price per bushel ..	<i>s. d.</i> 8 11	<i>s. d.</i> 6 6	<i>s. d.</i> 5 2	<i>s. d.</i> 6 1	<i>s. d.</i> 5 1

5. Oversea Imports and Exports.—The decline in the production of maize in Australia during recent years has necessitated an average annual import of about 1,000,000 bushels during the past ten years, the bulk of the supplies being furnished by South Africa. Details of imports and exports for the years 1919-20 to 1923-24 are as follow :—

MAIZE.—IMPORTS AND EXPORTS, AUSTRALIA, 1919-20 TO 1923-24.

Year.	Imports.		Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
1919-20	Bushels. 494,278	£ 158,361	Bushels. 6,632	£ 3,001	Bushels. 487,646	£ 155,360
1920-21	96,536	40,097	77,489	27,162	19,047	12,935
1921-22	45,066	9,791	36,320	9,023	8,746	768
1922-23	1,198,673	264,758	8,427	2,736	1,190,246	262,022
1923-24	2,572,809	515,468	37,918	9,524	2,534,891	505,944

6. Prepared Maize.—A small quantity of corn-flour is imported annually into Australia, the principal countries of supply being the United Kingdom and the United States of America. During the year 1923-24 the imports amounted to 435,248 lb., and represented a value of £6,390. The exports from Australia are small, and amounted to only 30,061 lb., valued at £735 in 1923-24.

7. Value of Maize Crop.—The value of the Australian maize crop for the season 1923-24 has been estimated at £2,050,246, made up as follows:—

MAIZE.—VALUE OF CROP, 1923-24.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	F.C.T.	Australia.
	£	£	£	£	£	£	£
Aggregate value ..	1,078,460	329,564	641,219	443	320	240	2,050,246
Value per acre ..	£6/9/3	£11/6/6	£5/6/9	£4/14/3	£7/8/10	£5/17/1	£6/9/8

§ 7. Barley.

1. Progress of Cultivation.—(i) *Area and Yield.* The area under barley in Australia has fluctuated very considerably, but results for the past ten years show a marked rise. The average annual area sown for the decennium 1914 to 1924 amounted to 251,510 acres, which was nearly double the average of the previous ten-yearly period, i.e., 135,368 acres. Victoria was originally the principal barley-growing State, but the rapid expansion of the cultivation of this crop in South Australia during recent years brought the latter State into the lead in 1913-14, and, during 1923-24, the area under barley in South Australia accounted for more than 71 per cent. of the Australian acreage. Victoria was next in importance with 22 per cent., leaving a small margin of about 7 per cent. distributed among the other States. The figures here given relate to the areas harvested for grain; small areas only are cropped for hay, while more considerable quantities are cut for green forage. These, however, are not included in this sub-section. The area and yield of barley for grain in the several States are shown in the following table for the last five years, while the progress since 1860 is illustrated in the graphs herein:—

BARLEY.—AREA AND YIELD, 1919-20 TO 1923-24.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Australia.
AREA.							
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1919-20 ..	5,354	85,323	3,275	157,897	9,167	6,293	267,309
1920-21 ..	5,969	93,954	15,908	202,079	10,686	6,151	334,747
1921-22 ..	5,031	100,127	7,730	170,887	7,894	7,241	298,910
1922-23 ..	3,899	102,773	5,292	215,283	9,243	5,706	342,196
1923-24 ..	4,350	56,564	665	184,286	8,673	4,230	258,775
YIELD.							
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1919-20 ..	38,892	1,528,654	34,892	2,448,936	116,037	120,516	4,287,927
1920-21 ..	123,290	2,495,762	317,511	3,946,062	111,405	161,346	7,155,376
1921-22 ..	83,950	2,336,246	133,885	3,278,787	85,857	166,960	6,085,685
1922-23 ..	55,520	2,442,041	93,693	3,697,849	107,804	152,028	6,548,935
1923-24 ..	71,700	1,455,435	3,808	3,251,885	97,779	94,634	4,975,451

(a) Including Federal Capital Territory, 7 acres, 210 bushels.

The States in which the annual production of barley averaged over 1,000,000 bushels for the past decade were South Australia and Victoria, the yields being respectively 2,457,130 and 1,839,232 bushels, the higher return in the latter State tending to diminish the advantage held by South Australia in regard to acreage.

(ii) *Malting and other Barley.* (a) *Year 1923-24.* In recent years the statistics of all the States have distinguished between "malting" and "other" barley. Particulars for the season 1923-24 are as follows:—

BARLEY, MALTING AND OTHER.—AREA AND YIELD, 1923-24.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Malting barley ..	2,039	39,588	589	166,824	4,744	3,829	217,613
Other barley ..	2,318	16,976	76	17,462	3,929	401	41,162
Total ..	4,357	56,564	665	184,286	8,673	4,230	258,775
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
Malting barley ..	29,260	1,037,144	3,312	2,986,617	55,317	84,358	4,196,008
Other barley ..	42,650	418,291	496	265,268	42,462	10,276	779,443
Total ..	71,910	1,455,435	3,808	3,251,885	97,779	94,634	4,975,451

(a) Includes Federal Capital Territory, 7 acres, 210 bushels.

The cultivation of malting barley is a special industry to meet the demands of the local brewing trade. Its expansion, however, appears to be restricted, although of late years the exports have considerably increased. Taking Australia as a whole, more than 84 per cent. of the area under barley in 1923-24 was sown with the malting variety. The proportion varies largely in the several States.

(b) *Progress of Cultivation.* The following table sets out the acreage and yield of malting and other barley in Australia as a whole during the past five seasons:—

BARLEY, MALTING AND OTHER.—AREA AND YIELD, AUSTRALIA, 1919-20 TO 1923-24.

Season.	Acres.			Bushels.			Average Yields per Acre.		
	Malting.	Other.	Total.	Malting.	Other.	Total.	Malting.	Other.	Total.
1919-20 ..	204,752	62,557	267,309	3,352,027	935,900	4,287,927	16.37	14.96	16.04
1920-21 ..	249,908	84,839	334,747	5,248,861	1,906,515	7,155,376	21.00	22.47	21.38
1921-22 ..	218,662	80,248	298,910	4,430,599	1,655,086	6,085,685	20.26	20.62	20.36
1922-23 ..	279,159	63,037	342,196	5,283,144	1,265,791	6,548,935	18.93	20.08	19.14
1923-24 ..	217,613	41,162	258,775	4,196,008	779,443	4,975,451	19.28	18.94	19.23
Average 10 seasons 1914-24	183,606	67,904	251,510	3,439,861	1,262,630	4,702,491	18.74	18.59	18.70

During the past ten seasons the area and production of malting barley have represented nearly three times the corresponding figures for other barley. The average yield per acre differs very little in respect of the two classes, the results for the past ten-yearly period being slightly in favour of the malting variety.

(iii) *Average Yield.* The average yield of barley per acre varies considerably in the different States, being as a rule highest in Victoria and Tasmania, and lowest in Western Australia. Details for each State during the past five seasons, and for the decennium 1914-24, are given in the following table:—

BARLEY.—YIELD PER ACRE, 1919-20 TO 1923-24.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1919-20	7.26	17.92	10.65	15.51	12.66	19.15	16.04
1920-21	20.66	26.56	19.96	19.53	10.43	26.23	21.38
1921-22	16.69	23.33	17.32	19.19	10.88	23.06	20.36
1922-23	14.24	23.76	17.70	17.18	11.66	26.64	19.14
1923-24	16.48	25.73	5.73	17.65	11.27	22.37	19.23
Average for 10 seasons 1914-24	14.31	21.88	17.44	17.41	10.65	21.54	18.70

(iv) *Relation to Population.* During the last five seasons the quantity of barley produced in Australia has averaged 1 bushel per head of population. For the season 1923-24 the production ranged from 6 bushels per head in South Australia to 0.005 lbs. per head in Queensland. Details for the years 1919-20 to 1923-24 are as follows:—

BARLEY.—PRODUCTION PER 1,000 OF POPULATION, 1919-20 TO 1923-24.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Australia.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1919-20	19	1,017	47	5,085	354	574	808
1920-21	59	1,633	422	8,034	337	758	1,322
1921-22	39	1,506	174	6,524	256	764	1,104
1922-23	26	1,536	119	7,206	314	694	1,163
1923-24	32	895	5	6,197	276	432	865

2. *Comparison with Other Countries.*—(i) *Total Yield.* In comparison with the barley production of other countries, that of Australia appears extremely small. Particulars for some of the leading countries during recent years are as follows, the Australian figure being added for the purpose of comparison:—

BARLEY.—PRODUCTION IN VARIOUS COUNTRIES, 1919-23.

Country.	Yield in Bushels (000 omitted).		Country.	Yield in Bushels (000 omitted).	
	Average, 1919-1921.	1923.		Average, 1919-1921.	1923.
Soviet Republics ..	(a)150,943	208,980	Sweden	11,518	11,310
United States	149,214	190,254	Egypt	10,393	11,509
India (British) ..	126,874	139,642	Bulgaria	8,705	10,620
Japan	88,210	70,533	Italy	7,859	10,080
Spain	83,710	107,387	Lithuania ..	(a)7,302	7,639
Germany	78,921	104,109	Tunis	6,609	11,023
Canada	57,410	73,916	Syria	(b)6,544	(c)8,047
United Kingdom ..	(a)51,203	49,326	Irish Free State ..	(a)6,498	5,345
Rumania	46,240	59,632	Australia ..	5,840	4,975
Poland	39,240	72,995	Greece	5,782	6,817
Korea	36,356	29,492	Finland	5,361	3,628
Czecho-Slovakia ..	34,009	52,783	Latvia	(a)5,223	5,780
France	32,956	43,224	Norway	4,779	3,151
French Morocco ..	31,090	33,956	Austria	4,393	7,541
Denmark	24,569	31,159	Estonia	4,238	3,934
Hungary	(a)20,466	26,180	Chile	4,206	5,631
Algeria	20,290	45,040	Belgium	4,137	4,015
Jugo-Slavia	(a)11,876	13,502	Argentine Republic	3,910	11,574

(a) Average 1920-1922.

(b) Average for two years.

(c) Year 1922.

(ii) *Yield per Acre.* The following table shows the average yield of barley per acre in various countries of the world, the return ranging from 46.92 bushels in Belgium to 6.08 bushels in Tunis:—

BARLEY.—AVERAGE YIELD PER ACRE IN VARIOUS COUNTRIES, 1919-1923.

Country.	Yield in Bushels per acre.		Country.	Yield in Bushels per acre.	
	Average, 1919-1921.	1923.		Average, 1919-1921.	1923.
Belgium ..	46.92	48.38	Spain ..	18.05	23.66
Denmark ..	37.99	45.18	Austria ..	17.83	22.61
Irish Free State ..	(a)35.89	35.33	Lithuania ..	(a)17.82	17.67
Chile ..	30.87	38.74	Korea ..	17.51	13.59
United Kingdom ..	(a)30.70	33.15	Hungary ..	(a)17.15	23.27
Norway ..	30.66	25.28	Bulgaria ..	16.72	19.53
Japan ..	29.96	25.20	Estonia ..	15.77	12.61
Egypt ..	28.58	28.76	Italy ..	15.59	17.71
Sweden ..	28.56	28.80	Rumania ..	14.95	12.85
Germany..	27.55	32.37	Latvia ..	(a)14.87	13.31
Czecho-Slovakia ..	24.20	31.11	Greece ..	14.50	17.05
France ..	21.61	25.67	French Morocco ..	13.13	12.11
Canada ..	21.55	26.55	Jugo-Slavia ..	(a)12.83	15.15
United States ..	20.83	17.67	Soviet Republics ..	(a)11.28	13.15
Poland ..	20.62	24.63	Algeria ..	10.08	15.87
Australia..	19.44	19.23	Argentine Republic	6.15	18.16
Finland ..	18.90	13.11	Tunis ..	6.08	9.14
India (British) ..	18.80	18.87	Syria ..	(c)	(b)12.14

(a) Average 1920-1922.

(b) Year 1922.

(c) Not available.

3. *Price of Barley.*—The average price of barley in the Melbourne market during each of the past five years is given in the following table:—

BARLEY.—AVERAGE MELBOURNE PRICE PER BUSHEL, 1919 TO 1923.

Particulars.	1919.	1920.	1921.	1922.	1923.
	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>	<i>s. d.</i>
Malting barley ..	5 9½	7 3	4 5	4 1½	4 0½
Cape barley ..	4 6½	6 3	3 5	3 0	3 1½

4. *Imports and Exports.*—The Australian export trade in barley has grown considerably in recent years, the average annual shipments during the last five years amounting to 2,052,596 bushels, as compared with an average of 200,836 bushels for the previous quinquennium. The grain was consigned mainly to the United Kingdom and Belgium, South Australia being the principal exporting State. Particulars of the Australian overseas imports and exports for the years 1919-20 to 1923-24 are contained in the following table:—

BARLEY.—IMPORTS AND EXPORTS, AUSTRALIA, 1919-20 TO 1923-24.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1919-20	438	236	1,075,446	364,809	1,075,008	364,573
1920-21	20	45	3,209,734	778,615	3,209,714	778,570
1921-22	7,052	1,891	1,935,830	396,883	1,928,778	394,992
1922-23	34	18	2,213,184	432,326	2,213,150	432,308
1923-24	4	3	1,828,788	318,912	1,828,784	318,909

In some years there is an export of Australian pearl and Scotch barley, the total for 1923-24 reaching 111,284 lb., valued at £780. The trade for the year was mainly with Japan and South Africa.

5. Imports and Exports of Malt.—In pre-war times the imports of malt into Australia were fairly extensive, the supply being obtained principally from the United Kingdom. Since the outbreak of the war in 1914, however, imports have practically ceased, and in 1917-18 and 1920-21 fairly large quantities were exported to South Africa and Japan. Details of imports and exports for the years 1919-20 to 1923-24 are given hereunder:—

MALT.—IMPORTS AND EXPORTS, AUSTRALIA, 1919-20 TO 1923-24.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1919-20 .. ..	..	..	..	..	..	..
1920-21	5	3	139,908	80,575	139,903	80,567
1921-22	40	43	7,553	3,238	7,513	3,195
1922-23	28	63	4,618	2,006	4,590	1,943
1923-24	28	13	3,573	1,550	3,545	1,537

6. Value of Barley Crop.—The estimated values of the barley crop of Australia for the seasons 1919-20 to 1923-24 were £1,360,411, £1,522,915, £1,139,736, £1,220,703, and £879,811. The extent to which the several States have contributed to the total in 1923-24 is shown in the following table:—

BARLEY.—VALUE OF CROP (a), 1923-24.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	F.C.T.	Australia.
Total value ..	£17,250	£289,273	£836	£532,741	£17,801	£21,860	£50	£879,811
Value per acre	£3/19/4	£5/2/3	£1/5/2	£2/17/10	£2/1/1	£5/3/4	£7/2/10	£3/8/-

(a) Exclusive of the value of straw.

§ 8. Other Grain and Pulse Crops.

In addition to the grain crops already specified, the only other grain and pulse crops extensively grown in Australia are beans, peas, and rye. The total area under the two former crops for the season 1923-24 was 41,343 acres, giving a yield of 840,319 bushels, or an average of 20.33 bushels per acre, being greater than the average yield for the decennium ended 1923-24, which was 16.18 bushels per acre. The States in which the greatest area is devoted to beans and peas are Tasmania, Victoria and South Australia. The total area under rye in Australia during the season 1923-24 was 2,864 acres, yielding 42,741 bushels, and giving an average of 14.92 bushels per acre. This was higher than the average for the past ten seasons, which was 10.98 bushels per acre. Over 54 per cent. of the rye grown during the season was produced in New South Wales, and 26 per cent. in Victoria. In addition to these grain crops a small area of rice has for some years been cultivated in Queensland and the Northern Territory. The results obtained, however, have not up to the present been very satisfactory. Should rice-growing be seriously taken up in Australia, it is probable that large tracts of country in the northern parts of Queensland and Western Australia, and in the Northern Territory, will be found well suited to its cultivation.

§ 9. Potatoes.

1. *Progress of Cultivation.*—(i) *Area and Yield.* The principal potato-growing State is Victoria, which possesses peculiar advantages for the growth of the tuber. The rainfall is generally satisfactory, while the atmosphere is sufficiently dry to be unfavourable to the spread of Irish blight, consequently potatoes are grown in nearly every district except in the wheat belt. Tasmania comes next in order of importance, followed by New South Wales.

The area and production of potatoes in each State during the last five years are given hereunder:—

POTATOES—AREA AND YIELD, 1919-20 TO 1923-24.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
AREA.								
1919-20 ..	Acres. 20,036	Acres. 53,918	Acres. 4,432	Acres. 3,411	Acres. 3,585	Acres. 28,511	Acres. 7	Acres. 113,900
1920-21 ..	27,667	62,687	8,770	4,811	4,254	32,000	6	140,195
1921-22 ..	29,491	63,895	9,553	5,795	3,612	36,795	3	149,144
1922-23 ..	22,556	61,741	7,649	5,749	3,621	34,407	12	135,735
1923-24 ..	21,850	59,306	6,127	5,239	4,761	37,040	29	134,352
YIELD.								
1919-20 ..	Tons. 49,962	Tons. 145,888	Tons. 7,844	Tons. 11,020	Tons. 13,240	Tons. 66,225	Tons. 24	Tons. 294,203
1920-21 ..	63,234	171,628	19,068	17,057	13,368	88,679	22	373,056
1921-22 ..	57,825	173,660	16,794	18,573	13,605	107,624	10	388,091
1922-23 ..	35,694	148,354	10,517	17,356	15,198	101,201	32	328,352
1923-24 ..	60,949	238,520	8,878	21,327	17,830	99,936	130	447,570

The production of potatoes in Australia decreased by about 23,500 tons during the past decade, the decline being confined to New South Wales and Tasmania. The average yield during the last ten years amounted to 348,640 tons, which is considerably below the maximum production of 507,153 tons obtained in 1906-7.

(ii) *Average Yield.* The suitability of the soil, climate, and general conditions for potato growing is evidenced by the satisfactory yields per acre which are generally obtained in Australia, despite the little attention paid to this crop, the average yield during the past ten seasons being 2.60 tons per acre. The lowest average yield is that obtained in Queensland with an average of 1.81 tons for the same period.

Particulars for each State for the seasons 1919-20 to 1923-24, and also for the past decennium, are given hereunder :—

POTATOES.—YIELD PER ACRE, 1919-20 TO 1923-24.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1919-20	2.49	2.71	1.77	3.23	3.69	2.32	3.43	2.58
1920-21	2.29	2.74	2.17	3.55	3.14	2.77	3.67	2.66
1921-22	1.96	2.72	1.76	3.21	3.77	2.92	3.33	2.60
1922-23	1.58	2.40	1.37	3.02	4.20	2.94	2.67	2.42
1923-24	2.79	4.02	1.45	4.07	3.74	2.70	4.48	3.33
Average for 10 seasons 1914-24	2.01	2.84	1.81	3.28	3.25	2.58	3.20	2.60

The decline in the average yield per acre in Australia was largely responsible for the decreased production during the last ten years. This decline was in evidence throughout the States with the exception of Victoria, and for Australia as a whole averaged 3 cwt. per acre. In Tasmania, where the decrease was highest, the average yield diminished by 17 cwt. during the past decennium. The comparatively low yield per acre is due to the neglect of rotation and parsimony in the application of manures. Rotation and manuring are carefully studied in many European countries, with the result that the production per acre is double that obtained in Australia.

(iii) *Relation to Population.* The average annual production of potatoes per head of the population of Australia for the past five seasons was approximately 148 lbs. In Tasmania, where this crop is of far greater importance in relation to population than is the case in any other State, the production per head in 1906-7 was nearly a ton, while for the past five seasons it has averaged about 8½ cwt. Details for the seasons 1919-20 to 1923-24 are as follows :—

POTATOES.—PRODUCTION PER 1,000 OF POPULATION, 1919-20 TO 1923-24.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1919-20	25	97	11	23	40	315	12	55
1920-21	30	112	25	35	40	417	11	69
1921-22	27	112	22	37	41	493	5	70
1922-23	16	93	13	34	44	462	13	58
1923-24	28	147	11	41	50	456	50	78

2. *Imports and Exports.*—Under normal conditions there is a moderate export trade in potatoes carried on by Australia principally with New Zealand, the Pacific Islands and the Philippine Islands. On the other hand, when the recurrence of droughts causes

a shortage in some of the States, importations are usually made from New Zealand. The quantities and values of the Australian oversea imports and exports of potatoes during the past five years are shown in the following table :—

POTATOES.—IMPORTS AND EXPORTS, AUSTRALIA, 1919-20 TO 1923-24.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£	Tons.	£
1919-20	2,614	41,391	1,455	22,954	—	1,159
1920-21	56	746	1,130	13,222	1,074	12,476
1921-22	59	499	2,540	21,611	2,481	21,112
1922-23	72	957	2,061	23,599	1,989	22,642
1923-24	38	639	3,951	29,974	3,913	29,335

NOTE.—The minus sign — signifies net imports.

3. Value of Potato Crop.—The estimated value of the potato crop of each State for the season 1923-24 is given in the following table, together with the value per acre :—

POTATOES.—VALUE OF CROP, 1923-24.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
Total value ..	£406,330	£1,073,340	£131,505	£147,139	£168,122	£505,540	£870	£2,432,846
Value per acre	£18/11/11	£18/2/-	£21/9/3	£28/1/8	£35/6/3	£13/13/-	£30	£18/2/2

§ 10. Other Root and Tuber Crops.

1. Nature and Extent.—Root crops, other than potatoes, are not extensively grown in Australia, the total area devoted to them for the season 1923-24 being only 16,889 acres. The principal of these crops are onions, mangolds, sugar beet, turnips, and "sweet potatoes." Of these, onions, sugar beet and mangolds are most largely grown in Victoria, turnips in Tasmania, and sweet potatoes in Queensland. The total area under onions in Australia during the season 1923-24 was 5,334 acres, giving a yield of 35,351 tons, and averaging 6.63 tons per acre. The area devoted in 1923-24 to root crops other than potatoes and onions, viz., 11,555 acres, yielded 90,196 tons, and gave an average of 7.81 tons per acre. The areas and yields here given are exclusive of the production of "market gardens," reference to which is made further on.

2. Imports and Exports.—The only root crop, other than potatoes, in which any considerable oversea trade is carried on by Australia is that of onions. During the past five years 3,459 tons, valued at £54,594, were imported, principally from New Zealand, Japan, and the United States, while during the same period, the exports totalled 28,374 tons, valued at £274,699, and were shipped mainly to New Zealand, the Pacific Islands, the Philippine Islands, and the United States of America.

§ 11. Hay.

1. Nature and Extent.—(i) *Area and Yield.* As already stated, the chief crop in Australia is wheat grown for grain. Next in importance is hay, which for the season ended 1923-24 averaged over 20 per cent. of the total area cropped. In most European countries the hay consists almost entirely of meadow and other grasses, but in Australia a very large proportion is composed of wheat and oats. Large quantities of lucerne hay are made also, particularly in New South Wales and Queensland. The area under hay of all kinds in the several States during the last five years is given hereunder. The progress from 1860 onwards may be traced from the graph accompanying this chapter.

HAY.—AREA AND YIELD, 1919-20 TO 1923-24.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	N. Ter.	Fed. Cap. Ter.	Aus-tralia.
AREA.									
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1919-20	936,729	1,116,998	48,843	590,835	327,498	102,908	100	1,671	3,125,582
1920-21	853,109	1,333,397	94,212	570,865	266,824	113,618	10	1,154	3,233,189
1921-22	749,738	1,159,135	98,155	559,285	335,561	91,443	12	1,190	2,994,519
1922-23	888,250	1,261,408	78,050	577,810	431,633	100,088	10	1,207	3,338,456
1923-24	1,022,118	1,277,606	46,909	631,267	329,534	97,183	10	1,599	3,406,226
YIELD.									
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1919-20	578,232	1,242,489	41,804	598,954	379,025	143,053	500	2,354	2,986,411
1920-21	1,372,801	1,984,854	116,709	769,050	264,244	176,798	20	1,855	4,686,331
1921-22	1,027,833	1,548,453	138,675	680,201	368,720	136,991	25	1,291	3,902,189
1922-23	1,059,529	1,665,089	101,069	697,189	457,371	167,282	10	1,450	4,148,989
1923-24	1,170,737	1,541,287	43,407	781,768	368,122	144,298	5	2,310	4,051,934

In all the States marked fluctuations occur yearly in the area under hay. These fluctuations are due to various causes, the principal being the variations in the relative prices of grain and hay, and the favourableness or otherwise of the season for a grain crop. Thus, crops originally sown for grain are frequently cut for hay owing to the improved price of that commodity, or owing to the fact that the outlook for grain is not satisfactory. On the other hand, improved grain prices or the prospect of a heavy yield will frequently cause crops originally intended for hay to be left for grain. The area under hay in Australia during the season 1915-16, *i.e.*, 3,597,771 acres, was the highest on record, whilst the average during the past decennium amounted to 2,990,204 acres.

(ii) *Average Yield.* The States in which the highest average yields per acre have been obtained during the last decennium are Tasmania, Queensland, and Victoria, in the two former of which States also the smallest areas are devoted to this crop. For the same period the lowest yield for Australia as a whole was that of 13 cwt. per acre in 1914-15; while the highest was that of 31½ cwt. in 1915-16, followed closely by 29 cwt.

obtained in 1920-21. The average for the decennium was 24 cwt. Particulars for the several States for the seasons 1919-20 to 1923-24, and the average for the last ten years, are given hereunder :—

HAY.—YIELD PER ACRE, 1919-20 TO 1923-24.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	N. Ter.	Fed. Cap. Ter.	Australia.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1919-20	0.62	1.11	0.86	1.01	1.16	1.39	5.00	1.41	0.96
1920-21	1.61	1.49	1.24	1.35	0.99	1.56	2.00	1.61	1.45
1921-22	1.37	1.34	1.41	1.22	1.10	1.50	2.08	1.08	1.30
1922-23	1.19	1.32	1.29	1.21	1.06	1.67	1.00	1.20	1.24
1923-24	1.15	1.21	0.93	1.24	1.12	1.48	0.50	1.44	1.19
Average for 10 seasons 1914-24	1.17	1.29	1.29	1.19	1.02	1.40	2.60	1.44	1.21

(iii) *Relation to Population.* During the past five seasons the Australian hay production per head of population has varied between $11\frac{1}{4}$ cwt. in 1919-20 and $17\frac{1}{2}$ cwt. in 1920-21; averaging over 14 cwt. per head for the period. Hay production per head of population is highest in South Australia. Details for the seasons 1919-20 to 1923-24 are given hereunder :—

HAY.—YIELD PER 1,000 OF POPULATION, 1919-20 TO 1923-24.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	N. Ter.	Fed. Cap. Ter.	Australia.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1919-20	284	827	57	1,244	1,158	681	110	1,227	563
1920-21	657	873	155	1,566	799	831	5	941	866
1921-22	483	998	180	1,353	1,100	627	7	625	708
1922-23	488	1,047	128	1,359	1,331	764	3	567	737
1923-24	530	948	54	1,490	1,040	659	1	881	705

(iv) *Varieties Grown.* Particulars concerning the kinds of crop cut for hay are furnished in the returns prepared by five of the States. In the case of Tasmania the bulk consists of oaten hay; full particulars, however, are not available for that State.

Details for the past five seasons are given in the following table :—

HAY.—VARIETIES GROWN, 1919-20 TO 1923-24.

Varieties.	1919-20.	1920-21.	1921-22.	1922-23.	1923-24.
	Acres.	Acres.	Acres.	Acres.	Acres.
NEW SOUTH WALES—					
Wheaten	716,341	520,417	467,068	597,959	695,369
Oaten	171,113	259,022	203,074	216,136	241,161
Barley	1,718	1,832	899	1,265	1,584
Lucerne	46,542	70,995	77,527	72,337	83,256
Other	1,015	843	1,170	553	748
Total	936,729	853,109	749,738	888,250	1,022,118

HAY.—VARIETIES GROWN, 1919-20 TO 1923-24—*continued.*

Varieties.	1919-20.	1920-21.	1921-22.	1922-23.	1923-24.
	Acres.	Acres.	Acres.	Acres.	Acres.
VICTORIA—					
Wheaten	417,221	165,502	130,181	213,219	163,826
Oaten	681,179	1,140,578	1,001,256	1,021,216	1,084,136
Lucerne, etc.	18,598	27,317	27,698	26,973	29,644
Total ..	1,116,998	1,333,397	1,159,135	1,261,408	1,277,606
QUEENSLAND—					
Wheaten	11,710	14,024	13,837	8,834	8,714
Oaten	2,488	19,229	12,480	4,542	1,344
Lucerne	29,348	53,059	67,183	60,042	33,505
Other	5,297	7,900	4,655	4,632	3,346
Total ..	48,843	94,212	98,155	78,050	46,909
SOUTH AUSTRALIA—					
Wheaten	450,371	329,543	325,769	359,834	381,962
Oaten	134,775	231,446	225,878	208,769	234,899
Lucerne	2,167	3,938	4,145	4,973	7,270
Other	3,522	5,938	3,493	4,234	7,136
Total ..	590,835	570,865	559,285	577,810	631,267
WESTERN AUSTRALIA—					
Wheaten	234,772	169,264	222,209	307,142	223,770
Oaten	91,152	96,228	111,386	123,232	103,723
Lucerne	206	146	125	142	175
Other	1,368	1,186	1,841	1,117	1,866
Total ..	327,498	266,824	335,561	431,633	329,534

Wheaten hay is the principal hay crop in New South Wales, South Australia, and Western Australia, oaten hay in Victoria and Tasmania, and lucerne in Queensland.

2. *Comparison with Other Countries.*—As already noted, the hay crops of most European countries consist of grasses of various kinds, amongst which clover, lucerne, sainfoin and rye grass occupy prominent places. The statistics of hay production in these countries are not prepared on a uniform basis, consequently any attempt to furnish extensive comparisons would be misleading. It may be noted, however, that in Great Britain the production of hay from clover, sainfoin, etc., for the year 1924 amounted to 3,507,000 tons from 2,167,358 acres, while from permanent grasses a yield of 5,466,000 tons of hay was obtained from 4,656,213 acres, giving a total of 8,973,000 tons from 6,823,571 acres, or about 26½ cwt. per acre.

3. *Imports and Exports.*—Under normal conditions hay, whether whole or in the form of chaff, is somewhat bulky for oversea trade, and consequently does not in such circumstances figure largely amongst the imports and exports of Australia. During 1923-24, 162 tons were imported, while the exports amounted to 10,237 tons, valued at £60,937, the principal purchases being made by New Zealand, the Philippine Islands, Malaya (British) and India.

4. Value of Hay Crop.—The following table shows the value and the value per acre of the hay crop of the several States for the season 1923-24 :—

HAY.—VALUE OF CROP, 1923-24.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Cap. Ter.	Australia.
Total Value ..	£ 9,476,960	£ 6,165,148	£ 402,172	£ 2,638,467	£ 1,447,140	£ 562,770	£ 5	£ 19,090	£ 20,711,752
Value per acre	£9/5/5	£4/16/6	£8/11/6	£4/3/7	£4/7/10	£5/15/10	£0/10/0	£11/18/9	£6/1/7

§ 12. Green Forage.

1. Nature and Extent.—(i) *Area*. In all the States a considerable area is devoted to the production of green forage, mainly in connexion with the dairying industry. The total area so cropped during the season 1923-24 was 961,311 acres, to which New South Wales contributed nearly 53 per cent., or 429,765 acres, the bulk of which consisted of wheat deemed unsuitable for the production of grain or hay. Under normal conditions the principal crops cut for green forage are maize, sorghum, oats, barley, rye, rape, and lucerne, while small quantities of sugar-cane also are so used. Particulars concerning the area under green forage in the several States during each of the last five years are given in the following table :—

GREEN FORAGE.—AREA, 1919-20 TO 1923-24.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1919-20	1,007,478	89,802	157,568	114,126	27,007	5,271	..	28	1,401,280
1920-21	112,003	79,524	142,554	40,678	26,620	5,575	..	..	406,954
1921-22	128,965	89,410	147,135	50,121	27,396	9,481	..	..	452,508
1922-23	499,679	102,451	188,636	61,000	32,997	9,073	..	35	893,871
1923-24	429,765	107,371	306,693	55,282	51,754	10,389	50	7	961,311

(ii) *Relation to Population*. Particulars of the area under green forage per 1,000 of the population for the seasons 1919-20 to 1923-24 are given hereunder :—

GREEN FORAGE.—AREA PER 1,000 OF POPULATION, 1919-20 TO 1923-24.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Cap. Ter.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1919-20 ..	494	60	214	237	82	25	..	15	264
1920-21 ..	54	52	190	83	80	26	..	..	75
1921-22 ..	61	58	191	100	82	43	..	..	82
1922-23 ..	230	64	239	119	96	41	..	14	159
1923-24 ..	195	66	378	105	146	47	14	3	167

2. Value of Green Forage Crops.—The value of these crops is variously estimated in the several States, and the Australian total for the season 1923-24 may be taken approximately as £3,559,344, or about £3 14s. 1d. per acre.

§ 13. Sugar-cane and Sugar-beet.

1. **Sugar-cane.**—(i) *Area.* Sugar-cane for sugar-making purposes is grown only in Queensland and New South Wales, and much more extensively in the former than in the latter. Thus, of a total area of 237,280 acres under sugar-cane in Australia for the season 1923-24, there were 219,965 acres, or about 92½ per cent., in Queensland. Sugar-cane growing appears to have been started in Australia in or about 1862, as the earliest statistical record of sugar-cane as a crop is that which credits Queensland with an area of 20 acres for the season 1862-3. In the following season the New South Wales returns show an area of 2 acres under this crop. The area under cane in New South Wales reached its maximum in 1895-6 with a total of 32,927 acres. Thenceforward with slight variations it gradually fell to 10,490 acres in 1918-19, but from that year onwards considerable improvement has taken place, nearly 7,000 acres being added to the canefields during the past five years. In Queensland, although fluctuations in area are manifest, the general trend has been upwards, the acreage under cane for the season 1923-24 being the highest on record. The area under sugar-cane in Australia from 1919-20 is given in the following table, and particulars for earlier years may be seen from the accompanying graphs:—

SUGAR-CANE.—AREA, 1919-20 TO 1923-24.

Season.	New South Wales.		Queensland.		Australia.		
	Productive.	Unproductive.	Productive.	Unproductive.	Productive.	Unproductive.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1919-20 ..	4,827	5,741	84,877	63,592	89,704	69,333	159,037
1920-21 ..	5,519	5,863	89,142	73,477	94,661	79,340	174,001
1921-22 ..	5,400	7,380	122,956	61,557	128,356	68,937	197,293
1922-23 ..	5,879	8,704	140,850	61,453	146,729	70,157	216,886
1923-24 ..	6,733	10,582	138,742	81,223	145,475	91,805	237,280

(ii) *Productive and Unproductive Cane.* The areas given in the preceding table represent sugar-cane grown for purposes other than green forage. The whole area was not necessarily cut for crushing during any one season, there being always a considerable amount of young and "stand over" cane, as well as a small quantity required for plants. The season in which the highest acreage is recorded may not show the greatest area of productive cane cut for crushing, as was evidenced in 1923-24, when, although the total acreage established a record, the area cut was less than in the previous year.

(iii) *Yield of Cane and Sugar.* Queensland statistics of the production of sugar-cane are not available for dates prior to the season 1897-8. In that season the total for Australia was 1,073,883 tons, as against the maximum production of 2,879,092 tons in 1917-18. The second highest yield was in the season 1921-22, with a total of 2,436,890 tons. The average production of cane during the decennium ended 1923-24 was 1,954,834 tons. The three highest yields of sugar were in 1917-18, 1922-23, and 1921-22, the quantities

being 327,589 tons, 306,365 tons, and 300,004 tons respectively. The decennial average was 237,627 tons of sugar. Particulars relative to the total yields of cane and sugar for the past five years are as follows :—

SUGAR-CANE.—YIELD OF CANE AND SUGAR, 1919-20 TO 1923-24.

Season.	New South Wales.		Queensland.		Australia.	
	Cane.	Sugar.	Cane.	Sugar.	Cane.	Sugar.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1919-20 ..	91,321	10,837	1,258,760	162,136	1,350,081	172,973
1920-21 ..	131,313	15,124	1,339,455	167,401	1,470,768	182,525
1921-22 ..	149,474	17,806	2,287,416	282,198	2,436,890	300,004
1922-23 ..	147,992	18,580	2,67,990	287,785	2,35,982	306,365
1923-24 ..	132,084	16,829	2,045,808	269,175	2,177,892	236,004

The cane cut in 1924 was approximately 3,170,000 tons. The season was very favourable, and, while on account of the heavier rainfall the sugar content of the cane was not so high as in the two previous years, the record yield of 435,768 tons of sugar was obtained from the crushing. In accordance with the agreement made by the Commonwealth Government respecting the yields for the three years 1920, 1921, and 1922, the sugar industry progressed considerably. The guaranteed price induced mill-owners to make considerable additions to plant, thereby increasing the efficiency of the mills, while farmers in nearly every district put new areas under cane, using in many cases land that had lain unproductive for years.

A preliminary estimate of the production of sugar in 1925 places the amount at 500,000 tons, but later advices, particularly from the southern districts of Queensland, show that this figure will have to be materially reduced.

Large quantities of molasses are produced as a by-product in the sugar mills; details for a series of years of the quantity produced and proportions used for distilling, fuel, manure and other purposes will be found in Chapter XXII.—“Manufacturing.”

(iv) *Average Yield of Cane and Sugar.* The average yield per acre of productive cane is much higher in New South Wales than in Queensland, the average during the last decade being 25.37 tons for the former and 16.86 for the latter State. For some years prior to 1910-11, the yield in New South Wales remained practically constant at about 21 tons per acre. Since that year, the average yield per acre has shown an upward tendency, reaching 30 tons or over during 1913-14, 1914-15, and 1917-18. The climatic conditions affecting the long coastal area where this industry is situated in Queensland are largely responsible for the great variations in the yields of sugar for that State, the figures ranging during the past decennium from 12.20 tons per acre in 1915-16 to 24.88 tons in 1917-18.

The greatest production of sugar per acre crushed during the past quinquennium occurred in 1917-18, when 2.87 tons were obtained, the respective crushings for New South Wales and Queensland averaging 3.56 and 2.83 tons. The average yield per acre for the past ten years was 2.99 tons in New South Wales, and 2.05 tons in Queensland.

(v) *Quality of Cane.* The quantity of cane required to produce a ton of sugar varies not only with the district in which the cane is grown, but also with the season, and for the decennium ended 1923-24 averaged 8.23 tons, the average production of sugar being 12.15 per cent. of the weight of cane crushed. The systematic study of beet culture in European countries has shown that by suitable methods the sugar contents of the root can be greatly increased, and it is believed that a similar improvement can be effected in the yield from sugar-cane.

SUGAR-CANE AND SUGAR.—YIELD PER ACRE, 1919-20 TO 1923-24.

Season.	New South Wales.			Queensland.			Australia.		
	Cane per acre Crushed.	Sugar per acre Crushed.	Cane to each ton of Sugar.	Cane per acre Crushed.	Sugar per acre Crushed.	Cane to each ton of Sugar.	Cane per acre Crushed.	Sugar per acre Crushed.	Cane to each ton of Sugar.
1919-20	Tons. 18.92	Tons. 2.25	Tons. 8.43	Tons. 14.83	Tons. 1.91	Tons. 7.76	Tons. 15.05	Tons. 1.93	Tons. 7.81
1920-21	23.79	2.74	8.68	15.03	1.88	8.00	15.54	1.93	8.06
1921-22	27.68	3.30	8.40	18.60	2.30	8.11	18.99	2.34	8.12
1922-23	25.17	3.16	7.97	15.39	2.04	7.53	15.78	2.09	7.56
1923-24	19.62	2.50	7.85	14.75	1.94	7.60	14.97	1.97	7.60
Average 10 seasons 1914-24 ..	25.37	2.99	8.50	16.86	2.05	8.20	17.28	2.10	8.23

The Bureau of Sugar Experiment Stations established in Queensland is rendering excellent service to the sugar industry in that State, by advocating and demonstrating better methods of cultivation, the use of green manures, lime, and fertilizers, together with the introduction and distribution of improved varieties of sugar cane.

(vi) *Relation to Population.* The yield of sugar in Australia during the five years 1919-20 to 1923-24 was not sufficient to supply local requirements, the average production during the period amounting to 101 lbs. per head of population, while the consumption was estimated to average 117 lbs. per head. Details for the period 1919-20 to 1923-24 are as follows:—

SUGAR.—PRODUCTION PER HEAD OF POPULATION, 1919-20 TO 1923-24.

State.	1919-20.	1920-21.	1921-22.	1922-23.	1923-24.
New South Wales ..	lbs. 12	lbs. 16	lbs. 19	lbs. 19	lbs. 17
Queensland	492	498	821	818	743
Australia	73	76	122	122	111

If estimated figures of the output for the years 1924 and 1925 be realized, the production during the five seasons ended 1925-26 will be considerably in excess of local requirements.

2. *Sugar-beet.*—(i) *Area and Yield.* The following table shows the acreage under sugar-beet, and the production in Victoria during the past five seasons:—

SUGAR-BEET.—AREA AND PRODUCTION IN VICTORIA, 1919-20 TO 1923-24.

Particulars.	1919-20.	1920-21.	1921-22.	1922-23.	1923-24.
Area harvested .. acres	1,090	1,180	1,600	2,045	1,937
Production .. tons	13,195	7,147	16,577	20,444	29,512
Average per acre ..	12.11	6.06	10.36	10.00	15.24
Sugar produced ..	1,551	833	1,872	2,784	3,499

The 1923-24 season was a very favourable one in every respect. Growers were paid 37s. 6d. a ton for their beets, and a profit of £19,016 was realized by the Sugar-beet Factory as the result of the year's operations.

(ii) *Encouragement of Beet-growing.* During recent years an effort has been made to revive the sugar-beet industry in Victoria. The State Government is fast completing a comprehensive irrigation scheme at Maffra, where the sugar-beet factory is situated, which will make available for beet-growing large areas of land hitherto unsuitable. In view of the prospective expansion of the area under beet, the State Government has decided to remodel the factory plant, and the preliminary arrangements in connexion with this work are now in hand. A sum of £65,000 has been voted for the purpose, and an engineer has been appointed to proceed with the work. A fine grade of white sugar is manufactured at Maffra, and considerable quantities of beet pulp and molasses are distributed for stock feed.

3. Sugar Bounties.—The provision of bounties or similar aids to the sugar-growers of Australia early occupied the attention of the Commonwealth Parliament, the object in view being that of assisting the industry, and at the same time diminishing the employment of coloured labour in connexion therewith. An account of the various Acts in connexion with sugar bounties and sugar excise tariffs will be found on pages 394 to 396 of Year Book No. 6. In 1912 the Sugar Excise Repeal Act and the Sugar Bounty Abolition Act were passed by the Federal Parliament, conditionally on the Queensland Parliament approving of legislation prohibiting the employment of coloured labour in connexion with the industry. The State Sugar Cultivation Act, the Sugar Growers Act, and the Sugar Growers' Employees Act of 1913, having been approved of, the 1912 Federal Acts, which repeal all previous enactments in regard to excise on sugar and bounty on cane, came into force by proclamation in July, 1913.

4. Sugar Purchase by Commonwealth Government.—Particulars of the purchase by the Commonwealth Government of the Australian sugar output from 1915 onwards, together with the agreement made between the Commonwealth and Queensland Governments covering the three seasons ended 1922, will be found on page 277 of Year Book No. 15, 1922.

On the termination of the 1922 sugar season in June, 1923, the Commonwealth Government announced that the agreement fixing the price of raw sugar at £30 6s. 8d. per ton would not be renewed. The embargo against the importation of black-grown sugar was to be continued for a further period of two years from date, on condition that a pool, free from Commonwealth Government control, would be formed to buy raw sugar for the ensuing season at not more than £27 per ton, and to arrange with the Colonial Sugar Refining Company and the Millaquin Company for refining and distribution. Allowing three months for the disposal of the 57,500 tons of carry-over sugar, the retail price was to be reduced in October, 1923, to 4½d. per lb., while special concessions were to be made to manufacturers using sugar in goods for export.

The price of raw sugar in the 1924–25 season was to be fixed by a competent tribunal after investigation, such price not to exceed £27 per ton. The embargo was to be definitely withdrawn on 30th June, 1925, and after that date the sugar industry was to be protected from unfair competition by means of the Customs Tariff. In terms of the Commonwealth Government's proposals a tribunal was appointed in April, 1924, and, after investigation, determined that the present price of £27 per ton for raw sugar should be continued for the 1924–25 season.

A further agreement was reached between the Commonwealth and Queensland Governments in 1925, by which it was arranged that the embargo on the importation of foreign sugar should be extended for three years from 1st September, 1925. It was estimated that 60 per cent. of the production in 1925 would be required for home consumption, leaving the remaining 40 per cent. to be exported. The price payable for the raw sugar needed for home consumption was fixed at £27 per ton, less £1 per ton to defray administrative and general expenses of the Sugar Board, and to provide special concessions to certain consumers of sugar, while for that portion reserved for export the price was fixed at £9 10s. per ton, subject to realization adjustments.

5. Imports and Exports of Sugar.—The production of sugar in Australia during the five years ended 1923–24 was not sufficient to supply the growing requirements of Australian consumption. It was found necessary to import annually on the average

some 42,278 tons, valued at £2,045,205, the principal countries engaged in supplying this commodity being Java and Fiji. Particulars concerning the imports and exports of cane sugar for the past five years are as follows :—

CANE SUGAR.—IMPORTS AND EXPORTS, AUSTRALIA, 1919-20 TO 1923-24.

Year.	Oversea Imports.		Oversea Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£	Tons.	£
1919-20	112,805	4,359,203	2,825	83,729	109,980	4,275,474
1920-21	116,274	6,560,373	4,190	220,965	112,084	6,339,408
1921-22	6,888	174,850	1,918	60,145	4,970	114,705
1922-23	4,551	87,317	5,127	159,897	- 576	- 72,580
1923-24	525	12,200	15,591	443,183	- 15,066	- 430,983

Note.—The minus sign (—) signifies net exports.

§ 14. Vineyards.

1. *Progress of Cultivation.*—(i) *Area of Vineyards.* The date of introduction of the vine into Australia has been variously set down by different investigators, the years 1815 and 1828 being principally favoured. It would seem, however, that plants were brought out with the first fleet which initiated the colonization of Australia in 1788, consequently the Australian vine is as old as Australian settlement. As already mentioned, a report by Governor Hunter gives the area under vines in 1797 as 8 acres. From New South Wales the cultivation spread to Victoria and South Australia, and these States have now far outstripped the mother State in the area under this crop. In Queensland and Western Australia also, vine-growing has been carried on for many years, but the progress of the industry in these States has been negligible. In Tasmania the climate is not favourable to the growth of grapes. The purposes for which grapes are grown in Australia are three in number, viz. :—(a) for wine-making, (b) for table use, and (c) for drying. The total area under vines in the several States during each of the last five years is given in the following table, while particulars from 1860 onwards may be gathered from the graph accompanying this chapter :—

VINEYARDS.—AREA, 1919-20 TO 1923-24.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1919-20	8,923	27,441	1,203	32,784	2,975	There are no vineyards in Tasmania.	73,326
1920-21	10,783	29,255	1,256	36,661	3,210		81,165
1921-22	12,583	33,175	1,281	41,424	3,951		92,414
1922-23	13,734	38,892	1,242	46,750	4,858		105,476
1923-24	14,559	42,599	1,269	49,303	5,235		112,965

The area under vines in Australia amounted to 65,673 acres in 1904-5. From that year onwards a gradual decline set in, and at the end of 1914-15 the acreage had decreased to 60,985. Since that date, however, as the result of satisfactory annual increases, the 1904-5 figure was soon exceeded, and the total for 1923-24 was the highest recorded.

The wine-growing industry in Australia, especially in Victoria and New South Wales, received a severe check by various outbreaks of phylloxera. With a view to the eradication of this disease extensive uprooting of vineyards in the infested areas was undertaken, while further planting within such areas, except with phylloxera-resistant stocks, was prohibited.

(ii) *Wine Production.* The production of wine has not increased as rapidly as the suitability of soil and climate would appear to warrant. The cause is probably twofold, being due in the first place to the fact that Australians are not a wine-drinking people, and consequently do not provide a local market for the product, and in the second to the fact that the new and comparatively unknown wines of Australia find it difficult to establish a footing in the markets of the old world, owing to the competition of well-known brands. Active steps are being taken in various ways to bring the Australian wines under notice, and it may be confidently expected that when their qualities are duly recognized, the wine production of Australia will increase. Particulars of the quantity of wine produced in the several States during the past five seasons are given in the table hereunder :—

WINE.—PRODUCTION, 1919-20 TO 1923-24.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Australia.
	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	No production of wine in Tasmania.	Gallons.
1919-20 ..	717,893	1,634,680	48,495	5,085,939	162,397		7,649,404
1920-21 ..	674,188	2,222,305	71,403	7,893,345	152,979		11,014,220
1921-22 ..	627,105	1,355,066	57,793	6,370,310	152,299		8,562,573
1922-23 ..	771,206	1,717,490	53,171	8,653,579	232,347		11,427,793
1923-24 ..	1,459,778	2,177,127	37,242	10,756,538	233,196		14,663,881

(iii) *Relation to Population.* In relation to population the areas of the vineyards of the several States show an upward tendency during the last five years, the Australian total increasing from 14 to 20 acres per 1,000 of the population during the period. Details for the seasons 1919-20 to 1923-24 are given in the succeeding table :—

VINEYARDS.—AREA PER 1,000 OF POPULATION, 1919-20 TO 1923-24.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1919-20 ..	4	18	2	68	9	..	14
1920-21 ..	5	19	2	75	10	..	15
1921-22 ..	6	21	2	82	12	..	17
1922-23 ..	6	24	2	91	14	..	19
1923-24 ..	7	26	2	94	15	..	20

2. *Imports and Exports of Wine.*—(i) *Imports.* The principal countries of origin of wine imported into Australia are France, Spain, Portugal, and Italy, the bulk of the sparkling wines coming from France. Particulars relative to the importations of wine into Australia during the past five years are given hereunder :—

WINE.—IMPORTS, AUSTRALIA, 1919-20 TO 1923-24.

Year.	Quantity.			Value.		
	Sparkling.	Other.	Total.	Sparkling.	Other.	Total.
	Gallons.	Gallons.	Gallons.	£	£	£
1919-20 ..	34,383	57,211	91,594	118,164	50,112	168,276
1920-21 ..	39,665	63,824	103,489	135,169	58,248	193,417
1921-22 ..	7,398	37,814	45,212	20,781	35,830	56,611
1922-23 ..	15,368	43,199	58,567	41,305	32,692	73,997
1923-24 ..	21,770	54,988	76,758	56,069	38,434	94,503

(ii) *Exports.* The principal countries to which wine is exported from Australia are the United Kingdom and New Zealand, a small but fairly regular export trade being also carried on with India, Ceylon, and the Pacific Islands. Details concerning the exports of wine from Australia during the past five years are given in the following table :—

WINE.—EXPORTS, AUSTRALIA, 1919-20 TO 1923-24.

Year.	Quantity.			Value.		
	Sparkling.	Other.	Total.	Sparkling.	Other.	Total.
	Gallons.	Gallons.	Gallons.	£	£	£
1919-20 ..	6,112	795,049	801,161	12,482	221,741	234,223
1920-21 ..	9,669	1,098,678	1,108,347	19,105	291,856	310,961
1921-22 ..	2,177	602,853	605,030	5,451	155,487	160,938
1922-23 ..	2,607	703,710	706,317	5,626	159,368	164,994
1923-24 ..	3,601	987,703	991,304	7,180	210,132	217,312

3. Other Viticultural Products.—(i) *Table Grapes.* In addition to grapes for wine-making purposes, large quantities are grown in all the States for table use, while, particularly in Victoria and South Australia, the drying of raisins and currants is also carried on. The quantities of table grapes grown in the several States during the past five seasons are as follows :—

TABLE GRAPES.—PRODUCTION, 1919-20 TO 1923-24.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Australia.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1919-20 ..	2,678	3,502	613	1,129	2,161	..	10,083
1920-21 ..	2,660	2,471	649	955	2,088	..	8,823
1921-22 ..	2,914	3,075	602	1,027	1,894	..	9,512
1922-23 ..	3,513	3,304	570	1,314	2,344	..	11,045
1923-24 ..	3,983	2,726	1,038	1,056	2,662	..	11,465

(ii) *Raisins and Currants.* Statistics of the quantities of raisins and currants dried during each of the past five seasons are given in the following table :—

RAISINS AND CURRANTS.—QUANTITIES DRIED, 1919-20 TO 1923-24.

Season.	N. S. Wales.		Victoria.		South Aust.		Western Aust.		Australia.	
	Raisins.	Currants.	Raisins.	Currants.	Raisins.	Currants.	Raisins.	Currants.	Raisins.	Currants.
	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.
1919-20 ..	7,084	2,465	211,307	55,661	58,502	80,400	3,923	5,090	280,816	143,616
1920-21 ..	4,448	2,469	116,887	62,919	39,534	65,307	7,308	5,856	168,177	136,551
1921-22 ..	6,696	4,189	190,451	75,042	66,083	78,534	6,790	6,371	270,020	162,136
1922-23 ..	11,253	5,768	285,520	98,081	69,261	96,807	6,748	9,250	372,782	209,906
1923-24 ..	16,967	6,658	438,827	150,867	125,006	131,000	9,606	15,769	590,406	304,294
Average 10 seasons 1914-24	6,582	3,185	191,704	73,014	58,110	70,324	4,106	5,056	258,502	151,579

4. Imports and Exports of Raisins and Currants.—The following table gives the oversea imports and exports of raisins and currants during each of the past five years :—

**RAISINS AND CURRANTS.—IMPORTS AND EXPORTS, AUSTRALIA,
1919-20 TO 1923-24.**

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
RAISINS.						
	lbs.	£	lbs.	£	lbs.	£
1919-20..	42,169	2,201	8,839,839	359,561	8,797,670	357,360
1920-21..	14,997	1,366	11,816,126	520,293	11,801,129	518,927
1921-22..	219,499	12,021	13,206,052	550,838	12,986,553	538,817
1922-23..	81,018	5,292	19,240,729	721,641	19,159,711	716,349
1923-24..	433,920	8,137	26,399,830	803,365	25,965 910	795,228
CURRANTS.						
1919-20..	2,877	120	7,947,811	246,382	7,944,934	246,262
1920-21..	3,573	300	5,994,580	208,743	5,991,007	208,443
1921-22..	3,577	102	10,941,175	344,238	10,937,598	344,136
1922-23..	3,236	90	14,502,772	404,184	14,499,536	404,094
1923-24..	4,267	178	16,458,561	420,380	16,454,294	420,202

The quantities of raisins and currants imported into Australia were generally greater than the exports for all years prior to 1912, when the increased production in Australia left a surplus available for export. During the last five years the value of the exports exceeded that of the imports by £4,729,818, the average annual excess for the quinquennium being £945,964.

§ 15. Orchards and Fruit Gardens.

1. Progress of Cultivation.—(i) *Area.* Fruit-growing has made rapid progress in Australia during recent years, the area devoted thereto having increased in the past ten years by nearly 60,000 acres. This figure would have been much larger if unsatisfactory marketing arrangements had not caused a temporary decline of 7,304 acres during the past two seasons. The States in which the decennial increase is most marked are :—New South Wales, 20,915 acres; Victoria, 18,387 acres; and Queensland, 9,496 acres. During the same period the South Australian fruit-growing area increased by 9,047 acres and the Tasmanian by 1,876 acres, while in Western Australia a decline of 1,799 acres took place since 1913-14. The total area under orchards and fruit gardens in the several States is given in the following table :—

ORCHARDS AND FRUIT GARDENS.—AREA, 1919-20 TO 1923-24.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Cap. Ter.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1919-20 ..	72,802	86,336	24,636	30,617	19,815	37,687	1	271,894
1920-21 ..	75,904	87,768	26,927	31,364	19,570	37,013	5	278,551
1921-22 ..	75,746	89,491	28,035	32,295	19,012	36,565	5	281,149
1922-23 ..	73,134	86,014	29,431	33,003	19,405	34,689	11	275,687
1923-24 ..	72,372	85,570	29,568	33,472	18,776	34,076	11	273,845

(ii) *Varieties and Yield.* The varieties grown differ in various parts of the States, ranging from such fruits as the pineapple, paw-paw, mango, and guava of the tropics, to the strawberry, the raspberry, and the currant of the colder parts of the temperate zone. The principal varieties grown in Victoria are the apple, peach, pear, plum, orange, and apricot. In New South Wales, citrus fruits (orange, lemon, etc.) occupy the leading position, although apples, peaches, plums, pears and bananas are extensively grown. In Queensland, the banana, the pineapple, the orange, the apple, the peach, the plum, and the coconut are the varieties most largely cultivated. In South Australia, in addition to the apple, orange, apricot, peach, plum, and pear, the almond and the olive are extensively grown. In Western Australia, the apple, orange, pear, peach, plum, apricot and fig are the chief varieties. In Tasmania, the apple occupies nearly four-fifths of the fruit-growing area, but small fruits, such as the currant, raspberry, and gooseberry are extensively grown, while the balance of the area is taken up with the pear, apricot, plum, and cherry. The following table gives the acreage under the principal kinds of fruit, and the quantity and value of fruit produced. The acreages are exclusive of young trees not yet bearing. Although statistics of area are not collected annually in Victoria, the acreage under each class of fruit is estimated from data based on the triennial collection of the number of trees, subject to annual variations in the total area under orchards and fruit gardens :—

ORCHARDS AND FRUIT GARDENS.—VARIETIES AND YIELD, 1923-24.

Fruit.		N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Fed. Cap. Ter.	Australia.
Apples	.. acres	8,975	27,044	2,161	9,240	7,699	25,681	11	80,811
	bushels	521,821	1,663,308	105,852	1,143,274	517,247	1,889,826	950	5,842,278
	£	258,300	457,410	54,690	338,418	292,568	493,140	476	1,895,002
Apricots	.. acres	1,493	4,102	79	2,615	525	1,425	..	10,239
	bushels	140,874	352,604	2,570	178,476	43,484	110,439	..	828,447
	£	56,370	114,596	2,249	65,551	27,721	21,230	..	287,717
Bananas	.. acres	1,604	..	11,668	..	6	..	..	13,278
	bushels	142,475	..	1,465,321	..	345	..	..	1,608,141
	£	123,480	..	529,144	..	690	..	..	653,314
Pears	.. acres	2,183	1,182	302	425	407	..	..	4,499
	bushels	233,382	95,443	19,479	51,154	53,221	..	..	452,679
	£	58,350	38,177	9,902	17,904	13,638	..	..	137,971
Nectarines and Peaches	.. acres	7,080	9,326	2,208	2,739	923	63	..	22,339
	bushels	678,608	953,557	103,942	182,256	65,783	4,719	30	1,988,895
	£	197,360	250,858	58,979	62,903	44,165	1,050	10	615,325
Grapes	.. acres	18,429	3,280	2,499	3,719	2,482	..	..	30,409
	bushels	1,762,263	210,595	220,337	345,408	282,255	..	..	2,820,858
	£	671,390	115,827	137,711	138,163	108,880	..	..	1,171,971
Pineapples	.. acres	34	..	3,925	..	..	..	..	3,959
	dozen	4,000	..	982,418	..	..	..	..	986,418
	£	1,700	..	184,203	..	..	..	..	185,903
Pears	.. acres	3,028	8,574	286	1,902	1,043	1,936	..	16,769
	bushels	221,454	858,611	7,408	199,067	62,218	183,349	..	1,532,107
	£	74,610	193,187	5,649	53,009	29,100	43,760	..	399,315
Plums	.. acres	3,426	4,327	1,047	1,903	675	552	..	11,930
	bushels	230,147	241,818	38,977	137,262	48,901	50,654	..	747,759
	£	92,500	42,318	27,609	39,582	23,839	8,470	..	234,318
Other fruits	acres	3,354	6,874	2,221	3,613	708	2,384	..	19,154
	£	190,250	189,016	92,555	103,677	22,834	103,380	4	701,716
Total	.. acres	49,606	64,709	26,396	26,156	14,468	32,041	11	213,387
	£	1,724,310	1,401,389	1,102,691	819,207	563,435	671,030	490	6,282,552

(iii) *Relation to Population.* The acreage of the orchards and fruit gardens of Australia in relation to population has shown a tendency to decrease during the past five years. The Australian figure for 1923-24 amounted to .048 acres per head,

whilst the range amongst the States varied from .033 in New South Wales to .156 acres in Tasmania. Details for orchards and fruit gardens for the years 1919-20 to 1923-24 are as follows :—

**ORCHARDS AND FRUIT GARDENS.—AREA PER 1,000 OF POPULATION,
1919-20 TO 1923-24.**

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N. Ter.	Fed. Cap. Ter.	Aus- tralia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1919-20 ..	36	57	33	64	61	180	..	0.5	51
1920-21 ..	36	57	36	64	59	174	..	3	51
1921-22 ..	36	58	36	64	57	167	..	2	51
1922-23 ..	34	54	37	64	56	158	..	4	49
1923-24 ..	33	53	37	64	53	156	..	4	48

2. Imports and Exports of Fruit.—(i) *General.* A considerable export trade in both fresh and dried fruits is carried on by Australia with overseas countries. The import trade in fresh fruits declined heavily during the past three years, owing to the imposition of a Customs duty of 1d. per lb. on imported bananas, which had hitherto been the chief item of fresh fruit imported into Australia, while the imports of dried fruits at present consist mainly of dates from Mesopotamia. The export trade in both fruits, however, has greatly expanded during the past quinquennium, the value of the shipments during 1923-24 amounting to £2,113,532. Apples constitute the bulk of the fresh fruits exported, although the export of citrus fruits is expanding, and experiments are being conducted in regard to the dispatch of other fruits. Shipments of raisins and currants have developed into large proportions since 1914-15, and are mainly responsible for the increase in the dried fruits exports. Other fruits in the dried state, notably apricots and peaches, are receiving attention from overseas, and in 1922-23 more than £100,000 was realized from these products.

(ii) *Fresh Fruits.* Information with regard to the Australian overseas trade in fresh fruits is given hereunder :—

FRESH FRUITS.—IMPORTS AND EXPORTS, AUSTRALIA, 1919-20 TO 1923-24.

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
1919-20..	8,330,500	95,560	42,722,200	466,910	34,391,700	371,350
1920-21..	11,555,200	130,471	51,686,200	535,525	40,131,000	405,054
1921-22..	2,385,800	29,907	97,343,800	973,726	94,958,000	943,819
1922-23..	2,390,600	28,103	108,391,900	1,040,310	106,001,300	1,012,207
1923-24..	3,473,300	47,343	78,927,000	870,260	75,453,700	822,917

The value of the exports of apples in 1923-24 amounted to £677,315, and of citrus fruits to £45,939.

(iii) *Dried Fruits.* Particulars of overseas imports and exports of dried fruits for the last five years are as follows :—

DRIED FRUITS (a).—IMPORTS AND EXPORTS, AUSTRALIA, 1919-20 TO 1923-24.

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
1919-20..	9,444,713	234,811	18,034,391	643,670	8,589,678	408,859
1920-21..	7,362,341	168,076	19,598,672	806,134	12,236,331	638,058
1921-22..	6,036,379	132,392	25, 55,733	969,457	19,919,354	837,065
1922-23..	10,957,699	189,397	36,047,962	1,232,124	25,090,263	1,042,727
1923-24..	11,091,310	167,366	43,581,329	1,243,272	32,490,019	1,075,906

(a) Including raisins and currants referred to under Vineyards, § 14, 4.

(iv) *Jams and Jellies.* The oversea trade in jams and jellies expanded considerably during the war years, and in 1918-19 the record shipment of 79,277,560 lbs., valued at £1,847,970, was dispatched from Australia. Since that year, however, there has been a heavy decline, and the value of the exports contracted to £77,465 in 1923-24. Particulars relative to imports and exports during each of the last five years are as follows:—

JAMS AND JELLIES.—IMPORTS AND EXPORTS, AUSTRALIA, 1919-20 TO 1923-24.

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
1919-20..	179,480	9,913	44,793,409	1,218,997	44,613,929	1,209,084
1920-21..	379,401	14,543	16,535,335	550,403	16,155,934	535,860
1921-22..	184,993	8,437	5,640,579	164,046	5,455,586	155,609
1922-23..	151,572	8,253	2,605,554	79,396	2,453,982	71,143
1923-24..	138,219	7,597	2,680,047	85,062	2,541,828	77,465

(v) *Preserved Fruit.* Details concerning the quantities and values of preserved fruit imported into and exported from Australia cannot readily be obtained, owing to the fact that in the Customs returns particulars concerning fruit and vegetables are in certain cases combined. The total value of fruit and vegetables, preserved or partly preserved in liquid, or pulped, imported into Australia during 1923-24 was £111,915, and the corresponding value of exports was £498,331.

§ 16. Minor Crops.

1. *General.*—In addition to the leading crops previously dealt with in some detail, there are many others which, owing either to their nature, or to the fact that their cultivation has advanced but little beyond the experimental stage, do not occupy so prominent a position. Some of the more important of these are included under the headings—Market Gardens, Pumpkins and Melons, Nurseries, Grass Seed, Tobacco, Flax, Hops, and Millet. Cotton-growing has recently received considerable attention in the tropical portions of Australia, and the prospects of establishing this industry on a large scale are very favourable. The total area in Australia during the season 1923-24, devoted to crops not dealt with in previous sections, was 151,599 acres, to which cotton and market gardens contribute most largely.

2. **Market Gardens.**—Under this head are included all areas on which mixed vegetables are grown. Where considerable areas are devoted to the production of one vegetable, such for instance as the potato, the onion, the melon, the tomato, etc., the figures are usually not included with market gardens, but are shown either under some specific head, or under some general head as "Other Root Crops," or "All Other Crops." The area under market gardens during each of the last five seasons is given hereunder :—

MARKET GARDENS.—AREA, 1919-20 TO 1923-24.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N. Ter.	Fed. Cap. Ter.	Australia.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1919-20 ..	9,833	12,633	1,752	1,343	2,410	367	..	39	28,377
1920-21 ..	9,888	12,201	2,018	1,471	2,269	386	..	27	28,260
1921-22 ..	8,217	14,304	1,965	1,486	2,274	681	..	27	28,954
1922-23 ..	7,743	14,108	1,838	1,438	2,698	540	..	18	28,383
1923-24 ..	8,526	16,212	1,719	1,448	2,259	478	..	17	30,659

3. **Grass Seed.**—The total area under this crop during 1923-24, exclusive of New South Wales, for which State no figures as to area are available, was 5,092 acres, of which 3,448 acres were in Victoria, 629 acres in Tasmania, 610 acres in Queensland, and 405 acres in South Australia. The total yield for 1923-24, including New South Wales, was 63,386 bushels, valued at £45,756.

4. **Tobacco.**—Tobacco-growing has experienced marked fluctuations, although at one time it promised to occupy an important place amongst the agricultural industries of Australia. Thus, as early as the season 1888-89, the area under this crop amounted to as much as 6,641 acres, of which 4,833 were in New South Wales, 1,685 in Victoria, and 123 in Queensland. This promise of importance was, however, not fulfilled, and after numerous fluctuations, in the course of which the Victorian area rose in 1895 to over 2,000 acres, and that in Queensland to over 1,000 acres, the total area for the season 1920-21 had declined to 1,345 acres. The area increased during the past three years, and 2,783 acres were recorded in 1923-24, of which 1,450 acres were in New South Wales, 1,047 acres in Victoria, 276 acres in Queensland, and 10 acres in South Australia. Greater attention is now being paid to the proper treatment of the leaf, and flue-curing is becoming more general. In all the States in which its cultivation had been tried, the soil and climate appear to be very suitable for the growth of the plant, and the enormous importations of tobacco in its various forms into Australia furnish an indication of the extensive local market which exists for an article grown and prepared to meet the requirements of consumers. The value of the net importations of tobacco into Australia during the year 1923-24 amounted to £2,775,779, comprising unmanufactured tobacco £2,854,470, cigars £98,688, cigarettes £146,652, and snuff £1,548, while manufactured tobacco showed a balance in favour of exports amounting to £325,579.

5. **Pumpkins and Melons.**—The total area under this crop in Australia during 1923-24 was 12,192 acres, of which 4,386 acres were in New South Wales, 2,163 acres in Victoria, 4,795 acres in Queensland, 559 acres in Western Australia, 286 acres in South Australia, and 3 acres in the Federal Capital Territory. The production in all the States amounted to 40,561 tons.

6. **Hops.**—Hop-growing in Australia is practically confined to Tasmania and some of the cooler districts of Victoria, the total area for the season 1923-24 being 1,750 acres, of which 1,524 acres were in Tasmania, 224 acres in Victoria, and 2 acres in South Australia. The Tasmanian area, though still small, has increased considerably during the

past twenty years, the total for the season 1901-2 being only 599 acres. On the other hand the Victorian area, which in 1901-2 was 307 acres, had diminished to 224 acres in 1923-24, although increased acreages have been planted during each of the last four years. The cultivation of hops was much more extensive in Victoria some 40 years ago than at present, the area in 1883-84 being no less than 1,758 acres. During the year 1923-24 the exports of hops exceeded the imports by 747,789 lbs., the excess value being £79,316.

7. *Flax*.—For over twenty years flax has been grown intermittently in the Gippsland district of Victoria, and attempts have been made to introduce its cultivation into Tasmania and New South Wales, but without success. About the end of the year 1917 the shortage of flax fibre in the world had become acute, and a serious endeavour was made by the Commonwealth Government to encourage the cultivation of flax. The acreage in Victoria increased from 419 acres in 1917-18 to 1,611 acres in 1919-20, but the area had declined in 1923-24 to 6 acres. Flax products to the value of more than £1,500,000 are annually imported into Australia, and, as it has been demonstrated that flax can be grown to perfection here, a good prospect exists for the ultimate establishment of a local industry.

8. *Millet*.—Millet figures in the statistical records of three of the States. The total area devoted thereto in 1923-24 was 6,829 acres, of which 3,746 acres were in New South Wales, 2,626 in Victoria, and 457 in Queensland. The particulars here given relate to millet grown for grain and fibre, the quantity for green forage being dealt with in the section relating thereto.

9. *Nurseries*.—In all the States fairly large areas are occupied as nurseries for raising plants, trees, etc. Statistics of the area under flowers, fruit trees, etc., are available for New South Wales, Victoria, South Australia, and Western Australia. During 1923-24 the areas in those States were 554, 985, 169, and 123 acres respectively.

10. *Cotton*.—The cultivation of cotton commenced in Queensland in 1860, and ten years later the area cropped had increased from fourteen to upwards of fourteen thousand acres. The re-appearance of American cotton in the European market on the conclusion of the Civil War gave a severe set-back to the new industry, and the area continuously declined till 1888, when only 37 acres were planted. The industry was resuscitated soon after, and manufacturing was undertaken on two separate occasions at Ipswich, but operations were not at any time very extensive, and low prices over a term of years checked development. Added interest was shown in the crop in 1903, and in 1913 the Queensland Government made an advance of 1½d. per lb. on seed cotton, and ginned it on owner's account, the final return being equal to about 1½d. per lb.

Considerable interest has recently been manifested in cotton-growing, mainly as a result of the encouragement of the industry by the fixed advance of 5½d. per lb. for seed cotton of good quality for the three years ended 31st July, 1923. The Australian Cotton-Growing Association by establishing modern ginning-plants at convenient centres has also contributed to the flourishing condition of the industry.

The Department of Agriculture is introducing improved long-staple upland varieties, with a view to the production of cotton which will return a good aggregate yield and command also the highest price, while the Queensland Government, acting on expert advice, at first prohibited the growing of ratoon cotton, and ordered the destruction of the old shrubs and debris in the field, but has now relaxed the prohibition on the following conditions:—All growers of ratoon cotton must be registered. The Government guarantee will not apply to it, but reasonable advances will be made from time to time. It must be ginned and marketed separately, and there is a heavy penalty for mixing it with plant cotton. A close season will obtain, and all stalks and debris must be destroyed.

Cotton seed requires a fair amount of moisture and warmth for germination, and sowings in the latter part of September or in October are mostly favoured by Queensland growers. Cotton planted in such months should, in normal seasons, commence opening up during the latter part of March and continue on until the end of June. Particulars of the cotton crop in Queensland since 1919 are as follows :—

COTTON.—AREA AND YIELD, QUEENSLAND, 1919 TO 1925.

Year.						Area.(a)	Yield of Unginned Cotton.
						Acres.	lbs.
1919	..	..	..	..	..	72	27,470
1920	..	..	..	..	..	166	57,065
1921	..	..	..	..	..	1,944	940,126
1922	..	..	..	..	..	8,716	3,956,635
1923	..	..	..	..	..	40,821	12,543,770
1924 (b)	..	..	..	..	..	(c)	15,250,000
1925 (b)	..	..	..	..	..	(c)	24,000,000

(a) Area harvested.

(b) Estimated.

(c) Not available.

The figures given above show the development which has taken place during the past five years, and present indications point to the ultimate establishment of cotton-growing on a large scale in Australia.

The guarantee for the 1924-25 season was fixed at 5d. per lb. for cotton of less than $1\frac{1}{4}$ inch staple, and at 5 $\frac{1}{2}$ d. per lb. for cotton of a longer staple. Guaranteed prices for the forthcoming season have not yet been announced.

11. **Coffee.**—Queensland is the only State in which coffee-growing has been extensively tried, but the results have not been satisfactory. The area under crop reached its highest point in the season 1901-2 with 547 acres. In subsequent seasons the area fluctuated somewhat, but on the whole with a downward tendency, and in 1923-24 only 19 acres were recorded, with a yield of 10,616 lbs.

12. **Other Crops.**—Amongst miscellaneous small crops grown in the several States may be mentioned tomatoes, rhubarb, artichokes, arrowroot, chicory, and flowers.

§ 17. Bounties on Agricultural Products.

1. **General.**—The Bounties Acts of 1907 and 1912, passed by the Federal Parliament with the object of encouraging the manufacture and production of certain articles in Australia, included among the items on which bonuses were payable the following agricultural products :—Cotton, fibres, rice, coffee, tobacco, and dried fruits, except currants and raisins. Though the bonuses were fairly liberal, they were not availed of to any great extent. An Act was passed early in 1924 to provide for the payment of bounties on the production of canned apricots, peaches, pears and pineapples during 1924, and on the export thereof before 28th February, 1925. The rates of bounty were fixed at 9d. to 1s. per dozen tins, each containing 30 ozs. net, produced, and 1s. to 1s. 9d. per dozen tins exported, and the amount distributed in respect of both bounties was £64,752. Provision for the payment of 4s. per gallon on fortified wine, containing not less than 34 per centum of proof spirit, exported from the Commonwealth from 1st September, 1924, to 31st August, 1927, was contained in the Wine Export Bounty Act, also passed in 1924. Under the terms of this Act the sum of £28,417 was paid during 1924-25 on 142,085 gallons exported.

§ 18. Fertilizers.

1. **General.**—In the early days of settlement in Australia, scientific cultivation was practically neglected. Farmers were neither under the necessity nor were they aware of the value of supplying the proper constituents to the soil for each class of crop. The widely divergent character of the soils, their degeneration by repeated cropping, the limitations of climatic conditions, and the difficulties of following any desired order of rotation of crops, all rendered it essential to give attention to artificial manuring. The introduction of the modern seed-drill acting also as a fertilizer-distributor has greatly facilitated the use of artificial manures, and much land formerly regarded as useless for cultivation has now been made productive. There is reason to believe that this feature will be even more strikingly characteristic in the future.

2. **Fertilizers Acts.**—In order to protect the interests of users of artificial manures, legislation has been passed in each of the States, regulating the sale and preventing the adulteration of fertilizers. A list of these Acts and their main features will be found in Year Book No. 12 (page 378).

3. **Imports.**—The local production of artificial manures has greatly increased in recent years, and the home requirements of prepared fertilizers can now be supplied by Australian manufacturers. Imports of fertilizers are also expanding, but the bulk of the inward shipments consists of rock phosphates, which form the raw material for the home manufactured superphosphates, a fertilizer which has proved itself eminently suitable for the growing of cereals in Australian soils. During 1923-24 the values of rock phosphates imported represented more than 76 per cent. of the total importation of fertilizers. Nauru, with 68 per cent., was the largest contributor, Gilbert and Ellice Islands Colony coming next with 27 per cent., while the remainder was supplied by Surprise Island. Practically all of the soda nitrate came from Chile.

The imports of artificial manures during the last five years are given in the following table. Although considerable quantities of manufactured superphosphates were annually imported up till 1914-15, the importations of this fertilizer have now practically ceased :—

FERTILIZERS.—IMPORTS, AUSTRALIA, 1919-20 TO 1923-24.

Fertilizer.				1919-20.	1920-21.	1921-22.	1922-23.	1923-24.
Bonedust	..	..	cwt.	1,508	1,260	910	..	542
"	..	..	£	1,420	652	556	..	164
Guano	..	..	cwt.	535,688	1,129,240	704,039	857,411	821,938
"	..	..	£	61,021	124,193	72,892	97,526	90,415
Superphosphates	..	..	cwt.	..	..	1,034	1,007	1,270
"	..	..	£	..	..	1,145	660	806
Rock Phosphates	..	..	cwt.	2,585,163	4,756,140	3,255,808	3,390,089	4,697,574
"	..	..	£	330,544	721,608	553,109	516,059	678,446
Soda Nitrate	..	..	cwt.	130,914	99,660	50,214	143,274	74,990
"	..	..	£	84,398	84,532	38,409	96,083	45,358
Other	..	..	cwt.	61,454	169	42,063	175,778	138,897
"	..	..	£	75,116	1,792	33,561	80,720	74,403
Total				3,314,727	5,986,469	4,054,068	4,567,559	5,735,211
				£ 552,499	932,777	699,672	791,048	889,592

4. Exports.—The subjoined table shows the exports of artificial manures for the years 1919-20 to 1923-24. Practically the whole of these fertilizers are manufactured locally, and are shipped mainly to New Zealand, Japan, Java, and the Pacific Islands :—

FERTILIZERS.—EXPORTS, AUSTRALIA, 1919-20 TO 1923-24.

Fertilizer.		1910-20.	1920-21.	1921-22.	1922-23.	1923-24.
Bonedust	.. .. cwt.	131,710	59,680	33,311	54,385	49,966
"	.. .. £	74,036	40,926	18,517	24,400	22,327
Guano	.. .. cwt.	601	..	..	..	..
"	.. .. £	181	..	..	..	..
Superphosphates	.. cwt.	264,174	472,860	26,727	73	22
"	.. .. £	67,288	153,060	6,284	35	7
Rock phosphates	.. cwt.	72,462	186,260	12,900	..	20
"	.. .. £	11,775	25,763	1,960	..	10
Soda nitrate	.. .. cwt.	28,223	2,720	5,790	600	405
"	.. .. £	28,673	3,640	5,717	715	315
Ammonia sulphate	.. cwt.	167,420	123,720	155,414	68,799	93,157
"	.. .. £	226,289	160,017	105,472	58,571	69,491
Other	.. .. cwt.	158,661	41,320	24,525	34,323	31,431
"	.. .. £	108,926	25,190	11,956	15,816	11,824
Total	.. .. cwt.	823,251	886,560	258,667	158,180	175,001
	.. .. £	517,168	408,596	149,906	99,537	103,974

5. Statistics of Use of Fertilizers.—Statistics regarding the use of manures are collected in all the States, and the particulars for 1923-24 are as follows :—

FERTILIZERS USED IN EACH STATE, 1923-24.

State.	Total Area of Crops.	Area Manured.		Manure Used.	
		Aggregate.	Percentage of Total Area of Crops.	Natural (Stable Yard, etc.).	Artificial.
	Acres.	Acres.	%	Loads.	Tons.
New South Wales ..	4,809,591	2,320,747	48.25	196,667	66,378
Victoria	4,682,144	4,113,640	87.86	163,843	178,621
Queensland	871,968	50,606	5.80	53,489	12,920
South Australia ..	3,562,551	3,110,497	87.31	91,650	121,184
Western Australia ..	2,323,070	2,291,405	98.63	59,565	92,055
Tasmania	279,122	197,346	70.70	25,656	17,431
Northern Territory ..	440	12	2.73	..	1
Fed. Cap. Territory ..	2,300	330	14.34	30	11
Total	16,531,186	12,084,583	73.10	590,900	488,601

Similar particulars in respect to Australia as a whole during the past five years are as shown below :—

FERTILIZERS USED IN AUSTRALIA, 1919-20 TO 1923-24.

Year.	Total Area of Crops.	Area Manured.		Manure Used.	
		Aggregate.	Percentage of Total Area of Crops.	Natural (Stable Yard, etc.).	Artificial.
	Acres.	Acres.	%	Loads.	Tons.
1919-20	13,296,407	9,278,296	69.78	562,545	329,489
1920-21	15,069,858	10,290,633	68.29	556,514	375,600
1921-22	15,357,024	10,999,259	71.62	582,725	408,742
1922-23	16,543,555	12,131,831	73.33	616,804	463,673
1923-24	16,531,186	12,084,583	73.10	590,900	488,601

The percentage of the area manured on the total area cultivated has advanced from 69.78 to 73.10 during the past five years, while the use of artificial manures has increased by 160,000 tons during the same period.

6. Local Production of Fertilizers.—Statistics relative to the local production of fertilizers are incomplete, and detailed returns for fertilizer factories other than bone mills are not available. The number of firms engaged in the manufacture of artificial manures in Australia at latest available date was 104, made up as follows :—New South Wales, 20; Victoria, 30; Queensland, 24; South Australia, 11; Western Australia, 11; and Tasmania, 8.

§ 19. Ensilage.

1. Government Assistance in Production.—The Government of Victoria, recognizing that defective methods of making ensilage were often adopted, has for some years been making special efforts to educate the farming community by lectures, the issue of bulletins, etc. The Government also undertakes the erection of different types of silos on very liberal terms, repayment extending over a series of years. Experts erect the silos and give practical lessons in regard to cutting and packing the silage. The New South Wales Government also gives advice in the "Agricultural Gazette," and issues special bulletins dealing with the subject, while silos have been erected at the various experimental farms.

2. Quantity Made.—Particulars concerning the number of holdings on which ensilage was made, and the quantity made during the seasons 1919-20 to 1923-24 are given in the following table :—

ENSILAGE MADE, 1919-20 TO 1923-24.

State or Territory.	1919-20.		1920-21.		1921-22.		1922-23.		1923-24.	
	Holdings.	Ensilage Made.	Holdings.	Ensilage Made.	Holdings.	Ensilage Made.	Holdings.	Ensilage Made.	Holdings.	Ensilage Made.
	(a) No.	(a) Tons.	(a) No.	(a) Tons.	(a) No.	(a) Tons.	(a) No.	(a) Tons.	(a) No.	(a) Tons.
New South Wales ..	112	13,328	118	15,633	166	24,174	118	12,191	152	19,292
Victoria ..	74	8,072	99	9,702	107	5,873	103	5,674	61	3,640
Queensland ..	72	4,318	164	7,600	96	6,575	65	5,300	71	4,833
South Australia ..	15	1,435	25	1,618	26	1,849	20	2,595	24	2,838
Western Australia ..	5	211	12	390	7	361	12	331	20	1,506
Tasmania ..	7	275	11	490	10	544	12	437	9	372
Northern Territory ..	..	..	..	..	..	..	..	..	..	..
Total ..	285	25,630	429	35,431	412	39,396	334	26,528	337	32,580

(a) No. of holdings on which ensilage was made.

Following the drought of 1902-3 greater attention was paid to the making of ensilage, and during the four seasons ended 1909-10 there was an increase both in the number of holdings on which ensilage was made and in the quantity produced. The following five seasons, however, showed a falling-off, but the reduction was due to the fact that stocks had not been drawn upon to any great extent during the previous seasons. The accumulated stocks proved of great value during the 1914 drought, though far below what would have been the case if more attention had been paid to production during the previous years when there was a surplus of green forage. A substantial increase took place in 1915-16, both in the holdings on which ensilage was made and in the quantity produced, but during the next three years the production declined, particularly in Victoria. From 1918-19 satisfactory increases were recorded each year up to 1921-22, but the quantity made in each of the two following seasons was below that manufactured in 1921-22.

§ 20. Agricultural Colleges and Experimental Farms.

1. *General.*—In most of the States agricultural colleges and experimental farms have been established with a view to the promotion of more scientific methods in agriculture, stock-breeding and dairying. In the colleges, and on some of the farms, provision is made for the accommodation of pupils to whom both practical and theoretical instruction is given by experts in various branches of agriculture. Analyses of soils and fertilizers are made, manures are tested, and elementary veterinary science, etc., are taught, while general experimental work is carried on with cereal and other crops, not merely for the purpose of showing that it is practicable to produce certain crops in a given place, but also to show how it is possible to make farming pay in the locality. Opportunities are afforded for practice in general agricultural work, and instruction is given in the conservation of fodder; in cheese and butter-making; in the management, breeding, and preparation for the market of live stock; in the eradication of pests and weeds; and in carpentering, blacksmithing, and other trades.

Travelling expert lecturers visit the various agricultural and dairying centres, and there is a wide distribution of periodical agricultural gazettes and bulletins.

2. *Particulars of Agricultural Colleges and Experimental Farms.*—In previous issues of this volume detailed information was given regarding agricultural colleges, experimental farms, and agricultural education generally. See Year Book No. 11, pp. 393-5.

3. *Particulars respecting Agricultural and Stock Departments.*—A synopsis of the activities and operations of the Agricultural and Stock Departments of the several States as on 30th June, 1920, will be found in Year Book No. 14, pages 1180 to 1191. The main features of organization are set out under their respective headings as regards staff, expenditure, work undertaken in agricultural colleges, technical schools, experimental farms, and orchards and vineyards. The subject of lectures and other forms of agricultural instruction by experts is dealt with, as well as such matters as the distribution of plants, and the special steps taken to disseminate information amongst agriculturists, and to facilitate the marketing of products.