SECTION VIII.

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 eight 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 three 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, 6,877 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, 34 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 since 1860.**—The following table shews the area under crop in each of the Commonwealth States and Territories 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 1860–79 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 IN AUSTRALIA, 1860 TO 1918–19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Nor. Ter.	Fed. Ter.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1860–1	260,798	387,282	3,353	359,284	24,705	152,860	..	..	1,188,282
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
1914–15	4,807,001	4,622,759	792,568	3,282,364	1,867,547	274,474	391	4,870	15,651,974
1915–16	5,796,376	5,711,265	729,588	3,763,570	2,189,456	333,334	274	4,371	18,528,234
1916–17	5,164,434	4,851,335	885,259	3,627,477	2,004,944	270,526	274	2,131	16,806,380
1917–18	4,461,172	4,110,225	727,958	3,079,778	1,679,772	238,199	134	1,744	14,298,982
1918–19	3,891,823	3,942,899	525,517	3,111,079	1,605,088	254,109	99	1,779	13,332,393

The increase in the area under crop during the past ten years has been most marked in the case of New South Wales, Western Australia, and South Australia, the respective increases being 1,176,517, 1,019,749, and 789,366 acres. During the same period an increase of 481,138 acres was experienced in Victoria, while Tasmania and Queensland suffered decreases of 15,237 and 10,383 acres respectively. The total area under crop in the Commonwealth increased during the period by 3,441,150 acres. The percentage of increase was particularly high in Western Australia, viz., 174 per cent. New South Wales had an increase of 43 per cent., while South Australia and Victoria added to their areas under crop to the extent of 34 and 14 per cent. respectively. The decreases for the ten years represented about 6 per cent. in Tasmania and 2 per cent. in Queensland, while the increase for the whole of the Commonwealth during the same period was 35 per cent.

3. **Relation to Population.**—From the following table it will be seen that the acreage under crop per 1000 of the population has consistently declined in all the States during the past four years. The decreased areas are particularly noticeable in New South Wales,

Victoria, South Australia, and Western Australia, and are mainly attributable to the decline of wheat growing in Australia since 1915–16. Details for the past five seasons are as follows :—

TOTAL AREA UNDER CROP PER 1,000 OF POPULATION, 1914–15 TO 1918–19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Ter.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1914–15 ..	2,582	3,231	1,171	7,431	5,782	1,363	98	2,486	3,168
1915–16 ..	3,099	4,025	1,075	8,584	6,885	1,658	60	2,390	3,757
1916–17 ..	2,779	3,468	1,322	8,383	6,493	1,353	57	959	3,447
1917–18 ..	2,373	2,913	1,074	7,060	5,429	1,172	27	829	2,897
1918–19 ..	2,016	2,756	757	6,980	5,121	1,217	21	797	2,650

4. **Relation to Total Area.**—The next table furnishes a comparison of the area under crop in the Commonwealth and the several States and Territories, with the respective total areas. For the Commonwealth as a whole, the area under crop in 1918–19 represented only about one acre in every 143. In Victoria the proportion was about one acre in every 14, in New South Wales one in 51, in Tasmania one in 66, in South Australia one in 78, in Western Australia one in 389, in Queensland one in 820, in the Federal Territory one in 338, and in the Northern Territory about one in 3,385,000.

PERCENTAGE OF AREA UNDER CROP ON TOTAL AREA, 1914–15 TO 1918–19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Ter.	C'wealth.
	%	%	%	%	%	%	%	%	%
1914–15 ..	2.427	8.219	0.185	1.349	0.299	1.636	0.0001	0.834	0.822
1915–16 ..	2.927	10.154	0.170	1.547	0.351	1.987	0.0001	0.749	0.973
1916–17 ..	2.608	8.625	0.206	1.491	0.321	1.612	0.0001	0.354	0.883
1917–18 ..	2.253	7.308	0.170	1.266	0.269	1.420	..	0.290	0.751
1918–19 ..	1.965	7.010	0.122	1.279	0.257	1.515	..	0.296	0.700

5. **Artificially-sown Grasses.**—In all the States considerable areas are devoted to artificially-sown grasses, mainly sown on uncultivated land after burning off the existing vegetation and consequently not included with " area under crops." Statistics regarding the area under such grasses are as shewn hereunder :—

AREA UNDER SOWN GRASSES, 1914–15 TO 1918–19.

Season.	New South Wales.	Victoria.	Queens-land.	South Australia.	Western Australia.	Tasmania.	Nor. Ter.	Fed. Ter.	Common-wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1914–15	1,251,383	1,202,130	290,147	24,974	8,025	647,602	..	70	3,424,331
1915–16	1,247,029	1,182,995	305,186	25,443	9,119	675,335	200	70	3,445,377
1916–17	1,357,087	1,292,817	363,876	29,044	8,327	654,072	200	70	3,706,093
1917–18	1,389,557	1,268,310	406,094	20,155	11,769	679,512	460	83	3,775,940
1918–19	1,438,382	1,269,493	418,467	21,987	14,158	666,954	600	83	3,830,124

The considerable increase in the area of the grass lands of the Commonwealth is due in large measure to the great development of the dairying industry which has taken place during recent years, and which is referred to in the succeeding section.

§ 3. Relative Importance of Crops.

1. **Various Crops.**—In the following table are furnished details concerning the areas in the several States under each of the principal crops for the season 1918–19 :—

DISTRIBUTION OF CROPS IN AUSTRALIA, 1918–19.

Crop.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Ter.	Total for C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat.. ..	2,409,633	2,214,490	21,637	2,186,349	1,146,103	11,917	..	36	7,990,165
Oats	86,421	342,867	298	160,823	141,459	36,231	..	53	768,152
Maize	114,582	22,559	149,505	112	39	..	15	..	286,812
Barley—									
Malting ..	5,929	52,222	1,082	109,920	3,994	6,039	..	..	179,186
Other ..	2,051	47,976	234	20,437	3,988	997	..	..	75,683
Beans and Peas..	557	12,398	70	7,542	361	35,602	..	..	56,530
Rye	1,330	982	2	631	466	475	..	..	3,886
Other Cereals ..	..	..	44	..	29	114	..	..	187
Hay	813,379	984,479	54,772	501,731	249,796	87,136	30	1,581	2,692,904
Green Forage ..	331,079	73,641	90,635	56,067	28,141	6,827	..	50	586,440
Grass Seed ..	..	2,152	2,021	102	..	1,278	..	..	5,553
Orchards and other Fruit Gardens	67,432	85,130	24,250	30,085	20,412	37,424	..	18	264,751
Vines—									
Productive ..	6,595	19,618	1,175	26,149	2,350	..	..	..	55,887
Unproductive..	2,145	6,454	112	4,874	586	..	..	..	14,171
Market Gardens..	10,004	11,594	1,814	1,405	2,237	389	..	39	27,482
Sugar-cane—									
Productive ..	4,566	..	111,572	..	..	..	..	..	116,138
Unproductive..	5,924	..	48,962	..	..	..	..	..	54,886
Potatoes ..	20,877	51,620	6,434	3,275	3,936	25,023	2	2	111,169
Onions.. ..	335	5,512	88	367	75	33	..	..	6,410
Other root crops	761	1,997	2,716	387	120	2,842	2	..	8,825
Tobacco ..	1,680	167	213	..	..	..	..	..	2,060
Broom Millet ..	3,019	1,876	305	..	..	..	10	..	5,210
Pumpkins and Melons ..	2,363	1,161	4,603	287	401	..	40	..	8,855
Hops	..	71	..	2	..	1,260	..	..	1,333
All other crops ..	1,161	3,933	2,973	534	595	522	..	..	9,718
Total area ..	3,891,823	3,942,899	525,517	3,111,079	1,605,088	254,109	99	1,779	13,332,393

2. **Relative Areas of Crops in States and Territories.**—Taking the principal crops, *i.e.*, those in the case of which the cultivation amounts to more than 50,000 acres in the Commonwealth, the proportion of each in the various States and Territories to the total area under crop for the season 1918–19 is shewn 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, South Australia, and Western Australia the oat crop occupies third position, while green forage ranks third in New South Wales followed by maize. In Queensland, on the other hand, the three principal crops in the order of importance are sugar-cane, maize, and green forage, while in Tasmania hay, orchards and fruit gardens, and oats, occupy the leading positions. For the Commonwealth as a whole, the wheat, hay, and oat crops represent nearly 86 per cent of the total area under crop.

PROPORTION OF AREA UNDER CHIEF CROPS, 1918-19.

Crop.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Ter.	C'wealth.
	%	%	%	%	%	%	%	%	%
Wheat ..	61.92	56.16	4.12	70.28	71.40	4.69	..	2.03	59.93
Hay ..	20.90	24.97	10.42	16.13	15.56	34.29	30.30	88.87	20.20
Oats ..	2.22	8.70	0.06	5.17	8 82	14.26	..	2.98	5.76
Green Forage...	8.51	1.87	17.25	1.80	1.75	2.68	..	2.81	4.40
Maize ..	2.94	0.57	28.45	0.00	0.00	..	15.15	..	2.15
Orchards and Fruit Gardens	1.73	2.16	4.61	0.97	1.27	14.73	..	1.01	1.99
Barley ..	0.21	2.54	0.25	4.19	0.50	2.77	..	..	1.91
Sugar-cane	0.27	..	30.55	..	..	..	..	..	1.28
Potatoes ..	0.54	1.31	1.22	0.10	0.25	9.85	2.02	0.11	0.83
Vineyards	0.22	0.66	0.25	1.00	0.18	..	..	..	0.53
All other..	0.54	1.06	2.82	0.36	0.27	16.73	52.53	2.19	1.02
Total ..	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

3. **Relative Positions of States and Territories in regard to Principal Crops.**—The relative proportion of acreage of the several crops for 1918-19 and the position regarding them in each State and Territory is shewn in the following table. New South Wales exhibited the largest area under wheat and green forage; Victoria was in the leading position in regard to hay, oats, orchards and fruit gardens, and potatoes; and Queensland was first in sugar-cane and maize and second in green forage. South Australia had the largest area under vineyards and barley, and occupied second position in regard to oats; Western Australia held third position in oats and barley and fourth in wheat, hay, and vineyards; while Tasmania was second in regard to potatoes, and third in orchards and fruit gardens.

RELATIVE POSITIONS OF STATES AND TERRITORIES IN REGARD TO AREA UNDER EACH OF THE PRINCIPAL CROPS DURING THE SEASON 1918-19.

Crop.		N.S.W.	Victoria	Q'land.	S. Aust.	W. Aust.	Tas.	N. Ter.	F. Ter.	C'w'lth.
Wheat..	.. %	30.16	27.72	0.27	27.36	14.34	0.15	..	..	100.00
	position	1	2	5	3	4	6	..	..	
Hay ..	.. %	30.20	36.56	2.03	18.63	9.28	3.24	..	0.06	100.00
	position	2	1	6	3	4	5	..	7	
Oats ..	.. %	11.25	44.63	0.04	20.94	18.41	4.72	..	0.01	100.00
	position	4	1	6	2	3	5	..	7	
Green Forage	.. %	56.46	12.56	15.45	9.56	4.80	1.16	..	0.01	100.00
	position	1	3	2	4	5	6	..	7	
Maize ..	.. %	39.95	7.86	52.13	0.04	0.01	..	0.01	..	100.00
	position	2	3	1	4	5	..	6	..	
Orchards and Fruit Gardens	.. %	25.47	32.15	9.16	11.36	7.71	14.14	..	0.01	100.00
	position	2	1	5	4	6	3	..	7	
Barley	.. %	3.13	39.31	0.52	51.15	3.13	2.76	..	..	100.00
	position	4	2	6	1	3	5	..	..	
Sugar-cane	.. %	6.13	..	93.87	..	..	..	..	..	100.00
	position	2	..	1	..	..	..	..	..	
Potatoes	.. %	18.78	46.43	5.79	2.95	3.54	22.51	..	..	100.00
	position	3	1	4	6	5	2	..	..	
Vineyards	.. %	12.48	37.21	1.84	44.28	4.19	..	..	..	100.00
	position	3	2	5	1	4	..	..	..	
All other crops	.. %	15.59	30.76	10.91	8.27	3.15	31.25	0.04	0.03	100.00
	position	3	2	4	5	6	1	7	8	
Total area under crop	.. %	29.19	29.57	3.94	23.34	12.04	1.91	..	0.01	100.00
	position	2	1	5	3	4	6	8	7	

4. **Acreage of Principal Crops, Commonwealth.**—The acreage devoted to each of the principal crops in the whole Commonwealth during the last five seasons is shewn below :—

ACREAGE OF CHIEF COMMONWEALTH CROPS, 1914–15 TO 1918–19.

Crop.	1914–15.	1915–16.	1916–17.	1917–18.	1918–19.
	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat	9,651,081	12,484,512	11,532,828	9,774,658	7,990,165
Hay	2,628,613	3,597,771	2,671,862	2,212,914	2,692,904
Oats	774,734	721,644	844,130	615,800	768,152
Green Forage ..	1,352,158	515,561	390,151	373,850	586,440
Maize	339,781	323,637	360,072	332,057	286,812
Orchards and Fruit Gardens	232,711	247,008	257,687	262,134	264,751
Barley	153,656	169,514	230,253	204,870	254,869
Sugar-cane	172,616	164,285	178,190	186,484	171,024
Potatoes	151,845	120,993	149,895	136,241	111,169
Vineyards	60,985	62,124	65,394	67,862	70,058
All other Crops ..	133,794	121,185	125,918	132,112	136,049
Total ..	15,651,974	18,528,234	16,806,380	14,298,982	13,332,393

During the period under review the area devoted to the several crops has varied considerably, that under wheat attaining a maximum in the season 1915–16, and a minimum in 1918–19, while hay also reached its maximum area in 1915–16, and its minimum in 1917–18. Of the other crops, green forage and potatoes attained their maximum areas in 1914–15, maize and oats in 1916–17, sugar-cane in 1917–18, and orchards and fruit gardens, barley, and vineyards in 1918–19.

§ 4. Wheat.

1. **Progress of Wheat-Growing.**—(i) *Acreage.* The area under wheat for grain is given below for each State at various periods since 1860, and is shewn diagrammatically in the graph hereinafter :—

AREA UNDER WHEAT, 1860–1 TO 1919–20.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Ter.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1860–1	128,829	161,252	196	273,672	13,584	66,450	..	..	643,983
1870–1	147,997	284,167	2,892	604,761	26,640	57,382	..	..	1,123,839
1880–1	253,138	977,285	12,632	1,733,542	27,686	50,022	..	..	3,054,305
1890–1	333,233	1,145,163	10,390	1,673,573	33,820	32,452	..	..	3,228,631
1900–1	1,530,609	2,017,321	79,304	1,913,247	74,308	51,825	..	..	5,666,614
1910–11	2,128,826	2,398,089	106,718	2,104,717	581,862	52,242	2	..	7,372,456
1914–15	2,756,343	2,863,535	127,015	2,502,630	1,376,012	23,865	..	1,681	9,651,081
1915–16	4,186,493	3,679,971	93,703	2,739,214	1,734,117	48,642	..	2,372	12,484,512
1916–17	3,805,699	3,125,692	227,778	2,778,357	1,566,608	27,789	..	905	11,532,828
1917–18	3,328,856	2,690,216	127,815	2,355,682	1,249,762	21,812	..	515	9,774,658
1918–19	2,409,633	2,214,490	21,637	2,186,349	1,146,103	11,917	..	36	7,990,165
1919–20*a*	1,450,540	1,918,269	37,409	1,921,515	1,041,827	10,000	..	..	6,379,560

(*a*) Preliminary figures except Victorian which are final.

The area devoted in the Commonwealth to the production of wheat for grain was higher for the season 1915–16 than for any previous season, there being an increase in all the States with the exception of Queensland, which shewed a falling-off. The figures for the season 1916–17 shew a reduction in area under wheat for grain throughout the Commonwealth with the exception of Queensland and South Australia, where the acreages for both States are the highest on record. During 1917–18, and again in 1918–19, a serious decline took place in the area under wheat in all the States, the Commonwealth total for the latter year exhibiting a shortage of nearly 4½ million acres as compared with 1915–16. The average area under wheat in the Commonwealth during the last ten seasons, 1909 to 1919, was 8,944,682 acres, or roughly 1 million acres more than were sown during 1918–19.

Although final figures for 1919–20 for all the States are not yet available, the data to hand indicate the total area under wheat for grain in the Commonwealth at about 6,379,560 acres, representing a decrease of 20 per cent. on the 1918–19 area. This decrease was again in evidence in all the wheat producing States, being most marked in New South Wales, where the area under wheat for grain declined by 959,093 acres. The total for the Commonwealth is lower than for any season since 1908–9, when an area of 5,262,473 acres was reaped.

(ii) *Yield.* The production during the same period for each State and for the Commonwealth as a whole is given below :—

PRODUCTION OF WHEAT, 1860–1 TO 1919–20.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Nor. Ter.	Fed. Ter.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bush.	Bush.	Bushels.
1860–1	1,581,598	3,459,914	3,136	3,576,593	208,332	1,415,896	..	..	10,245,469
1870–1	999,595	2,870,409	39,787	6,961,164	316,769	896,881	..	..	12,084,605
1880–1	3,717,355	9,727,369	223,243	8,606,510	332,232	750,040	..	..	23,356,749
1890–1	3,649,216	12,751,295	207,990	9,399,389	467,389	642,980	..	..	27,118,259
1900–1	16,173,771	17,847,321	1,194,088	11,253,148	774,653	1,110,421	..	..	48,353,402
1910–11	27,913,547	34,813,019	1,022,373	24,344,740	5,897,540	1,120,744	20	..	95,111,983
1914–15	12,812,803	3,940,947	1,585,087	3,527,428	2,624,190	384,220	..	17,727	24,892,402
1915–16	66,726,459	58,521,706	414,438	34,134,504	18,236,355	993,790	..	38,451	179,065,703
1916–17	36,585,380	51,162,438	2,463,141	45,745,064	16,103,216	348,330	..	12,620	152,420,189
1917–18	37,704,626	37,737,552	1,035,268	28,692,594	9,303,787	252,383	..	7,374	114,733,584
1918–19	18,324,640	25,239,871	104,509	22,936,925	8,845,337	186,570	..	360	75,638,262
1919–20*a*	4,296,630	14,858,380	286,925	14,947,413	11,222,950	141,000	..	..	45,753,298

(*a*) Final figures Victoria, those for remaining States approximate.

The 1915–16 harvest of 179,065,703 bushels was the largest ever reaped in the Commonwealth. The 1916–17 yield of 152,420,189 bushels comes next in order, followed by the yields obtained during 1917–18, 1913–14, 1910–11, 1912–13, and 1909–10, *i.e.*, 114,733,584 ; 103,344,132 ; 95,111,983 ; 91,981,070, and 90,413,597 bushels respectively. These seven seasons represent the only occasions on which a harvest exceeding 90,000,000 bushels was garnered. The harvest for 1914–15 was poor, the prolonged drought having been disastrous to the wheat areas. The yield was 24,892,402 bushels, the lowest since 1902. During the past four seasons the production of wheat in the Commonwealth has declined from 179,065,703 bushels in 1915–16 to 45,753,298 bushels in 1919–20, a decrease of 133,312,405 bushels, or 33,328,101 bushels per annum. While admitting that 1915–16 was a record year, and the yields per acre for 1918–19 and 1919–20 were generally below the average as the result of protracted droughts in the wheat growing States, the seriousness of the position brought about by the abnormal decrease in the acreage and yield of Australia's primary agricultural product in the short space of four seasons cannot be overstated, and every means should be utilized to retard the decline of wheat growing in Australia.

(iii) *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 1909–19 :—

YIELD OF WHEAT PER ACRE, 1914-15 TO 1918-19.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	N.Ter.	F. Ter.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bshls.	Bushels.	Bushels.
1914–15..	4.65	1.38	12.48	1.41	1.91	16.10	..	10.55	2.58
1915–16..	15.94	15.90	4.42	12.46	10.52	20.43	..	16.21	14.34
1916–17..	9.61	16.37	10.81	16.46	10.28	12.53	..	14.06	13.22
1917–18..	11.33	14.03	8.10	12.18	7.44	11.57	..	14.32	11.74
1918–19..	7.60	11.40	4.83	10.49	7.72	15.66	..	10.00	9.47
Average 10 seasons 1909–19	(*a*)11.41	12.37	10.89	(*c*)10.53	8.81	18.80	..	(*b*)14.26	11.17

(*a*) Including Federal Territory. (*b*) Average for eight seasons.
(*c*) Including Northern Territory.

As the above figures shew, there were considerable variations in the average yields, chiefly due to the vagaries of the seasons. The average of 2.58 bushels for 1914–15 was the lowest ever recorded for the Commonwealth with one exception, viz., the average of 2.40 bushels for 1902–3. Both were the results of exceptionally severe droughts. In both cases the yield per acre for the succeeding season was considerably above the ten-yearly average, being 14.34 bushels per acre for 1915–16 and 13.32 for 1903–4. Owing to droughty conditions prevailing throughout the wheat belt, the yield for 1918–19 was below the ten-yearly average in each of the States.

(iv) *Relation to Population.* During the seasons embraced in the following table, the Commonwealth's production of wheat per head of population has varied between 5 bushels in 1914–15 and 36¼ bushels in 1915–16. The State in which wheat-growing occupies the most important position relatively to population is South Australia, which in 1918–19 had a yield averaging over 51 bushels per head. Queensland and Tasmania are the States in which the average production of wheat per head is least, the quantity raised being considerably below that required for local consumption. Particulars for the past five seasons are as follows :—

AUSTRALIAN WHEAT PRODUCTION PER 1,000 OF POPULATION, 1914-15 TO 1918-19.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	N. Ter.	F. Ter.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1914–15..	6,883	2,755	2,342	7,986	8,124	1,908	..	9,049	5,038
1915–16..	35,675	41,241	611	77,854	57,344	4,944	..	21,023	36,307
1916–17..	19,685	36,574	3,679	105,718	52,147	1,742	..	5,677	31,264
1917–18..	19,943	26,745	1,527	65,776	30,068	1,242	..	3,505	23,247
1918–19..	9,493	17,641	150	51,462	28,220	893	..	161	15,036

The normal annual consumption of wheat in Australia, exclusive of the requirements for seed, poultry and other live stock, is 325 lbs. (5.43 bushels) per head of population.

2. **Australian and Foreign Wheat Yields.**—In the next table will be found a statement of the average return per acre in the principal wheat-growing countries of the world, ranging from Denmark with a maximum of 44.82 bushels per acre to Mexico with a minimum of under 3 bushels per acre. Australia with approximately 9.47 occupies a relatively subordinate position.

AVERAGE YIELD OF WHEAT PER ACRE IN VARIOUS COUNTRIES, 1918.

Country.	Average Yield in bushels per acre.	Country.	Average Yield in bushels per acre.
Denmark	44.82	Serbia (1914)	16.03
Netherlands	40.42	Rumania (1916)	15.72
Switzerland	34.95	United States	15.52
Belgium (1914)	34.94	Algeria	15.45
United Kingdom	33.35	Spain	13.27
New Zealand	31.57	Uruguay	12.68
Germany	25.47	Russia in Europe (1916) ..	12.27
Egypt	25.30	Canada	10.90
Bulgaria (1913)	23.82	Argentine Republic ..	10.86
Sweden	23.81	India	10.70
France	21.55	Portugal (1911)	9.78
Austria (1913)	19.89	Australia (*a*)	9.47
Japan	18.27	Union of South Africa ..	9.02
Hungary (1915)	17.89	Russia in Asia (1915) ..	6.97
Chile (1916)	17.12	Tunis	5.98
Italy	16.33	Mexico (1914)	2.97

(*a*) Average yield per acre for 10 years, 11.17.

3. **Wheat Crops of the World.**—The latest available official statistics of the production of wheat in various countries are given in the following table :—

WHEAT YIELD IN VARIOUS COUNTRIES, 1918.

Country.	Yield in bushels.	Country.	Yield in bushels.
United States	917,100,000	Egypt	32,555,000
Russia in Europe (1916) ..	595,425,000	Japan	25,372,000
India	379,831,000	Chile (1917)	23,330,550
France	233,785,000	Turkey in Europe (1915) ..	17,449,200
Canada	189,079,000	Persia (1915)	15,510,400
Argentine Republic ..	184,270,000	Uruguay	12,860,000
Italy	176,370,000	Serbia (1915)	9,694,000
Hungary (1915)	148,254,220	Sweden	9,002,000
Spain	135,709,000	Union of South Africa ..	8,602,000
United Kingdom ..	93,144,000	Tunis	8,451,000
Russia in Asia (1915) ..	91,672,280	Belgium (1915)	7,755,200
Germany	90,331,000	Portugal (1916) ..	7,118,304
Rumania (1916)	76,117,288	Switzerland	7,095,000
Australia (*a*)	75,638,000	New Zealand	6,567,629
Austria (1915)	54,286,400	Denmark	6,320,000
Algeria	49,199,000	Netherlands	5,780,000
Bulgaria (1916)	37,070,825	Mexico (1915)	3,877,600
Turkey in Asia (1915) ..	33,929,000		

(*a*) Average yield for 10 years, 99,924,000.

Various estimates of the total quantity of wheat produced in the world have been made. That furnished by the International Institute of Agriculture, Rome, gives the following figures for the ten years 1907 to 1916:—

WORLD'S PRODUCTION OF WHEAT, 1907 TO 1916.

Year.	1,000,000 bushels.	Year.	1,000,000 bushels.	Year.	1,000,000 bushels.
1907	3,131	1911 ..	3,512	1915 ..	4,492
1908	3,137	1912 ..	3,795	1916 ..	3,657
1909	3,569	1913 ..	4,048	Average for 10 years ..	3,641
1910	3,525	1914 ..	3,548		

In this estimate the figures given for Australia and New Zealand relate to the agricultural year ending on 30th June in the year specified.

For the ten years referred to, the Australian production of wheat aggregated 830,113,000 bushels, thus representing 2.3 per cent. of the world's production. The total quantity of wheat produced in the British Empire during the same period of ten years was approximately 7,214 million bushels, so that the Australian production of wheat represented 11.5 per cent. of that of the British Empire, while the British Empire production represented 19.8 per cent. of the world's total.

4. **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 realised for British-grown wheat :—

PRICES OF BRITISH WHEAT PER QUARTER, 1861 TO 1917.

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	1913 ..	31 8	34 3	30 0
1871 ..	56 8	60 0	52 6	1914 ..	34 11	43 3	30 11
1881 ..	45 4	55 2	40 9	1915 ..	52 10	62 0	42 9
1891 ..	37 0	41 8	32 3	1916 ..	58 5	75 10	46 3
1901 ..	26 9	27 8	25 8	1917 ..	75 9	83 10	70 3
1911 ..	31 8	33 4	30 0				

(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 five years :—

EXPORT VALUES OF AUSTRALIAN WHEAT, 1914-15 TO 1918-19.

Year	1914–15.	1915–16.	1916–17.	1917–18.	1918–19.
	s. d.	s. d.	s. d.	s. d.	s. d.
Price per bushel	4 1	5 7	4 10	5 3	5 1

The export values here shewn are the average declared values for the successive years at the several ports of shipment in the Commonwealth.

5. **Imports and Exports of Wheat and Flour.**—(i) *Quantities.* The table hereunder shews the imports, exports, and net exports of wheat and flour from 1914–15 to 1918–19. For the sake of convenience, flour has been expressed at its equivalent in wheat, one ton of flour being taken as equal to 50 bushels of grain. During 1914–15 and 1915–16 the Commonwealth imports of wheat and flour were equivalent to 1,646,387 and 5,633,596 bushels of wheat respectively. The severe drought encountered during 1914–15 was responsible for these importations. In ordinary seasons the import of wheat and flour is negligible. During the past five years the export has ranged between 6,886,293 bushels in 1914–15 and 69,810,522 bushels in 1916–17, the net exports for the period averaging 43,159,674 bushels.

IMPORTS AND EXPORTS OF WHEAT AND FLOUR, COMMONWEALTH, 1914-15 TO 1918-19.

Year.	Imports.			Exports.			Net Exports.
	Wheat.	Flour.	Total.	Wheat.	Flour.	Total.	
	Bushels.	Eq. Bushels.(a)	Bushels.	Bushels.	Eq. Bushels.(a)	Bushels.	Bushels.
1914–15	1,641,237	5,150	1,646,387	4,210,593	2,675,700	6,886,293	5,239,906
1915–16	5,616,696	16,900	5,633,596	28,621,445	7,347,750	35,969,195	30,335,599
1916–17	40	3,000	3,040	55,278,872	14,531,650	69,810,522	69,807,482
1917–18	20	1,050	1,070	22,981,772	18,704,150	41,685,922	41,684,852
1918–19	50	2,768	2,818	44,563,597	24,169,750	68,733,347	68,730,529

(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 the Commonwealth exported wheat and flour during each year of the period 1914–15 to 1918–19. The countries are as shewn in the Australian Customs returns, but owing to the fact that in normal times wheat ships are frequently instructed to call for orders at various ports, the countries to which these ports belong cannot always be considered as the ultimate destination of the whole of the wheat said to be exported to them.

EXPORTS OF WHEAT FROM THE COMMONWEALTH, 1914-15 TO 1918-19.

Country to which Exported.	1914–15.	1915–16.	1916–17.	1917–18.	1918–19.	Total for Five Years.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
United Kingdom	1,532,693	14,494,248	22,715,735	5,309,162	9,104,560	53,156,398
Egypt	..	267,568	4,842,000	..	11,741,477	16,851,045
France ..	9,482	2,186,567	8,562,240	5,074,098	674,363	16,506,750
Italy	157,000	3,258,313	8,154,602	517,962	2,950,015	15,037,892
Union of South Africa ..	1,088,507	2,919,608	6,549,395	1,216,172	541,778	12,315,460
United States ..	..	..	357,643	6,593,878	3,510,762	10,462,283
India	..	..	..	225,820	4,306,312	4,532,132
Canary Islands (*a*)	..	2,960,558	884,615	..	..	3,845,173
New Zealand ..	151,042	30,380	225,852	1,295,448	1,452,625	3,155,347
Peru	290,810	156,302	1,154,355	340,965	660,318	2,602,750
Japan	223,996	..	..	702,958	1,407,775	2,334,729
Ceylon ..	853	..	1,247	392	2,142,212	2,144,704
Sweden ..	..	..	..	..	2,134,500	2,134,500
Norway ..	..	..	540,482	..	1,369,105	1,909,587
Spain	72,970	1,550,252	..	..	..	1,623,222
Chile	650,510	..	..	..	975	651,485
Other Countries	32,730	797,645	1,290,706	1,704,917	2,566,820	6,392,818
Total ..	4,210,593	28,621,441	55,278,872	22,981,772	44,563,597	155,656,275

(*a*) For orders.

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

EXPORTS OF FLOUR FROM THE COMMONWEALTH, 1914-15 TO 1918-19.

Country to which Exported.	1914–15.	1915–16.	1916–17.	1917–18.	1918–19.	Total for Five Years.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
United Kingdom	850	43,604	127,502	145,914	136,254	454,124
Egypt	3,592	1,345	9,772	13,994	129,992	158,695
Italy	..	14,142	25,679	6,099	35,804	81,724
Union of South Africa ..	14,075	22,019	25,106	7,330	12,892	81,422
France	..	14,087	33,320	32,597	..	80,004
Java	6,003	11,674	13,826	15,573	27,444	74,520
Philippine Islands	3,313	3,383	..	35,158	27,180	69,034
United States	..	..	8,131	54,889	3,865	66,885
Straits Settlements ..	3,352	5,023	9,755	23,609	24,386	66,125
India	158	33	83	..	23,629	23,903
Hong Kong	140	1,442	648	3,604	17,898	23,732
New Zealand	5,064	2,190	9,006	5,736	511	22,507
New Caledonia	3,791	3,566	3,533	3,314	3,804	18,008
Sumatra	633	1,507	4,072	2,530	4,515	13,257
Fiji	1,834	1,257	2,199	2,280	2,212	9,782
Japan	2	53	300	3,702	1,258	5,315
Mauritius	1,810	..	112	..	1,968	3,890
Portuguese East Africa ..	3,163	216	409	..	..	3,788
China	545	384	335	923	880	3,067
Ceylon	2,173	342	20	..	47	2,582
Other Countries	3,016	20,688	16,825	16,831	28,856	86,216
Total	53,514	146,955	290,633	374,083	483,395	1,348,580

For the five years under review the export of wheat to the United Kingdom amounted to 53,156,398 bushels, or 34 per cent. of the total export for the period, while the export of flour to the United Kingdom aggregated 454,124 tons, or 33 per cent. of the total export. During the quinquennium the heaviest exports of flour have been to the United Kingdom, Egypt, Italy, South Africa, France, and Java.

(iii) *Exports of Wheat and Flour.* From the foregoing returns it will be seen that the quantity of Australian wheat exported in the form of flour during the past five years represents, on the average, slightly over 30 per cent. of the total equivalent in wheat exported as wheat or flour from the Commonwealth.

A point of some interest in connexion with the export of wheat, and one which bears also on the proportions 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 the Commonwealth, 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., etc.), 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 the Commonwealth of wheat and its milled products have amounted to 358,383,825 bushels of wheat, 2,158,825 tons of flour, and 3,687,110 bushels of bran, pollard, and sharps. On the basis of the figures quoted above this export would contain no less than 186,800,000 lbs. of phosphoric acid, the value of which as a fertilizer would amount to nearly two and a half million pounds sterling.

(iv) *Local Consumption of Wheat.* The estimated consumption of wheat for food and for seed purposes in the Commonwealth during the past ten years is given in the following tables :—

WHEAT USED FOR HUMAN CONSUMPTION IN THE COMMONWEALTH, 1909 TO 1917–18.

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.
1909 ..	603,688	129,889	1,980	471,819	23,590,950	.1104	5.519
1910 ..	649,282	139,774	2,340	507,168	25,358,400	.1161	5.803
1911 ..	696,301	175,649	2,570	518,082	25,904,100	.1154	5.769
1912 ..	677,053	167,948	2,820	506,285	25,314,250	.1090	5.450
1913 ..	760,613	221,605	2,600	536,408	26,820,400	.1117	5.583
1914 ..	713,845	174,180	2,400	537,265	26,863,250	.1092	5.461
1915 ..	541,810	7,633	2,160	532,017	26,600,850	.1075	5.374
1915–16 ..	577,038	146,618	2,650	427,770	21,388,500	.0867	4.335
1916–17 ..	869,975	290,572	2,885	576,518	28,825,900	.1183	5.913
1917–18 ..	985,761	374,062	9,810	601,889	30,094,450	.1220	6.098
Aggregate 10 years	7,075,366	1,827,930	32,215	5,215,221	260,761,050	.1105	5.525

ESTIMATED QUANTITY OF WHEAT USED FOR SEED PURPOSES IN THE COMMONWEALTH, 1909 TO 1918.

Year.	Area for Grain and Hay.	Wheat for Seed Purposes.		
		Quantity.	Per Acre.	Per Head of Population.
	Acres.	Bushels.	Bushels.	Bushels.
1909	7,582,238	7,322,000	.966	1.713
1910	8,527,308	8,332,000	.977	1.907
1911	8,859,949	8,282,000	.935	1.844
1912	9,112,676	8,484,000	.931	1.827
1913	10,661,430	9,747,000	.914	2.029
1914	11,012,679	10,059,000	.913	2.045
1915	14,414,024	13,041,000	.905	2.634
1916	12,894,917	11,523,000	.894	2.348
1917	10,910,669	9,713,000	.890	1.968
1918	9,428,398	9,054,000	.960	1.800
Aggregate for 10 years ..	103,404,288	95,557,000	.924	2.006

In addition to the above, there is to be taken into consideration grain fed to poultry and other live stock. This, doubtless, varies in quantity from year to year according to the prices current for wheat, and other causes. No data are available on which to base an estimate of actual quantity so consumed. The flour available for human consumption necessarily fluctuates from year to year coincident with stocks being heavy or light. In some years the flour available per head of population, after deducting net exports from quantity milled, shews 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 0.1105 tons per head of population, which, when expressed in equivalent terms in wheat, represents 5.525 bushels. The estimates of quantity of grain used for seed purposes have been based on data supplied by the Agricultural and Statistical 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 2.006 bushels per head of population, and 0.924 bushels or 55½ lbs. per acre sown.

6. **Value of the Wheat Crop.**—The estimated value of the wheat crop in each State and in the Commonwealth during the season 1918–19 is shewn below :—

VALUE OF THE WHEAT CROP, (*a*) 1918–19.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Ter.	C'wealth.
	£	£	£	£	£	£	£	£
Aggregate value..	4,447,390	6,309,968	23,515	6,307,654	2,211,347	44,310	90	19,344,274
Value per acre ..	£1/16/11	£2/17/0	£1/1/9	£2/17/8	£1/18/7	£3/14/4	£2/10/0	£2/8/5

(*a*) Exclusive of the value of straw.

7. **The Australian Wheat Marketing Scheme.**—(i) *General Principles.* Owing to the abnormal conditions prevailing, a Wheat Marketing Scheme was entered into by the Governments of the Commonwealth and of the States of New South Wales, Victoria, South Australia, and Western Australia, for the purpose of realising to the best advantage the 1915–16 wheat harvest of the States named, and of making advances to farmers pending realisation. It was subsequently decided that the 1916–17 harvest, and later, the 1917–18, 1918–19, and 1919–20 harvests, should be dealt with on similar lines to those of the 1915–16 harvest.

The general principles of the scheme may be shortly stated thus :—

1. That all growers should participate equitably in the realisation of the harvest and the proceeds thereof.
2. That the limited freights available should be allotted between the States in accordance with the exportable surplus of each.

The securing and general allotment of freights is under the control of the Chartering Agents, who are responsible to the Commonwealth Government.

The distribution of freights among the States is in charge of the Australian Wheat Board, which also has the duty of realising the crop. This Board consists of Ministerial representatives of the Governments of the Commonwealth and of the States and representatives of the growers, one from each State. It has the assistance of an Advisory Board consisting of well-known wheat shippers. A London Wheat Committee, consisting of the High Commissioner and the Agents-General of the States concerned, acting with the advice of the London representatives of the wheat shippers, arranges overseas sales. Adjustments are to be made between the States so that, having regard to the quantity shipped, each will ultimately receive the average net result of the whole of the overseas realisations.

In certain States the crop is bought by the State Government, and in others the wheat is received from the growers for sale on their behalf.

The Australian Wheat Board fixes all prices at which wheat may be sold, except in the case of poultry feed, which is left to the States to regulate.

Each State has a local Board or Commission to control the operations of the scheme within the State concerned. This Board or Commission effects all local sales, including sales to millers.

(ii) *Advances and Finance.* Under arrangements with the Australian banks made by the Commonwealth and State Governments, advances are made to farmers upon delivery of their wheat at railway stations to representatives of agents appointed by the different State Governments. The following advances per bushel have been made in respect of the five pools for each of the States up to the 2nd August, 1920 :—

POOLED WHEAT ADVANCES PER BUSHEL, 1915-16 TO 1919-20.

State.	1915–16. (b)	1916–17.	1917–18. (a)	1918–19. (a)	1919–20. (a)
	s. d.	s. d.	s. d.	s. d.	s. d.
New South Wales ..	4 10	3 3	4 0	4 7	6 6
Victoria	4 9	(a) 4 0	5 0	5 2	6 10
South Australia	4 7½	3 3	4 9	5 4	7 9
Western Australia ..	4 7¼	(a) 4 0	4 6	4 10	7 6

(a) Less rail freight. (b) Less rail freight and handling charges.

Proceeds of wheat as realised are applied in reduction of the bank overdrafts caused by payment of advances and expenses. The rate of interest payable to the banks is five per cent. The Government of each State has undertaken to repay all advances made on account of such State, and the Commonwealth Government has guaranteed repayment by the States. Advances to growers are made by means of certificates issued by the agents appointed by the various States. The certificates are payable at banks named by the growers.

(iii) *Results of the Scheme.* In all the States, certain wheat, particularly seed wheat, has not been brought under the scheme. The quantity of wheat pooled therefore differs from that harvested in each State. In addition, wheat grown in one State may be pooled in another. A considerable quantity of New South Wales wheat is included in Victorian returns, and the Victorian total also includes a small quantity of South Australian wheat.

Deliveries made on account of each harvest to 2nd August, 1920, are as follows :—

WHEAT POOLED IN EACH STATE, 1915-16 TO 1919-20.

State in which pooled.	1915–16.	1916–17.	1917–18.	1918–19.	1919–20. (to 2/8/1920).
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
New South Wales ..	58,574,000	32,050,000	33,715,000	13,892,000	447,000
Victoria	59,923,000	50,407,000	36,233,000	23,029,000	12,152,000
South Australia ..	29,894,000	41,996,000	25,867,000	20,472,000	12,469,000
Western Australia ..	15,004,000	13,822,000	7,529,000	7,625,000	9,602,000
Total ..	163,395,000	138,275,000	103,244,000	65,018,000	34,670,000

On 2nd August, 1920, the total overdraft on all pools amounted to £3,409,000.

The quantities of wheat disposed of and in hand on that date were as follows :—

POOLED WHEAT DISPOSED OF AND IN HAND IN EACH STATE, 2nd AUGUST, 1920.

Particulars.	N.S.W.	Vic.	S. Aust.	W. Aust.	Total.
1915–16. (In thousands of bushels.)					
Shipments	28,977	37,769	20,503	10,169	97,418
Local sales	29,597	22,154	8,314	4,835	64,900
Stocks on hand	..	..	1,077	..	1,077
Total	58,574	59,923	29,894	15,004	163,395
1916–17. (In thousands of bushels.)					
Shipments	7,893	24,390	21,169	2,473	55,925
Local sales	21,631	23,094	14,186	11,106	70,017
Stocks on hand	..	904	6,642	..	7,546
Adjustment of stocks	2,526	2,019	..	243	4,788
Total	32,050	50,407	41,997	13,822	138,276
1917–18. (In thousands of bushels.)					
Shipments	10,684	19,830	19,237	2,517	52,268
Local sales	22,124	16,062	5,562	4,791	48,539
Stocks on hand	..	341	1,068	221	1,630
Adjustment of stocks	907	..	..	..	907
Total	33,715	36,233	25,867	7,529	103,344
1918–19. (In thousands of bushels.)					
Shipments	549	6,526	14,287	4,761	26,123
Local sales	13,343	12,772	3,645	2,169	31,929
Stocks on hand	..	3,731	2,540	695	6,966
Total	13,892	23,029	20,472	7,625	65,018
1919–20. (In thousands of bushels.)					
Shipments	..	714	7,983	3,578	12,275
Local sales	447	5,941	1,761	3,802	11,951
Stocks on hand	..	5,497	2,725	2,222	10,444
Total	447	12,152	12,469	9,602	34,670

The value realised to 2nd August, 1920 (all pools) is as follows :—

TOTAL VALUE OF POOLED WHEAT SOLD IN EACH STATE, 2nd AUGUST, 1920.

Particulars.	N.S.W.	Victoria.	S. Aust.	W. Aust.	Total.
	£	£	£	£	£
Oversea shipments and Australian Wheat Board flour contracts	14,599,000	26,452,000	24,301,000	8,755,000	74,107,000
Local sales ..	19,251,000	15,710,000	5,935,000	4,771,000	45,667,000
Total shipments and local deliveries ..	33,850,000	42,162,000	30,236,000	13,526,000	119,774,000

Since the initiation of the "Pool," several sales of magnitude have been made, notably one of 3,000,000 tons to the British Wheat Commission, at a rate of 4s. 9d. per bushel f.o.b., equalling £26,600,000, which is the largest wheat transaction ever recorded, and another of 1,500,000 tons to the same purchaser for £15,400,000, at the rate of 5s. 6d. per bushel.

§ 5. Oats.

1. **Progress of Cultivation.**—Oats came next in importance to wheat amongst the grain crops cultivated last season, but while wheat grown for grain accounted for nearly 60 per cent., oats represented less than 6 per cent. of the area under crop in the Commonwealth. The progress of cultivation of oats since 1860 is shewn in the table hereunder, and more fully in the graphs hereinafter :—

CULTIVATION OF OATS, 1860–1 TO 1918–19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Fed. Ter.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1860–1	6,535	86,337	7	2,273	507	30,303	..	125,962
1870–1	10,683	149,309	122	6,188	2,095	30,946	..	199,343
1880–1	17,923	134,089	116	4,355	1,319	19,853	..	177,655
1890–1	14,102	221,048	411	12,475	1,934	20,740	..	270,710
1900–1	29,383	362,689	385	27,988	4,790	45,073	..	470,308
1910–11	77,991	392,681	2,537	77,674	61,918	63,887	..	676,688
1914–15	43,285	434,815	2,728	140,567	96,085	57,063	191	774,734
1915–16	58,449	353,932	339	126,529	104,086	78,212	97	721,644
1916–17	67,003	441,598	6,564	151,609	122,220	55,028	108	844,130
1917–18	82,512	293,214	3,002	106,556	95,666	34,771	79	615,800
1918–19	86,421	342,867	298	160,823	141,459	36,231	53	768,152

2. **Total Yield.**—The total oat crop of the several States for the same period is furnished in the following table :—

COMMONWEALTH OAT CROP, 1860–1 TO 1918–19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	F. Ter.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1860–1	98,814	2,633,693	91	52,989	11,925	926,418	..	3,723,930
1870–1	119,365	2,237,010	1,586	88,383	39,974	691,250	..	3,177,568
1880–1	356,121	2,362,425	2,081	50,070	21,104	439,446	..	3,231,247
1890–1	256,659	4,919,325	8,967	116,229	38,791	519,395	..	5,859,366
1900–1	593,548	9,582,332	7,855	366,229	86,433	1,406,913	..	12,043,310
1910–11	1,702,706	9,699,127	50,469	1,136,618	776,233	2,063,303	..	15,428,456
1914–15	511,759	1,608,419	43,607	368,425	464,943	1,341,800	2,151	4,341,104
1915–16	1,344,138	9,328,894	2,454	2,134,374	1,538,092	2,189,467	1,560	16,538,979
1916–17	1,083,030	8,289,289	108,664	1,839,541	1,689,352	1,006,183	1,950	14,018,009
1917–18	1,452,144	6,141,287	44,688	1,248,529	908,592	589,224	2,967	10,387,431
1918–19	1,272,411	5,274,984	3,632	1,540,603	1,499,689	848,420	1,341	10,441,080

The principal oat-growing State of the Commonwealth is Victoria. During the past five seasons it has produced 55 per cent. of the total quantity of oats grown in the Commonwealth; South Australia, Western Australia, New South Wales, and Tasmania come next in order of importance. In New South Wales and Tasmania, the

highest production of oats for any season was that of 1909–10, while Victoria experienced its maximum yield in 1903–4, South Australia in 1915–16, Queensland in 1916–17, and Western Australia in 1912–13. For the Commonwealth as a whole, the record yield was that of 17,541,210 bushels in the season 1903–4, while the yields of 16,538,979 and 16,248,857 for 1915–16 and 1908–9 respectively rank second and third.

3. **Average Yield.**—The average yield per acre of the oat crop of the Commonwealth 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 also for the decennium 1909–19, are given in the succeeding table :—

AVERAGE YIELD OF OATS PER ACRE, 1914–15 TO 1918–19.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Ter.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1914–15	11.82	3.70	15.98	2.62	4.84	23.51	11.26	5.60
1915–16	23.00	26.36	7.24	16.87	14.78	27.99	16.08	22.92
1916–17	16.16	18.77	16.55	12.13	13.82	18.28	18.06	16.61
1917–18	17.60	20.94	14.89	11.72	9.50	16.95	37.56	16.87
1918–19	14.72	15.38	12.19	9.58	10.60	23.42	25.30	13.59
Average for 10 seasons 1909–19	(*a*)18.50	18.31	16.51	11.14	12.43	27.36	(*b*)19.05	17.02

(*a*) Including Federal Territory. (*b*) Average for eight seasons.

The smallest average yield per acre ever recorded for the Commonwealth 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 1908–9, amounting to 24.03 bushels per acre.

4. **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 5.89 bushels per head during the last five years under review, as compared with 2.25 bushels per head for the Commonwealth as a whole. Particulars for the seasons 1914–15 to 1918–19 are furnished in the succeeding table :—

OAT PRODUCTION PER 1,000 OF POPULATION, 1914–15 TO 1918–19.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Ter.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1914–15	275	1,124	64	834	1,439	6,662	1,098	879
1915–16	719	6,574	4	4,868	4,837	10,892	820	3,353
1916–17	583	5,926	162	4,251	5,471	5,033	877	2,875
1917–18	768	4,352	66	2,862	2,936	2,900	1,410	2,105
1918–19	659	3,687	5	3,457	4,785	4,062	601	2,076

5. **Value of Oat Crop.**—The estimated value of the oat crop of the several States of the Commonwealth for the season 1918–19 is as follows :—

VALUE OF OAT CROP, (*a*) 1918–19.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Ter.	C'wealth.
Aggregate value..	£331,340	£1,252,809	£620	£288,863	£296,813	£159,079	£350	£2,329,874
Value per acre ..	£3/16/8	£3/13/1	£2/1/7	£1/15/11	£2/2/0	£4/7/10	£6/12/1	£3/0/8

(*a*) Exclusive of the value of straw.

6. **Imports and Exports.**—The production of oats in the Commonwealth has not yet reached such a stage as to admit of a regular export trade in this cereal; in fact in certain years the imports have exceeded the exports, notably in 1903, 1906, 1908, 1910, and in each of the four years prior to 1916–17. The quantities and values of oats imported into and exported from the Commonwealth during the years 1914–15 to 1918–19 are given hereunder :—

COMMONWEALTH IMPORT AND EXPORT OF OATS, 1914-15 TO 1918-19.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1914–15 ..	1,767,490	344,201	38,163	7,904	– 1,729,327	– 336,297
1915–16 ..	2,473,412	501,755	582,055	85,119	– 1,891,357	– 416,636
1916–17 ..	3,700	635	670,985	97,879	667,285	97,244
1917–18 ..	838	219	368,113	53,809	367,275	53,590
1918–19 ..	41,728	9,713	149,413	35,326	107,685	25,613

Note.—The minus sign (–) signifies net imports.

The principal countries from which the Commonwealth imports of oats have been obtained are the Dominion of New Zealand, Chile, Japan, and the United States of America, while the principal countries to which oats were exported during the period under review were New Zealand and the United Kingdom.

7. **Oatmeal, etc.**—Importations of oatmeal, etc., into the Commonwealth take place principally from the United Kingdom, the United States, and New Zealand. The total importations of oatmeal, wheatmeal, and rolled oats during 1918–19 amounted to 94,808 lbs., and represented a value of £2,345, while the exports amounted to 3,897,548 lbs., valued at £52,891, principally to India, New Zealand, and Java.

8. **Comparison with Other Countries.**—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 :—

PRODUCTION OF OATS IN VARIOUS COUNTRIES, 1918.

Country.	Quantity of Oats Produced.	Country.	Quantity of Oats Produced.	Country.	Quantity of Oats Produced.
	Bushels.		Bushels.		Bushels.
United States..	1,538,359,000	Hungary (1915)	78,449,000	Norway ..	13,268,000
Russia in Europe (1915) (*a*) ..	758,628,000	Sweden ..	51,814,000	**Australia** ...	**10,441,000**
Canada ..	362,363,000	Belgium (1915)	38,776,000	Bulgaria (1916)	7,146,000
Germany ..	257,985,000	Argentine Rep.	35,296,000	New Zealand	6,885,000
United Kingdom	249,568,000	Denmark ..	33,235,000	Union of South Africa (1917)	6,716,000
France ..	151,099,000	Italy ..	33,069,000	Japan ..	5,462,000
Austria (1915)	136,685,000	Rumania(1916)	28,050,000	Switzerland	4,150,000
Russia in Asia (1915) ..	82,243,000	Spain ..	24,378,000	Tunis ..	3,086,000
		Algeria ..	18,032,000		
		Netherlands..	16,568,000		

(*a*) Including Poland and Northern Caucasia.

9. **Comparison of Yields.**—The average yield per acre of oats in Australia is a somewhat low one compared with the results obtained in other countries, where the cultivation of this cereal is more extensively carried on. Arranging the countries contained in the foregoing table according to the magnitude of the average yield of oats for the years specified, the results are as follows :—

YIELD OF OATS PER ACRE, VARIOUS COUNTRIES, 1918.

Country.	Average per Acre.	Country.	Average per Acre.	Country.	Average per Acre.
	Bushels.		Bushels.		Bushels.
Belgium (1914) ..	70.29	Germany ..	31.97	France ..	22.79
Switzerland ..	48.26	Austria (1913) ..	31.35	Russia in Europe (1915) ..	21.72
Netherlands ..	46.54	Hungary (1915)	29.45	Bulgaria (1914)	20.90
United Kingdom	44.54	Sweden ..	29.04	Tunis ..	19.78
New Zealand ..	39.87	Italy ..	27.31	Spain ..	16.18
Norway ..	38.68	Union of South Africa (1917)	26.86	**Australia** ..	**13.59**
United States ..	34.65	Rumania (1916)	26.26	Russia in Asia (1915) ..	13.38
Japan ..	34.57	Canada ..	24.50	Argentine Rep.	11.84
Denmark ..	33.88				

10. **Price of Oats.**—The average wholesale prices of oats in the markets of the several capitals for the year 1918 are given in the following table :—

AVERAGE WHOLESALE PRICE OF OATS PER BUSHEL, 1918.

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 11½	3 10	3 10	3 2	3 9¾	4 8¾

(a) Year ended 30th June, 1919.

§ 6. Maize.

1. **States Growing Maize.**—The only States in which maize is at all extensively grown for grain are those of New South Wales and Queensland, the area so cropped in these two States during the season 1918–19 being 264,087 acres, or 92 per cent. of the total for the Commonwealth. Of the balance, Victoria contributed 22,559 acres, South Australia 112 acres, Western Australia 39 acres, and the Northern Territory 15 acres. The climate of Tasmania prevents the growing of maize for grain in that State. In South Australia, prior to 1908, particulars concerning maize had not been specially asked for on the form used in the collection of agricultural statistics. In all the States, maize is grown to a greater or less extent as green forage, particularly in connexion with the dairying industry.

2. **Area under Maize.**—The area devoted to the growing of maize for grain in each State, from 1880 onwards, is given in the following table, and the actual fluctuations from year to year are shewn more fully on the graph hereinafter.

The total area under maize in the Commonwealth exceeded 350,000 acres for the first time in the season 1909–10, and although it fluctuated somewhat during the succeeding nine years, it may be considered to have remained at about that figure. The greatest divergence during the period occurred in 1910–11, when a record total of 414,914 acres was harvested. The unfavourable weather conditions resulted in the acreage under maize during 1918–19 being reduced by 45,245 acres as compared with the preceding season.

AREA UNDER MAIZE, 1880-1 TO 1918-19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	N. Ter.	F. Ter.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1880-1 ..	127,196	1,769	44,109	..	32	..	..	173,106
1890-1 ..	191,152	10,357	99,400	..	81	..	..	300,990
1900-1 ..	206,051	9,389	127,974	..	91	..	..	343,505
1910-11 ..	213,217	20,151	180,862	(a)619	46	19	..	414,914
1914-15 ..	143,663	19,433	176,372	189	73	51	..	339,781
1915-16 ..	154,119	22,258	146,474	702	28	45	11	323,637
1916-17 ..	155,373	23,076	181,405	117	51	45	5	360,072
1917-18 ..	145,733	20,987	165,124	70	97	25	21	332,057
1918-19 ..	114,582	22,559	149,505	112	39	15	..	286,812

(a) Particulars for years prior to 1907-8 not available.

3. Total Yield.—The average yield for the season 1918-19 was the second lowest since 1887. The 1910-11 crop was a record one, and exceeded 13,000,000 bushels, while the average annual production of maize during the last decade was 8,981,568 bushels. Particulars concerning the yield from 1880 onwards are given hereunder :—

MAIZE CROP, 1880-1 TO 1918-19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W.Aust.	N. Ter.	F. Ter.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1880-1	4,518,897	49,299	1,409,607	..	896	..	..	5,978,699
1890-1	5,713,205	574,083	2,373,803	..	1,526	..	..	8,662,617
1900-1	6,292,745	604,180	2,456,647	..	1,399	..	..	9,354,971
1910-11	7,594,130	982,103	4,460,306	(a)6,375	718	449	..	13,044,081
1914-15	3,174,825	1,018,419	4,260,673	170	999	475	..	8,455,561
1915-16	3,773,405	999,886	2,003,463	15,837	273	450	195	6,793,509
1916-17	4,333,430	1,172,330	3,018,934	993	949	450	50	8,527,136
1917-18	3,499,529	1,152,787	4,188,586	796	701	432	429	8,843,260
1918-19	2,091,921	711,679	4,105,974	1,756	623	200	..	6,912,153

(a) Particulars for years prior to 1907-8 not available.

4. Average Yield.—In the following table particulars are given of the average yield per acre of the maize crops of the several States for the seasons 1914-15 to 1918-19, and also for the decennium 1909-19 :—

AVERAGE YIELD OF MAIZE PER ACRE, 1914-5 TO 1918-19.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	N. Ter.	F. Ter.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1914-15	22.10	52.41	24.16	0.90	13.68	9.31	..	24.89
1915-16	24.48	44.92	13.68	22.56	9.75	10.00	17.73	20.99
1916-17	27.89	50.80	16.64	8.49	18.61	10.00	10.00	23.68
1917-18	24.01	54.93	25.37	11.37	7.23	17.28	20.43	26.63
1918-19	18.26	31.55	27.46	15·68	15.97	13·33	..	24.10
Average for 10 seasons 1909-19	a27.82	46.64	22.18	b14.61	13.46	c18.75	d14.41	26.35

(a) Including Federal Territory.
(b) Including Northern Territory.
(c) Average for nine seasons.
(d) Average for eight seasons.

The extraordinarily high average yield obtained in Victoria is due, in large measure, to the fact that the area under maize in that State is comparatively small and is situated in districts that are peculiarly suited to the production of this grain. The average yield in New South Wales is appreciably higher than that obtained in Queensland.

5. **Value of Maize Crop.**—The value of the Commonwealth maize crop for the season 1918–19 has been estimated at £2,016,844, made up as follows :—

VALUE OF MAIZE CROP, 1918-19.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	N. Ter.	C'wealth.
	£	£	£	£	£	£	£
Aggregate value ..	725,480	263,914	1,026,494	637	249	70	2,016,844
Value per acre ..	£6/6/8	11/14/0	6/17/4	5/13/9	6/7/8	4/13/4	7/0/8

6. **Relation to Population.**—During the past ten seasons the Commonwealth production of maize has ranged between 1.37 bushels per head of population in 1918–19 and 3 bushels per head in 1910–11. The production in Queensland, the State in which the maize yield per head of population is highest, ranged during the same period between 3 bushels per head in 1915–16 and 7½ bushels per head in 1910–11. Details for the several States during the past five seasons are as follows :—

MAIZE PRODUCTION PER 1,000 OF POPULATION, 1914-15 TO 1918-19.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	N. Ter.	F. Ter.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1914–15..	1,705	712	6,216	..	3	120	..	1,711
1915–16..	2,017	705	2,952	36	1	99	107	1,377
1916–17..	2,332	835	4,509	2	3	94	32	1,749
1917–18..	1,851	817	6,179	2	2	88	204	1,792
1918–19..	1,084	497	5,913	4	2	42	..	1,374

7. **Australian and Foreign Maize Production.**—The following table gives the production of maize in Australia and in the leading maize-producing countries of the world. The figures shew that the United States of America was responsible for over 72 per cent. of the total production.

PRODUCTION OF MAIZE IN VARIOUS COUNTRIES, 1918.

Country.	Production of Maize.	Country.	Production of Maize.
	Bushels.		Bushels.
United States	2,582,814,000	Bulgaria (1915)	33,929,000
Hungary (1915)	175,025,170	Spain	24,141,000
Argentine Republic ..	170,660,000	Philippine Islands (1916)	13,652,060
Rumania (1915)	83,767,793	Serbia (1915)	11,632,800
India (British) (1915) ..	79,684,680	Russia in Asia (1913) ..	10,765,860
Russia in Europe (1916) ..	69,786,137	Portugal (1915) ..	8,991,185
Italy	66,926,000	France	8,744,000
Egypt (1916)	66,270,123	Canada	6,947,000
Mexico (1915)	58,164,000	**Australia**	**6,912,153**
Austria (1915)	40,714,800	Uruguay (1916) ..	4,463,118
Union of South Africa ..	34,644,000	Japan	3,756,000

8. **Comparison of Yields.**—The average yield per acre of maize in the Commonwealth during 1918 was 24.10 bushels, and may be regarded as highly satisfactory when compared with that of other maize-producing countries. Egypt, Hungary, Canada, and Japan are

the only countries showing a higher average. The remaining countries shewn in the following table had average yields per acre ranging from 10.09 to 24.03 bushels.

AVERAGE YIELD OF MAIZE PER ACRE IN VARIOUS COUNTRIES, 1918.

Country.	Average Yield per Acre.	Country.	Average Yield per Acre.
	Bushels.		Bushels.
Egypt (1916)	35.82	Russia in Europe (1916) ..	19.04
Hungary (1915)	28.26	Austria (1913)	18.61
Canada	27.79	Rumania (1915)	16.09
Japan	26.27	Serbia (1913)	15.85
Australia (*a*)	**24.10**	India (1915)	13.12
United States of America ..	24.03	Uruguay (1915)	12.95
Spain	20.65	Philippine Islands (1916) ..	12.77
Argentine Republic ..	19.58	France	11.91
Italy	19.35	Union of South Africa ..	11.74
Bulgaria (1914)	19.07	Russia in Asia (1913) ..	10.09

(*a*) Average yield for 10 years, 26.35 bushels.

9. **Oversea Imports and Exports.**—Except in the years 1902, 1903, 1912, 1914–15 and 1915–16, when many of the maize crops failed, the Commonwealth oversea trade in maize has been practically insignificant. In the first of the years mentioned, nearly two million, and in 1915–16 nearly three and a half million bushels were imported. In 1908, 1909, and 1919 also, owing to the small harvests of the seasons 1907–8, 1908–9, and 1918–19, the imports of maize were largely in excess of the exports. Details of imports and exports for the years 1914–15 to 1918–19 are as follows :—

COMMONWEALTH IMPORTS AND EXPORTS OF MAIZE, 1914-15 TO 1918-19.

Year.	Imports.		Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1914–15	1,457,660	282,461	12,266	2,873	1,445,394	279,588
1915–16	3,432,571	712,650	4,237	1,088	3,428,334	711,562
1916–17	41,952	8,162	50,296	11,894	– 8,344	– 3,732
1917–18	3,226	770	128,988	29,069	– 125,762	– 28,299
1918–19	255,605	73,774	84,120	20,804	171,485	52,970

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

The principal countries to which maize has been exported from the Commonwealth are New Zealand and the Pacific Islands, while the principal countries from which importations have taken place are South Africa, Java, and the Pacific Islands.

10. **Prepared Maize.**—A moderate quantity of corn-flour is imported annually into the Commonwealth, the principal countries of supply being the United Kingdom and the United States. During the year 1918–19 these importations amounted to 236,091 lbs., and represented a value of £3,735. The exports of this commodity have been steadily increasing in dimensions during the past five years, ranging from 61,143 lbs., valued at £985, in 1914–15, to 2,465,632 lbs., valued at £47,166 in 1918–19.

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

AVERAGE SYDNEY PRICE OF MAIZE PER BUSHEL, 1914-15 TO 1918-19.

Particulars.	1914–15.	1915–16.	1916–17.	1917–18.	1918–19.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Average price per bushel ..	4 6	5 2	3 8	4 8½	6 11½

§ 7. Barley.

1. **Area under Barley.**—The area devoted to barley in the Commonwealth has fluctuated very considerably, though with a tendency to increase during the past few years. Taking a series of years, the principal barley-growing State is Victoria, but for the past five seasons South Australia has attained the lead in regard to acreage, and for 1918–19 accounted for more than 51 per cent. of the Commonwealth area devoted to this crop; Victoria was next in importance with a percentage of about 39½; the remaining 9½ per cent. being represented by Western Australia, New South Wales, Tasmania, and Queensland, in the order named. The figures here given relate to the areas harvested for grain; only small areas are cropped for hay, while more considerable quantities are cut for green forage. These, however, are not included in this sub-section. The area under barley for grain in the several States from 1880 onwards is shewn in the following table:—

COMMONWEALTH AREA UNDER BARLEY, 1880–1 TO 1918–19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1880–1 ..	8,056	68,630	1,499	13,074	6,363	8,297	105,919
1890–1 ..	4,937	87,751	584	14,472	5,322	4,376	117,442
1900–1 ..	9,435	58,853	7,533	15,352	2,536	4,502	98,211
1910–11 ..	7,082	52,687	5,578	34,473	3,369	5,235	108,424
1914–15 ..	4,861	62,492	7,166	66,315	6,986	5,836	153,656
1915–16 ..	6,369	61,400	1,367	84,900	10,069	5,409	169,514
1916–17 ..	5,195	93,015	12,674	103,627	11,105	4,637	230,253
1917–18 ..	6,370	84,931	7,702	95,654	5,028	5,185	204,870
1918–19 ..	7,980	100,198	1,316	130,357	7,982	7,036	254,869

2. **Total Yield.**—The total production of barley in the Commonwealth for the season 1918–19 amounted to 4,763,721 bushels, giving an average yield of 18.69 bushels per acre as compared with 18.19 for the decennium 1909–19. Particulars concerning the yields of the several States from 1880 onwards are as follows:—

COMMONWEALTH BARLEY CROP, 1880–1 TO 1918–19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1880–1 ..	163,395	1,068,830	31,433	151,886	89,082	169,156	1,673,782
1890–1 ..	81,383	1,571,599	12,673	175,583	85,451	99,842	2,026,531
1900–1 ..	114,228	1,215,478	127,144	211,102	29,189	116,911	1,814,052
1910–11 ..	82,005	1,340,387	83,621	544,471	33,566	142,318	2,226,368
1914–15 ..	46,500	600,599	105,613	447,310	24,090	104,798	1,328,910
1915–16 ..	114,846	1,734,511	8,130	1,697,670	130,870	115,523	3,801,550
1916–17 ..	73,370	1,799,784	250,167	1,734,420	134,055	88,696	4,080,492
1917–18 ..	97,824	1,970,650	143,574	1,651,036	35,761	98,013	3,996,858
1918–19 ..	86,313	2,028,635	8,824	2,417,349	81,451	141,149	4,763,721

3. **Malting and other Barley.**—In recent years the statistics of all the States have distinguished between "malting" and "other" barley. Particulars for 1918–19 season are as follows :—

MALTING AND OTHER BARLEY, 1918–19.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Malting barley ..	5,929	52,222	1,082	109,920	3,994	6,039	179,186
Other barley	2,051	47,976	234	20,437	3,988	997	75,683
Total ..	7,980	100,198	1,316	130,357	7,982	7,036	254,869
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
Malting barley ..	65,682	1,081,256	7,069	2,102,157	43,039	120,660	3,419,863
Other barley	20,631	947,379	1,755	315,192	38,412	20,489	1,343,858
Total ..	86,313	2,028,635	8,824	2,417,349	81,451	141,149	4,763,721

Taking the Commonwealth as a whole, over 70 per cent. of the area devoted to this grain in 1918–19 was cropped for malting barley. The proportion varies considerably in the several States.

4. **Total Acreage and Yield.**—The following table sets out the total acreage and yield of malting and other barley in the Commonwealth as a whole during the past five seasons :—

AREA AND YIELD, MALTING AND OTHER BARLEY, COMMONWEALTH, 1914–15 TO 1918–19.

Season.	Acres.			Bushels.			Average Bushels per Acre.		
	Malting.	Other.	Total.	Malting.	Other.	Total.	Malting.	Other.	Total.
1914–15 ..	101,930	51,726	153,656	995,413	333,497	1,328,910	9.77	6.45	8.65
1915–16 ..	106,217	63,297	169,514	2,365,126	1,436,424	3,801,550	22.27	22.69	22.43
1916–17 ..	141,846	88,407	230,253	2,505,118	1,575,374	4,080,492	17.66	17.82	17.72
1917–18 ..	136,785	68,085	204,870	2,602,449	1,394,409	3,996,858	19.03	20.48	19.51
1918–19 ..	179,186	75,683	254,869	3,419,863	1,343,858	4,763,721	19.09	17.76	18.69
Average 10 seasons 1909–19	119,393	59,109	178,502	2,179,920	1,067,143	3,247,063	18.26	18.05	18.19

For the past ten seasons the area and production of malting barley have represented approximately twice the corresponding figures for other barley. The average yield per acre differs very little in respect of the two classes of barley, malting obtaining a slight average advantage of 0.21 bushels per acre during the last ten years.

5. **Value of Barley Crop.**—The estimated value of the total barley crop of the Commonwealth for the seasons 1914–15 to 1918–19 was £343,423, £655,917, £734,154, £834,075, and £1,221,863, in the order named. The extent to which the several States have contributed to the latter total is shewn in the following table :—

VALUE OF BARLEY CROP,(a) 1918–19.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
Total value	£23,620	£507,674	£1,544	£630,830	£22,908	£35,287	£1,221,863
Value per acre ..	£2/19/2	£5/1/4	£1/3/6	£4/16/9	£2/17/5	£5/0/4	£4/15/11

(a) Exclusive of the value of straw.

6. **Relation to Population.**—During the last five seasons the quantity of barley produced in the Commonwealth has averaged under three-quarters of a bushel per head of population. For the season 1918–19 the production ranged from 5½ bushels per head in South Australia to 0.6 pounds per head in Queensland. Details for the years 1914–15 to 1918–19 are as follows :—

BARLEY PRODUCTION PER 1,000 OF POPULATION, 1914–15 TO 1918–19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1914–15	25	420	156	1,012	75	520	269
1915–16	61	1,222	12	3,872	412	575	771
1916–17	39	1,287	374	4,008	434	444	837
1917–18	52	1,397	212	3,785	116	482	810
1918–19	45	1,418	13	5,424	260	676	947

7. **Commonwealth Imports and Exports.**—The Commonwealth oversea trade in barley is not large, though it shewed signs of extending during the past five years. Owing to the severe drought during 1914–15, the barley crop for that year was very low, and a fairly heavy importation of barley was necessary, the bulk of which came from the United States. During the next four years, however, the Commonwealth exported 900,656 bushels of barley valued at £203,828, principally to New Zealand, United Kingdom, and Japan. Particulars of the Commonwealth overseas imports and exports of barley for the years 1914–15 to 1918–19 are contained in the following table :—

COMMONWEALTH IMPORTS AND EXPORTS OF BARLEY, 1914–15 TO 1918–19.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1914–15	290,226	66,402	103,522	15,245	–186,704	–51,157
1915–16	147,144	27,387	185,122	36,661	37,978	9,274
1916–17	58	9	256,804	52,891	256,746	52,882
1917–18	34	8	282,252	64,703	282,218	64,695
1918–19	456	203	176,478	49,573	176,022	49,370

Note.—The minus sign (–) signifies net imports.

From time to time an export trade in Australian pearl and Scotch barley has been carried on, the total exports for 1918–19 reaching 983,343 lbs., valued at £12,840. The trade for the year was mainly with the Straits Settlements and New Zealand.

8. **Commonwealth Imports and Exports of Malt.**—In normal times the importations of malt into the Commonwealth are fairly extensive, the supply being obtained principally from the United Kingdom. Since the outbreak of the war in 1914, however, imports have continuously declined, and the quantities exported have practically remained negligible, with the exception of 1917–18, when 117,075 bushels, valued at £47,626, were exported mainly to Japan, South Africa, and the Philippines. Details of imports and exports for the years 1914–15 to 1918–19 are given hereunder :—

COMMONWEALTH IMPORTS AND EXPORTS OF MALT, 1914–15 TO 1918–19.

Year.	Imports.		Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1914–15	68,215	23,743	165	87	68,050	23,656
1915–16	23,910	9,596	30	13	23,880	9,583
1916–17	7,452	4,196	73	35	7,379	4,161
1917–18	35	106	117,075	47,626	−117,040	−47,520
1918–19	..	1	..	..	..	1

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

9. **Comparison with other Countries.**—In comparison with the barley production of other countries of the world, that of Australia appears very small indeed. Particulars for some of the leading countries for the year 1918 are as follows, the Australian figures being added for the sake of comparison :—

PRODUCTION OF BARLEY IN VARIOUS COUNTRIES, 1918.

Country.	Production of Barley.	Country.	Production of Barley.
	Bushels.		Bushels.
Russia in Europe (1915) (a)	380,229,700	Russia in Asia (1914) ..	18,855,799
United States	256,375,000	Sweden	11,204,000
British India (1917) ..	150,690,321	Egypt	9,475,000
Germany	91,033,000	Tunis	8,818,000
Spain	86,875,000	Italy	8,818,000
Japan	74,750,000	Norway	5,397,000
Canada	74,194,000	**Australia**	**4,764,000**
United Kingdom ..	62,080,000	Chile (1916)	4,224,645
Austria (1915)	61,012,097	Belgium (1915) ..	3,877,600
Algeria	58,422,000	Netherlands	2,447,000
Hungary (1915) ..	54,466,708	Serbia (1915)	2,181,150
Rumania (1916)	29,118,837	Argentine Republic (1917)	2,098,751
France	26,980,000	Union of S'th Africa (1917)	969,400
Denmark	20,591,000	New Zealand	710,932

(a) Including Northern Caucasia.

10. **Average Yield of Barley per Acre in various Countries.**—The following table shews the average yield of barley per acre in various countries of the world, ranging from nearly 43 bushels in the Netherlands to 5½ bushels in the Argentine Republic :—

AVERAGE YIELD OF BARLEY PER ACRE IN VARIOUS COUNTRIES, 1918.

Country.	Average yield per Acre.	Country.	Average yield per Acre.
	Bushels.		Bushels.
Netherlands	42.93	Spain	20.63
New Zealand	37.91	Rumania (1916)	20.03
Chile (1916)	34.91	France	19.88
Denmark	34.72	Hungary (1915)	19.25
Norway	34.60	India (1917)	19.18
United Kingdom	33.77	**Australia**	**18.69**
Egypt	28.20	Italy	17.85
Germany	26.99	Union of South Africa (1917)	17.01
United States	26.49	Russia in Asia (1916) ..	16.88
Japan	26.13	Russia in Europe (1915) ..	14.23
Sweden	24.79	Tunis	7.12
Canada	23.53	Argentine Republic (1917) ..	5.41
Algeria	20.90		

11. **Average Yield.**—The average yield per acre of barley varies considerably in the different States, being as a rule highest in Tasmania and Victoria, and lowest in Western Australia. Details for each State during the past five seasons, and also for the decennium 1909–19, are given in the following table :—

AVERAGE YIELD PER ACRE OF BARLEY, 1914–15 TO 1918–19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1914–15	9.57	9.61	14.74	6.75	3.45	17.96	8.65
1915–16	18.03	28.25	5.95	20.00	13.00	21.36	22.43
1916–17	14.12	19.35	19.74	16.74	12.07	19.13	17.72
1917–18	15.36	23.20	18.64	17.26	7.11	18.90	19.51
1918–19	10.82	20.25	6.71	18.54	10.20	20.06	18.69
Average for 10 seasons 1909–19	14.77	20.89	15.57	16.55	11.45	23.23	18.19

12. **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 :—

AVERAGE MELBOURNE PRICE OF BARLEY PER BUSHEL, 1914 TO 1918.

Particulars.	1914.	1915.	1916.	1917.	1918.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Malting barley	3 9⅓	5 4¾	4 4¼	4 4¾	5 9
Cape barley	2 9¼	4 4¼	3 1½	3 1⅓	4 0

§ 8. Other Grain and Pulse Crops.

In addition to the grain crops already specified, the only grain and pulse crops at all extensively grown in the Commonwealth are beans, peas, and rye. The total area under the two former crops for the season 1918–19 was 56,530 acres, giving a yield of 814,879 bushels, or an average of 14.41 bushels per acre, being less than the average yield for the decennium ended 1918–19, which was 16.87 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 the Commonwealth during the season 1918–19 was 3,886 acres, yielding 33,076 bushels, and giving an average of 8.51 bushels per acre. This was below the average for the past ten seasons, which was 11.24 bushels per acre. Over 36 per cent. of the rye grown during the season was produced in New South Wales and 22 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 ever 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. Area.—The principal potato-growing State of the Commonwealth as regards area is Victoria; Tasmania, for some years prior to 1909–10, usually ranking second, and New South Wales third. The relative positions of the two latter States were, however, reversed during the five seasons ended 1913–14, but Tasmania again took the lead over New South Wales in the last five seasons ended 1918–19.

The area under potatoes in each State from 1890 onwards is given hereunder :—

COMMONWEALTH AREA UNDER POTATOES, 1890–1 TO 1918–19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	F. Ter.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1890–1 ..	19,406	53,818	6,270	6,626	511	20,133	..	106,764
1900–1 ..	29,408	38,477	11,060	6,628	1,794	23,068	..	110,435
1910–11 ..	44,452	62,904	8,326	7,812	1,791	26,230	..	151,515
1914–15 ..	30,410	65,495	8,385	7,639	4,778	31,613	8	148,328
1915–16 ..	19,582	56,910	5,796	4,341	4,866	29,491	7	120,993
1916–17 ..	22,437	73,618	8,908	4,737	5,838	34,345	12	149,895
1917–18 ..	22,558	66,966	10,738	4,164	4,484	27,309	22	136,241
1918–19 ..	20,877	51,620	6,434	3,275	3,936	25,023	2	*a* 111,169

(*a*) Includes 2 acres in Northern Territory.

2. **Total Yield.**—For the season 1918–19, Victoria's production represented about 46½ per cent. of the total for the Commonwealth, Tasmania and New South Wales coming next in order with 22½ and 19 per cent. respectively. The total Commonwealth production for the season 1906–7 viz., 507,153 tons, was the highest ever attained, the yield which most nearly approached it being 449,383 tons in 1903–4. Details as to production in the several States during the period from 1890 onwards are as follows :—

COMMONWEALTH PRODUCTION OF POTATOES, 1890–1 TO 1918–19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	F. Ter.	C'wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1890–1 ..	52,791	204,155	13,112	23,963	1,900	73,158	..	369,079
1900–1 ..	63,253	123,126	20,014	14,566	4,836	93,862	..	319,657
1910–11 ..	121,033	163,312	15,632	23,920	5,864	70,090	..	399,851
1914–15 ..	40,694	189,225	16,014	18,035	14,724	78,907	15	357,614
1915–16 ..	44,420	173,821	7,439	12,991	14,118	79,890	25	332,704
1916–17 ..	45,296	187,992	19,457	20,343	16,841	67,038	35	357,002
1917–18 ..	49,934	182,195	22,139	11,315	11,320	70,442	50	347,395
1918–19 ..	30,353	137,533	11,083	13,219	11,697	56,528	3	260,416

3. **Average Yield per Acre.**—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, except in the most northerly portions, the average yield during the past ten seasons being 2.59 tons per acre. The lowest average yield is that obtained in Queensland with an average of 1.83 tons for the same period.

Particulars for each State for the seasons 1914–15 to 1918–19, and also for the past decennium, are given hereunder :—

AVERAGE YIELD OF POTATOES PER ACRE, 1914–15 TO 1918–19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Ter.	C'wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1914–15	1.34	2.89	1.91	2.36	3.08	2.50	1.88	2.41
1915–16	2.27	3.05	1.28	2.99	2.90	2.71	3.57	2.75
1916–17	2.02	2.55	2.18	4.29	2.88	1.95	2.92	2.38
1917–18	2.21	2.72	2.06	2.72	2.52	2.58	2.27	2.55
1918–19	1.45	2.66	1.72	4.04	2.97	2.26	1.50	2.34
Average for 10 seasons 1909–19	(a)2.26	2.78	1.83	3.09	2.99	2.61	(b)1.88	2.59

(a) Including Federal Territory. (b) Average for eight seasons.

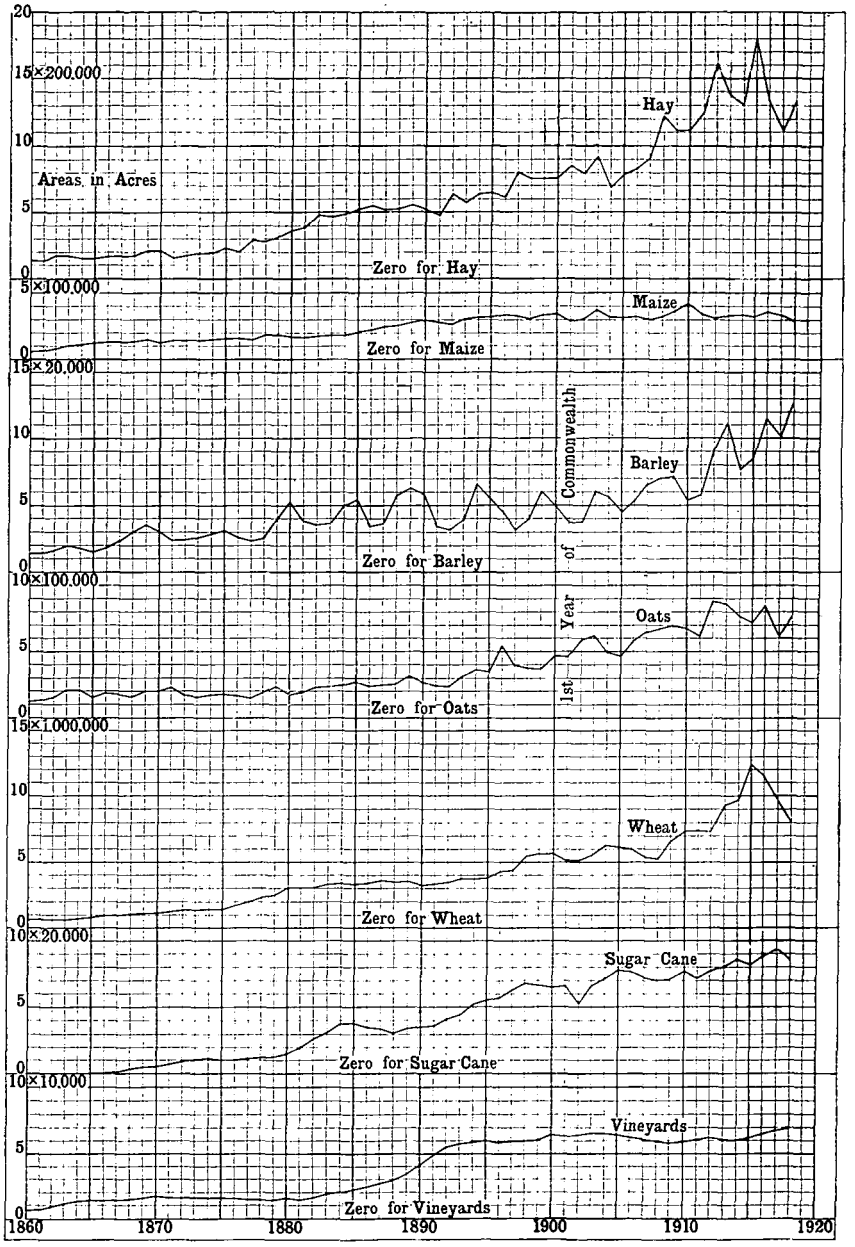
4. **Value of Potato Crop.**—The estimated value of the potato crop of each State for the season 1918–19 is furnished in the following table, together with the value per acre :—

VALUE OF POTATO CROP, 1918–19.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Ter.	C'wealth.
Total value ..	£368,730	£1,272,180	£102,241	£142,062	£152,061	£339,168	£40	£2,376,490a
Value per acre	£17/13/3	£24/12/11	£15/17/10	£43/7/5	£38/12/8	£13/11/1	£20/0/0	£21/7/7

(a) Includes Northern Territory, £8.

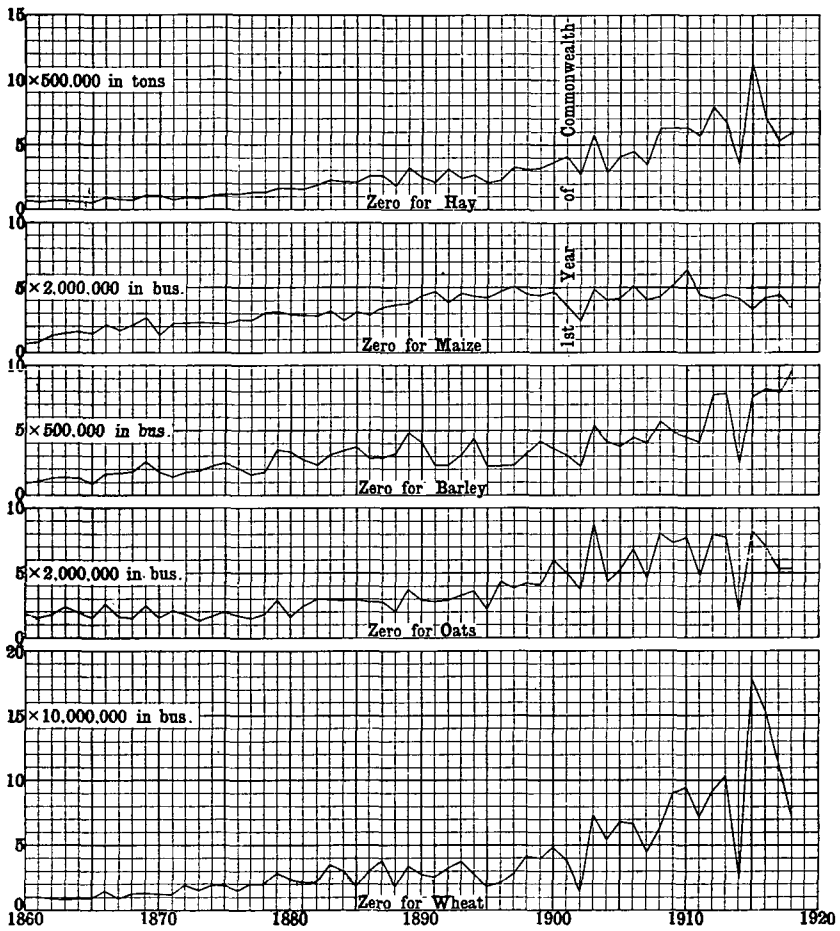
GRAPHS SHEWING THE AREA UNDER THE PRINCIPAL CROPS IN THE COMMONWEALTH FROM 1860–1 TO 1918–19.



(See pages—for wheat, 355; oats, 365; maize, 369; barley, 372; hay, 382; sugar-cane, 386; and vineyards, 390.)

EXPLANATION OF GRAPHS.—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-hand of the diagram. The height of each graph above the base line denotes, for the crop to which it relates, the total area under cultivation in the Commonwealth during the successive seasons.

GRAPHS SHEWING THE PRODUCTION OF THE PRINCIPAL CROPS IN THE COMMONWEALTH FROM 1860-1 TO 1918-19.



(See pages—for wheat, 356; oats, 365; maize, 369; barley, 372; and hay, 383.)

[a] EXPLANATION OF GRAPHS.—In this diagram 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 the wheat graph, 10,000,000 bushels; oats, 2,000,000 bushels; barley, 500,000 bushels; maize, 2,000,000 bushels; and hay, 500,000 tons. The height of each graph above its base line denotes the aggregate yield in the Commonwealth of that particular crop during the successive seasons.

5. **Relation to Population.**—The average production of potatoes per annum per head of the population of the Commonwealth for the past five seasons has been approximately 150 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 7½ cwt. Details for the seasons 1914–15 to 1918–19 are as follows :—

POTATO PRODUCTION PER 1,000 OF POPULATION, 1914–15 TO 1918–19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	F. Ter.	C'wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1914–15 ..	22	132	24	41	46	392	8	72
1915–16 ..	24	122	11	30	44	397	14	67
1916–17 ..	24	134	29	47	55	335	16	73
1917–18 ..	26	129	33	26	37	347	24	70
1918–19 ..	16	96	16	30	37	271	1	52

6. **Commonwealth Imports and Exports.**—Under normal conditions there is generally a fairly large export trade in potatoes carried on by the Commonwealth, 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, large importations from New Zealand usually take place. The quantities and values of the Commonwealth oversea imports and exports of potatoes during the past five years are shewn in the following table :—

COMMONWEALTH IMPORTS AND EXPORTS OF POTATOES, 1914–15 TO 1918–19.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£	Tons.	£
1914–15	2,708	15,406	1,803	12,690	– 905	– 2,716
1915–16	17,596	149,488	1,208	13,110	– 16,388	– 136,378
1916–17	91	951	4,492	37,579	4,401	36,628
1917–18	38	367	3,348	23,203	3,310	22,836
1918–19	308	3,570	6,742	50,308	6,434	46,738

Note.—The minus sign (–) signifies net imports.

§ 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 1918–19 being only 15,235 acres. The principal of these crops are onions, mangolds, sugar beet, turnips, and "sweet potatoes" (*Batatas edulis*). 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 the Commonwealth during the season 1918–19 was 6,410 acres, giving a yield of 28,849 tons, and averaging 4.5 tons per acre. The area devoted in 1918–19 to root crops other than potatoes and onions, viz., 8,825 acres, yielded 65,891 tons, and gave an average of 7.47 tons per acre. The areas and yields here given are exclusive of the production of "market gardens," a reference to which will be made later.

2. **Commonwealth Imports and Exports.**—The only root crop, other than potatoes, in which any considerable oversea trade is carried on by the Commonwealth is that of onions. During the past five years 3,476 tons, valued at £29,737, were imported, principally from New Zealand, Japan, and the United States, while during the same period, the exports totalled 19,603 tons, valued at £173,291, and were shipped mainly to New Zealand, the Pacific Islands, the Philippines, and the United States.

§ 11. Hay.

1. **Nature and Extent.**—As already stated, the most important crop of the Commonwealth is that of wheat grown for grain. Next to this in importance is the hay crop, which for the five seasons ended 1918-19 averaged more than 17½ per cent. of the area under crop in the Commonwealth, and for 1918–19 itself, 20.2 per cent. In most European countries the hay crop consists almost entirely of meadow and other grasses, whilst in Australia a very large proportion of the area under hay comprises cereal crops, mainly wheat and oats. A considerable quantity of lucerne hay is also made, particularly in New South Wales and Queensland. The area under hay of all kinds in the several States from 1860 onwards is given hereunder :—

AREA UNDER HAY, 1860–1 TO 1918–19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	N. Ter.	F. Ter.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1860–1	46,584	90,921	276	55,818	6,626	31,837	..	..	232,062
1870–1	65,404	163,181	3,671	140,316	17,173	33,612	..	..	423,357
1880–1	131,153	249,656	12,022	272,567	19,563	31,615	..	..	716,576
1890–1	175,242	413,052	31,106	345,150	23,183	45,381	..	..	1,033,114
1900–1	466,236	502,105	42,497	341,330	104,254	61,541	..	..	1,517,963
1910–11	638,577	832,669	98,558	440,177	175,432	72,992	..	..	2,258,405
1914–15	783,107	895,755	79,327	445,832	332,037	89,598	120	2,837	2,628,613
1915–16	1,107,228	1,330,455	55,174	709,831	290,036	103,216	140	1,691	3,597,771
1916–17	857,533	897,186	112,964	483,040	240,726	79,274	140	999	2,671,862
1917–18	619,614	748,808	96,431	407,011	265,899	74,107	14	1,030	2,212,914
1918–19	813,379	984,479	54,772	501,731	249,796	87,136	30	1,581	2,692,904

It will be seen from this table that in all the States marked fluctuations occur in the area devoted to the hay crop from year to year. 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 the due development of the 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 the Commonwealth for the season 1915–16 was the highest on record, and that for 1912–13 the next.

2. **Kinds of Hay.**—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 :—

KINDS OF HAY GROWN, 1914–15 TO 1918–19.

Kind of Hay Crop.	1914–15.	1915–16.	1916–17.	1917–18.	1918–19.
	Acres.	Acres.	Acres.	Acres.	Acres.
NEW SOUTH WALES—					
Wheaten	568,982	878,881	633,438	434,908	612,771
Oaten	158,949	175,285	160,898	118,209	152,057
Barley	1,179	1,348	866	843	1,238
Lucerne	52,570	50,528	61,584	64,668	46,336
Other	1,427	1,186	747	986	977
Total ..	783,107	1,107,228	857,533	619,614	813,379

KINDS OF HAY GROWN, 1914–15 TO 1918–19—*continued.*

Kind of Hay Crop.	1914–15.	1915–16.	1916–17.	1917–18.	1918–19.
	Acres.	Acres.	Acres.	Acres.	Acres.
VICTORIA—					
Wheaten	192,562	333,449	195,532	192,478	274,320
Oaten	677,895	964,318	672,905	532,634	691,808
Lucerne, etc.	25,298	32,688	28,749	23,696	18,351
Total ..	895,755	1,330,455	897,186	748,808	984,479
QUEENSLAND—					
Wheaten	14,906	14,003	21,047	7,247	1,902
Oaten	12,573	6,377	30,041	10,901	1,803
Lucerne	47,785	32,288	55,928	73,347	48,264
Other	4,063	2,506	5,948	4,936	2,803
Total ..	79,327	55,174	112,964	96,431	54,772
SOUTH AUSTRALIA—					
Wheaten	318,586	476,423	323,633	292,803	358,068
Oaten	118,505	190,321	148,881	107,284	138,507
Lucerne	3,976	3,380	2,855	2,123	2,106
Other	4,765	39,707	7,671	4,801	3,050
Total ..	445,832	709,831	483,040	407,011	501,731
WESTERN AUSTRALIA—					
Wheaten	266,113	225,959	188,272	208,303	190,399
Oaten	64,037	62,622	51,255	56,002	58,551
Lucerne	328	258	230	352	137
Other	1,559	1,197	969	1,242	709
Total ..	332,037	290,036	240,726	265,899	249,796

It will be seen that 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.

3. **Total Yield.**—The Commonwealth hay crop for the season 1915–16 was the highest on record, and amounted to 5,633,988 tons. The second in importance was 3,955,311 tons for the season 1912–13, while the third was 3,507,589 tons for 1916–17. For many years past the State of Victoria has been the largest hay producer in the Commonwealth, and in the five seasons, 1914–15 to 1918–19 inclusive, accounted for nearly 38 per cent. of the total production. The total yields of the several States from 1860 onwards are given hereunder :—

COMMONWEALTH HAY CROP, 1860–1 TO 1918–19.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	N.Ter.	F. Ter.	C'wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1860–1	50,927	144,211	414	71,241	8,099	62,318	..	..	337,210
1870–1	69,602	183,708	5,506	197,149	20,833	40,763	..	..	517,561
1880–1	174,194	300,581	23,441	261,371	19,563	35,883	..	..	815,033
1890–1	213,034	567,779	50,116	310,125	25,014	52,021	..	..	1,218,089
1900–1	526,260	677,757	78,758	353,662	103,813	94,198	..	..	1,834,448
1910–11	843,080	1,292,410	151,252	595,064	178,891	115,190	..	..	3,175,887
1914–15	610,559	568,956	102,193	210,437	156,932	81,971	220	2,676	1,733,944
1915–16	1,570,941	2,342,094	53,858	1,100,127	395,172	168,449	350	2,997	5,633,988
1916–17	1,172,078	1,232,721	145,279	615,059	236,989	103,141	350	1,972	3,507,589
1917–18	781,972	949,545	153,895	488,693	267,163	80,405	14	2,234	2,723,921
1918–19	751,247	1,113,861	92,230	567,941	250,014	115,896	30	2,383	2,893,602

4. **Value of Hay Crop.**—The following table furnishes particulars concerning the total value and the value per acre of the hay crop of the several States of the Commonwealth for the season 1918–19 :—

VALUE OF HAY CROP, 1918–19.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Nor. Ter.	Fed. Ter.	C'wealth.
	£	£	£	£	£	£	£	£	£
Total value ..	5,405,960	5,569,305	530,361	2,214,969	1,412,716	637,428	120	17,940	15,788,799
Value per acre	£6/12/11	£5/13/2	£9/13/8	£4/8/4	£5/13/1	£7/6/4	£4/-/-	£11/6/11	£5/17/3

5. **Average Yield per Acre.**—The States of the Commonwealth in which the highest average yields per acre have been obtained during the last decennium are those of Tasmania and Queensland, these being also the States in which the smallest areas are devoted to this crop. For the same period the lowest yield for the Commonwealth as a whole was that of 13 cwt. per acre in 1914–15 ; while the highest was that of 31 cwt. in 1915–16. The average for the decennium was 24½ cwt. Particulars for the several States for the seasons 1914–15 to 1918–19, and the average for the last ten years, are given hereunder :—

AVERAGE YIELD OF HAY PER ACRE, 1914–15 TO 1918–19.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W.Aust.	Tas.	N. Ter.	F. Ter.	C'wlth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1914–15	0.78	0.64	1.29	0.47	0.47	0.91	1.83	0.94	0.66
1915–16	1.42	1.76	0.98	1.55	1.36	1.63	2.50	1.77	1.57
1916–17	1.37	1.37	1.29	1.27	0.98	1.30	2.50	1.97	1.31
1917–18	1.26	1.27	1.60	1.20	1.00	1.08	1.00	2.17	1.23
1918–19	0.92	1.13	1.68	1.13	1.00	1.33	1.00	1.51	1.07
Average for 10 seasons 1909–19	*a*1.21	1.32	1.40	*b*1.17	0.99	1.41	*d*2.05	*c*1.29	1.23

(*a*) Including Federal Territory. (*b*) Including Northern Territory. (*c*) Average for eight seasons. (*d*) Average for nine seasons.

6. **Relation to Population.**—During the past five seasons the Commonwealth hay production per head of population has varied between 7 cwt. in 1914–15 and 22¾ cwt. in 1915–16 ; averaging about 13 cwt. per head for the period. The State in which the hay production per head of population is highest is South Australia. Details for the seasons 1914–15 to 1918–19 are given hereunder :—

HAY PRODUCTION PER 1,000 OF POPULATION, 1914–15 TO 1918–19.

Season.	N.S.W.	Vict.	Q'land.	S. Aust.	W. Aust.	Tas.	N. Ter.	F. Ter.	C'wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1914–15 ..	328	398	151	476	486	407	55	1,366	351
1915–16 ..	840	1,651	79	2,509	1,243	838	77	1,639	1,142
1916–17 ..	631	881	217	1,421	767	516	73	887	719
1917–18 ..	414	673	227	1,120	863	396	3	937	552
1918–19 ..	389	779	133	1,274	798	555	6	1,068	575

7. **Oversea 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 the Commonwealth. During 1918–19 only 5 tons were imported, while the exports amounted to 1,300 tons, valued at £8,964, the principal purchases being made by India, the Philippines, and the Straits Settlements.

8. **Hay Production in 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, and consequently any attempt to furnish extensive comparisons would be misleading. It may be noted, however, that in the United Kingdom the production of hay from clover, sainfoin, &c., for the year 1918, amounted to 4,393,000 tons from 2,803,413 acres, while from permanent grasses a yield of 7,939,000 tons of hay was obtained from 5,950,352 acres, giving a total of 12,332,000 tons from 8,753,765 acres, or about 28 cwt. per acre.

§ 12. Green Forage.

1. **Nature and Extent.**—In all the States of the Commonwealth 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 1918–19 was 586,440 acres. Of the total, the New South Wales area represented about 56½ per cent., that of Queensland 15½ per cent., while that of Victoria amounted to 12½ per cent. 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 from 1890 onwards are furnished in the following table :—

AREA UNDER GREEN FORAGE, 1890–1 TO 1918–19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	N.Ter.	F. Ter.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1890–1	37,473	10,091	9,546	7,349	161	1,497	..	..	66,117
1900–1	78,144	18,975	41,445	13,136	1,024	3,749	..	..	156,473
1910–11	179,382	71,826	89,667	20,728	4,545	8,695	19	..	374,862
1914–15	a949,539	139,654	184,239	52,656	19,098	6,809	83	80	1,352,158
1915–16	162,808	60,426	236,293	32,664	15,622	7,587	24	137	515,561
1916–17	149,824	49,667	116,449	37,352	28,653	8,133	24	49	390,151
1917–18	152,374	55,903	87,909	41,869	29,856	5,873	47	19	373,850
1918–19	331,079	73,641	90,635	56,067	28,141	6,827	..	50	586,440

(a) Including area fed off.

2. **Value of Green Forage Crops.**—The value of these crops is variously estimated in the several States, and the Commonwealth total for the season 1918–19 may be taken approximately as £1,588,151, or about £2 14s. 2d. per acre.

3. **Relation to Population.**—Particulars concerning the area under green forage per 1,000 of the population of the Commonwealth and the several States for the seasons 1914–15 to 1918–19 are given hereunder :—

AREA UNDER GREEN FORAGE PER 1,000 OF POPULATION, 1914–15 TO 1918–19.

Season.	N.S.W.	Vict.	Q'land.	S. Aust.	W. Aust.	Tas.	N. Ter.	F. Ter.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1914–15 ..	(a)510	98	272	119	59	34	21	41	274
1915–16 ..	87	43	348	74	49	38	5	75	105
1916–17 ..	81	36	174	86	93	41	5	22	80
1917–18 ..	80	40	130	96	96	29	10	9	76
1918–19 ..	172	51	131	126	90	33	..	22	117

(a) Including area fed off.

§ 13. Sugar-cane.

1. **Area.**—Sugar-cane is grown for sugar-making purposes in only two of the States of the Commonwealth, viz., Queensland and New South Wales, and much more extensively in the former than in the latter. Thus, of the total area of 171,024 acres under sugar-cane in the Commonwealth for the season 1918–19, there were 160,534 acres, or about 94 per cent., in Queensland. Sugar-cane growing appears to have been started in the Commonwealth 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 records shew that an area of two acres was devoted to the crop in the mother State. The area under cane in New South Wales reached its maximum in 1895–6 with a total of 32,927 acres. From thence onwards with slight variations, it gradually fell to 10,490 acres in 1918–19. In Queensland, on the other hand, although fluctuations in area are in evidence throughout, the general trend has been one of satisfactory increase, the area under cane for the season 1917–18 being the highest on record. The area under sugar-cane in the Commonwealth from 1870 is given in the following table:—

AREA UNDER SUGAR-CANE, 1870–1 TO 1918–19.

Season.	New South Wales.		Queensland.		Commonwealth.		
	Productive.	Unproductive.	Productive.	Unproductive.	Productive.	Unproductive.	Total.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1870–1 ..	1,475	2,607	2,188	4,154	3,663	6,761	10,424
1880–1 ..	4,465	6,506	12,306	7,918	16,771	14,424	31,195
1890–1 ..	8,344	12,102	39,435	11,487	47,779	23,589	71,368
1900–1 ..	10,472	11,642	72,651	35,884	83,123	47,526	130,649
1910–11 ..	5,596	8,167	94,641	47,138	100,237	55,305	155,542
1914–15 ..	6,012	5,409	108,013	53,182	114,025	58,591	172,616
1915–16 ..	6,030	5,228	94,459	58,568	100,489	63,796	164,285
1916–17 ..	5,223	5,746	75,914	91,307	81,137	97,053	178,190
1917–18 ..	5,588	5,134	108,707	67,055	114,295	72,189	186,484
1918–19 ..	4,566	5,924	111,572	48,962	116,138	54,886	171,024

2. **Productive and Unproductive Cane.**—The areas given in the preceding table represent the area on which sugar-cane was grown during the seasons specified for purposes other than green forage. The whole area was not in any case cut for crushing during that season, there being always a considerable amount of young and "stand over" cane, as well as a small quantity required for plants. The season 1917–18 had the highest recorded acreage under sugar-cane, while the greatest area of productive cane was cut for crushing during the 1918–19 season.

3. 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 the Commonwealth was 1,073,883 tons, as against 2,879,092 tons for the record season 1917–18. The second highest yield was in the season 1913–14, with a total of 2,271,558 tons. The average production of cane during the decennium ended 1918–19 was 1,818,109 tons. The three highest yields of sugar were in 1917–18, 1913–14, and 1914–15, the quantities being 327,589 tons, 265,029 tons, and 245,876 tons respectively. The decennial average was 209,416 tons of sugar. Particulars relative to the total yields of cane and sugar for a series of years are as follows :—

YIELD OF CANE AND CANE-SUGAR, 1900–1 TO 1918–19.

Season.	New South Wales.		Queensland.		Commonwealth.	
	Cane.	Sugar.	Cane.	Sugar.	Cane.	Sugar.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1900–1 ..	199,118	19,938	848,328	92,554	1,047,446	112,492
1910–11 ..	160,311	20,115	1,840,447	210,756	2,000,758	230,871
1914–15 ..	181,606	20,029	1,922,633	225,847	2,104,239	245,876
1915–16 ..	157,748	19,144	1,152,516	140,496	1,310,264	159,640
1916–17 ..	143,558	16,064	1,579,514	176,973	1,723,072	193,037
1917–18 ..	174,881	19,875	2,704,211	307,714	2,879,092	327,589
1918–19 ..	105,234	12,278	1,674,829	189,978	1,780,063	202,256

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

4. Average Yields of Cane and Sugar per Acre.—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 26.79 tons for the former and 17.53 for the latter State. For some years prior to 1910–11, the yield remained practically constant in New South Wales at about 21 tons per acre. Since that year, the average yield per acre has shewn an upward tendency, reaching 30 tons or over during 1913–14, 1914–15, and 1917–18. The climatic conditions affecting the tremendous length of coastline embracing this industry in Queensland are largely responsible for the great variations in the yields of sugar for that State, which ranged, 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 in New South Wales and Queensland during the past quinquennium occurred in 1917–18, when 3.56 and 2.83 tons were respectively obtained. The average yield per acre for the past ten years was 3.13 tons in New South Wales, and 2.02 tons in Queensland.

5. 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 1918–19 averaged 8.68 tons, the average production of sugar being approximately 11½ per cent. of the weight of cane crushed. The systematic study of beet culture in European countries has shewn 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.

AVERAGE YIELD OF SUGAR-CANE AND SUGAR PER ACRE, 1900-1 TO 1918-19.

Season.	New South Wales.			Queensland.			Commonwealth.		
	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.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1900–1	19.01	1.90	9.99	11.68	1.27	9.17	12.60	1.35	9.31
1910–11	28.65	3.59	7.97	19.45	2.23	8.73	19.96	2.30	8.67
1914–15	30.21	3.33	9.07	17.80	2.09	8.51	18.45	2.16	8.56
1915–16	26.16	3.17	8.24	12.20	1.49	8.20	13.04	1.59	8.21
1916–17	27.49	3.08	8.94	20.81	2.33	8.93	21.24	2.38	8.93
1917–18	31.30	3.56	8.80	24.88	2.83	8.79	25.19	2.87	8.79
1918–19	23.05	2.69	8.57	15.01	1.70	8.82	15.33	1.74	8.80
Average 10 seasons 1909–19 ..	26.79	3.13	8.56	17.53	2.02	8.69	18.05	2.08	8.68

6. **Relation to Population.**—The sugar production of the Commonwealth during the past five seasons has averaged about 102 lbs. per head of population. In the same period in Queensland, the principal sugar-producing State, the production of sugar per head has ranged between 464 lbs. in 1915–16 and 1,017 lbs. in 1917–18. Details for the period 1914–15 to 1918–19 are as follows :—

SUGAR PRODUCTION PER HEAD OF POPULATION, 1914–15 TO 1918–19.

State.	1914–15.	1915–16.	1916–17.	1917–18.	1918–19.
	lbs.	lbs.	lbs.	lbs.	lbs.
New South Wales ..	24	23	19	24	14
Queensland	748	464	592	1,017	613
Commonwealth	111	73	89	149	90

7. **Sugar Bounties.**—The provision of bounties or similar aids to the sugar-growers of the Commonwealth 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 connection 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 connection 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.

8. **Sugar Purchase by Commonwealth Government.**—In June, 1915, the Commonwealth Government assumed control of the Australian sugar output, paying the growers a fixed price of £18 per ton of raw sugar, subsequently raised in 1917 to £21. The

Commonwealth Government disposed of the refined product at an average of £25 10s. per ton in 1915, the object then being to enable the consumer to purchase sugar of 1A grade at 3d. per lb. In January, 1916, however, the wholesale price was raised to £29 5s. per ton, and the retail price to 3½d. per lb. This arrangement was continued from year to year until June 26th, 1920, when an agreement was made with the Queensland Government for a period of three years, covering the seasons of 1920, 1921, and 1922, fixing the price of raw sugar for the first year at £30 6s. 8d. per ton, and making that price the minimum for each of the succeeding seasons, any increase being limited to the extra cost of production, due to higher wages paid to the sugar workers to meet the increased cost of living. In order to recoup the Commonwealth Government for the loss entailed in the purchase at very high prices of large quantities of foreign sugar, owing to the shortage of the Australian crop, the wholesale price of refined sugar was raised on March 25th, 1920, to £49 per ton, and the retail price to 6d. per lb.

9. **Beet Sugar.**—During the past few years an effort has been made to revive the sugar-beet industry in Victoria. The State Government has authorised the inauguration of a comprehensive irrigation scheme at Maffra, where the sugar-beet factory is situated. When completed, this scheme will make available for beet growing large areas of land hitherto unsuitable. The price of beet has been increased from 30s. to 35s. per ton for the 1920–1 season. A fine grade of white sugar is manufactured, and considerable quantities of beet pulp and molasses are distributed for stock feed.

10. **Acreage and Yield of Sugar Beet.**—The following table shews the acreage under sugar beet, and the production in Victoria during the past five seasons :—

AREA AND PRODUCTION OF SUGAR BEET IN VICTORIA, 1914–15 TO 1918–19.

Particulars.	1914–15.	1915–16.	1916–17.	1917–18.	1918–19.
Area .. .. acres	990	461	1,320	1,200	1,009
Production .. tons	10,343	4,928	15,159	14,487	12,290
Average per acre .. ,,	10.45	10.69	11.48	12.07	12.18

11. **Imports and Exports of Sugar.**—The production of sugar in the Commonwealth during the past five years has not been sufficient to supply the growing requirements of Australian consumption. It has been found necessary to annually import on the average some 50,821 tons, valued at £911,850, 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 :—

IMPORTS AND EXPORTS OF CANE SUGAR, 1914–15 TO 1918–19.

Year.	Oversea Imports.		Oversea Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£	Tons.	£
1914–15 ..	13,125	181,020	18,433	319,494	– 5,308	– 138,474
1915–16 ..	116,111	1,869,768	1,103	22,458	115,008	1,847,310
1916–17 ..	81,161	1,639,097	1,033	21,798	80,128	1,617,299
1917–18 ..	15,805	278,985	2,070	45,860	13,735	233,125
1918–19 ..	52,569	1,052,124	2,029	52,136	50,540	999,988

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

§ 14. Vineyards.

1. **Nature and Extent.**—The introduction of the vine into Australia has been set down by different investigators as at various dates, the years 1815 and 1828 being principally favoured. It would seem, however, that the vine was really brought out with the first fleet which initiated the colonisation of Australia in 1788, and that consequently the Australian vine is as old as Australian settlement. As already mentioned, a report of Governor Hunter's 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 which they have devoted to its cultivation. In Queensland and Western Australia also, vine-growing has been carried on for many years, but in neither State has the industry progressed with the rapidity attained in Victoria and South Australia. 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.—(i) for wine-making, (ii) for table use, and (iii) for drying. The total area under vines in the several States from 1860 onwards is given in the following table :—

COMMONWEALTH VINEYARDS, 1860-1 TO 1918-19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.		Acres.
1860-1	1,584	1,138	..	3,180	335	There are no vineyards in Tasmania.	6,237
1870-1	4,504	5,466	416	6,131	710		17,227
1880-1	4,800	4,980	739	4,337	659		15,515
1890-1	8,044	20,686	1,981	9,535	1,024		41,270
1900-1	8,441	30,634	2,019	20,158	3,325		64,577
1910-11	8,321	23,412	1,634	22,952	2,795		59,114
1914-15	7,985	21,801	1,415	26,864	2,920		60,985
1915-16	7,883	22,353	1,373	27,764	2,751		62,124
1916-17	8,666	23,264	1,256	29,177	3,031		65,394
1917-18	8,594	25,236	1,274	29,762	2,996		67,862
1918-19	8,740	26,072	1,287	31,023	2,936		70,058

Up till 1917-18 the area devoted to vines in the Commonwealth attained a maximum in the season 1904-5, when a total of 65,673 acres was reached. Each of the five following seasons shewed a decrease, the area in 1909-10 being only 58,151 acres. Since that year, however, the total has risen gradually until in 1917-18 the previous maximum of 1904-5 was passed, while the total reached in 1918-19 was 70,058 acres. South Australia is the only State where a steady annual increase has been recorded.

The wine-growing industry in Australia, more particularly 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 vines, was prohibited.

2. **Wine Production.**—The production of wine in Australia has not increased as rapidly as the suitability of soil and climate would appear to warrant. The cause of this is probably twofold, being in the first place due to the fact that the 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 recognised the wine production of this country will exhibit a rapid development. Particulars concerning the quantity of wine produced in the several States during the past five seasons are contained in the table given hereunder :—

AUSTRALIAN WINE PRODUCTION, 1914–15 TO 1918–19.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Commonwealth.
	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.		Gallons.
1914–15 ..	549,140	605,636	51,164	1,507,196	162,190	No production of wine in Tasmania.	2,875,326
1915–16 ..	571,000	1,380,367	59,008	3,709,878	166,820		5,887,073
1916–17 ..	628,950	1,302,660	23,171	2,951,048	220,439		5,126,268
1917–18 ..	538,215	800,068	39,125	5,331,166	156,532		6,865,106
1918–19 ..	555,770	1,349,309	44,491	6,544,125	199,142		8,692,837

3. **Relation to Population.**—In relation to population the areas of the vineyards of the several States exhibit an upward tendency during the last five years, the Commonwealth total increasing from 12 to 14 acres per 1,000 of the population during the same period. Details for the seasons 1914–15 to 1918–19 are furnished in the succeeding table :—

AREA OF VINEYARDS PER 1,000 OF POPULATION, 1914–15 TO 1918–19.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Commonwealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1914–15 ..	4	15	2	61	9	..	12
1915–16 ..	4	16	2	63	9	..	13
1916–17 ..	5	17	2	67	10	..	13
1917–18 ..	5	18	2	68	10	..	14
1918–19 ..	5	18	2	70	9	..	14

4. **Imports and Exports.**—The principal countries of origin of wine imported into Australia are France, Spain, Portugal, and Italy, the greater portion of the sparkling wines coming from France. Particulars relative to the importations of wine into the Commonwealth during the past five years are given hereunder :—

COMMONWEALTH IMPORTS OF WINE, 1914–15 TO 1918–19.

Year.	Quantity.			Value.		
	Sparkling.	Other.	Total.	Sparkling.	Other.	Total.
	Gallons.	Gallons.	Gallons.	£	£	£
1914–15 ..	28,179	71,633	99,812	56,998	32,953	89,951
1915–16 ..	26,744	62,357	89,101	55,573	27,494	83,067
1916–17 ..	18,659	47,741	66,400	39,212	26,497	65,709
1917–18 ..	9,274	31,808	41,082	20,569	20,635	41,204
1918–19 ..	7,551	30,464	38,015	16,226	21,121	37,347

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, Fiji, and the South Sea Islands. Details concerning the exports of wine from Australia during the past five years are given in the following table :—

COMMONWEALTH EXPORTS OF WINE, 1914-15 TO 1918-19.

Year.	Quantity.			Value.		
	Sparkling.	Other.	Total.	Sparkling.	Other.	Total.
	Gallons.	Gallons.	Gallons.	£	£	£
1914-15 ..	2,325	635,579	637,904	4,106	97,337	101,443
1915-16 ..	3,638	726,113	729,751	7,001	113,598	120,599
1916-17 ..	2,919	603,523	606,442	5,426	106,200	111,626
1917-18 ..	4,976	367,738	372,714	8,269	93,618	101,887
1918-19 ..	7,970	695,536	703,506	16,883	184,285	201,168

The sparkling wine included in the foregoing table consists largely of foreign wine re-exported.

5. **Other Viticultural Products.**—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, 1914-15 TO 1918-19.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Commonwealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1914-15 ..	2,667	3,083	1,191	1,283	1,348	..	9,572
1915-16 ..	2,940	3,524	932	1,608	2,027	..	11,031
1916-17 ..	2,214	2,606	668	758	1,940	..	8,186
1917-18 ..	1,710	1,127	696	984	1,570	..	6,087
1918-19 ..	2,415	2,052	614	1,745	1,892	..	8,718

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 DRIED, 1914-15 TO 1918-19.

Season.	N. S. Wales.		Victoria.		South Aust.		Western Aust.		Commonwealth.	
	Raisins.	Currants.	Raisins.	Currants.	Raisins.	Currants.	Raisins.	Currants.	Raisins.	Currants.
	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.
1914-15 ..	2,591	1,252	111,006	28,527	35,305	24,774	989	1,152	149,891	55,705
1915-16 ..	5,539	2,415	180,104	70,556	59,929	66,518	1,496	1,128	247,068	140,617
1916-17 ..	4,239	2,276	142,970	66,449	35,624	50,147	1,332	1,843	184,165	120,715
1917-18 ..	3,508	1,904	104,911	53,799	42,192	51,924	703	1,948	151,314	109,575
1918-19 ..	3,496	2,450	135,060	68,234	29,662	59,834	2,163	2,157	170,381	132,675
Average 10 seasons 1909-19	4,694		116,732	49,859	37,071	47,758	(a)1,228	(a)1,381	257,940	

(a) Average for seven seasons.

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

COMMONWEALTH OVERSEA IMPORTS AND EXPORTS OF RAISINS AND CURRANTS, 1914-15 TO 1918-19.

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	RAISINS.					
	lbs.	£	lbs.	£	lbs.	£
1914–15 ..	76,132	2,646	1,184,164	19,506	1,108,032	16,860
1915–16 ..	124,964	3,983	6,952,041	215,270	6,827,077	211,287
1916–17 ..	45,237	1,907	5,621,551	166,341	5,576,314	164,434
1917–18 ..	164,699	4,791	3,957,863	114,510	3,793,164	109,719
1918–19 ..	28,818	927	3,111,055	95,523	3,082,237	94,596
	CURRANTS.					
1914–15 ..	29,818	476	929,726	12,583	899,908	12,107
1915–16 ..	1,218,947	17,728	1,168,557	25,316	– 50,390	7,588
1916–17 ..	2,416	54	6,525,426	165,006	6,523,010	164,952
1917–18 ..	201	5	4,934,822	134,654	4,934,621	134,649
1918–19 ..	19,909	505	3,470,803	100,326	3,450,894	99,821

Note.—The minus sign (–) signifies net imports.

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 £1,000,837, the average annual excess for the quinquennium being £200,167.

§ 15. Orchards and Fruit Gardens.

1. **Nature and Extent.**—Fruit-growing has made rapid progress in the Commonwealth during recent years, the area devoted thereto having increased in the past ten years by no less than 91,363 acres. The States in which the increase is most marked are :—Victoria, 30,184 acres ; New South Wales, 21,570 acres ; Tasmania, 14,837 acres ; and Queensland, 10,146 acres. During the same period the South Australian fruit-growing area increased by 9,230 acres, while that in Western Australia exhibited an increase of 5,396 acres. The increased areas in Tasmania and Western Australia are mainly due to extensive plantings of apple trees with a view to the possibilities of the London market for fresh fruit. The total area devoted to orchards and fruit gardens in the several States is given hereunder :—

COMMONWEALTH ORCHARDS AND FRUIT GARDENS, 1914-15 TO 1918-19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N. Ter.	F. Ter.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1914–15 ..	53,905	74,302	22,212	25,811	21,378	35,007	50	46	232,711
1915–16 ..	57,515	80,120	22,616	27,576	21,805	37,351	..	25	247,008
1916–17 ..	60,360	83,087	25,293	28,794	21,752	38,380	..	26	257,692
1917–18 ..	64,116	83,818	26,001	29,020	21,137	38,024	..	18	262,134
1918–19 ..	67,432	85,130	24,250	30,085	20,412	37,424	..	18	264,751

The varieties of fruit grown differ materially in various parts of the several States, and range 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, plum, peach, apricot, cherry, and pear. In New South Wales, citrus fruits (orange, lemon, &c.), occupy the leading position, although apples, pears, peaches, plums, and apricots are also extensively grown. In Queensland the banana, the orange, the pineapple, the apple, the peach, the mango, the cocoanut, and the plum are the varieties most largely grown. In South Australia, in addition to the apple, pear, peach, apricot, plum, orange, and lemon, the almond and the olive are also largely grown. In Western Australia, the apple, orange, peach, pear, plum, fig, and apricot are the sorts chiefly grown, while in Tasmania, although the apple represents over four-fifths of the area in that State devoted to fruit-growing, small fruits, such as the currant, raspberry, and gooseberry, are very extensively grown, and the balance of the area is mainly occupied with the pear, plum, apricot, peach, and cherry. The following table gives the acreage under the principal kinds of fruit grown, and the quantity and value of fruit produced. The acreages shewn are exclusive of young trees not yet bearing. The acreages for each kind of fruit in Victoria are not available :—

PARTICULARS OF THE PRINCIPAL KINDS OF FRUIT GROWN IN THE SEVERAL STATES OF THE COMMONWEALTH DURING THE SEASON 1918-19.

Fruit.		N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	F. Ter.	C'wealth.
Apples	acres	8,260	..	1,718	8,660	7,492	22,245	11	..
	bushels	518,538	807,573	74,415	294,474	344,570	1,976,676	789	4,017,035
	£	205,340	262,461	37,518	90,143	183,771	494,169	316	1,273,718
Apricots	acres	1,204	..	104	2,253	463	951	1	..
	bushels	78,378	127,131	3,445	130,424	32,098	80,703	31	452,210
	£	38,780	57,209	1,722	52,918	16,851	32,281	17	199,778
Bananas	acres	2,485	..	7,817	..	12	..	..	..
	bunches	a259,427	..	1,267,641	..	b3,381	..	..	..
	£	220,510	..	211,273	..	3,381	..	..	435,164
Lemons	acres	2,797	..	290	427	218	..	..	..
	bushels	222,612	80,521	17,740	48,742	32,965	..	..	402,580
	£	115,700	36,234	14,192	20,106	12,808	..	..	199,040
Nectarines and Peaches	acres	8,098	..	1,931	2,260	1,137	60	1	..
	bshls.	594,211	577,844	80,480	188,197	61,701	4,363	33	1,506,829
	£	255,020	213,703	32,509	57,667	30,758	1,091	16	°590,764
Oranges	acres	17,677	..	2,611	2,705	1,964	..	..	..
	bushels	1,388,676	100,553	313,237	237,276	169,653	..	..	2,209,395
	£	753,240	50,277	154,008	103,808	89,854	..	..	1,151,187
Pineapples	acres	34	..	4,026	..	..	..	..	..
	dozen	3,825	..	859,948	..	..	..	..	863,773
	£	1,210	..	111,077	..	..	..	..	112,287
Pears	acres	2,074	..	263	1,578	912	1,284	1	..
	bushels	137,228	756,688	5,010	125,891	88,471	173,828	34	1,287,150
	£	48,040	217,548	7,765	26,010	33,822	26,074	12	359,271
Plums	acres	1,725	..	616	1,503	689	431	2	..
	bushels	126,212	220,546	12,388	99,081	43,267	53,908	85	555,487
	£	46,050	65,245	11,046	34,321	21,453	16,172	33	194,320
Other fruits	acres	2,495	..	2,767	3,470	820	1,854	2	..
	£	123,920	166,939	84,542	83,710	29,551	76,184	56	564,902
Total	acres	46,849	60,091	22,143	22,856	13,707	26,825	18	192,489
	£	1,807,810	1,069,616	665,652	468,683	422,249	645,971	450	5,080,431

(a) Cases. (b) Bushels.

2. **Relation to Population.**—The acreage of orchards and fruit gardens of the Commonwealth in relation to population has increased during the last seventeen years to an extent which more than compensates for the decline experienced in the case of

vineyards. Taking the two in conjunction, the relative area under vineyards and orchards has, during the period, considerably increased, averaging 55 acres per 1,000 of population in 1901–2, and 67 in 1918–19. Details for orchards and fruit gardens for the years 1914–15 to 1918–19 are as follows :—

AREA OF ORCHARDS AND FRUIT GARDENS PER 1,000 OF POPULATION, 1914–15 TO 1918–19.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N. Ter.	F. Ter.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1914–15..	29	52	33	58	66	174	13	23	47
1915–16..	31	57	33	63	69	186	..	14	50
1916–17..	32	59	38	67	70	192	..	12	53
1917–18..	34	59	38	67	68	187	..	9	53
1918–19..	35	59	35	67	65	179	..	8	53

3. **Commonwealth Imports and Exports.**—A considerable fruit trade, both import and export, is carried on by the Commonwealth with oversea countries, the major portion of the importations consisting of fresh fruits, while dried fruits, principally raisins and currants, bulk largely in the exports. The principal fresh fruits imported during the past five years were bananas, apples, oranges, and lemons, the bananas coming from Fiji, while the apples and citrus fruits were supplied by the United States. The fresh fruits exported during the same period consisted largely of apples consigned to the United Kingdom, and citrus fruits to New Zealand. Many varieties of dried fruits were imported into the Commonwealth since 1914–15, but the bulk of those exported consisted of currants and raisins, which were shipped mainly to the United Kingdom, New Zealand, and Canada.

Particulars concerning the oversea imports and exports of dried fruits for the last five years are as follows :—

COMMONWEALTH OVERSEA IMPORTS AND EXPORTS OF DRIED FRUITS, (*a*) 1914–15 TO 1918–19.

Year.	Oversea Imports.		Oversea Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
1914–15 ..	4,071,250	58,451	2,313,768	35,691	1,757,482	22,760
1915–16 ..	11,857,787	159,398	8,254,878	244,069	3,602,909	– 84,671
1916–17 ..	6,058,769	89,006	13,460,274	372,712	– 7,401,505	– 283,706
1917–18 ..	1,587,451	42,856	9,427,669	266,297	– 7,840,218	– 223,441
1918–19 ..	1,806,333	53,594	8,524,587	253,040	– 6,718,254	– 199,446

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

(*a*) Including raisins and currants referred to under Vineyards, § 14, 6.

Similar information with regard to the Commonwealth oversea trade in fresh fruits for the same period is contained in the table given hereunder :—

COMMONWEALTH OVERSEA IMPORTS AND EXPORTS OF FRESH FRUITS, 1914-15 TO 1918-19.

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
1914–15 ..	36,999,600	344,466	26,031,400	176,024	-10,968,200	- 168,442
1915–16 ..	43,281,700	374,174	64,554,800	415,305	21,273,100	41,131
1916–17 ..	46,304,700	299,360	16,294,800	141,583	-30,009,900	- 157,777
1917–18 ..	25,635,100	160,899	4,648,900	46,481	-20,986,200	- 114,418
1918–19 ..	13,656,500	90,034	20,809,100	188,381	7,152,600	98,347

Note.—The minus sign (−) signifies net imports.

4. **Jams and Jellies.**—A considerable oversea trade in jams and jellies is now carried on by the Commonwealth, the value of the imports for the year 1918–19 amounting to £2,294, and of the exports to £1,847,970. The destinations of the exports were principally the United Kingdom, Egypt, United States of America, France, and India. Particulars relative to imports and exports during each of the last five years are as follows :—

COMMONWEALTH OVERSEA TRADE IN JAMS AND JELLIES, 1914-15 TO 1918-19.

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
1914–15 ..	438,756	11,824	4,770,117	90,909	4,331,361	79,085
1915–16 ..	288,165	9,087	22,849,553	437,144	22,561,388	428,057
1916–17 ..	152,260	6,210	45,074,352	949,112	44,922,092	942,902
1917–18 ..	16,658	521	64,891,116	1,410,548	64,874,458	1,410,027
1918–19 ..	78,329	2,294	79,277,560	1,847,970	79,199,231	1,845,676

5. **Preserved Fruit.**—Details concerning the quantities and values of preserved fruit imported into and exported from the Commonwealth 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, other than fresh fruits, dried fruits, potatoes, and onions, imported into Australia during 1918–19 was £67,521, and the corresponding value of exports was £477,421.

§ 16. Minor Crops.

1. **Nature and Extent.**—In addition to the leading crops which in the foregoing pages have been 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 in recent years received some attention in the tropical portions of the Commonwealth, although the industry cannot yet be said to be beyond the experimental stage. The total area in the Commonwealth during the season 1918–19 devoted to crops not dealt with in previous sections was 60,211 acres, of which market gardens accounted for 27,482 acres, or more than 45 per cent.

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 shewn either under some specific head, or under some general head as "Other Root Crops," or "All Other Crops." The area under market gardens in the several States of the Commonwealth during each of the last five seasons is given in the table hereunder :—

COMMONWEALTH MARKET GARDENS, 1914-15 TO 1918-19.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	N. Ter.	F. Ter.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1914-15 ..	10,475	12,935	2,648	1,830	2,785	628	60	27	31,388
1915-16 ..	10,940	11,379	2,330	1,712	2,787	435	..	27	29,610
1916-17 ..	10,683	10,746	2,305	1,522	2,153	448	..	27	27,884
1917-18 ..	10,100	11,362	1,991	1,502	2,334	447	..	39	27,775
1918-19 ..	10,004	11,594	1,814	1,405	2,237	389	..	39	27,482

The area of market gardens has consistently declined in each of the States during the past five years, the total area for the Commonwealth decreasing by 3,906 acres since 1914-15.

3. **Grass Seed.**—The total area under this crop during 1918-19, exclusive of New South Wales, for which State no figures as to area are available, was 5,553 acres, of which 2,152 acres were in Victoria, 2,021 acres in Queensland, and 1,278 acres in Tasmania. The total yield for 1918-19, including New South Wales, was 83,504 bushels, valued at £34,238.

4. **Tobacco.**—Tobacco-growing is an industry which has experienced marked fluctuations, although at one time it promised to occupy an important place amongst the agricultural industries of the Commonwealth. Thus, as early as the season 1888-9 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 1918-19 had declined to 2,060 acres, distributed as follows :—New South Wales, 1,680 acres ; Victoria, 167 acres ; and Queensland, 213 acres. This decline in production appears to have been due to the comparatively small demand which existed in Australia for the locally-produced leaf, and to the fact that the cost of production and preparation in the Commonwealth prevented the Australian leaf from obtaining a footing in outside markets. Possibly under more favourable circumstances, and with greater attention given to the production of leaf of the best quality only, the industry may eventually assume considerable proportions. In all the States in which its cultivation has 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 the Commonwealth furnish an indication of the extensive local market which exists for an article grown and prepared in such a manner as to meet the requirements of consumers. The value of the net importations of tobacco into the Commonwealth during the year 1918-19 amounted to £1,577,057, comprising unmanufactured tobacco £1,592,222, cigarettes £87,265, and snuff £704, while manufactured tobacco and cigars shewed balances in favour of exports amounting to £99,831 and £3,303 respectively.

5. **Pumpkins and Melons.**—The total area under this crop in the Commonwealth during 1918-19 was 8,855 acres, of which 2,363 acres were in New South Wales, 1,161 acres in Victoria, 4,603 acres in Queensland, 401 acres in Western Australia, and 287 in South Australia. The production for the Commonwealth amounted to 28,567 tons.

6. **Hops.**—Hop-growing in the Commonwealth is practically confined to Tasmania and some of the cooler districts of Victoria, the total area for the season 1918-19 being 1,333 acres, of which 1,260 acres were in Tasmania, and 71 acres in Victoria ; a small area of 2 acres was also grown in South Australia. The Tasmanian area, though still small, has increased considerably during the past seventeen 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 71 acres in 1918-19. The cultivation of hops was much

more extensive in Victoria some thirty years ago than at present, the area devoted to this crop in 1883–4 being no less than 1,758 acres. During the year 1918–19 the imports of hops exceeded the exports by 402,507 lbs., the excess value being £19,175.

7. **Flax.**—For the past twenty years flax has been grown intermittently in the Gippsland district of Victoria, and attempts have also been made to introduce its cultivation into Tasmania and New South Wales, but without success. The chief reason for this failure was the dominant position held by Russia in the European fibre markets. That country produced 80 per cent. of the world's output of fibre, and the low standard of wages resulted in a correspondingly low price for fibre. Consequently the price the Australian farmer received for his flax rendered its cultivation unattractive compared with that of other agricultural products. In 1907, the Commonwealth Government, with a view to foster the industry, provided for the payment of a bounty of 10 per cent. of the market value of all flax products, but the low returns for fibre, about £45 per ton, prevented the extension of flax growing to any appreciable degree, and on 1st July, 1917, the bounty provisions expired. At the end of that year, however, the shortage of flax fibre in Europe had become very acute owing to the occupation of the Baltic Provinces by Germany, and at the suggestion of the Advisory Council of Science and Industry, and with a view primarily to assisting the Imperial Government, the Commonwealth Government formulated a scheme to encourage the cultivation of flax. A Flax Industry Committee, consisting of representatives of the Department of Agriculture of Victoria, the flax growers, and the cordage manufacturers, was appointed with executive powers under War Precautions Regulations. At the same time, a guarantee was given by the Commonwealth Government of £5 per ton for flax of specified standard grown in 1918.

The area was increased from 400 acres in 1917 to 1,420 acres in 1918, and the fibre from the latter crop has been sold to the Imperial Government at £170 per ton c.i.f., its pre-war value having been about £45 per ton. Owing to the disorganisation of Russian industries, and the depletion of the world's stocks of linens, there is every indication that the present high values of flax products will be retained for many years. The value of the products of the Australian 1918 crop is estimated as follows :—Fibre £12,800, linseed £5,700, and tow £1,500, or a total of £20,000. A further guarantee has been given by the Commonwealth Government of £6 per ton for the 1919 flax crop. About 2,200 acres were planted in 1919, and with a normal season the return from flax products is estimated at about £33,000. In order to encourage farmers to take advantage of this unprecedented opportunity of firmly establishing the flax industry, the Commonwealth Government has guaranteed a price for the flax grown in Australia during the next three years. With a three years' guarantee of remunerative prices, there is every incentive to farmers in suitable districts not only to grow flax, but to co-operate in the erection of flax-mills for the treatment of the flax straw. The guarantee for 1920 is £6 per ton, and for 1921 and 1922 £5 per ton for raw flax. Australia imports annually flax products to the value of £1,800,000, and as it has been demonstrated that flax can be grown to perfection in many parts of the Commonwealth it would appear that there is a good prospect of successfully establishing a local industry. There are five mills operating in Gippsland, and the erection of additional mills is anticipated. The whole of the commercial flax crop is grown in Victoria, but a grant of £1,000 has been made by the Commonwealth Government for experimental work, and in all the States experiments are being carried out to determine the suitability of the soil and climate for the cultivation of this crop. Experiments have also been carried out with a view to improve the methods of treatment at the mills.

8. **Millet.**—Millet appears in the statistical records of three of the Commonwealth States. The total area devoted thereto in 1918–19 was 5,210 acres, of which 3,019 acres were in New South Wales, 1,876 in Victoria, 305 in Queensland, and 10 in the Northern Territory. The particulars here given relate to millet grown for grain and fibre. That grown for green forage is dealt with in the section relating thereto.

9. **Nurseries.**—In all the States somewhat extensive areas are devoted to nurseries for raising plants, trees, etc. Statistics concerning the area so occupied for flowers, fruit trees, etc., are available for New South Wales, Victoria, South Australia, and Western Australia. During 1918–19 the areas in those States were 674, 1,020, 166, and 94 acres respectively. Statistics so far as they relate to forestry are given elsewhere.

10. **Cotton.**—Cotton-growing on a small scale has been tried in Queensland, but so far without very marked success. In 1902, 8 acres were devoted to this crop, in 1907, 300 acres were under cultivation, and in 1911 the maximum either in regard to area or production was reached, an area of 605 acres producing 186,894 lbs. of unginned cotton. A gradual falling-off has since been experienced, and in 1918 the area was only 203 acres with a production of 101,445 lbs. of cotton. Special efforts have recently been made to encourage cotton-growing in Queensland, and hopes are entertained that with the invention of a mechanical device for the picking of the cotton the industry will become firmly established, since the soil and conditions appear eminently suitable for the growth of this crop. Small areas in the Northern Territory have also been planted with cotton. The tropical portions of Western Australia have also long been regarded as suitable for its cultivation.

11. **Coffee.**—Queensland is the only State of the Commonwealth in which coffee-growing has been at all extensively tried, and here the results have up to the present time been far from satisfactory. The total area devoted to this crop reached its highest point in the season 1901–2, when an area of 547 acres was recorded. The area then continuously declined to 1906–7, when it was as low as 256 acres. In subsequent seasons the area fluctuated somewhat, but on the whole with a downward tendency, and in 1918–19 only 29 acres were recorded, with a yield of 13,129 lbs.

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

§ 17. Bounties on Agricultural Products.

1. **General.**—The Bounties Act of 1907, passed by the Federal Parliament in order to encourage the manufacture and production of certain articles in the Commonwealth, included among the items on which bonuses were payable several agricultural products. Under an Act passed in 1912 the provisions of the 1907 Act in respect of certain items were renewed. During 1918 an Apple Bounty Act was passed, which provided for the payment of a bounty on the export of apples grown and evaporated in Australia and sold to the Imperial Government for delivery between 1st April and 31st August, 1918. Products of the soil on which these bounties were payable are as follows :—

BOUNTIES ON AGRICULTURAL PRODUCTS.

Article.	Period dating from 1st July, 1907, during or in respect of which Bounty may be paid.	Rates of Bounty.	Maximum amounts which may be assigned in any one year.
			£
Cotton, ginned	8 years	10 % on market value	6,000
Fibres—			
New Zealand flax	10 ,,	10 ,, ,,	3,000
Flax and hemp	10 ,,	10 ,, ,,	8,000
Jute	10 ,,	20 ,, ,,	9,000
Sisal hemp	10 ,,	10 ,, ,,	3,000
Oil materials supplied to an oil factory for the manufacture of oil—			
Cotton seed	8 ,,	10 ,, ,,	1,000
Linseed (flax seed)	10 ,,	10 ,, ,,	5,000
Rice, uncleaned	10 ,,	20s. per ton	1,000
Coffee, raw, as prescribed	8 ,,	1d. per lb.	1,500
Tobacco leaf for the manufacture of cigars, high grade, of a quality to be prescribed	10 ,,	2d. ,,	4,000
Fruits—			
Dates (dried) (*a*)	15 ,,	1d. ,,	1,000
Dried (except currants and raisins) or candied, and exported	10 ,,	10% on market value	6,000
Evaporated apples	..	$\frac{7}{10}$d. per lb.	12,000

(*a*) Any unexpended amount assigned in any year to be available for the years following.

At the present time the only one of these bounties still in force is that relating to dates.

2. **Bounties Paid.**—Although the rate of bonus on the several articles was fairly liberal, the bounties were not availed of to any great extent, as will be seen from the following table, which gives particulars as to the quantity of the articles raised and the amounts paid as bounties in respect thereto for the five financial years ended 1918–19. The sum of £4,054 paid on the export of evaporated apples was the total amount of money distributed as bounties during 1918–19.

PARTICULARS OF BOUNTIES PAID ON AGRICULTURAL PRODUCTS (OTHER THAN SUGAR), 1914–15 TO 1918–19.

Article.	Quantity produced on which Bounties were paid.					Amount paid as Bounties.				
	1914–15.	1915–16.	1916–17.	1917–18.	1918–19.	1914–15.	1915–16.	1916–17.	1917–18.(a)	1918–19.
						£	£	£	£	£
Cotton, ginned lbs.	..	13,751	..	..	..	..	22	..	..	..
Fibres—										
Flax and hemp tons	34	238	122	..	..	77	634	267	..	..
Sisal hemp ,,	..	2,250	..	5	..	..	2	..	19	..
Oil materials supplied to an oil factory for the manufacture of oil—										
Cottonseed lbs.	..	22,400	..	..	..	..	10	..	..	..
Linseed (flax seed) cwt.	..	..	..	..	..	..	..	..	..	..
Coffee, raw, as prescribed lbs.	17,022	732	..	..	..	71	3	..	..	..
Tobacco leaf for the manufacture of cigars, high grade, of a quality to be prescribed lbs.	41,891	17,423	57,795	1,577	..	349	145	488	13	..
Fruits—										
Dried (except currants and raisins) or candied, and exported lbs.	41,212	6,000	579,334	131,432	..	98	16	2,063	342	..
Evaporated apples lbs.	..	..	..	..	1,388,577	..	..	..	..	4,054

(a) Bounties paid on goods produced during 1916–17.

§ 18. Fertilizers.

1. **General.**—In the early days of settlement and cultivation in the Commonwealth, scientific cultivation was in a comparatively undeveloped state. The early farmers were neither under the necessity, nor in fact aware of the necessity, of supplying the constituents to the soil demanded by each class of crop. The widely divergent character of the soils in the Commonwealth, their degeneration by repeated cropping, the limitations of climatic conditions, 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 of 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 assumed large proportions during the last few years, though considerable quantities are still imported The importation of fertilizers has increased over 100 per cent. since 1901. The chief items, as regards both quantity and value, are those relating to phosphates, a fertilizer which has proved itself to be very suitable for the growing of cereals in Australian soils. During 1918–19 the quantities of rock phosphates imported represented 87 per cent. of the total importation of fertilizers. The colony of Gilbert and Ellice Islands, with 39 per cent., was the largest contributor, Pleasant Island coming next with 38 per cent., while the bulk of the remainder was supplied by Christmas Island. The whole of the soda nitrate came from Chile.

The imports of artificial manures during the last five years are given in the following table. It will be noticed that the quantities of rock phosphates imported have been consistently large, representing over 82 per cent. of the total importation of fertilizers during the period. No importations of manufactured superphosphates were made during 1917–18 and 1918–19, though considerable quantities were imported during 1914–15.

COMMONWEALTH IMPORTS OF FERTILIZERS, 1914–15 TO 1918–19.

Fertilizer.		1914–15.	1915–16.	1916–17.	1917–18.	1918–19.
Bonedust	cwt.	10,901	..	40	..	2,004
,, ...	£	3,136	..	18	..	785
Guano	cwt.	2,053	1,800	264,581	..	137,008
,, ...	£	814	792	30,772	..	17,304
Superphosphates ..	cwt.	502,382	57,790	200	..	..
,, ..	£	79,889	10,308	61	..	..
Rock phosphates ..	cwt.	3,464,547	3,813,788	3,556,561	3,643,038	2,811,812
,, ,, ..	£	397,284	440,434	444,984	433,940	334,036
Soda nitrate ..	cwt.	67,508	112,203	165,472	53,800	38,483
,, ,, ..	£	34,059	49,463	107,977	43,264	30,767
Other	cwt.	108,291	5,109	1,202	397	520
,, ...	£	31,644	3,509	1,494	909	488
Total	cwt.	4,155,682	3,990,690	3,988,056	3,697,235	2,989,827
	£	546,826	504,506	585,306	478,113	383,380

4. **Exports.**—The subjoined table shews the exports of artificial manures for the years 1914–15 to 1918–19. Practically the whole of these fertilizers are manufactured locally, and are shipped mainly to New Zealand, Java, Japan, and the Pacific Islands :—

COMMONWEALTH EXPORTS OF FERTILIZERS, 1914–15 TO 1918–19.

Fertilizer.		1914–15.	1915–16.	1916–17.	1917–18.	1918–19.
Bonedust	cwt.	148,229	71,795	37,337	17,252	34,722
,, ...	£	45,707	22,563	12,832	7,221	18,516
Guano	cwt.	2,800	..	4,455	840	8,669
,, ...	£	470	..	1,061	234	2,775
Superphosphates ..	cwt.	311,067	823,361	483,552	699,784	345,493
,, ..	£	64,224	156,862	105,492	179,691	95,623
Rock phosphates ..	cwt.	22,340	75,839	66,010	70,004	44,032
,, ,, ..	£	3,429	10,695	8,464	9,810	6,773
Soda nitrate ..	cwt.	1,500	2,619	7,339	18,888	60
,, ,, ..	£	897	1,835	5,678	16,741	84
Ammonia sulphate ..	cwt.	113,801	129,651	109,248	118,147	196,954
,, ,, ..	£	75,379	102,821	111,794	211,322	350,098
Other	cwt.	224,309	86,964	72,572	30,037	21,486
,, ...	£	38,972	28,059	20,925	14,532	11,008
Total	cwt.	824,046	1,190,229	780,513	954,952	651,416
	£	229,078	322,835	266,246	439,551	484,877

5. **Statistics of Use of Fertilizers.**—Statistics of the use of manures in the Commonwealth during the past five years are available for all the States with the exception of Queensland, where the particulars were first collected in 1915–16. Particulars concerning New South Wales are given hereunder :—

FERTILIZERS USED IN NEW SOUTH WALES, 1914–15 TO 1918–19.

Season.	Total Area of Crops.	Area Manured.		Manure Used.	
		Aggregate.	Percentage on Total Area of Crops.	Natural (Stable-yard, etc.).	Artificial.
	Acres.	Acres.	%	Loads.	Tons.
1914–15	4,807,001	2,329,819	48.47	168,450	55,169
1915–16	5,796,376	2,753,301	47.50	177,788	56,621
1916–17	5,164,434	2,352,180	45.55	166,374	50,704
1917–18	4,461,172	1,974,620	44.26	181,052	44,883
1918–19	3,891,823	1,780,254	45.74	180,734	42,804

Particulars for Victoria for the past five seasons are as follows :—

FERTILIZERS USED IN VICTORIA, 1914–15 TO 1918–19.

Season.	Total Area of Crops.	Farmers Using Manure.	Area Manured.		Manure Used.	
			Aggregate.	Percentage on Total Area of Crops.	Natural (Stable-yard, etc.).	Artificial.
	Acres.	No.	Acres.	%	Tons.	Tons.
1914–15 ..	4,622,759	31,874	3,728,279	80.65	209,534	117,935
1915–16 ..	5,711,265	33,378	4,336,252	75.92	187,602	128,667
1916–17 ..	4,851,335	33,165	3,870,742	79.79	181,268	117,812
1917–18 ..	4,110,225	30,109	3,336,418	81.17	167,114	106,119
1918–19 ..	3,942,899	32,589	3,222,822	81.74	162,165	104,993

The following table gives particulars of the use of manures in Queensland since 1915–16 :—

FERTILIZERS USED IN QUEENSLAND, 1915–16 TO 1918–19.

Season.	Total Area of Crops.	Area Manured.		Manure Used.	
		Aggregate.	Percentage on Total Area of Crops.	Natural (Stable-yard, etc.).	Artificial.
	Acres.	Acres.	%	Loads.	Tons.
1915–16	729,588	25,166	3.45	43,483	7,608
1916–17	885,259	22,145	2.50	34,811	6,869
1917–18	727,958	17,862	2.45	42,779	4,833
1918–19	525,517	18,932	3.60	45,328	6,679

The figures relating to the use of fertilizers in South Australia are shewn in the table below :—

FERTILIZERS USED IN SOUTH AUSTRALIA, 1914–15 TO 1918–19.

Season.	Total Area of Crops.	Area Manured.		Manure Used.	
		Aggregate.	Percentage on Total Area of Crops	Natural (Stable-yard, etc.).	Artificial.
	Acres.	Acres.	%	Loads.	Tons.
1914–15	3,282,364	2,722,349	82.94	103,537	97,421
1915–16	3,763,570	3,112,462	82.70	90,142	98,258
1916–17	3,627,477	2,872,571	79.19	101,032	96,893
1917–18	3,079,778	2,553,713	82.92	87,550	90,795
1918–19	3,111,079	2,587,648	83.19	92,063	90,302

Corresponding particulars relative to Western Australia for the seasons 1914–15 to 1918–19 are given in the following table :—

FERTILIZERS USED IN WESTERN AUSTRALIA, 1914–15 TO 1918–19.

Season.	Total Area of Crops.	Area Manured.		Manure Used.	
		Aggregate.	Percentage on Total Area of Crops	Natural (Stable-yard, etc.).	Artificial.
	Acres.	Acres.	%	Loads.	Tons.
1914–15	1,867,547	1,808,503	96.84	54,245	67,839
1915–16	2,189,456	2,117,166	96.70	53,257	70,523
1916–17	2,004,944	1,903,026	94.92	49,216	70,326
1917–18	1,679,772	1,586,748	94.46	49,578	58,989
1918–19	1,605,088	1,547,144	96.39	49,900	57,276

Statistics relating to the use of manures in Tasmania for the past five seasons are as follows :—

FERTILIZERS USED IN TASMANIA, 1914–15 TO 1918–19.

Season.	Total Area of Crops.	Area Manured.		Manure Used.	
		Aggregate.	Percentage on Total Area of Crops	Natural (Stable-yard, etc.).	Artificial.
	Acres.	Acres.	%	Tons.	Tons.
1914–15	274,474	144,732	52.73	31,572	13,065
1915–16	333,334	182,374	54.71	30,486	15,232
1916–17	270,526	144,532	53.43	30,990	13,886
1917–18	238,199	120,476	50.58	28,006	11,472
1918–19	254,109	135,558	53.35	25,032	11,367

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 the Commonwealth at latest available date was 94, made up as follows:—New South Wales, 21; Victoria, 29; Queensland, 22; South Australia, 10; Western Australia, 4; and Tasmania, 8.

7. **Benefits Derived from the Use of Fertilizers.**—There is little doubt that the increasing use throughout the Commonwealth of fertilizers, natural and artificial, combined with the greater attention being devoted to fallowing and to the combination of sheep-farming with agriculture, is having the effect of improving the prospects of those dependent for a livelihood on the products of the soil. Reference has previously been made to the loss to the soil of phosphoric acid which the Commonwealth export of wheat and its milled products involves, and the necessity which thus arises for returning this ingredient in some form. Similarly, other staple products exported impose their respective tolls upon the soil, and the increased use of fertilizers furnishes evidence that producers are alive to the necessity for making good the deficiency so arising.

§ 19. Ensilage.

1. **Value to Stockowners.**—The use of ensilage as a substitute for green fodder during periods of drought or spells of dry weather, or for winter use, is less extensive in Australia than the circumstances would appear to warrant. There is, however, a growing disposition on the part of dairy farmers to make silos on their holdings, as they find that dairy cattle eat ensilage greedily, and that by its means the output of milk, both in regard to quantity and quality, may be kept up long after the supply of ordinary green food is exhausted. Sheepbreeders are also recognising the fact that during protracted periods of dry weather the silo enables them to keep their stock in good condition, and that lambing can take place satisfactorily. Ensilage thus obviates the expense of travelling or trucking sheep for hundreds of miles to get beyond the drought area, or the equally costly and even ruinous alternative of providing chaff for food at high prices and costly freight. In the rearing of lambs for the London market, ensilage appears to be destined to play an important part, as the lambs thrive upon it much better than upon dry food. By the judicious economising of the surplus growth of green food with the use of the silo, farmers and squatters can carry more stock on their holdings than they otherwise would be justified in doing. Not only is the great waste of superabundant food thus avoided, but it becomes possible to change into a succulent and nutritious food much growth that in any other state would not be eaten by stock. Thus such vegetation as marsh mallows, thistles, weeds of all sorts, and even the swamp reed (*Arundo phragmites*), which grows in great quantities in lagoons, billabongs, and swamps, are all eaten with avidity when offered to stock in the form of ensilage. The pit and stack silos are rapidly being superseded by those built of red gum and hardwood or concrete. This is found to a great extent to obviate the loss sustained by mould, at the same time reducing the risk of fire. A portable silo made of iron has been devised in sections of such size and weight as to admit of ready handling. These silos can be increased in diameter or height by the addition of further sections.

2. **Government Assistance in the Production of Ensilage.**—The Government of Victoria, recognising that defective methods of making ensilage have often been adopted, has for some years been making special efforts to educate the farming community, by the issue of bulletins, lectures, etc., so that mistakes may be avoided, and the conditions essential for the production of good ensilage may be better appreciated. These conditions vary with the climate and with the locality. 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 as to packing them, etc. The New South Wales Government has, by giving advice in the "Agricultural Gazette," and by the issue of special bulletins, taken steps towards the education of the farmers. Silos also have been erected on the various experimental farms with a view to demonstrating the value of ensilage. No financial assistance is, however, given in New South Wales in this connexion.

3. ***Quantity Made.***—Particulars concerning the number of silos and the quantity of ensilage made in the several States of the Commonwealth in the seasons 1914–15 to 1918–19 are furnished in the following table :—

ENSILAGE MADE IN COMMONWEALTH, 1914–15 TO 1918–19.

State or Territory.	1914–15.		1915–16.		1916–17.		1917–18.		1918–19.	
	Holdings.	Ensilage Made.	Holdings.	Ensilage Made.	Holdings.	Ensilage Made.	Holdings.	Ensilage Made.	Holdings.	Ensilage Made.
	(*a*)		(*a*)		(*a*)		(*a*)		(*a*)	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
New South Wales ..	83	10,963	130	18,511	119	16,336	116	14,789	60	6,292
Victoria	161	9,055	269	16,356	179	10,974	117	9,852	95	8,249
Queensland	52	3,363	37	3,012	70	5,115	60	4,556	45	3,541
South Australia ..	6	681	43	1,688	20	1,795	13	921	16	1,083
Western Australia ..	11	403	12	518	12	278	11	325	11	441
Tasmania	10	231	17	849	7	114	38	518	7	180
Federal Territory ..	..	..	..	..	..	..	..	..	..	..
Northern Territory ..	..	..	..	..	1	55	1	50	1	50
Commonwealth ..	323	24,696	508	40,934	408	34,667	356	31,011	235	19,836

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

Following the drought of 1902–3 greater attention was paid to ensilage than was previously the case, and during the four seasons ended 1909–10 a continuous and fairly rapid increase was in evidence in all the States, both in the number of holdings on which ensilage was made, and in the quantity produced. The following five seasons, however, shewed a falling-off, but the reduction cannot be accepted as an indication of a lessening of appreciation of the benefits of ensilage, but rather of the fact that stocks had not been drawn upon to any great extent during the previous seasons. The accumulated stocks proved of very great value during the 1914 drought, though far below what would have been the case if more attention had been paid to ensilage-making during the previous years of surplus green food. A very substantial increase took place in 1915–16, both in the holdings on which ensilage was made and in the quantity produced, but during the last three years the number of holdings and the quantity of ensilage made declined considerably, the falling off in New South Wales and Victoria being particularly heavy.

§ 20. Agricultural Colleges and Experimental Farms.

1. **Introduction.**—In most of the States, agricultural colleges and experimental farms have been established with a view to promoting agriculture and to establishing improved and more scientific systems of stock-breeding and dairying. In these 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., is taught, while general experimental work is carried on with cereal and other crops, not merely for the purpose of shewing that it is practicable to produce certain crops in a given place, but also to shew how it is possible to make farming pay best in that 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 carpenters', blacksmiths', and other trades.

Travelling expert lecturers are sent to the various agricultural and dairying centres, and there is a wide distribution of periodical agricultural gazettes and bulletins on matters of importance at special seasons.

2. ***Particulars of Agricultural Colleges and Experimental Farms.***—In previous issues detailed information is given in respect of agricultural colleges, experimental farms and agricultural education generally. See Year Book No. 11, pp. 393–5.

§ 21. Government Loans to Farmers.

1. **Introduction.**—All the Australian States have established systems under which financial aid is rendered to agriculturists by the Government. The principle upon which such aid is founded was probably first practically applied in Germany, in the year 1770, when the *Landschaften Bank* was created. The establishment of the *Crédit Foncier* nearly a century later in France was a creation of a similar character. This latter institution was designed to enable house and land owners to raise money on mortgage at a low rate of interest, with facility for repayment by annual instalments including redemption of the capital. It dates from 1852, but the mortgage bank known as the *Caisse Hypothécaire*, which, after a struggling existence, was finally liquidated in 1864, was based essentially on the same principle. Over the operations of the *Crédit Foncier*, created under governmental patronage and invested with such special privileges as to virtually constitute it a monopoly, the Government exercised a direct control, by appointing its governor and its two deputy-governors. The *Crédit Foncier* was empowered to lend money only on a first mortgage, and to the amount of one-half of the estimated value of houses and farms, and one-third that of vineyards, woods, and other plantations, and the commission charged could not exceed six-tenths per cent. The system developed and adopted in the Commonwealth, with the object of assisting farmers to make improvements or to develop or utilise the agricultural or pastoral resources of the land, is analogous. Particulars of advances made under the Closer Settlement and similar Acts are dealt with in the section on Closer Settlement.

2. **Aggregate of Transactions in each State, 1916 to 1919.**—The subjoined table gives aggregates of transactions in reference to advances to farmers in each State during the past four years :—

STATE GOVERNMENT ADVANCES DEPARTMENTS—AGGREGATE OF LOANS TO FARMERS, 1916 TO 1919. (*a*)

State.	Total Advanced to 30th June—				Balance Due at 30th June—			
	1916.	1917.	1918.	1919.	1916.	1917.	1918.	1919.
	£	£	£	£	£	£	£	£
N.S.W. ..	4,119,842	4,281,697	4,514,157	4,774,412	2,513,332	2,522,674	2,544,054	2,599,751
Victoria ..	3,866,952	4,040,582	4,204,542	4,337,542	1,833,988	1,920,737	1,957,694	1,949,023
Q'land	1,517,040	1,810,910	2,026,823	2,245,474	1,186,895	1,428,530	1,525,649	1,633,936
S. Aust.(*b*) ..	2,831,631	2,847,017	2,956,859	3,140,711	1,300,877	1,232,705	1,223,897	1,284,795
W. Aust. ..	3,533,493	3,626,658	3,700,488	3,798,146	2,695,550	2,753,559	2,789,388	2,835,631
Tasmania ..	97,776	117,027	124,319	129,018	87,106	103,152	105,965	107,437
Commonwealth	15,966,734	16,723,891	17,527,188	18,425,303	9,617,748	9,961,357	10,146,647	10,410,573
	Profits for Year ended 30th June—				Accumulated Profits at 30th June—			
	£	£	£	£	£	£	£	£
N.S.W. ..	16,633	17,477	17,446	15,276	88,374	104,898	120,085	135,107
Victoria(*c*) ..	14,000	15,623	14,284	16,615	126,411	142,064	156,348	172,904
Q'land	6,674	(*d*)	(*d*)	(*d*)	29,328	(*e*)29,328	(*e*)29,328	(*e*) 29,328
S. Aust.(*b*) ..	11,670	11,400	11,454	11,128	91,069	102,469	113,923	125,052
W. Aust. ..	7,706	2,894	2,371	7,142	82,351	85,245	88,239	95,381
Tasmania ..	1,278	1,238	1,224	1,096	2,787	4,025	5,249	6,346
Commonwealth	57,961	48,632	46,779	51,257	420,320	(*e*)468,029	(*e*)513,172	(*e*)564,118

(*a*) Compiled from figures furnished by the Government Savings Bank of Victoria. (*b*) Includes loans to farmers and other producers and to local bodies on the security of their own rates. (*c*) Including profits in connexion with house and similar loans. (*d*) Not shewn since amalgamation with Government Savings Bank. (*e*) See note (*d*).

3. **Legislation in each State.**—An account of the initial legislation in each State in reference to advances to settlers; subsequent legislation; security on which, and objects for which advances were made; amount of advances and repayments up to the end of 1917–18, etc., will be found in previous issues of the Year Book (see No. 12, pages 384 to 389).

4. **Particulars Respecting Agricultural and Stock Departments.**—In Year Book No. 7, 1901–1913, on pages 364 to 369, will be found particulars respecting Agricultural and Stock departments of the several States of the Commonwealth as on 30th June, 1913. The main features of organisation are set out under their respective headings, and will be found to embrace such items as the number on staffs, expenditure, facilities for agricultural education and work undertaken in agricultural colleges, technical schools, experimental farms, and orchards and vineyards. The nature of lectures and other forms of agricultural instruction by experts is dealt with, as well as the extent of distribution of plants, and the special steps taken by the departments to disseminate information amongst agriculturists, and also to facilitate placing the products of the State on the market.

§ 22. Graphical Representation of Crops.

1. **Areas of Principal Crops.**—A graphical representation of the areas devoted to each of the principal crops in the Commonwealth since 1860 will be found on page 379. The crops so represented are as follows:—Wheat, hay, oats, maize, sugar-cane, barley, and vines.

2. **Production.**—On page 380 will be found a graphical representation of the aggregate yields in the Commonwealth since 1860 of wheat, oats, barley, maize, and hay.