

SECTION VIII.

AGRICULTURAL PRODUCTION.

NOTE.—Except where otherwise stated, the "agricultural" years hereinafter mentioned are taken as ending on the 31st March.

§ 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, 3361 acres; maize, 1527 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, 6877 acres; maize, 3389 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 shows the area under crop in each of the Commonwealth States and Territories at quinquennial intervals since 1860 and during each of the last seven 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 1916-17.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	W. Aust.	Tasmania.	N.T.	Fed. Terr.	Commonwealth.
	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
1865-6	378,255	448,194	14,414	547,124	38,180	159,547	...	...	1,585,714
1870-1	426,976	692,840	52,210	801,571	54,527	157,410	...	...	2,185,534
1875-6	451,139	736,520	77,347	1,111,882	47,571	142,547	...	...	2,567,006
1880-1	629,180	1,548,809	113,978	2,087,237	57,707	140,788	...	...	4,577,699
1885-6	737,701	1,867,496	193,334	2,298,412	60,058	144,761	...	...	5,306,762
1890-1	852,704	2,031,955	224,993	2,093,515	69,678	157,376	...	...	5,430,221
1895-6	1,348,600	2,413,235	285,319	2,092,942	97,821	212,703	...	...	6,450,620
1900-1	2,445,564	3,114,132	457,397	2,369,680	201,338	224,352	...	...	8,812,463
1905-6	2,840,235	3,219,962	522,748	2,255,569	364,704	230,237	...	...	9,433,455
1910-11	3,386,017	3,952,070	667,113	2,746,334	855,024	286,920	360	...	11,893,838
1911-12	3,628,513	3,640,241	526,388	2,965,338	1,072,653	270,000	375	3,509	12,107,017
1912-13	3,737,085	4,079,356	668,483	3,062,998	1,199,991	286,065	330	3,741	13,038,049
1913-14	4,567,592	4,391,321	747,814	3,169,559	1,537,923	264,140	354	4,309	14,683,012
1914-15	4,807,001	4,622,759	792,568	3,232,364	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

The increase in the area under crop during the past ten years has been most marked in the case of New South Wales, Victoria and Western Australia, the respective increases being 2,337,777, 1,547,749, and 1,544,119 acres. During the same period an increase of 1,470,242 acres was experienced in South Australia, 325,506 in Queensland, and 25,782 acres in Tasmania. The total area under crop in the Commonwealth increased during the period by 7,253,580 acres, and the total for 1915-16 was the highest ever attained by the Commonwealth. During these past ten seasons the percentage of increase was particularly high in Western Australia, viz., 335 per cent. New South Wales had an increase of 83 per cent., while South Australia, Queensland, Victoria, and Tasmania added to their areas under crop to the extent of 68, 58, 47 and 11½ per cent. respectively. The increase for the whole of the Commonwealth during the same period was 75.9 per cent.

3. Relation to Population.—From the following table it will be seen that for the Commonwealth as a whole the area under crop has, during the seasons under review, with the exception of 1916-17, increased at a rate which is greater than that at which

the population of the Commonwealth has increased. This relatively greater increase is in evidence in all the States, being most marked in the case of Western Australia, which has now a larger area under crop per head of population than any State except South Australia. Details for 1901-2 and for the past five seasons are as follows:—

TOTAL AREA UNDER CROP PER 1000 OF POPULATION, 1901-2 and 1912-13 to 1916-17.

Season	N S.W.	Vic.	Q'land	S. Aust.	W. Aus.	Tas.	Northern Territory	Federal Terr.	C'with.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2	1,656	2,451	954	6,224	1,123	1,327	...	...	2,200
1912-13	2,102	2,955	1,050	7,122	3,920	1,451	95	1,928	2,755
1913-14	2,494	3,110	1,133	7,203	4,796	1,310	96	2,168	3,014
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

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 1916-17 represented only about one acre in every 113. In Victoria the proportion was about one acre in every 11½, in New South Wales one in 38, in Tasmania one in 62, in South Australia one in 67, in Western Australia one in 311, in Queensland one in 485, in the Federal Territory one in 282, and in the Northern Territory one in 1,223,054.

PERCENTAGE OF AREA UNDER CROP TO TOTAL AREA, 1901-2 and 1912-13 to 1916-17.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aus.	Tas.	Northern Territory	Federal Terr.	C'with.
	%	%	%	%	%	%	%	%	%
1901-2	1.147	5.273	0.113	0.919	0.035	1.386	...	...	0.442
1912-13	1.887	7.253	0.156	1.259	0.192	1.705	0.0001	0.641	0.685
1913-14	2.230	7.807	0.174	1.303	0.246	1.574	0.0001	0.738	0.771
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

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, 1901-2 and 1912-13 to 1916-17.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Fed. Terr.	Commonwealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2	467,839	162,954	34,679	23,510	3,711	314,422	...	1,007,115
1912-13	1,152,399	1,085,346	205,363	30,377	5,168	508,714	50	* 2,987,419
1913-14	1,234,405	1,094,566	236,582	30,277	6,919	605,559	50	* 3,208,362
1914-15	1,278,883	1,202,130	290,147	24,974	8,025	647,602	70	* 3,451,831
1915-16	1,247,029	1,182,995	305,186	25,443	9,119	675,335	70	* 3,445,377
1916-17	1,357,087	1,292,817	363,876	29,644	8,327	654,072	70	* 3,706,093

* Including 2 acres Northern Territory 1912-13, 4 acres 1913-14, and 200 acres 1915-16 and 1916-17.

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 1916-17 :—

DISTRIBUTION OF CROPS IN AUSTRALIA, 1916-17.

Crop.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T. 1915-16.	Fed. Terr.	Total for C'with.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat	3,805,699	3,125,692	227,778	2,778,357	1,566,608	27,789	...	905	11,532,828
Oats	67,003	441,598	6,564	151,609	122,220	55,028	...	108	844,130
Maize	155,373	23,076	181,405	117	51	...	45	5	360,072
Barley—									
Malting	2,874	43,131	8,578	77,984	5,157	4,122	...	...	141,846
Other	2,321	49,884	4,096	25,643	5,948	515	...	...	88,407
Beans and Peas	357	9,956	49	5,875	496	15,660	...	...	32,393
Rye	2,341	3,481	131	1,868	520	714	...	...	9,055
Other Cereals ...	...	...	...	...	80	...	25	...	105
Hay	857,533	897,186	112,964	489,040	240,726	79,274	140	999	2,671,862
Green Forage ...	149,824	49,667	117,174	37,352	28,653	8,133	24	49	390,876
Grass Seed ...	760	1,769	1,588	10	...	1,155	...	...	4,582
Orchards & other									
Fruit Gardens	60,360	83,087	25,293	28,794	21,747	88,380	...	26	257,687
Vines—									
Productive ...	6,176	18,604	1,123	24,376	2,494	...	...	...	52,773
Unproductive	2,490	4,660	133	4,801	537	...	...	...	12,621
Market Gardens	10,683	10,746	2,305	1,522	2,153	448	...	27	27,884
Sugar Cane—									
Productive ...	5,223	...	75,914	...	...	...	...	...	81,137
Unproductive	5,746	...	91,307	...	...	...	...	...	97,053
Potatoes	22,437	73,618	8,908	4,737	5,838	34,345	...	12	149,895
Onions	180	6,324	189	288	57	21	...	...	7,059
Other root crops	869	2,704	2,417	274	292	2,988	15	...	9,559
Tobacco	952	73	317	...	...	...	...	...	1,342
Broom Millet ...	1,720	1,143	1,063	...	...	...	5	...	3,931
Pumpkins and									
Melons	3,119	2,064	12,566	345	659	...	20	...	18,773
Hops ... ..	...	87	...	3	...	1,241	...	...	1,331
All other crops	1,094	2,785	3,397	482	708	713	...	...	9,179
Total Area...	5,164,434	4,851,335	885,259	3,627,477	2,004,944	270,526	274	2,131	16,896,380

* Canary Seed only, balance included with acreage under green forage and hay.

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 1916-17 is shewn in the next table. In five of the States, *viz.*, New South Wales, Victoria, Queensland, South Australia, and Western Australia, wheat-growing for grain is by far the most extensive form of cultivation, while in the same States, with the exception of Queensland the hay crop is second in importance. In Victoria, South Australia, and Western Australia the oat crop occupies third position. In Queensland, on the other hand, the three principal crops in the order of importance are wheat, maize, and sugar cane, while in Tasmania hay, oats, orchards and fruit gardens occupy the leading positions. For the Commonwealth as a whole, the wheat, hay, and oat crops represent over 89½ per cent. of the total area under crop.

PROPORTION OF AREA UNDER CHIEF CROPS, 1916-17.

Crop.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Federal Terr.	C'wealth
	%	%	%	%	%	%	%	%	%
Wheat ...	73.69	64.43	25.73	76.59	78.14	10.27	...	42.47	68.62
Hay ...	16.60	18.49	12.76	13.32	12.01	29.30	51.10	46.88	15.90
Oats ...	1.30	9.10	0.74	4.18	6.10	20.34	...	5.07	5.02
Green Forage	2.90	1.02	13.24	1.03	1.43	3.01	8.76	2.30	2.33
Maize ...	3.01	0.48	20.49	...	...	...	16.42	0.23	2.14
Orchards and Fruit G'dens	1.17	1.71	2.86	0.79	1.08	14.19	...	1.22	1.53
Barley ...	0.10	1.94	1.43	2.86	0.55	1.71	...	...	1.37
Sugar Cane...	0.21	...	18.89	...	...	...	...	...	1.06
Potatoes ...	0.43	1.52	1.01	0.13	0.29	12.70	1.82	0.56	0.89
Vineyards ...	0.17	0.48	0.14	0.80	0.15	...	...	...	0.39
All Other ...	0.42	0.82	2.71	0.30	0.25	8.48	21.90	1.27	0.75
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 and the position regarding them in each State and Territory is shewn in the following table. New South Wales exhibits the largest area under wheat and green forage; Victoria is in the leading position in regard to hay, oats, orchards and fruit gardens, and potatoes; and Queensland is 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 fourth in wheat, hay, barley, 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 1916-17.

Crop.	N.S.W.	Vict.	Q'land.	S. Aust.	W.A.	Tas.	N.T.	Federal Terr.	C'wlth.
Wheat ...	33.00	27.10	1.98	24.09	13.58	0.24	...	0.01	100.00
position	1	2	5	3	4	6	...	7	
Hay ...	32.09	33.58	4.23	18.08	9.01	2.97	...	0.04	100.00
position	2	1	5	3	4	6	...	7	
Oats ...	7.94	52.31	0.78	17.96	14.48	6.52	...	0.01	100.00
position	4	1	6	2	3	5	...	7	
Maize ...	43.15	6.41	50.38	0.03	0.02	...	0.01	...	100.00
position	2	3	1	4	5	...	6	...	
Green Forage	38.33	12.71	29.98	9.56	7.33	2.08	...	0.01	100.00
position	1	3	2	4	5	6	...	7	
Orchards and Fruit Gardens...	23.42	32.24	9.82	11.18	8.44	14.89	...	0.01	100.00
position	2	1	5	4	6	3	...	7	
Sugar Cane	6.16	...	93.84	...	...	...	...	...	100.00
position	2	...	1	...	...	...	...	...
Potatoes ...	14.97	49.12	5.94	3.16	3.90	22.91	...	...	100.00
position	3	1	4	6	5	2	...	...
Barley ...	2.26	40.40	5.50	45.01	4.82	2.01	...	...	100.00
position	5	2	3	1	4	6	...	...
Vineyards ...	13.25	35.58	1.92	44.62	4.63	...	...	...	100.00
position	3	2	5	1	4	...	...	...
All other crops	12.52	26.81	38.89	5.52	8.10	8.16	...	...	100.00
position	3	2	1	6	5	4	...	...
Total area under crop	30.73	28.87	5.27	21.58	11.93	1.61	...	0.01	100.00
position	1	2	5	3	4	6	...	...

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, 1912-13 to 1916-17.

Crop.	1912-13.	1913-14.	1914-15.	1915-16.	1916-17.
	Acres.	Acres.	Acres.	Acres.	Acres.
Wheat	7,339,651	9,287,398	9,651,081	12,484,512	11,532,828
Hay	3,217,041	2,754,672	2,628,613	3,597,771	2,671,862
Oats	874,034	859,020	774,734	721,644	844,130
Green Forage	428,006	486,504	1,352,158	515,561	390,876
Maize	314,936	331,879	339,781	323,637	360,072
Orchards and Fruit Gardens	205,174	216,021	232,711	247,008	257,687
Barley	181,387	222,564	153,656	169,514	230,253
Sugar Cane	155,567	160,976	172,616	164,285	178,190
Potatoes	128,889	174,262	151,845	120,993	149,895
Vineyards	62,388	61,197	60,985	62,124	65,394
All other Crops	130,976	128,519	133,794	121,185	125,193
Total	13,038,049	14,683,012	15,651,974	18,528,234	16,806,380

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 1912-13, while hay also reached its maximum area in 1915-16, and its minimum in 1914-15. Of the other crops, maize, orchards and fruit gardens, sugar cane, barley and vineyards attained their maximum areas in 1916-17, green forage in 1914-15, potatoes in 1913-14, and oats in 1912-13.

§ 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 1917-18.

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tas.	N.T.	Fed. Terr.	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
1865-6	131,653	178,628	2,068	410,608	22,249	73,270	...	...	818,476
1870-1	147,997	284,167	2,892	604,761	26,640	57,382	...	...	1,123,839
1875-6	133,609	321,401	4,478	898,820	21,561	42,745	...	...	1,422,614
1880-1	253,138	977,285	12,632	1,733,542	27,686	50,022	...	...	3,054,305
1885-6	264,867	1,020,082	10,093	1,922,555	29,511	30,266	...	...	3,277,374
1890-1	333,233	1,145,163	10,390	1,673,573	33,820	32,452	...	...	3,228,631
1895-6	596,684	1,412,736	27,090	1,649,929	23,241	64,652	...	...	3,774,332
1900-1	1,530,609	2,017,321	79,304	1,913,247	74,308	51,825	...	...	5,666,614
1905-6	1,939,447	2,070,517	119,356	1,757,036	195,071	41,319	...	...	6,122,746
1910-11	2,128,826	2,398,089	106,718	2,104,717	581,862	52,242	2	...	7,372,456
1911-12	2,379,968	2,164,066	42,962	2,190,782	612,104	37,208	2	742	7,427,834
1912-13	2,230,500	2,085,216	124,963	2,079,633	793,096	25,226	3	1014	7,339,651
1913-14	3,203,572	2,565,861	132,655	2,267,851	1,097,193	18,432	9	1825	9,287,398
1914-15	2,756,343	2,863,535	127,015	2,502,630	1,376,012	23,865	...	1681	9,651,081
1915-16	4,186,493	3,679,971	93,703	2,739,214	1,734,117	48,642	...	2372	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	3,232,700	2,690,216	148,174	2,355,682	1,249,637	21,812	...	†	9,698,221

* Preliminary figures, except Victorian which are final. † Including Federal Territory.
‡ Included with New South Wales.

The area devoted 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 in all the States with the exception of Queensland and South Australia, where the acreages for both States are the highest on record. The average area under wheat in the Commonwealth in the past ten seasons, 1907-17, was 8,232,838 acres. The past four seasons exceeded this average, while the previous six seasons fell short of it.

Although final figures for 1917-8 for all the States are not yet available, the data to hand indicate the total area under wheat for grain in the Commonwealth as about 9,700,000 acres, representing a decrease of nearly 16 per cent. on the 1916-17 area. New South Wales returns shew a decrease in acreage of about 15 per cent.; Victoria, 14 per cent.; Queensland, 35 per cent.; South Australia, 15 per cent.; Western Australia, 20 per cent.; and Tasmania, 16 per cent.

(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 1917-18.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N. T.	Federal Terr.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1860-1	1,581,598	3,459,914	3,136	3,576,593	208,332	1,415,896	...	...	10,245,469
1865-6	1,013,863	3,514,227	33,088	3,587,800	231,594	1,273,766	...	...	9,654,338
1870-1	999,595	2,870,409	39,787	6,961,164	316,769	896,881	...	...	12,084,605
1875-6	1,958,640	4,978,914	97,400	10,739,834	237,171	700,092	...	...	18,712,051
1880-1	3,717,355	9,727,369	223,243	8,606,510	332,232	750,040	...	...	23,356,749
1885-6	2,733,133	9,170,538	51,598	14,612,876	339,376	524,348	...	...	27,431,869
1890-1	3,649,216	12,751,295	207,990	9,399,389	467,389	642,980	...	...	27,115,259
1895-6	5,195,312	5,669,174	123,630	5,929,300	188,077	1,164,855	...	...	18,270,348
1900-1	16,173,771	17,847,321	1,194,088	11,253,148	774,653	1,110,421	...	...	48,353,402
1905-6	20,737,200	23,417,670	1,137,321	20,143,798	2,308,305	776,478	...	...	68,520,772
1910-11	27,913,547	34,813,019	1,022,373	24,344,740	5,897,540	1,120,744	20	...	95,111,983
1911-12	25,080,111	20,891,877	285,109	20,352,720	4,358,904	659,615	20	7,991	71,636,347
1912-13	32,466,506	26,223,104	1,975,505	21,496,216	9,168,594	630,315	...	20,830	91,981,070
1913-14	37,996,068	32,936,245	1,769,432	16,936,988	13,331,350	349,736	...	24,313	103,344,132
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*	37,843,930	37,737,552	1,405,664	28,692,594	9,304,995	252,383	...	†	115,237,118

* Final figures Victoria and Queensland, those for remaining States approximate.

† Included with New South Wales.

The yield for the 1916-17 season was 152,420,189 bushels, which constitutes the second largest yield on record; the harvest of 1915-16 was the largest ever reaped in the Commonwealth, and exceeded by over 75,700,000 bushels that of 1913-14, the previous largest return; the 1910-11 yield was 95,111,983 bushels, that for 1912-13, 91,981,070 bushels, and that for 1909-10 was 90,413,597 bushels, these being the only five occasions, prior to 1916-17, on which a yield exceeding 90,000,000 bushels was obtained. 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. The approximate estimate for the 1917-18 season gives 115,237,118 bushels, which, though shewing a decrease of more than 24 per cent. as compared with the previous season's returns, is, nevertheless, the third highest yield on record for the Commonwealth as a whole. The only State shewing an increased yield for 1917-18 was New South Wales, the increment being 3.4 per cent.

(iii.) *Average Yields.* In the next table will be found the average yield of wheat per acre in each of the seasons 1901-2 and 1912-13 to 1916-17 and for the decennium 1907-17 :—

YIELD OF WHEAT PER ACRE, 1901-2 and 1912-13 to 1916-17.

Season.	N.S.W.	Vic.	Q'land.	S. Aus.	W. Aus.	Tasmania.	N.T.	Fed. Terr.	C'wealth.
	Bushels.	B'shls.	B'shls.	B'shls.	B'shls.	B'shls.	B'shls.	B'shls.	B'shls.
1901-2 ...	10.64	6.91	19.40	4.60	10.10	21.86	...	...	7.54
1912-13 ...	14.56	12.58	15.81	10.34	11.56	24.99	...	20.54	12.53
1913-14 ...	11.86	12.84	13.34	7.47	12.15	18.97	...	13.32	11.13
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
Average 10 seasons	11.50	11.90	11.43	10.46	9.20	20.05	...	14.28	11.13
1907-17									

As the above figures shew, there were considerable variations in the average yields, chiefly due to the vagaries of the season.

For the Commonwealth as a whole the average yield for 1914-15 of 2.58 bushels per acre was 8.55 below the average yield of 11.13 per acre during the last ten seasons. The highest average yield for any State for that season was in Tasmania with 16.10 bushels per acre, and the lowest in Victoria with 1.38 bushels per acre. The yield of 14.34 bushels per acre for the Commonwealth for 1915-16 exceeded that of any year since 1866 by more than three-fifths of a bushel, while the yield of 13.22 bushels per acre for 1916-17 has been exceeded only four times in the last fifty years. The Victorian average of 16.17 for 1916-17 was the highest recorded for that State since 1872, while the Tasmanian average of 12.53 was the lowest ever experienced there.

(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 $3\frac{1}{2}$ bushels in 1902-3 and $36\frac{1}{2}$ bushels in 1915-16. The State in which wheat-growing occupies the most important position relatively to population is South Australia, which in 1916-17 had a yield averaging over 105 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 1901-2 and the past six seasons are as follows:—

AUSTRALIAN WHEAT PRODUCTION PER 1000 OF POPULATION, 1901-2 and 1912-13 to 1917-18.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Fed. Terr.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bush'ls	Bush'ls	Bushels.
1901-2	10,766	10,023	3,340	22,299	4,943	5,499	...	...	10,082
1912-13	18,265	18,995	3,104	49,981	29,950	3,196	...	10,737	19,433
1913-14	20,743	23,324	2,680	38,489	41,572	1,734	...	12,230	21,212
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*	20,217	26,851	2,066	66,389	30,154	1,242	...	†	23,350

* Approximate, except for Victoria and Queensland. † Included with New South Wales.

The normal annual consumption of wheat in Australia, exclusive of the requirements for seed, poultry and other live stock, is 325 lbs. (5.42 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 38.52 bushels per acre, to Mexico with a minimum of under 3 bushels per acre. Australia with approximately 13.22 occupies a relatively subordinate position.

AVERAGE YIELD OF WHEAT PER ACRE IN VARIOUS COUNTRIES, 1916.

Country.	Average Yield in bushels per acre.	Country.	Average Yield in bushels per acre.
Denmark ...	38.52	Spain ...	14.66
Belgium (1914) ...	34.94	Italy ...	14.65
Sweden (1912) ...	30.08	Chile (1915) ...	14.41
United Kingdom ...	29.48	Australia ...	13.22
Netherlands ...	28.75	Russia in Asia (1914) ...	12.44
Germany (1915) ...	27.75	United States ...	11.75
Egypt ...	24.48	Algeria (1915) ...	10.47
Bulgaria (1913) ...	23.82	India ...	10.23
New Zealand ...	23.20	Argentine Republic ...	10.19
Canada ...	21.18	Portugal (1911) ...	9.78
Austria (1913) ...	19.89	Russia in Europe (1914) ...	9.07
Japan ...	18.51	Union of South Africa ...	8.45
Hungary (1915) ...	17.89	Uruguay ...	8.33
France ...	16.08	Tunis ...	4.69
Serbia (1914) ...	16.03	Mexico (1914) ...	2.97
Rumania ...	15.72		

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, 1916.

Country.	Yield in Bushels.	Country.	Yield in Bushels.
United States ...	620,305,488	Turkey in Asia (1915) ...	33,929,000
Russia in Europe (1914)* ...	561,541,430	Algeria (1915) ...	33,593,588
India ...	308,274,047	Japan ...	23,696,014
Canada ...	213,623,770	Chile ...	20,497,963
France ...	206,689,652	Turkey in Europe (1915) ...	17,449,200
Italy ...	171,127,213	Persia (1915) ...	15,510,400
Argentine Republic ...	167,337,828	Serbia (1915) ...	9,694,000
Russia in Asia (1914) ...	167,287,419	Sweden (1915) ...	8,889,398
Australia ...	152,420,189	Uruguay ...	7,917,090
Hungary (1915) ...	148,254,220	Belgium (1915) ...	7,755,200
Spain ...	147,667,733	Portugal ...	7,118,304
Germany (1915) ...	137,340,714	Tunis ...	6,945,751
Rumania ...	76,117,288	Denmark ...	5,855,176
United Kingdom ...	60,462,447	New Zealand ...	5,051,227
Austria (1915) ...	54,286,400	Union of South Africa ...	4,708,376
Bulgaria ...	37,070,825	Netherlands ...	3,910,560
Egypt ...	35,424,784	Mexico (1915) ...	3,877,600

* Including Poland and Northern Caucasia.

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	
1910 ...	3,525	1914 ...	3,548	10 years ...	3,641

In this estimate the figures given for Australia and New Zealand relate to the agricultural year ending on 31st March 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 1916.

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	1907 ...	30 7	36 3	26 0
1871 ...	56 8	60 0	52 6	1908 ...	32 0	35 6	30 5
1881 ...	45 4	55 2	40 9	1909 ...	36 11	44 9	31 4
1891 ...	37 0	41 8	32 3	1910 ...	31 8	33 9	29 0
1901 ...	26 9	27 8	25 8	1911 ...	31 8	33 4	30 0
1902 ...	28 1	31 8	24 10	1912 ...	34 9	39 2	29 10
1903 ...	26 9	30 3	24 11	1913 ...	31 8	34 3	30 0
1904 ...	28 4	30 6	26 3	1914 ...	34 11	43 3	30 11
1905 ...	29 8	32 3	26 8	1915 ...	52 10	62 0	42 9
1906 ...	28 3	30 9	25 9	1916 ...	58 5	75 10	46 3

(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 ten years:—

EXPORT VALUES OF AUSTRALIAN WHEAT, 1907 to 1916-17.

Year.	1907.	1908.	1909	1910.	1911.	1912.	1913.	1914-15.	1915-16.	1916-17.
Price per bushel	3s. 4d.	4s. 1d.	4s. 2d.	4s. 2d.	3s. 6d.	3s. 11d.	3s. 9d.	4s. 1d.	5s. 7d.	4s. 10d.

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 during 1901 and from 1912 to 1916-17. 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 1903 and 1915-16 the Commonwealth imports of wheat and flour were equivalent to 12,607,940 and 5,633,596 bushels of wheat respectively. This importation was necessitated in each case by the failure of the crop in the preceding season. 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 40,077,246 bushels.

**IMPORTS AND EXPORTS OF WHEAT AND FLOUR, COMMONWEALTH,
1901 AND 1912 TO 1916-17.**

Year.	Imports.			Exports.			Net Exports.
	Wheat.	Flour.	Total.	Wheat.	Flour.	Total.	
	Bushels.	Eq. Bshls.*	Bushels.	Bushels.	Eq. Bshls.*	Bushels.	Bushels.
1901	22,992	302,550	325,542	20,260,058	4,840,700	25,100,758	24,775,216
1912	1,483	7,300	8,783	32,604,248	8,404,700	41,008,948	41,000,165
1913	60	2,650	2,710	42,922,887	11,082,900	54,005,787	54,003,077
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

* 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 1912 to 1916-17. 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, 1912 to 1916-17.

Country to which Exported.	1912.	1913.	1914-15.	1915-16.	1916-17.	Total for Five Years.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
U. Kingdom	23,099,670	27,922,717	1,532,693	14,494,248	22,715,735	89,765,063
Union of South Africa	1,784,382	4,482,865	1,088,507	2,919,608	6,549,395	16,824,757
Canary Is.*	3,107,257	1,477,005	...	2,960,558	884,615	8,429,435
France ...	53,773	1,943,208	9,482	2,186,567	8,562,240	12,755,270
Peru ...	1,201,682	943,130	290,810	156,302	1,154,355	3,746,279
Belgium ...	1,414,263	1,742,803	...	...	...	3,157,066
Chile ...	...	...	650,510	...	...	650,510
Japan ...	42,550	1,215,778	223,996	...	...	1,482,324
Germany ...	556,508	290,553	...	...	...	847,061
Italy ...	488,697	1,879,923	157,000	3,258,313	8,154,602	13,938,535
Egypt ...	427,988	92,413	...	267,568	4,842,000	5,629,969
Philippine I.	1,667	...	...	2	63	1,732
New Zealand	1,695	...	151,042	30,380	225,852	408,969
New Caledonia ...	1,400	1,129	743	173	285	3,730
Ceylon ...	1,487	1,748	853	337	1,247	5,672
Other Countries ...	421,229	929,615	104,957	2,347,385	2,188,483	5,991,669
Total ...	32,604,248	42,922,887	4,210,593	28,621,441	55,278,872	163,638,041

* 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, 1912 to 1916-17.

Country to which Exported.	1912.	1913.	1914-15.	1915-16.	1916-17.	Total for Five Years.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
United Kingdom	38,535	18,894	850	43,604	127,502	229,385
Union of Sth. Africa	26,230	38,209	14,075	22,019	25,106	125,639
Java ...	29,275	38,103	6,003	11,674	13,826	98,881
Portuguese East Africa ...	4,264	15,612	3,163	216	409	23,664
Philippine Islands	16,240	14,366	3,313	3,383	...	37,302
Straits Settlements	15,177	21,625	3,352	5,023	9,755	54,932
Hong Kong ...	1,952	2,466	140	1,442	648	6,648
New Zealand ...	1,641	3,057	5,064	2,190	9,006	20,958
New Caledonia ...	4,012	4,143	3,791	3,566	3,533	19,045
Mauritius ...	1,240	1,906	1,810	...	112	5,068
Ceylon ...	3,901	5,454	2,173	342	20	11,890
China ...	1,738	2,188	545	384	335	5,190
Fiji ...	2,429	2,619	1,834	1,257	2,199	10,338
Japan ...	453	610	2	53	300	1,418
Other Countries ...	21,007	52,406	7,399	51,802	97,882	230,496
Total ...	168,094	221,658	53,514	146,955	290,633	880,854

For the five years under review the export of wheat to the United Kingdom amounted to 89,765,063 bushels, or nearly 55 per cent. of the total export for the period. On the other hand, the export of flour to the United Kingdom aggregated only 229,385 tons, or 26 per cent. of the total export. During the quinquennium the heaviest exports of flour have been to the United Kingdom, South Africa, Java, the Straits Settlements, the Philippine Islands, and Portuguese East Africa.

(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 21 per cent. of the total equivalent in wheat exported as wheat or flour from the Commonwealth.

A point of some interest in connection 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 past ten years the net exports from the Commonwealth of wheat and its milled products have amounted to 334,647,905 bushels of wheat, 1,605,155 tons of flour, and 3,465,795 bushels of bran, pollard, and sharps. On the basis of the figures quoted above this export would contain no less than 172,000,000 lbs. of phosphoric acid, the value of which as a fertiliser would be over a 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,
1907 TO 1915-16.**

Year.	Flour Milled.	Net Exports of Flour.			Net Quantity Available for Home Consumption.		Net Quantity Available per Head of Population.	
		Flour.	Flour in Biscuits Exp'd.		Flour.	Equivalent in Terms of Wheat.	Flour.	Equivalent in Terms of Wheat.
	Tons.	Tons.	Tons.		Tons.	Bushels.	Tons.	Bushels.
1907 ...	652,135	163,064	1,840		487,231	24,361,550	.1182	5.908
1908 ...	552,388	116,625	1,810		433,953	21,697,650	.1035	5.173
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 ...	691,301	175,649	2,570		513,082	25,654,100	.1143	5.713
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
Aggregate 10 years ...	6,419,153	1,442,985	23,170		4,952,998	247,649,900	.1084	5.422

**ESTIMATED QUANTITY OF WHEAT USED FOR SEED PURPOSES IN THE
COMMONWEALTH, 1907 to 1916.**

Year.	Wheat for Seed Purposes.			
	Area.	Quantity.	Per Acre.	Per Head of Population.
	Acres.	Bushels.	Bushels.	Bushels.
1907	6,329,037	6,261,000	.989	1.518
1908	6,535,433	6,429,000	.984	1.533
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
Aggregate for 10 years ...	95,929,691	89,480,000	.933	1.959

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, shows a substantial increase over the average for the previous year, this, however, being counterbalanced by a decline in the following year. The average quantity of flour consumed per annum for the ten years under consideration was 0.1084 tons per head of population, which, when expressed in equivalent terms in wheat, represents 5.422 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, hay or green fodder. The average annual quantity thus used during the ten years was 1.959 bushels per head of population, and 0.933 bushels or 56 lbs. per acre sown.

A steady decline in the average quantity of seed wheat per acre is in evidence during the period under review, chiefly due to the general use of more economical methods of sowing by the use of drills, etc.

Reference will be found in a subsequent section to Commonwealth and State legislation for control of trade and prices of commodities during the war. Various State Boards and Commissions and a Federal Royal Commission were appointed to collect information and to report on such matters as the supply of foodstuffs and other necessities required by, and available for, Australia, and other important matters relating to conditions of trade and industry.

6. Value of the Wheat Crop.—The estimated value of the wheat crop in each State and in the Commonwealth during the season 1916-17 is shewn below :—

VALUE OF THE WHEAT CROP,* 1916-17.

Particulars.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Terr.	C'w'lth.
	£	£	£	£	£	£	£	£
Aggregate value ...	7,774,400	11,511,549	656,835	10,864,453	3,052,901	82,728	2,680	33,945,549
Value per acre ...	£2/0/10	£3/13/8	£2/17/8	£3/18/2	£1/19/0	£2/19/7	£2/19/3	£2/18/10

* 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 harvest, 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 an elected representative of the growers. 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. Upon the 1915-16 crop, advances made amount to 4s. 6d. per bushel, less rail freight and handling charges. This will still leave for distribution a small amount, varying in the different States in accordance with differences in local realising, and in interest and other expenses. Upon the 1916-17 and 1917-18 crops, advances have been made amounting to 3s. per bushel. This represents the position as at 29th April, 1918; a reference to later developments will be found in the Appendix.

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 are as follows :—

State in which pooled.	1915-16.	1916-17.	1917-18 to 29/4/18.
	Bushels.	Bushels.	Bushels.
New South Wales ...	58,244,000	32,471,000	32,618,000
Victoria ...	59,176,000	50,392,000	35,607,000
South Australia ...	29,894,000	41,990,000	25,304,000
Western Australia ...	14,943,000	13,825,000	7,350,000
Total ...	162,257,000	138,678,000	100,879,000

On 29th April, 1918, the total overdraft on all pools amounted to £11,034,000.

The quantities of wheat disposed of and on hand on that date were as follows (a bag may roughly be taken as equivalent to three bushels, except in New South Wales 1916-17, where it amounts to 2½ bushels per bag):—

Particulars.	N.S.W.	Vic.	S.A.	W.A.	Total.
1915-16. (In thousands of bags).					
Shipments ...	9,726	11,949	5,690	3,428	30,793
Local Sales ...	9,786	6,706	3,076	1,640	21,208
Stocks on hand ...	16	756	1,034	...	1,806
Total ...	19,528	19,411	9,800	5,068	53,807
1916-17. (In thousands of bags).					
Shipments ...	856	122	1,675	558	3,211
Local Sales ...	2,868	3,868	968	1,523	9,227
Stocks on hand ...	8,069	12,601	11,099	2,402	34,171
Total ...	11,793	16,591	13,742	4,483	46,609
1917-18. (In thousands of bags).					
Shipments ...	16	...	...	...	16
Local Sales ...	799	526	...	...	1,325
Stocks on hand ...	10,406	11,157	8,414	2,451	32,428
Total ...	11,221	11,683	8,414	2,451	33,769

The value realised to 29th April, 1918 (all pools) is as follows :—

Particulars.	N.S.W.	Vic.	S.A.	W.A.	Total.
Oversea shipments and A.W.B. Flour Contracts	£ 8,934,000	£ 10,743,000	£ 6,801,000	£ 3,430,000	£ 29,908,000
Local Sales ...	8,083,000	6,370,000	1,548,000	1,123,000	17,124,000
Total shipments and local deliveries	17,017,000	17,113,000	8,349,000	4,553,000	47,032,000

Since the initiation of the "Pool," several sales of magnitude have been made, including 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. This is the largest wheat transaction ever recorded.

§ 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 over 68½ per cent., oats represented only 5 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 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Federal Terr.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1860-1	6,535	86,337	7	2,273	507	30,303	...	125,962
1865-6	10,939	102,817	348	2,872	1,232	28,538	...	146,746
1870-1	10,683	149,309	122	6,188	2,095	30,946	...	199,343
1875-6	18,856	124,100	114	3,640	1,256	32,556	...	180,522
1880-1	17,923	134,089	116	4,355	1,319	19,853	...	177,655
1885-6	14,117	215,994	208	7,871	1,596	29,247	...	269,033
1890-1	14,102	221,048	411	12,475	1,934	20,740	...	270,710
1895-6	23,750	255,503	922	34,098	1,880	32,699	...	348,852
1900-1	29,383	362,689	385	27,988	4,790	45,073	...	470,308
1905-6	38,543	312,052	533	56,950	15,713	42,776	...	466,567
1910-11	77,991	392,681	2,537	77,674	61,918	63,887	...	676,688
1911-12	70,880	302,298	557	107,881	77,488	57,583	167	616,794
1912-13	84,979	439,242	4,232	155,545	127,645	62,445	196	874,284
1913-14	103,262	442,060	4,093	116,932	133,625	58,886	154	859,020*
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

* Including 8 acres, Northern Territory.

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 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	Fed. Terr.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bush'ls	Bushels.
1860-1	98,814	2,633,693	91	52,989	11,925	926,418	...	3,723,930
1865-6	116,005	2,279,468	4,524	42,642	19,005	688,740	...	3,150,384
1870-1	119,365	2,237,010	1,586	88,383	39,974	691,250	...	3,177,568
1875-6	352,966	2,719,795	1,482	60,749	18,840	827,043	...	3,980,875
1880-1	356,121	2,362,425	2,081	50,070	21,104	439,446	...	3,231,247
1885-6	279,107	4,692,303	1,006	97,201	23,142	784,325	...	5,877,084
1890-1	256,659	4,919,325	8,967	116,229	38,791	519,395	...	5,859,366
1895-6	374,196	2,880,045	10,887	184,012	19,326	906,934	...	4,375,400
1900-1	593,548	9,582,332	7,855	366,229	86,433	1,406,913	...	12,043,310
1905-6	883,081	7,232,425	5,858	869,146	283,987	1,200,024	...	10,474,521
1910-11	1,702,706	9,699,127	50,469	1,136,618	776,233	2,063,303	...	15,428,456
1911-12	1,152,889	4,585,326	5,783	1,349,480	961,385	1,504,633	2,337	9,561,833
1912-13	1,669,259	8,323,639	82,420	1,673,508	2,105,812	2,257,258	4,816	16,116,712
1913-14	1,832,616	8,890,321	56,236	1,200,740	1,655,681	1,593,664	2,790	15,232,048
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	2,451	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

The principal oat-growing State of the Commonwealth is Victoria. During the past five seasons it has produced about 55 per cent. of the total quantity of oats grown in the Commonwealth; Tasmania, Western Australia, South Australia, and New South Wales 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 and South Australia experienced maximum yields 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 1908-9, 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 seasons 1901-2 and 1912-13 to 1916-17, and also for the decennium 1907-17, are given in the succeeding table:—

AVERAGE YIELD OF OATS PER ACRE, 1901-2 and 1912-13 to 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Terr.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1901-2 ...	21.31	20.43	27.50	13.54	16.78	31.48	...	21.22
1912-13 ...	19.64	18.95	19.48	10.76	16.50	36.15	24.57	18.43
1913-14 ...	17.75	20.11	13.74	10.27	12.39	27.06	18.12	17.73
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
Average for 10 Seasons 1907-17	18.31	18.70	17.01	11.80	13.19	28.87	17.09	17.79

The smallest average yield per acre for the Commonwealth for the past ten-year period was that experienced in the abnormally dry season 1914-15, viz., 5.60 bushels, while the largest 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 8.5 bushels per head during the last five years under review, as compared with 2.7 bushels per head for the Commonwealth as a whole. Particulars for the seasons 1901-2 and 1912-13 to 1916-17 are furnished in the succeeding table:—

OAT PRODUCTION PER 1000 OF POPULATION, 1901-2 and 1912-13 to 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Federal Territory.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1901-2	500	5,558	83	1,306	845	9,734	...	2,559
1912-13	939	6,029	129	3,891	6,879	11,446	2,482	3,405
1913-14	1,000	6,296	85	2,729	5,163	7,902	1,403	3,126
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

5. **Value of Oat Crop.**—The estimated value of the oat crop of the several States of the Commonwealth for the season 1916-17 is as follows:—

VALUE OF OAT CROP,* 1916-17.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Terr.	C'wealth.
Aggregate value	£151,170	£596,006	£19,469	£176,289	£214,688	£125,772	£270	£1,585,664
Value per acre	£2/5/2	£2/0/8	£2/19/4	£1/3/3	£1/15/2	£2/5/8	£2/10/0	£1/17/7

* 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, 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 1901 and 1912 to 1916-17 are given hereunder:—

COMMONWEALTH IMPORT AND EXPORT OF OATS, 1901 and 1912 to 1916-17.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1901	1,526,599	153,674	2,874,334	285,347	1,347,735	131,673
1912	2,939,325	398,114	106,275	14,688	—2,833,050	— 383,426
1913	146,102	20,282	111,280	14,102	— 34,822	— 6,180
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

Note. — signifies net imports.

The principal countries from which the Commonwealth imports of oats have been obtained are the Dominion of New Zealand, Chili, Japan, and the United States of America, while the principal countries to which oats were exported during the period under review were the South African colonies in the earlier, and the United Kingdom, Ceylon, India and New Zealand in the later years. Of the 670,985 bushels exported during 1916-17, 438,900 bushels were shipped to New Zealand.

7. Oatmeal, etc.—Importations of oatmeal, etc., into the Commonwealth take place principally from the United Kingdom, the United States, and Canada. The total importations of oatmeal, wheatmeal, and rolled oats during 1916-17 amounted to 384,841 lbs., and represented a value of £7,597 while the exports amounted to 589,003 lbs., valued at £7,395, principally to New Zealand and the Union of South Africa.

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, 1916.

Country.	Quantity of Oats produced.	Country.	Quantity of Oats produced	Country.	Quantity of Oats produced.
	Bushels.		Bushels.		Bushels.
United States ...	1,213,681,045	Sweden (1915)	88,516,883	Algeria (1915)	14,620,490
Russia in Europe		Hungary (1915)	78,448,695	Australia ...	14,018,009
(1914) ...	700,379,867	Argentine Rep.	72,976,432	Norway ...	10,584,879
Germany (1915)	399,780,056	Denmark ...	40,988,171	Union of	
Canada ...	340,428,076	Belgium (1915)	38,776,000	South Africa	
France ...	238,625,565	Spain ...	33,878,591	(1915) ...	9,365,373
United Kingdom	180,350,084	Rumania ...	28,049,589	Bulgaria ...	7,146,417
Austria (1915) ...	136,685,400	Italy ...	25,387,617	New Zealand	5,371,436
Russia in Asia ...	92,061,010	Netherlands ...	21,558,487		
(1915)					

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 (with the exception of the Union of South Africa, for which particulars are not available) according to the magnitude of the average yield of oats for the years specified, the results are as follow:—

YIELD OF OATS PER ACRE, VARIOUS COUNTRIES, 1916.

Country.	Average per Acre.	Country.	Average per Acre.	Country.	Average per Acre.
	Bushels.		Bushels.		Bushels.
Belgium (1914) ...	70.29	France ...	30.61	Spain ...	24.36
Netherlands ...	62.85	New Zealand ...	30.26	Italy ...	23.04
United Kingdom ...	43.50	Hungary (1915)...	29.45	Bulgaria (1914) ...	20.90
Denmark ...	39.41	United States ...	29.22	Russia in Asia (1913) ...	20.50
Norway ...	35.76	Argentine Rep. ...	28.45	Russia in Europe (1914) ...	17.38
Germany (1915) ...	35.06	Rumania ...	26.26	Australia ...	16.61
Canada ...	34.76	Sweden (1914) ...	25.99		
Austria (1913) ...	31.35	Algeria (1915) ...	24.78		

10. **Price of Oats.**—The average wholesale prices of oats in the markets of the several capitals for the year 1916 are given in the following table:—

AVERAGE WHOLESALE PRICE OF OATS PER BUSHEL, 1916.

Particulars.	Sydney.	Melbourne.	Brisbane.	Adelaide.	Perth.	Hobart.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Average price per bushel ...	2 9½	2 3	3 7½	1 9	2 5½	2 8

* Year ended 30th June, 1917.

§ 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 1916-17 being 336,778 acres, or 93½ per cent. of the total for the Commonwealth. Of the balance, Victoria contributed 23,076 acres, South Australia 117 acres, Western Australia 51 acres, and the Northern Territory 45 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 connection with the dairying industry.

2. **Area under Maize.**—The area devoted to the growing of maize for grain in each State, from 1875 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 300,000 acres for the first time in the season 1890-1, and although it fluctuated somewhat during the succeeding seventeen years, it may be considered to have remained at about that figure. The greatest divergence during the period occurred in 1903-4, when a record total of 371,906 acres was harvested. For 1908-9 and the two following seasons a continuous increase in the area devoted to maize was in evidence, and the total of 414,914 acres for 1910-11 is the highest ever attained. The unfavourable weather conditions during 1911-12 resulted in the acreage under maize for that season being reduced by 74,849 acres as compared with the preceding season. Since then the area devoted to this crop has fluctuated slightly from year to year, that for 1916-17 being third highest on record.

AREA UNDER MAIZE, 1875-6 to 1916-17.

Season.	N.S.W.	Victoria.	Queensland.	South Aust.	W. Aust.	N.T.	Fed. Terr.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1875-6	117,582	2,346	38,711	...	60	...	...	158,699
1880-1	127,196	1,769	44,109	...	32	...	...	173,106
1885-6	132,709	4,530	71,741	...	120	...	...	209,100
1890-1	191,152	10,357	99,400	...	81	...	...	300,990
1895-6	211,104	7,186	100,481	...	23	...	...	318,794
1900-1	206,051	9,389	127,974	...	91	...	...	343,505
1905-6	189,353	11,785	113,720	...	43	...	...	314,901
1910-11	213,217	20,151	180,862	*619	46	19	...	414,914
1911-12	167,712	18,223	153,916	97	29	19	69	340,065
1912-13	176,415	19,986	117,993	176	25	35	56	314,686
1913-14	156,793	17,962	156,775	239	38	45	27	331,879
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

* Particulars for years prior to 1907-8 not available.

3. **Total Yield.**—The average yield per acre of this cereal for the season 1916-17, though an increase over that for the previous season, was considerably below that obtaining for some of the previous years, being 2.94 bushels under the decennial average. The 1910-11 crop was a record one, and exceeded 13,000,000 bushels. The average annual production of maize during the last decade was 9,085,329 bushels. Particulars concerning the yield from 1875 onwards are given hereunder:—

MAIZE CROP, 1875-6 to 1916-17.

Season.	N.S.W.	Victoria.	Queensland.	S. Aust.	W. Aust.	N.T.	Fed. Terr.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	B'shls.	B'shls.	Bushels.
1875-6	3,410,517	37,177	1,006,486	...	1,200	...	...	4,455,380
1880-1	4,518,897	49,299	1,409,607	...	896	...	...	5,978,699
1885-6	4,336,163	181,240	1,574,294	...	1,417	...	...	6,093,114
1890-1	5,713,205	574,083	2,373,803	...	1,526	...	...	8,662,617
1895-6	5,687,030	351,891	2,391,378	...	600	...	...	8,430,899
1900-1	6,292,745	604,180	2,456,647	...	1,399	...	...	9,354,971
1905-6	5,539,750	641,216	2,164,674	...	428	...	...	8,346,068
1910-11	7,594,130	982,103	4,460,306	*6,375	718	449	...	13,044,081
1911-12	4,506,547	792,660	3,637,562	1,490	401	400	795	8,939,855
1912-13	5,111,056	715,299	2,524,371	2,628	470	1,400	934	8,356,158
1913-14	4,452,989	800,529	3,915,876	2,336	421	1,350	320	9,173,321
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

* 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 1901-2 and 1912-13 to 1916-17, and also for the decennium 1907-17:—

AVERAGE YIELD OF MAIZE PER ACRE, 1901-2 and 1912-13 to 1916-17.

Season.	N.S.W.	Victoria.	Q'sland.	S. Aust.	W. Aust.	N.T.	Fed. Terr.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	B'shls.	Bushels.
1901-2	22.98	61.42	21.96	*	10.16	...	...	23.86
1912-13	28.93	35.79	21.39	14.93	18.80	40.00	16.68	26.53
1913-14	28.40	44.57	24.97	9.77	11.08	30.00	11.85	27.64
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
Average for 10 Seasons	28.92	47.55	21.45	14.19	13.62	†19.20	‡13.65	26.62
1907-17								

* Particulars not available. † Average for 7 seasons. ‡ Average for 5 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 1916-17 has been estimated at £1,662,678, made up as follows:—

VALUE OF MAIZE CROP, 1916-17.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	N.T.	Federal Terr.	C'wealth.
	£	£	£	£	£	£	£	£
Aggregate value	812,520	195,338	654,102	228	300	180	10	1,662,678
Value per acre	£5/4/7	£8/9/4	£3/12/1	£1/19/0	£5/17/9	£4/0/0	£2/0/0	£4/12/4

6. **Relation to Population.**—During the past ten seasons the Commonwealth production of maize has ranged between 1.4 bushels per head of population in 1915-16 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 $7\frac{1}{2}$ bushels per head in 1910-11. Details for the several States for the seasons 1901-2 and 1912-13 to 1916-17 are as follow:—

MAIZE PRODUCTION PER 1000 OF POPULATION, 1901-2 and 1912-13 to 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	N. T.	Federal Terr.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1901-2	2,795	509	5,070	*	27	...	...	1,839
1912-13	2,875	518	3,967	6	2	403	481	1,765
1913-14	2,431	567	5,931	5	1	368	161	1,883
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

* Particulars not available.

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 of the total production the United States of America was responsible for over 72 per cent.

PRODUCTION OF MAIZE IN VARIOUS COUNTRIES, 1916.

Country.	Production of Maize.	Country.	Production of Maize.
	Bushels.		Bushels.
United States ...	2,504,193,825	Union of South Africa ...	30,214,259
Hungary (1915) ...	175,025,170	Spain (1915) ...	28,205,662
Argentine Republic ...	156,202,330	Philippine Islands (1915)...	14,301,558
Rumania (1915) ...	83,767,793	France (1915) ...	13,571,600
India (British) (1915) ...	79,684,680	Serbia (1915) ...	11,632,800
Italy ...	76,326,678	Uruguay (1915) ...	11,033,711
Russia in Europe ...	69,786,137	Russia in Asia (1913) ...	10,765,860
Mexico (1915) ...	58,164,000	Portugal (1915) ...	8,991,185
Austria (1915) ...	40,714,800	Australia ...	8,527,136
Egypt (1915) ...	38,585,028	Canada ...	6,079,107
Bulgaria (1915) ...	33,929,000		

8. **Comparison of Yields.**—The average yield per acre of maize in the Commonwealth during 1916 was 23.68 bushels, and may be regarded as highly satisfactory when compared with that of other maize-producing countries. Canada, Hungary, and Spain

are the only countries shewing a higher average. The remaining countries shewn in the following table had average yields per acre ranging from 10.09 to 23.63 bushels.

AVERAGE YIELD OF MAIZE PER ACRE IN VARIOUS COUNTRIES, 1916.

Country.	Average yield per acre.	Country.	Average yield per acre.
	Bushels.		Bushels.
Canada	35.14	Austria (1913)	18.61
Hungary (1915)	28.26	France (1915)	17.72
Spain (1915)	24.48	Rumania (1915)	16.09
Australia*	23.68	Serbia (1913)	15.85
United States of America	23.63	Argentine Republic	15.73
Egypt (1915)	20.23	India (1915)	13.12
Italy	19.93	Philippine Islands (1915)	13.06
Bulgaria (1914)	19.07	Uruguay (1915)	12.95
Russia in Europe	19.04	Russia in Asia (1913)	10.09

* Average yield for 10 years, 26.63 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 the latter year nearly three and a-half million bushels were imported. In 1908 and 1909 also, owing to the small harvests of the seasons 1907-8 and 1908-9, the imports of maize were largely in excess of the exports. Details of imports and exports for 1901 and the past five years are as follows:—

COMMONWEALTH IMPORTS AND EXPORTS OF MAIZE, 1901 and 1912 to 1916-17.

Year.	Imports.		Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1901	188,423	24,764	533	75	187,890	24,689
1912	1,133,755	218,233	37,968	8,402	1,095,787	209,831
1913	273,123	53,387	15,261	3,349	257,862	50,038
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	—8,732

Note. — signifies net exports

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

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 1916-17 these importations amounted to 242,134 lbs., and represented a value of £2,212.

11. **Price of Maize.**—The average wholesale price of maize in the Sydney market is given in the following table for each of the years 1907 to 1916:—

AVERAGE PRICE OF MAIZE PER BUSHEL, 1907 to 1916.

Particulars.	1907.	1908.	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1916.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Average price per bushel	3 2	4 7	4 2	2 11	3 0	4 8	4 1	4 6	5 2	3 8

* For year ended 30th June of year following.

§ 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 four seasons South Australia has attained the lead in regard to acreage, and for 1916-17 accounted for 45 per cent. of the Commonwealth area devoted to this crop; Victoria was next in importance with a percentage of 40½; the remaining 14½ per cent. being represented by Queensland, Western Australia, New South Wales, and Tasmania 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 1875 onwards is shewn in the following table:—

COMMONWEALTH AREA UNDER BARLEY, 1875-6 to 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tasmania.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1875-6	4,817	31,568	613	13,969	5,014	5,939	61,920
1880-1	8,056	68,630	1,499	13,074	6,363	8,297	105,919
1885-6	5,298	74,112	406	16,493	6,178	6,833	109,320
1890-1	4,937	87,751	584	14,472	5,322	4,376	117,442
1895-6	7,590	78,438	721	14,184	1,932	6,178	109,043
1900-1	9,435	58,853	7,533	15,352	2,536	4,502	98,211
1905-6	9,519	40,938	5,201	26,250	3,665	5,372	90,945
1910-11	7,082	52,687	5,578	34,473	3,369	5,235	108,424
1911-12	10,803	53,541	1,634	40,743	3,664	6,081	116,466
1912-13	16,909	71,631	9,447	68,964	5,626	8,802	*181,387
1913-14	20,601	83,351	8,826	90,552	11,502	7,723	*222,564
1914-15	4,861	62,492	7,166	66,315	6,986	5,836	153,656
1915-16	6,369	61,400	1,867	84,900	10,069	5,409	169,514
1916-17	5,195	93,015	12,674	103,627	11,105	4,637	230,253

* Including 1 acre Northern and 7 acres Federal Territory in 1912-13, and 9 acres Federal Territory 1913-14.

2. **Total Yield.**—The total production of barley in the Commonwealth for the season 1916-17 amounted to 4,080,492 bushels, giving an average yield of 17.72 bushels per acre as compared with 17.90 for the decennium 1907-17. Particulars concerning the yields of the several States from 1875 onwards are as follows:—

COMMONWEALTH BARLEY CROP, 1875-6 to 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tasmania.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1875-6	98,576	700,665	12,260	197,315	70,196	165,357	1,244,369
1880-1	163,395	1,068,830	31,433	151,886	89,082	169,156	1,673,782
1885-6	85,606	1,302,854	9,826	218,334	89,581	176,466	1,882,667
1890-1	81,388	1,571,599	12,673	175,583	85,451	99,842	2,026,531
1895-6	96,119	715,592	7,756	140,391	18,691	138,833	1,117,382
1900-1	114,228	1,215,478	127,144	211,102	29,189	116,911	1,814,052
1905-6	111,266	1,062,139	61,816	505,916	49,497	106,042	1,896,676
1910-11	82,005	1,340,387	83,621	544,471	33,566	142,318	2,226,368
1911-12	129,008	1,024,584	15,369	702,855	37,011	148,009	2,056,836
1912-13	289,562	1,744,527	146,847	1,318,734	93,418	265,908	*3,859,116
1913-14	303,297	1,812,890	115,975	1,332,714	167,915	187,484	*3,920,425
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

* Including 120 bushels, Federal Territory, 1912-13, 150 bushels 1913-14.

3. **Malting and other Barley.**—In recent years the statistics of all the States have distinguished between "malting" and "other" barley. Particulars for 1916-17 season are as follows:—

MALTING AND OTHER BARLEY, 1916-17.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W.Aust.	Tas.	N.T.	F.T.	C'wealth.
	Acres	Acres	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
Malting barley	2,874	43,131	8,578	77,984	5,157	4,122	...	...	141,846
Other barley	2,321	49,884	4,096	25,643	5,948	515	...	...	88,407
Total ...	5,195	93,015	12,674	103,627	11,105	4,637	...	...	230,253
	Bushels.	Bushels.	Bushels	Bushels.	Bushels.	Bushels	Bus.	Bus.	Bushels.
Malting barley	40,310	806,280	173,210	1,340,302	66,143	78,873	...	...	2,505,118
Other barley	33,060	993,504	76,957	394,118	67,912	9,823	...	...	1,575,374
Total ...	73,370	1,799,784	250,167	1,734,420	134,055	88,696	...	...	4,080,492

Taking the Commonwealth as a whole, about 62 per cent. of the area devoted to this grain in 1916-17 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 ten seasons:—

**AREA AND YIELD, COMMONWEALTH, MALTING AND OTHER BARLEY,
1907-8 to 1916-17.**

Season.	Acres.			Bushels.			Average Bushels per Acre.		
	Malting	Other.	Total.	Malting.	Other.	Total.	Malting	Other.	Total.
1907-8 ...	89,157	41,942	131,099	1,410,404	581,348	1,991,652	15.82	13.86	15.19
1908-9 ...	95,644	44,599	140,243	1,984,841	889,363	2,874,204	20.75	19.94	20.49
1909-10 ...	91,814	51,199	143,013	1,536,032	900,352	2,436,384	16.73	17.59	17.04
1910-11 ...	67,408	41,016	108,424	1,369,464	856,904	2,226,368	20.32	20.89	20.53
1911-12 ...	80,919	35,547	116,466	1,459,468	597,348	2,056,816	18.04	16.80	17.66
1912-13 ...	135,880	45,507	181,387	2,920,857	938,259	3,859,116	21.60	20.62	21.28
1913-14 ...	151,944	70,620	222,564	2,625,415	1,295,010	3,920,425	17.28	18.34	17.61
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	22.37	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
Average 10 seasons									
1907-17 ...	106,276	53,386	159,662	1,917,216	940,378	2,857,594	18.04	17.61	17.90

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 for five of the seasons was in favour of malting, while for the remaining five seasons the yield per acre for other barley shewed the more satisfactory results. The average yields for the past ten seasons for malting and for other barley were 18.04 and 17.61 bushels per acre respectively.

5. **Value of Barley Crop.**—The estimated value of the total barley crop of the Commonwealth for the seasons 1913-14 to 1916-17, was £564,871; £343,423; £655,917; and £734,154 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,* 1916-17.

Particulars.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tas.	Fed. Terr.	C'wealth.
Total value ...	£14,710	£324,500	£54,203	£299,281	£23,721	£17,739	...	£734,154
Value per acre	£2/16/8	£3/9/9	£4/5/6	£2/17/9	£2/2/9	£3/16/6	...	£3/3/9

* Exclusive of the value of straw.

6. **Relation to Population.**—During the seasons embraced in the following table, the quantity of barley produced in the Commonwealth has averaged slightly under three-quarters of a bushel per head of population. For the season 1916-17 the production ranged from four bushels per head in South Australia to two pounds per head in New South Wales. Details for the season 1901-2 and for the last quinquennium are as follows:—

BARLEY PRODUCTION PER 1000 OF POPULATION, 1901-2 and 1912-13 to 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1901-2 ...	75	573	547	677	179	956	397
1912-13 ...	163	1,264	231	3,066	305	1,348	815
1913-14 ...	166	1,284	176	3,029	524	930	805
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

7. **Commonwealth Imports and Exports.**—The Commonwealth oversea trade in barley is not extensive, and in most years the imports exceed the exports. In 1902, 1903, 1912, and 1914-15 somewhat extensive importations of barley from the United States and New Zealand took place, owing to the shortage in local supply resulting from the severe droughts of those periods. In 1904, the excellent crop of the season furnished the material for a heavy exportation to Japan, the total exported thither during that year being 551,821 bushels. In 1909 also there was a fairly heavy export, mainly to the United Kingdom. Particulars of the Commonwealth oversea imports and exports of barley for the years 1901 and 1912 to 1916-17 are contained in the following table :—

COMMONWEALTH IMPORTS AND EXPORTS OF BARLEY, 1901 and 1912 to 1916-17.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1901 ...	55,508	7,208	17,474	1,942	— 38,034	— 5,266
1912 ...	546,177	109,466	1,426	322	—544,751	—109,144
1913 ...	22,810	6,026	7,414	1,069	— 15,396	— 4,957
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

Note. — signifies net imports.

Only in five years during the period embraced in the above table have the Commonwealth exports of barley exceeded in value the imports, viz., in 1904, 1905, 1909, 1915-16, and 1916-17. During the last ten years the total importations amounted to

1,995,383 bushels, valued at £449,994, and the total exports to 831,298 bushels, valued at £147,196, giving a net importation of 1,164,085 bushels with a value of £302,798.

In addition to the above, which relates to the unprepared grain, there is a small importation into the Commonwealth of pearl and Scotch barley, mainly from the United Kingdom and Japan. The total imported during 1916-17 amounted to only 7,345 lbs. weight, with a value of £91.

From time to time a considerable export trade in Australian pearl and Scotch barley has been carried on, mainly with the United Kingdom and New Zealand, the total exports for 1909 reaching 1,155,346 lbs., valued at £3,573, and for 1910, 119,337 lbs., valued at £510. During 1911 and 1912, the exports were only 588 lbs., valued at £8, and 712 lbs., valued at £10, respectively; in 1913, they increased to 62,992 lbs., with a value of £406, while during 1914-15 only 7,314 lbs., valued at £52, were exported. During 1915-16 and 1916-17, however, the exports amounted to 83,982 lbs. and 447,290 lbs. respectively, valued at £656 and £3,090, the bulk of which in the former year went to New Zealand and in the latter to South Africa.

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. Details of imports and exports for the years 1901 and 1912 to 1916-17 are given hereunder :—

COMMONWEALTH IMPORTS AND EXPORTS OF MALT, 1901 and 1912 to 1916-17.

Year.	Imports.		Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bushels.	£	Bushels.	£	Bushels.	£
1901	516,135	140,615	...	...	516,135	140,615
1912	128,800	45,226	117	48	128,683	45,178
1913	85,002	31,071	120	55	84,882	31,016
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

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 1916 are as follows, the Australian figures being added for the sake of comparison :—

PRODUCTION OF BARLEY IN VARIOUS COUNTRIES, 1916.

Country.	Production of Barley.	Country.	Production of Barley.
	Bushels.		Bushels.
Russia in Europe (1914)	371,834,697	Denmark	21,623,436
United States	175,390,634	Russia in Asia (1914)	18,855,799
British India (1915) ...	138,474,912	Sweden (1915)	13,915,889
Germany (1915)	110,586,244	Egypt (1914)	10,636,000
Japan	96,767,447	Italy	9,794,818
Spain	81,790,217	Tunis	6,678,197
Austria (1915)	61,012,097	Australia	4,080,492
Hungary (1915)	54,466,708	Belgium (1915)	3,877,600
United Kingdom	53,253,020	Chili (1915)	3,635,250
Canada	40,053,669	Norway	2,933,404
Algeria (1915)	38,646,100	Netherlands	2,422,531
France	36,621,993	Serbia (1915)	2,181,150
Rumania	29,118,837	New Zealand	738,050

10. **Average Yield of Barley per Acre in various Countries.**—The following table shows the average yield of barley per acre in various countries of the world, ranging from over 40 bushels in the Netherlands to 12½ bushels in European Russia:—

AVERAGE YIELD OF BARLEY PER ACRE IN VARIOUS COUNTRIES, 1916.

Country.	Average yield per Acre.	Country.	Average yield per Acre.
	Bushels.		Bushels.
Netherlands ...	40.38	Spain ...	20.27
Denmark ...	34.16	Rumania ...	20.03
United Kingdom ...	32.24	Hungary (1915) ...	19.25
Japan ...	31.12	India (1915) ...	17.85
Canada ...	30.14	Australia ...	17.72
Norway ...	29.93	Russia in Asia ...	16.88
Germany (1915) ...	27.63	Italy ...	16.43
New Zealand ...	24.90	Chile (1915) ...	16.23
France ...	23.67	Algeria (1915) ...	14.30
United States ...	22.86	Russia in Europe (1914) ...	12.50

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 for 1901-2 and the past five seasons, and also for the decennium 1907-17, are given in the following table:—

AVERAGE YIELD PER ACRE OF BARLEY, 1901-2 and 1912-13 to 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	West Aust.	Tas.	C'wealth.
	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.	Bushels.
1901-2 ...	17.16	21.40	23.53	15.68	13.01	27.44	20.40
1912-13 ...	17.12	24.35	15.54	19.12	16.60	30.21	21.28
1913-14 ...	14.72	21.75	13.14	14.72	14.60	24.28	17.61
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
Average for 10 Seasons 1907-17 }	14.34	20.55	15.13	16.07	11.45	24.29	17.90

12. **Price of Barley.**—The average prices of barley in the Melbourne market during each of the past ten years are given in the following table:—

AVERAGE PRICE OF BARLEY PER BUSHEL, 1907 to 1916.

Particulars.	1907.	1908.	1909.	1910.	1911.	1912.	1913.	1914.	1915.	1916.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Malting barley	4 8	4 10	3 10	4 1	4 10½	5 11½	3 11½	3 9½	5 4½	4 4½
Cape barley ...	2 8	3 8	2 7	2 5	2 8	4 11	3 0	2 9½	4 4½	3 1½

§ 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 1916-17 was 32,393 acres, giving a yield of 586,342 bushels, or an average of 17.39 bushels per acre, being virtually the same as the average yield for the decennium ended 1916-17, which was 17.40 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

1916-17 was 9,055 acres, yielding 97,100 bushels, and giving an average of 10.72, this being below the average for the past ten seasons, which is 11.61 bushels per acre. Over 38 per cent. of the rye grown during the season was produced in Victoria, 25 per cent. in New South Wales, and 26½ per cent. in South Australia. 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 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 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, while the position was again reversed in the last three seasons ended 1916-17.

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

COMMONWEALTH AREA UNDER POTATOES, 1890-1 to 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Terr.	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
1895-6 ...	24,722	43,895	9,240	6,448	668	19,247	...	104,220
1900-1 ...	29,408	38,477	11,060	6,628	1,794	23,068	...	110,435
1905-6 ...	26,374	44,670	7,170	9,540	2,145	28,634	...	118,533
1910-11 ...	44,452	62,904	8,326	7,812	1,791	26,230	...	151,515
1911-12 ...	43,079	47,692	7,688	7,412	2,705	21,818	69	130,463
1912-13 ...	34,093	47,575	8,822	8,581	5,175	24,612	31	128,889
1913-14 ...	38,695	74,574	10,085	10,809	5,229	30,811	30	170,233
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	4,241	4,866	29,491	7	120,993
1916-17 ...	22,437	73,618	8,908	4,737	5,838	34,345	12	149,895

2. **Total Yield.**—For the season 1916-17, Victoria's production represented about 52½ per cent. of the total for the Commonwealth, Tasmania and New South Wales coming next in order with 19 and 12½ 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 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Fed. Terr.	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
1895-6 ...	56,179	117,238	19,027	18,412	2,290	81,423	...	294,569
1900-1 ...	63,253	123,126	20,014	14,566	4,836	93,862	...	319,657
1905-6 ...	50,386	115,352	11,308	20,328	6,297	64,606	...	268,277
1910-11 ...	121,033	163,312	15,632	23,920	5,864	70,090	...	399,851
1911-12 ...	75,040	119,092	13,087	22,668	9,312	62,164	126	301,489
1912-13 ...	91,600	191,112	16,386	33,078	13,558	72,565	42	418,341
1913-14 ...	106,805	176,602	16,548	32,950	17,803	80,389	44	431,141
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

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 2.66 tons per acre. The lowest average yield is that obtained in Queensland with an average of 1.79 tons for the same period.

Particulars for each State for the seasons 1901-2 and 1912-13 to 1916-17, and also for the past decennium, are given hereunder:—

AVERAGE YIELD OF POTATOES PER ACRE, 1901-2 and 1912-13 to 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	S.Aust.	W. Aust.	Tas.	Federal Terr.	C'wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1901-2	1.50	3.13	2.25	2.41	3.14	4.51	...	2.94
1912-13	2.69	4.02	1.86	3.85	2.62	2.95	1.35	3.25
1913-14	2.76	2.37	1.64	3.05	3.40	2.61	1.47	2.53
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
Average for 10 Seasons 1907-17	2.30	2.81	1.79	2.93	3.07	2.90	1.83	2.66

4. **Value of Potato Crop.**—The estimated value of the potato crop of each State for the season 1916-17 is furnished in the following table, together with the value per acre:—

VALUE OF POTATO CROP, 1916-17.

Particulars.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	Federal Terr.	C'wealth.
Tot. value	£242,050	£657,972	£218,891	£86,033	£98,879	£382,117	£190	£1,686,132
Value per acre ...	£10/15/9	£8/18/9	£24/11/6	£18/3/3	£16/18/9	£11/2/8	£15/16/8	£11/5/0

5. **Relation to Population.**—The average production of potatoes per annum per head of the population of the Commonwealth for the past ten seasons has been approximately 184 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 1901-2 and 1912-13 to 1916-17 are as follows:—

POTATO PRODUCTION PER 1000 OF POPULATION, 1901-2 and 1912-13 to 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tas.	Federal Terr.	C'wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1901-2 ...	28	104	44	42	30	655	...	84
1912-13 ...	52	133	26	77	44	368	22	88
1913-14 ...	59	125	25	75	56	398	22	88
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

6. **Commonwealth Imports and Exports.**—Under normal conditions there is usually a fairly large export trade in potatoes carried on by the Commonwealth, principally with New Zealand, the Pacific Islands, and the Philippine Islands. Thus, during 1907, out of a total export of 17,842 tons, 13,346 tons went to New Zealand, 2,102 tons to the Pacific

Islands, and 2,112 tons to the Philippine Islands. On the other hand, when the droughts of 1902, 1903, 1912 and 1914, had brought about a shortage in some of the States, importations from New Zealand took place to the extent of 11,471 tons and 2,279 tons in the first two years, 17,732 tons in 1912, and 16,342 tons in 1915-16. The quantities and values of the Commonwealth oversea imports and exports of potatoes for 1901 and for the past five years are shewn in the following table:—

COMMONWEALTH IMPORTS AND EXPORTS OF POTATOES, 1901 and 1912 to 1916-17.

Year.	Imports.		Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£	Tons.	£
1901 ...	17,655	86,067	6,028	45,485	— 11,627	— 40,582
1912 ...	18,151	163,249	1,619	15,331	— 16,532	— 147,918
1913 ...	996	5,537	1,689	12,012	— 693	— 6,475
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

Note. — signifies net imports.

7. Comparison with Other Countries.—The following table furnishes a comparison of the potato crop of Australia for 1915 with those of some of the leading potato-producing countries of the world for the same year:—

POTATO CROPS OF VARIOUS COUNTRIES, 1915.

Country.	Yield.	Country.	Yield.
	Tons.		Tons.
Germany ...	38,954,948	Spain (1914) ...	1,505,762
Russia in Europe (1914)	17,864,903	Canada ...	1,229,721
Austria (1913) ...	8,811,687	Italy ...	1,115,086
Poland (1913) ...	7,537,671	Russia in Asia (1914)	1,085,779
United States ...	7,065,948	Denmark ...	831,875
France ...	6,536,907	Switzerland ...	759,629
United Kingdom ...	5,529,504	Japan ...	492,584
Hungary (1914) ...	3,835,582	Norway ...	365,141
Netherlands ...	2,489,555	Australia ...	332,704
Belgium (1913) ...	2,310,255	New Zealand ...	133,642
Sweden ...	1,547,975	Luxemburg (1914) ...	103,871

AVERAGE YIELD OF POTATOES PER ACRE IN VARIOUS COUNTRIES, 1915.

Country.	Average Yield per Acre.	Country.	Average Yield per Acre.
	Tons.		Tons.
Belgium (1913) ...	5.85	Canada ...	2.57
Netherlands ...	5.68	Japan ...	2.54
New Zealand ...	5.11	Hungary (1914) ...	2.54
Denmark ...	5.07	Australia ...	2.38
Switzerland ...	4.78	Spain (1914) ...	2.19
United Kingdom ...	4.60	France ...	2.03
Germany ...	4.41	Russia in Europe (1914)	2.02
Sweden ...	4.05	Russia in Asia (1914)	1.96
Poland ...	2.83	United States ...	1.89
Austria (1913) ...	2.58	Italy ...	1.54

§ 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 1916-17 being only 16,618 acres. The principal of these crops are onions, mangolds, turnips, and "sweet potatoes" (*Batatas edulis*). Of these, onions are most largely grown in Victoria, mangolds in Tasmania and Victoria, turnips in Tasmania, and sweet potatoes in Queensland. The total area under onions in the Commonwealth during the season 1916-17 was 7,059 acres, giving a yield of 32,019 tons, and averaging 4.5 tons per acre. The area devoted in 1916-17 to root crops other than potatoes and onions, viz., 9,559 acres, yielded 65,480 tons, and gave an average of 6.9 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 overseas trade is carried on by the Commonwealth is that of onions. During the year 1915-16 overseas imports of onions amounted to 926 tons, obtained principally from the United States and New Zealand, of which total 720 tons went to New South Wales and 124 tons to Queensland. For the same year the exports of onions totalled 3881 tons, the principal countries to which they were exported being New Caledonia and other Pacific Islands. During 1916-17 only 27 tons were imported and 7806 tons exported. Of the latter 4105 tons were shipped to New Zealand, 1497 tons to Canada, 620 to the United States, and 593 tons to the Philippine Islands.

§ 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 1916-17 averaged nearly 19 per cent. of the area under crop in the Commonwealth, and for 1916-17, 15.9 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 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tas.	N. T.	Fed. Terr.	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
1865-6	61,909	97,902	1,449	101,996	8,824	30,244	...	...	302,324
1870-1	65,404	163,181	3,671	140,316	17,173	33,612	...	...	423,357
1875-6	77,125	155,274	8,531	161,429	17,319	34,758	...	...	454,436
1880-1	131,153	249,656	12,022	272,567	19,563	31,615	...	...	716,576
1885-6	219,886	421,036	28,881	312,672	19,677	41,693	...	...	1,043,845
1890-1	175,242	413,052	31,106	345,150	23,183	45,381	...	...	1,033,114
1895-6	319,296	464,482	28,609	362,972	63,804	54,748	...	...	1,293,911
1900-1	466,236	502,105	42,497	341,330	104,254	61,541	...	...	1,517,963
1905-6	438,036	591,771	37,425	317,924	124,906	64,350	...	...	1,574,412
1910-11	638,577	832,669	98,558	440,177	175,432	72,992	...	...	2,258,405
1911-12	651,866	860,205	61,299	521,182	344,032	77,466	18	2,220	2,518,288
1912-13	944,725	1,203,728	87,643	647,069	231,690	99,839	10	2,337	3,217,041
1913-14	798,978	977,684	76,469	568,550	246,640	84,138	61	2,152	2,754,672
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

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 kind 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, 1912-13 to 1916-17.

Kind of Hay Crop.				1912-13.	1913-14.	1914-15.	1915-16.	1916-17.
				Acres.	Acres.	Acres.	Acres.	Acres.
NEW SOUTH WALES—								
Wheaten	...	...	...	703,509	533,890	568,982	878,881	633,438
Oaten	...	...	...	181,400	209,821	158,949	175,285	160,898
Barley	...	...	...	1,703	1,395	1,179	1,348	866
Lucerne	...	...	...	56,403	52,457	52,570	50,528	61,584
Other	...	...	...	1,710	1,415	1,427	1,186	747
Total	...	...	...	944,725	798,978	783,107	1,107,228	857,533
VICTORIA—								
Wheaten	...	...	...	386,370	220,560	192,562	333,449	195,532
Oaten	...	...	...	790,268	729,678	677,895	964,318	672,905
Lucerne, etc.	...	...	...	27,090	27,446	25,298	32,688	28,749
Total	...	...	...	1,203,728	977,684	895,755	1,330,455	897,186
QUEENSLAND—								
Wheaten	...	...	...	12,710	12,648	14,906	14,003	21,047
Oaten	...	...	...	19,539	16,020	12,573	6,377	30,041
Lucerne	...	...	...	50,814	44,270	47,785	32,288	55,928
Other	...	...	...	4,580	3,531	4,063	2,506	5,948
Total	...	...	...	87,643	76,469	79,327	55,174	112,964
SOUTH AUSTRALIA—								
Wheaten	...	...	...	492,980	411,101	318,586	476,423	323,633
Oaten	...	...	...	147,963	151,694	118,505	190,321	148,881
Lucerne	...	...	...	2,414	2,378	3,976	3,880	2,855
Other	...	...	...	3,712	3,377	4,765	39,707	7,671
Total	...	...	...	647,069	568,550	445,832	709,831	483,040
WESTERN AUSTRALIA—								
Wheaten	...	...	...	176,744	195,497	266,113	225,959	188,272
Oaten	...	...	...	52,904	49,801	64,037	62,622	51,255
Lucerne	...	...	...	205	264	328	258	230
Other	...	...	...	1,837	1,078	1,559	1,197	969
Total	...	...	...	231,690	246,640	332,037	290,036	240,726

It will be seen that wheat is the principal hay crop in New South Wales, South Australia, and Western Australia, oats 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, 1912-13 to 1916-17 inclusive, accounted for 39 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 1916-17.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	N. T.	Fed. Ter.	Commonwealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1860-1	50,927	144,211	414	71,241	8,099	62,318	...	...	337,210
1865-6	54,230	96,101	2,173	88,731	7,901	34,751	...	...	283,887
1870-1	69,602	183,708	5,506	197,149	20,833	40,763	...	...	517,561
1875-6	88,968	206,613	12,796	194,794	17,319	49,217	...	...	569,707
1880-1	174,194	300,581	23,441	261,371	19,563	35,883	...	...	815,033
1885-6	191,371	442,118	30,670	307,855	19,677	51,872	...	...	1,043,563
1890-1	213,034	567,779	50,116	310,125	25,014	52,021	...	...	1,218,089
1895-6	229,671	390,861	50,881	225,462	53,758	62,345	...	...	1,012,978
1900-1	526,260	677,757	78,758	353,662	103,813	94,198	...	...	1,834,448
1905-6	459,182	864,177	56,829	435,546	139,380	90,077	...	...	2,045,191
1910-11	843,080	1,292,410	151,252	595,064	178,891	115,190	...	...	3,175,887
1911-12	727,054	1,032,288	94,553	605,239	299,695	107,684	40	1,420	2,867,973
1912-13	1,105,350	1,572,933	119,867	714,766	255,751	183,709	10	2,925	3,955,311
1913-14	952,489	1,350,374	103,935	571,616	278,585	112,958	81	2,558	3,372,596
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

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 1916-17:—

VALUE OF HAY CROP, 1916-17.

Particulars.	New South Wales.	Victoria.	Queensland.	South Aust.	Western Aust.	Tasmania.	N. T. 1915-16	Fed. Ter.	Commonwealth.
Total value ...	£3,833,280	£2,465,442	£730,951	£1,322,377	£1,067,999	£283,638	£2,500	£8,130	£9,714,317
Value per acre	£4/9/5	£2/15/0	£6/9/5	£2/14/9	£4/8/9	£3/11/7	£17/17/2	£8/2/9	£3/12/9

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, the next lowest was in 1907-8 when the average yield was 19 cwt., while the highest was that of 31 cwt. in 1915-16. The average for the decennium was 25 cwt. Particulars for the several States for the seasons 1901-2 and 1912-13 to 1916-17, and the average for the last ten years, are given hereunder:—

AVERAGE YIELD OF HAY PER ACRE, 1901-2 and 1912-13 to 1916-17.

Season.	N.S.W.	Vic.	Q'land.	S. Aus.	W. Aus.	Tas.	N. T.	Fed. Terr.	Com'-wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1901-2 ...	1.07	1.34	1.94	0.94	0.97	1.78	...	...	1.20
1912-13 ...	1.17	1.31	1.36	1.10	1.10	1.84	1.00	1.25	1.23
1913-14 ...	1.19	1.38	1.36	1.01	1.13	1.34	1.33	1.19	1.22
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	1.34
Average for 10 seasons									
1907-17 ...	1.18	1.33	1.36	1.19	0.93	1.45	*2.15	*1.19	1.24

* Average for 6 years.

6. **Relation to Population.**—During the past ten seasons the Commonwealth hay production per head of population has varied between 7 cwt. in 1914-15 and 22½ cwt. in 1915-16; averaging about 14 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 1901-2 and 1912-13 to 1916-17 are given hereunder:—

HAY PRODUCTION PER 1000 OF POPULATION, 1901-2 and 1912-13 to 1916-17.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	N. T.	Fed. Terr.	C'wlth.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
1901-2 ...	339	231	241	964	463	624	...	...	529
1912-13 ...	622	1,139	188	1,662	835	932	3	1,508	836
1913-14 ...	520	956	157	1,299	869	560	22	1,287	692
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

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. In 1901 and 1902, however, the exceptional demand which was created by the South African war brought about a fairly large export of hay and chaff to Natal and Cape Colony. These colonies also took a considerable quantity of Australian compressed fodder. During the year 1904, when the war between Japan and Russia was being carried on, the exports of compressed fodder to Hong Kong were valued at £42,759 and those to Japan at £23,608. The total value of the hay and chaff exported during 1901 was £406,455, as compared with only £15,107 in 1916-17, while the exports of compressed and other fodder, which amounted in value to £142,472 in 1904, had shrunk to £6,103 in 1916-17.

During 1916-17 the principal purchases of the hay and chaff exported from the Commonwealth were made by India, the Straits Settlements, and Ceylon, while the bulk of the compressed fodder was exported to the Philippine Islands and Ceylon.

Imports of hay and chaff into the Commonwealth are usually unimportant; for the year 1915-16, however, they totalled 36,725 tons, valued at £227,133, obtained principally from New Zealand and the United States, while for 1916-17 only 38 tons were imported, valued at £223.

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, etc., for the year 1916, amounted to 5,487,369 tons from 3,053,064 acres, while from permanent grasses a yield of 9,710,503 tons of hay was obtained from 6,521,192 acres, giving a total of 15,197,872 tons from 9,574,256 acres, or about 32 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 connection with the dairying industry. The total area so cropped during the season 1916-17 was 390,876 acres. Of the total, the New South Wales area represented about 38½ per cent., that in Queensland 30 per cent., while that in 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 1916-17.

Season.	N.S.W.	Vic.	Q'land.	S. Aust.	W. Aust.	Tas.	N. T.	Fed. Terr.	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
1895-6	66,833	25,939	19,552	7,309	430	1,883	...	...	121,946
1900-1	78,144	18,975	41,445	13,136	1,024	3,749	...	...	156,473
1905-6	95,058	34,041	66,183	23,842	1,873	4,882	...	...	225,879
1910-11	179,382	71,826	89,667	20,728	4,545	8,695	19	...	374,862
1911-12	211,693	75,177	93,049	33,673	5,021	5,627	19	181	424,440
1912-13	154,522	84,460	135,354	39,954	7,339	6,304	60	13	428,006
1913-14	146,093	98,963	171,290	49,948	13,126	7,037	21	26	486,504
1914-15	* 949,539	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	117,174	37,352	28,653	8,133	24	49	390,876

* 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 1913-14 may be taken approximately as £1,594,834, or about £3 5s. 7d. per acre; for 1914-15 as £2,019,365, or £1 9s. 10d. per acre; for 1915-16 as £2,348,532, or £4 11s. 1d. per acre, and for 1916-17 as £1,165,081, or £2 19s. 7d. per acre.

3. **Relation to Population.**—Particulars concerning the area under green forage per 1000 of the population of the Commonwealth and the several States for the seasons 1901-2 and 1912-13 to 1916-17 are given hereunder:—

AREA UNDER GREEN FORAGE PER 1000 OF POPULATION, 1901-2 and 1912 to 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N. T.	Fed. Terr.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2	82	27	79	38	8	24	...	...	54
1912-13	87	61	213	93	24	32	17	7	90
1913-14	80	70	259	114	41	35	6	13	100
1914-15	* 510	98	272	119	59	34	21	41	274
1915-16	87	43	348	74	49	38	5	75	105
1916-17	81	36	175	86	93	41	5	22	80

* 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 the latter. Thus, of the total area of 178,190 acres under sugar-cane in the Commonwealth for the season 1916-17, there were 167,221 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 twenty 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. It then fell continuously to 1902-3, when it was lower than for any previous season since 1889-90. From 1902-3 to 1906-7 it remained practically stationary; from that time, with slight variations, it gradually fell to 10,969 acres in 1916-17, the lowest area under sugar-cane since 1882-3. 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 1916-17 being the highest on record, that for 1914-15 being the next highest and that for 1915-16 only a little short of it. The area under sugar-cane in the Commonwealth from 1865 is given in the following table:—

AREA UNDER SUGAR-CANE, 1865-6 to 1916-17.

Season.	New South Wales.		Queensland.		Commonwealth.		Total.
	Productive.	Unproductive.	Productive.	Unproductive.	Productive.	Unproductive.	
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	
1865-6	141		450		591		591
1870-1	1,475	2,607	2,188	4,154	3,663	6,761	10,424
1875-6	3,654	2,800	7,668	5,791	11,322	8,591	19,913
1880-1	4,465	6,506	12,306	7,918	16,771	14,424	31,195
1885-6	9,583	6,835	40,756	18,430	50,339	25,265	75,604
1890-1	8,344	12,102	39,435	11,487	47,779	23,589	71,368
1895-6	14,398	18,529	55,771	21,476	70,169	40,005	110,174
1900-1	10,472	11,642	72,651	35,884	83,123	47,526	130,649
1905-6	10,313	11,492	96,093	38,014	106,406	49,506	155,912
1910-11	5,596	8,167	94,641	47,138	100,237	55,305	155,542
1911-12	5,244	8,663	95,766	34,610	101,010	43,273	144,283
1912-13	6,137	7,777	78,142	63,510	84,279	71,287	*155,567
1913-14	6,198	7,034	102,803	44,940	109,001	51,974	*160,976
1914-15	6,012	5,409	108,013	53,182	114,025	58,591	172,616
1915-16	6,030	5,228	94,459	58,563	100,489	63,796	164,285
1916-17	5,223	5,746	75,914	91,307	81,137	97,053	178,190

* Including 1 acre Northern Territory.

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. Though the season of 1916-17 has the highest recorded acreage under sugar-cane, 1914-15 the second, and 1915-16 the third, these positions are not maintained as regards the area cut for crushing, the 1914-15 season having the highest recorded area of productive cane, 1913-14 the second, and that of 1905-6 the third highest.

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 2,271,558 tons for the record season

1913-14. The second highest yield was in the season 1914-15, with a total of 2,104,239 tons, the third highest being in 1910-11 when 2,000,758 tons of cane were cut. The average production of cane during the decennium ended 1916-17 was 194,789 tons. The three highest yields of sugar were in 1913-14, 1914-15, and 1910-11, the quantities being 265,029 tons, 245,876 tons and 230,871 tons respectively, the decennial average being 194,789 tons. Particulars relative to the total yields of cane and sugar for a series of years are as follows:—

YIELD OF SUGAR-CANE AND CANE-SUGAR, 1900-1 to 1916-17.

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
1905-6 ...	201,998	20,102	1,415,745	152,722	1,617,743	172,824
1910-11 ...	160,311	20,115	1,840,447	210,756	2,000,758	230,871
1911-12 ...	147,799	17,299	1,534,451	173,296	1,682,250	190,595
1912-13 ...	140,914	16,817	994,212	113,060	1,135,141*	129,877
1913-14 ...	185,970	22,192	2,085,588	242,837	2,271,558	265,029
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	1,810,264	159,640
1916-17 ...	143,558	16,064	1,579,514	176,973	1,723,072	193,037

* Including 15 tons Northern Territory.

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,” § 8, 17.

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 26.20 tons for the former and 16.77 for the latter State. During the nine seasons 1901-2 to 1909-10 the yield remained practically constant in New South Wales at about 21 tons per acre, except in 1907-8 when the average reached nearly 28 tons. For the past seven years, however, the average yield per acre in this State has shewn an upward tendency, reaching over 30 tons during 1913-14 and 1914-15. In Queensland the average yield per acre for 1910-11, viz., 19.45 tons, was by far the highest recorded for that State prior to 1913-14, when the average was over 20 tons to the acre. The 1916-17 season gives the highest recorded average, exceeding that of 1913-14 by over half a ton per acre.

The years shewing the highest average quantity of sugar produced per acre crushed in New South Wales were 1910-11, 1913-14 and 1914-15, the averages being 3.59, 3.58 and 3.33 tons per acre in the order named. In Queensland the highest average occurred in 1913-14 with 2.36 tons per acre; the next in order were those for 1916-17 and 1910-11 with 2.33 and 2.23 tons respectively.

5. Quality of Cane.—The quantity of cane required to produce a ton of sugar varies considerably not only with the district in which the cane is grown but also with the season. In Queensland, for instance, during the seasons 1902-3 to 1906-7 the sugar content of the cane crushed continuously diminished, so that while in 1902-3 the quantity of cane used in producing a ton of sugar was 8.38 tons, in the season 1906-7 the quantity required was 9.38 tons, the production in the former case being approximately 12 per cent. and in the latter 10½ per cent. of the weight of cane crushed. For the season 1907-8, the cane was of much better quality, and the quantity required to produce a ton of sugar was only 8.84 tons, the sugar content representing in this case somewhat more than 11½ per cent. of the weight of cane crushed. In 1908-9, owing in large

measure to the effect of frosts, the quantity of cane required to produce one ton of sugar was increased to 9.49 tons, the sugar thus representing only about 10½ per cent. of the weight of cane crushed, while in 1909-10 only 8.65 tons of cane were required to each ton of sugar, the sugar representing about 11½ per cent. of the weight of cane crushed. The especially favourable weather experienced throughout 1910 resulted in a very high average quantity of cane per acre being obtained, while the moisture which caused this led to a slight diminution in the saccharine density as compared with the previous year. During 1910-11 and the six following seasons the quantity of cane required to produce one ton of sugar was 8.73, 8.85, 8.79, 8.59, 8.51, 8.20 and 8.93 tons in the order named, the sugar produced representing about 11½ per cent. of the weight of cane crushed in each of those years, while the average quantity of sugar obtained per acre crushed was 2.23 tons in 1910-11, 1.81 in 1911-12, 1.45 in 1912-13, 2.36 in 1913-14, 2.09 in 1914-15, 1.49 in 1915-16, and 2.33 in 1916-17. It may be remarked in this connection that the systematic study of beet culture in European countries shewed that by suitable methods the sugar contents of the root could 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, ALSO QUANTITY OF CANE, 1900-1 and 1905-6 to 1916-17.

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.
1900-1	19.01	1.90	9.99	11.68	1.27	9.17	12.60	1.35	9.31
1905-6	19.59	1.95	10.05	14.73	1.59	9.27	15.20	1.62	9.36
1910-11	28.65	3.59	7.97	19.45	2.23	8.73	19.96	2.30	8.67
1911-12	28.18	3.30	8.54	16.02	1.81	8.85	16.65	1.89	8.83
1912-13	22.96	2.74	8.38	12.72	1.45	8.79	13.47	1.54	8.74
1913-14	30.00	3.58	8.38	20.29	2.36	8.59	20.84	2.43	8.57
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
Average 10 Seasons	26.20	2.99	8.77	16.77	1.92	8.75	17.39	1.99	8.75

6. Relation to Population.—The sugar-cane production of the Commonwealth during the past five seasons has averaged about 7 cwt. per head of population. In Queensland, the principal sugar-producing State, the production of cane per head has ranged between 1½ tons in 1912-13 and 3 tons in 1913-14. Details for the period 1912-13 to 1916-17 are as follows:—

SUGAR-CANE PRODUCTION PER 1000 OF POPULATION, 1912-13 to 1916-17.

State.	1912-13.	1913-14.	1914-15.	1915-16.	1916-17.
	Tons.	Tons.	Tons.	Tons.	Tons.
New South Wales	79	102	98	84	77
Queensland	1,562	3,159	2,841	1,698	2,359
Commonwealth	240	466	426	266	353

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 connection 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 the 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 £21 per ton of raw sugar and disposing of the refined product at £29 7s. 6d. per ton, the object being to enable the consumer to purchase sugar of 1A grade at 3½d. per lb. This arrangement was continued from year to year until 1918, when an agreement was made for two years ending 30th June, 1920.

9. Beet Sugar.—During the past few years an effort has been made to revive the sugar-beet industry in Victoria. During 1910-11 £554 was paid as bounty on 1,847 tons of beet, £2,244 on 7,481 tons during 1911-12, £1,667 on 6,207 tons during 1912-13, and £1,001 on 3,330 tons during 1913-14. For the 1913 crop the State Government paid £1 per ton for all topped clean roots delivered at the Maffra factory, for the 1914 crop £1 1s. was paid, and £1 5s. for the 1915 and 1916 crops.

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

AREA AND PRODUCTION OF SUGAR BEET IN VICTORIA, 1912-13 to 1916-17.

Particulars.			1912-13.	1913-14.	1914-15.	1915-16.	1916-17.
Area ...	...	acres	934	1,093	990	461	1,320
Production ...	...	tons	6,207	7,431	10,343	4,928	15,159
Average per acre ...	...	„	6.65	6.80	10.45	10.69	11.48

11. Imports and Exports of Sugar.—Notwithstanding the increase in the production of sugar in the Commonwealth during recent years, Australia's oversea import trade in cane sugar remained fairly extensive until 1906, the principal countries engaged in supplying this commodity being Java, Mauritius, and Fiji. In 1907 the exports of sugar exceeded the imports for the first time, the value of the net exports being £166,121. In 1908 and the following five years the imports exceeded the exports, while in 1914-15 the exports were the greater by 5,308 tons, representing a value of £138,474. In 1915-16 and 1916-17, however, the imports exceeded the exports by no less than 115,008 tons, valued at £1,847,310, in the former year, and by 80,128 tons, valued at £1,617,299, in the latter. The principal countries to which sugar is exported are the United Kingdom, the Pacific Islands, and New Zealand, but the bulk of the sugar exported from the Commonwealth is not of Australian origin, being merely a re-export of sugar produced elsewhere. Thus, of 1,033 tons exported during 1916-17, only 41 tons were of Australian origin. The sugar so re-exported comes mainly from Fiji and Java. Particulars concerning the imports and exports of cane sugar for 1901 and the past five years are as follows :—

IMPORTS AND EXPORTS OF CANE SUGAR, 1901 and 1912 to 1916-17.

Year.	Oversea Imports.		Oversea Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	£	Tons.	£	Tons.	£
1901 ...	98,544	1,239,550	4,738	68,876	93,806	1,170,674
1912 ...	98,481	1,189,763	2,257	39,614	96,224	1,150,149
1913 ...	74,861	864,768	3,419	54,322	71,442	810,446
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

Note. — 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 vine 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, (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 1916-17.

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
1865-6 ...	2,126	4,078	110	6,629	634		13,577
1870-1 ...	4,504	5,466	416	6,131	710		17,227
1875-6 ...	4,459	5,081	376	4,972	675		15,563
1880-1 ...	4,800	4,980	739	4,337	659		15,515
1885-6 ...	5,247	9,775	1,483	5,142	624		22,271
1890-1 ...	8,044	20,686	1,981	9,535	1,024		41,270
1895-6 ...	7,519	30,275	2,021	17,604	2,217		59,636
1900-1 ...	8,441	30,634	2,019	20,158	3,325		64,577
1905-6 ...	8,754	26,402	2,044	23,603	3,541		64,344
1910-11 ...	8,321	23,412	1,634	22,952	2,795		59,114
1911-12 ...	8,231	24,193	1,371	23,986	2,821		60,602
1912-13 ...	8,163	24,579	1,428	25,208	3,010		62,388
1913-14 ...	8,153	22,435	1,537	26,208	2,864		61,197
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

The area devoted to vines in the Commonwealth attained its 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 to 65,394 acres in 1916-17, being only 279 acres below that of 1904-5. 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 this 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 1901-2 and the past five seasons are contained in the table given hereunder:—

AUSTRALIAN WINE PRODUCTION, 1901-2 and 1912-13 to 1916-17.

Season.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Commonwealth.
	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.	No production of wine in Tasmania.	Gallons.
1901-2 ...	868,479	1,981,475	148,835	2,631,563	185,735		5,816,087
1912-13 ...	719,100	1,206,111	54,627	3,974,838	149,132		6,103,808
1913-14 ...	561,100	1,121,491	58,897	2,759,665	208,738		4,709,891
1914-15 ...	549,140	605,636	51,164	1,507,196	162,190		2,875,326
1915-16 ...	571,000	1,880,367	59,008	3,709,878	166,820		5,887,073
1916-17 ...	628,950	1,802,660	23,171	2,951,048	220,439		5,126,268

3. Relation to Population.—In relation to population the area of the vineyards of the several States exhibits a well-marked decline from 1901 to 1908, the Commonwealth total having fallen during the period from 17 to 13 acres per 1000 of the population. During the following eight seasons, however, the relation remained stationary, with the exception of a slight further decline in the 1914-15 season. Details for the period are furnished in the succeeding table:—

AREA OF VINEYARDS PER 1000 OF POPULATION, 1901-2 and 1912-13 to 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tas.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2 ...	6	24	4	58	19	...	17
1912-13 ...	5	18	2	59	10	...	13
1913-14 ...	4	16	2	60	9	...	13
1914-15 ...	4	15	2	61	9	...	12
1915-16 ...	4	16	2	63	9	...	13
1916-17 ...	5	17	2	67	10	...	13

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 and of still wines from Spain and Portugal. Particulars relative to the importations of wine into the Commonwealth during 1901 and the past five years are given hereunder:—

COMMONWEALTH IMPORTS OF WINE, 1901 and 1912 to 1916-17.

Year.	Quantity.			Value.		
	Sparkling.	Other.	Total.	Sparkling.	Other.	Total.
	Gallons.	Gallons.	Gallons.	£	£	£
1901	55,341	165,472	220,813	104,700	57,245	161,945
1912	67,851	85,874	153,725	132,830	36,377	169,207
1913	68,907	81,006	149,913	138,563	34,797	173,360
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

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 1901 and the past five years are given in the following table:—

COMMONWEALTH EXPORTS OF WINE, 1901 and 1912 to 1916-17.

Year.	Quantity.			Value.		
	Sparkling.	Other.	Total.	Sparkling.	Other.	Total.
	Gallons.	Gallons.	Gallons.	£	£	£
1901	2,936	863,147	866,083	6,972	122,751	129,723
1912	2,467	784,371	786,838	4,803	116,327	121,130
1913	1,768	701,872	703,640	3,767	102,263	106,030
1914-15	2,325	635,579	637,904	4,106	97,337	101,443
1915-16	3,638	726,113	729,751	7,001	113,593	120,599
1916-17	2,919	603,523	606,442	5,426	106,200	111,626

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 1901-2 and the past five seasons are as follows:—

TABLE GRAPES, 1901-2 and 1912-13 to 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania	C'wealth.
	Tons.	Tons.	Tons.	Tons.	Tons.		Tons.
1901-2	3,475	5,110	750*	2,800*	1,100*	...	13,235
1912-13	3,893	2,624	1,046	2,194	1,891	...	11,648
1913-14	3,883	2,849	1,306	2,067	2,690	...	12,795
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

* Estimated.

Statistics of the quantities of raisins and currants dried for 1901-2 and the past five seasons are given in the following table:—

RAISINS AND CURRANTS DRIED, 1901-2 and 1912-13 to 1916-17.

Season.	N. S. Wales.		Victoria		South Australia.		West. Aust.		C'wealth.	
	Raisins.	Currants.	Raisins.	Currants.	Raisins.	Currants.	Raisins.	Currants.	Raisins.	Currants.
	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.
1901-2	...	...	27,533	2,546	7,340	3,413	*	*	140,832	...
1912-13	4,417	...	109,677	48,337	35,248	52,208	975	600	251,462	...
1913-14	4,874	...	120,303	62,098	35,548	49,170	940	837	273,770	...
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
Average 10 seasons	3,792	...	106,550	39,893	35,135	41,023	1,146	1,112	228,651	...

* No record.

† Incomplete.

‡ Average for five seasons.

From the above figures it will be noted that substantial progress has been made in the production of raisins and currants in the Commonwealth, the increase being in evidence in each of the four contributing States. From 1901 to 1916-17 the percentage of increase in the production of raisins and currants in Victoria was 419 and 2510 respectively, and in South Australia 385 and 1369 per cent. The highly satisfactory increase in regard to currants was largely due to improved methods of cultivation, while the introduction of cincturing, or ringing, the vines was also responsible for an increased yield.

6. Imports and Exports.—The following table gives the oversea imports and exports of raisins and currants during 1903 and the past five years:—

**COMMONWEALTH OVERSEA IMPORTS AND EXPORTS OF RAISINS AND CURRANTS,
1903 and 1912 to 1916-17.**

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
RAISINS.						
	lbs.	£	lbs.	£	lbs.	£
1903 ...	1,237,470	16,549	639,726	8,913	—547,744	—7,636
1912 ...	174,690	4,548	1,514,678	27,505	1,339,988	22,957
1913 ...	189,504	4,837	1,918,320	25,365	1,728,816	20,528
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
CURRANTS.						
1903 ...	8,640,693	61,313	92,650	1,800	—8,548,043	—60,513
1912 ...	248,235	2,999	384,447	4,275	136,212	1,276
1913 ...	81,530	1,033	472,193	5,122	390,663	4,089
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

Note. — Signifies net imports.

Except in the years 1904, 1907, 1908, which followed abnormally good seasons, the imports of raisins exceeded the exports for all years prior to 1912. During the past five years, however, the exports exceeded the imports, the average for the quinquennium being 3,316,047 lbs., valued at £87,213. The increased production of currants in Australia in recent years had a tendency to gradually reduce the importation and increase the exportation of currants, the first year shewing a margin in favour of exports being 1912, when an excess of 136,212 lbs., valued at £1276, was recorded. In 1916-17 the excess was no less than 6,523,010 lbs., valued at £164,952.

§ 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 94,474 acres. The States in which the increase is most marked are:—Victoria, 29,066 acres; Tasmania, 20,330 acres; New South Wales, 14,183 acres; and Queensland, 11,044 acres. During the same period the South Australian fruit-growing area increased 10,595 acres, while that in Western Australia exhibited an increase of 9,230 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, 1901-2 and 1912-13 to 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Fed. Terr.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2...	48,448	50,055	14,396	16,315	6,076	11,485	...	...	146,775
1912-13	49,329	63,209	18,556	23,905	19,540	30,575	...	60	205,174
1913-14	51,457	67,183	20,072	24,425	20,575	32,200	50	59	216,021
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	21,747	38,380	...	26	257,687

The varieties of fruit grown differ materially in various parts of the several States, and range between such fruits as the pineapple, paw-paw, mango, and guava of the

tropics, and 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, etc.), 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, 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 1916-17.

Fruit.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tasmania.	C'wealth.
Apples ... acres	7,005	...	1,287	8,321	7,163	19,712	...
bushels	533,026	617,929	39,409	169,061	647,877	1,446,996	3,454,298
£	133,256	154,482	14,778	57,761	242,954	397,924	1,001,155
Apricots ... acres	1,065	...	93	2,148	451	838	...
bushels	80,577	217,424	4,294	154,879	30,288	70,016	557,478
£	34,245	46,203	1,610	48,366	12,494	19,837	162,755
Bananas ... acres	1,165	...	9,800	...	86	...	...
bunches	†109,408	...	1,051,212	...	†2,575	...	...
£	54,704	...	175,202	...	2,575	...	232,481
Lemons ... acres	2,487	...	219	407	174	...	...
bushels	230,830	53,940	10,535	24,669	28,042	...	348,016
£	63,478	16,182	2,809	7,401	8,413	...	98,283
Nectarines { acres	6,906	...	1,706	1,914	1,254	72	...
and { bshls.	559,819	803,209	70,967	153,399	135,178	5,590	1,728,162
peaches { £	209,868	173,963	16,633	42,182	54,560	1,397	498,603
Oranges ... acres	10,475	...	2,420	2,236	1,772	...	...
bushels	910,777	59,985	227,545	101,186	158,166	...	1,457,659
£	273,234	20,995	91,018	40,474	63,222	...	488,943
Pineapples acres	33	...	4,186	...	...	...	...
dozen	3,629	...	867,221	...	...	...	870,850
£	635	...	93,949	...	...	...	94,584
Pears ... acres	1,824	...	219	1,194	798	1,265	...
bushels	152,241	661,962	2,371	121,438	97,712	196,472	1,232,196
£	38,060	99,294	741	22,499	22,799	29,470	212,863
Other fruits acres	8,560	...	3,126	4,589	1,555	2,514	...
£	289,547	139,477	63,053	71,745	43,694	77,521	685,037
Total ... acres	39,520	56,631	22,506	20,809	13,253	24,401	177,120
£	1,097,027	650,596	459,793	290,428	450,711	526,149	3,474,704

* Including Federal Territory, 26 acres, value £500. † Cases. ‡ Bushels.

2. **Relation to Population.**—The acreage of orchards and fruit gardens of the Commonwealth in relation to population has increased during the last fifteen 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 1000 of population in 1901-2, and 66 in 1916-17. Details for orchards and fruit gardens for 1901-2 and the past five seasons are as follows:—

**AREA OF ORCHARDS AND FRUIT GARDENS PER 1000 OF POPULATION,
1901-2 and 1912-13 to 1916-17.**

Season.	N.S.W.	Victoria.	Q'land.	Sth. Aust.	W. Aust.	Tas.	N.T.	Fed. Terr.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2...	35	41	28	45	31	66	...	...	38
1912-13	28	46	29	56	64	155	...	31	43
1913-14	28	48	30	56	64	160	14	30	44
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

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 dried fruits, while the bulk of the exports is made up of fresh fruits. Amongst the imports, the principal dried fruits are currants, dates, sultanas, and raisins, and the principal fresh fruits bananas, oranges, lemons, and apples. In normal times the currants imported have been mainly from Greece, the dates from Arabia, Asia Minor and Persia, the raisins mainly from Spain. Of the fresh fruits imported during 1916-17, the bananas were chiefly from Fiji, the oranges and lemons from the United States and Italy, and the apples from the United States and Canada. In 1907 a considerable increase in the trade in Australian dried fruits took place, the total export for the year being valued at £76,872, of which £71,506 represented Australian fruits and £5,366 re-exports of foreign fruits. In 1908 the export declined to £35,359, of which £33,111 represented Australian fruits, and £2,248 re-exports of foreign fruits. There was a further decline in 1909, when the total value was only £13,013, made up of £11,826 of Australian produce, and £1,187 of re-exports. There was a small increase in the exports in 1910 and 1911, the total for the latter year amounting to £23,900; in 1912 there was a further and more substantial increase, the value of dried fruits exported being £48,012. In 1913 the export value was £32,099; in 1914-15 £35,691; and in 1915-16 £244,069. In 1916-17 the value of dried fruits exported was the largest on record, viz., £372,712; of this sum £367,456 represented Australian produce, and the balance of £5,256 re-exports of foreign fruits. The principal consignees of Australian dried fruits exported were United Kingdom and New Zealand. The fresh fruits exported during the year were valued at £141,583, and consisted mainly of apples. These were all of Australian origin with the exception of re-exports valued at £1,828. The principal countries to which these were sent were the United Kingdom, New Zealand and the East Indies.

Particulars concerning the oversea imports and exports of dried fruits for 1901 and the last five years are as follows:—

**COMMONWEALTH OVERSEA IMPORTS AND EXPORTS OF DRIED FRUITS,*
1901 AND 1912 TO 1916-17.**

Year.	Oversea Imports.		Oversea Exports.		Net Imports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
1901	14,265,731	179,305	831,996	14,206	13,433,735	165,099
1912	7,484,432	81,913	2,545,779	48,012	4,938,653	33,901
1913	10,551,877	112,439	2,478,585	32,099	8,073,292	80,340
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

Note. — signifies net exports. * Including raisins and currants published 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,
1901 AND 1912 TO 1916-17.**

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs. *	£	lbs. *	£	lbs. *	£
1901		45,955		167,926		121,971
1912	30,607,900	217,796	67,469,500	468,306	36,861,600	250,510
1913	47,233,100	356,060	58,491,400	399,800	11,258,300	43,740
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

Note. — Signifies net imports.

* Not available.

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 1916-17 amounting to £6,210, and of the exports to £949,112. The country of origin of the bulk of the importations is the United Kingdom, while the destinations of the exports are principally the United Kingdom, India and Pacific Islands. Particulars relative to imports and exports for 1901 and the last five years are as follow :—

**COMMONWEALTH OVERSEA TRADE IN JAMS AND JELLIES,
1901 AND 1912 TO 1916-17.**

Year.	Oversea Imports.		Oversea Exports.		Net Exports.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	lbs.	£	lbs.	£	lbs.	£
1901	1,312,377	23,858	4,140,072	64,389	2,827,695	41,031
1912	476,504	13,031	1,429,338	23,089	952,834	10,008
1913	453,951	12,213	1,858,231	29,402	1,404,280	17,189
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

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 1916-17 was £56,003, and the corresponding value of exports was £139,230.

§ 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, Turnips, Mangolds, Nurseries, Grass Seed, Tobacco, 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 1916-17 devoted to crops not dealt with in previous sections was 67,023 acres, of which market gardens accounted for 27,884 acres, or more than 41 %.

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 1901-2 and each of the last five seasons is given in the table hereunder:—

COMMONWEALTH MARKET GARDENS, 1901-2 and 1912-13 to 1916-17.

Season.	N.S.W.	Victoria.	Q'land.	S. Aust.	W. Aust.	Tas.	N.T.	Federal Terr.	C'wealth.
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.
1901-2 ...	7,834	8,752	2,328	9,005	2,142	1,746	...	...	31,807
1912-13 ...	9,836	10,414	2,386	2,857	2,924	1,458	*50	11	29,936
1913-14 ...	10,585	10,777	2,611	2,265	2,851	† 769	60	22	29,940
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	1,523	2,153	448	...	27	27,884

* Included with South Australia prior to 1910-11. † Crops, other than Market Gardens, were included in previous years.

The area for 1916-17 was in excess of that for 1901-2 in New South Wales, Victoria, and Western Australia. In South Australia the falling-off is more apparent than real, being in large part due to a change in the classification of crops introduced in connection with the new system of collection which came into force for 1907-8. It is believed that the figures given for the earlier years are considerably in excess of the reality. During the past five seasons there has been very little variation in the total area of market gardens in the Commonwealth as a whole. Comparing the earliest of these with the latest, New South Wales and Victoria shew an increase, viz., 847 and 332 acres respectively, while South Australia and Western Australia shew a decrease of 1,335 and 771 acres respectively. For the Commonwealth as a whole a corresponding decrease of 2,052 acres is shewn.

3. Grass Seed.—The total area under this crop during 1916-17, exclusive of New South Wales, for which State no figures are available, was 4,522 acres, of which 1,769 acres were in Victoria, 1,588 acres in Queensland, and 1,155 acres in Tasmania. The total yield for 1916-17, excluding New South Wales, was 40,754 bushels.

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 2000 acres, and that in Queensland to over 1,000 acres, the total area for the season 1916-17 had declined to 1,342 acres, distributed as follows:—New South Wales, 952 acres; Victoria, 73 acres; and Queensland, 317 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 1916-17 amounted to £913,391, comprising unmanufactured tobacco £828,686, cigars £84,721, cigarettes £37,424, and snuff £907, while manufactured tobacco shewed a balance in favour of exports amounting to £38,347.

5. **Pumpkins and Melons.**—The total area under this crop in the Commonwealth during 1916-17 was 18,773 acres, of which 3,119 acres were in New South Wales, 2,064 acres in Victoria, 12,566 acres in Queensland, 659 acres in Western Australia, and 345 in South Australia. The production amounted to 11,504; 11,103; 37,511; 1,674; and 2,253 tons respectively.

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 1916-17 being 1,331 acres, of which 1,241 acres were in Tasmania, and 87 acres in Victoria; a small area of 3 acres was also grown in South Australia. The Tasmanian area, though still small, has increased rapidly during the past fourteen 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 87 acres in 1916-17. 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 1758 acres. During the year 1916-17 the net importations of hops into the Commonwealth represented a weight of 645,256 lbs. and a value of £31,592. The total value of the net importations into Australia during the past ten years amounted to £544,100, thus indicating the existence of a regular and extensive local demand.

7. **Millet.**—Millet appears in the statistical records of three of the Commonwealth States. The total area devoted thereto in 1916-17 was 3,931 acres, of which 1,720 acres were in New South Wales, 1143 in Victoria, 1063 in Queensland and 5 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.

8. **Nurseries.**—In all the States somewhat extensive areas are devoted to nurseries for raising plants, trees, etc., but statistics concerning the area so occupied for flowers, fruit trees, etc., are only available for New South Wales, Victoria and Western Australia. During 1916-17 the area in those States was 571; 1,162; and 93 acres respectively. Statistics so far as they relate to forestry are given elsewhere.

9. **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. unginned cotton. A gradual falling-off has since been experienced, and in 1916 the area was only 76 acres with a production of 24,264 lbs. cotton. Special efforts have recently been made to encourage the growth of cotton in Queensland, and the Agricultural Department of that State in 1916 distributed to upwards of 300 intending growers sufficient seed to plant about 800 acres. 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.

10. **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. Since then the area continuously declined to 1906-7, when it was as low as 256 acres. During the season 1907-8 the area increased to 304 acres, declining to 285 acres in 1908-9, 200 acres in 1910-11, 198 acres in 1911-12, 196 acres in 1912-13, 165 acres in 1913-14, 150 acres in 1914-15, and 91 acres in 1915-16. During 1916-17, 103 acres were under cultivation, the yield amounting to 15,530 lbs., valued at £582.

11. **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. 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—			
Cottonseed	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)*	15 "	1d. "	1,000
Dried (except currants and raisins) or candied, and exported	10 "	10 % on market value	6,000

* 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.

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 1916-17 :—

PARTICULARS OF BOUNTIES PAID ON AGRICULTURAL PRODUCTS (OTHER THAN SUGAR), 1912-13 to 1916-17.

Article.	Quantity produced on which Bounties were paid.					Amount paid as Bounties.				
	1912-13.	1913-14.	1914-15.	1915-16.	1916-17.	1912-13.	1913-14.	1914-15.	1915-16.	1916-17.
						£	£	£	£	£
Cotton, ginned ...lbs.	46,043	9,642	...	13,751	...	95	21	...	22	...
Fibres—										
Flax and hemp tons	101	137	34	238	122	215	318	77	634	267
Sisal hemp ...	...	...	...	2,250	...	...	...	...	2	...
Oil materials supplied to an oil factory for the manufacture of oil—										
Cottonseed ... lbs.	84,479	6,306	...	22,400	...	13	1	...	10	...
Linseed (flax seed) cwt.	100	...	...	...	...	9	...	...	...	...
Coffee, raw, as prescribed ... lbs.	30,053	17,540	17,022	732	...	125	73	71	3	...
Tobacco leaf for the manufacture of cigars, high grade, of a quality to be prescribed. lbs.	25,820	41,263	41,891	17,423	57,795	215	344	349	145	488
Fruits—										
Dried (except currants and raisins) or candied, & exported. lbs.	196,837	142,928	41,212	6,000	579,334	587	433	98	16	2,063

During the year 1916-17 the total amount paid in respect of flax and hemp was claimed by the State of Victoria. The bounty paid for tobacco leaf was paid to New South Wales and Queensland, the amounts being £16 and £472 respectively. Victoria South Australia, and Tasmania claimed the bonuses on dried fruits, the amounts being £80, £1,698, and £285 in the order named.

No bounties were paid on New Zealand flax, jute, or uncleaned rice, nor have any yet been paid on dates.

§ 18. Fertilisers.

1. **General.**—In the early days of settlement and cultivation in the Commonwealth, scientific cultivation was in a much less developed state than it is to-day. 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 fertiliser 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. **Fertilisers 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 fertilisers. A list of these Acts and their main features will be found in Year Book No. 6. (pages 406 and 407).

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 fertilisers has increased over 200 per cent. since 1901. The chief items, as regards both quantity and value, are those relating to phosphates, a fertiliser which has proved itself to be very suitable for the growing of cereals in Australian

soils. With the exception of very small quantities from the United Kingdom and New Zealand, the whole of the manufactured superphosphates imported during 1916-17 was obtained from Japan. The colony of Gilbert and Ellice Islands, with 46 per cent., was the principal contributor of rock phosphates; Christmas Island contributed 33 per cent., and the balance, about 21 per cent., was obtained from other South Sea Islands. All guano, except 720 cwt. from the United Kingdom, came from the Pacific Islands.

The imports of artificial manures during the last five years are given in the following table. It will be noticed that the quantity of rock phosphates imported since 1912 shews an increase amounting to 81 per cent. The imports were consistently large during the last four years. The imports of manufactured superphosphates shewed an increase of about 50 per cent. during 1910, for 1911 there was a further increase of some 5 per cent., but during 1912 and the three following years there was a decrease, the falling-off in 1915-16 and 1916-17 being particularly heavy.

COMMONWEALTH IMPORTS OF FERTILISERS, 1912 to 1916-17.

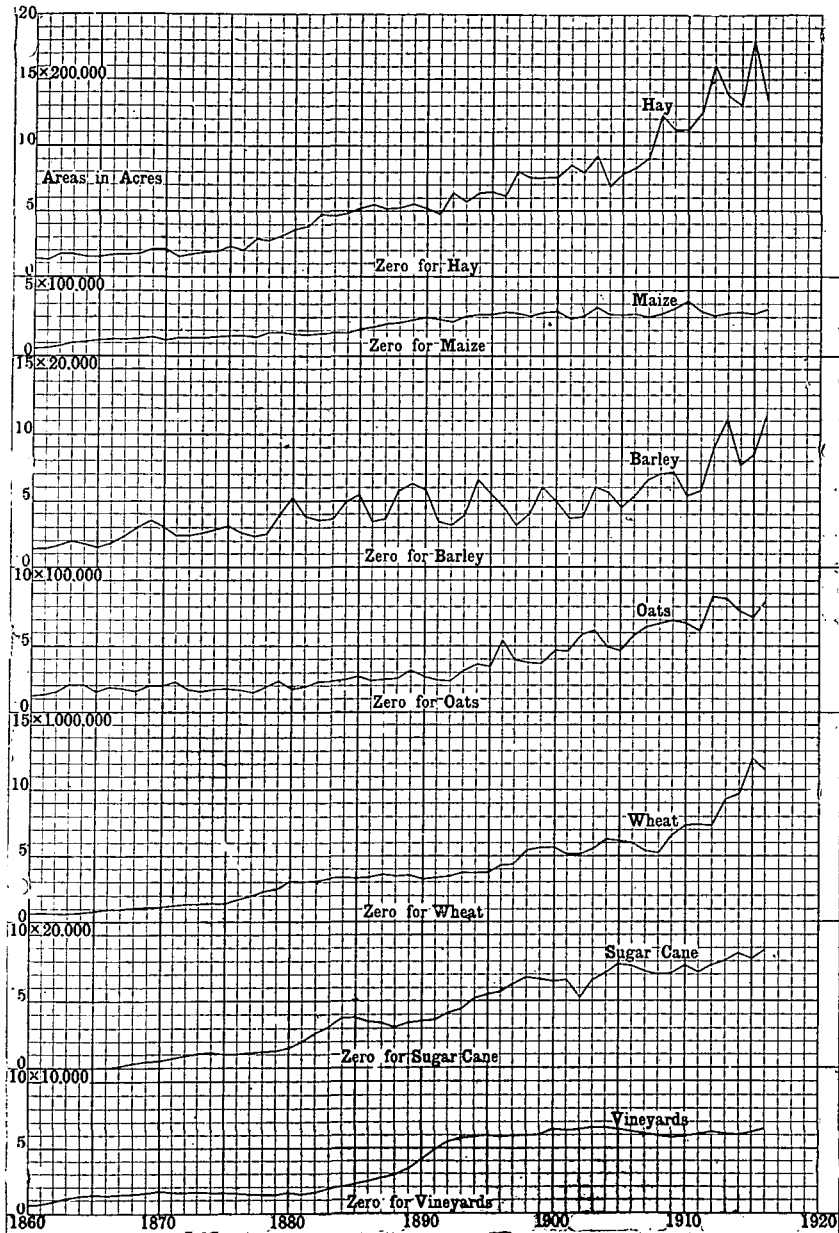
Fertiliser.		1912.	1913.	1914-15.	1915-16.	1916-17.
Bonedust	Cwt.	8,769	15,341	10,901	...	40
"	£	2,309	4,378	3,136	...	18
Guano	Cwt.	541,873	26,819	2,063	1,800	264,581
"	£	64,833	5,733	814	792	30,772
Superphosphates ...	Cwt.	967,450	534,138	502,392	57,790	200
"	£	155,643	89,474	79,899	10,308	61
Rock Phosphates ...	Cwt.	1,963,640	3,200,648	3,464,547	3,813,788	3,556,661
"	£	259,394	397,634	397,284	440,434	444,984
Other	Cwt.	247,025	279,308	175,739	117,312	166,674
"	£	82,769	90,902	65,703	52,972	109,471
Total ... {	Cwt.	3,728,788	4,056,314	4,155,682	3,990,690	3,988,056
	£	565,548	587,421	546,826	504,506	589,306

4. Exports.—The subjoined table shews the exports of artificial manures for the years 1912 to 1916-17. Practically the whole of these fertilisers are manufactured locally, and are shipped mainly to New Zealand, Java, Japan and the Pacific Islands:—

COMMONWEALTH EXPORTS OF FERTILISERS, 1912 to 1916-17.

Fertiliser.		1912.	1913.	1914-15.	1915-16.	1916-17.
Bonedust	Cwt.	125,546	86,295	148,229	71,795	37,337
"	£	38,188	26,023	45,707	22,563	12,832
Guano	Cwt.	500	6,242	2,800	...	4,455
"	£	100	848	470	...	1,061
Superphosphates ...	Cwt.	182,377	257,629	311,067	823,361	483,552
"	£	34,400	47,396	64,924	156,862	105,492
Rock Phosphates ...	Cwt.	...	18,555	22,340	75,839	66,010
"	£	...	3,050	3,423	10,695	8,464
Soda Nitrate	Cwt.	5,523	10,154	1,500	2,619	7,339
"	£	5,560	5,386	897	1,835	5,678
Ammonia Sulphate ...	Cwt.	73,193	46,067	113,801	129,651	109,248
"	£	51,022	31,577	75,379	102,821	111,794
Other	Cwt.	146,348	237,734	224,309	86,964	72,572
"	£	49,316	63,154	38,972	28,059	20,925
Total ... {	Cwt.	533,487	662,676	824,046	1,190,229	780,513
	£	175,686	177,434	229,078	322,835	266,246

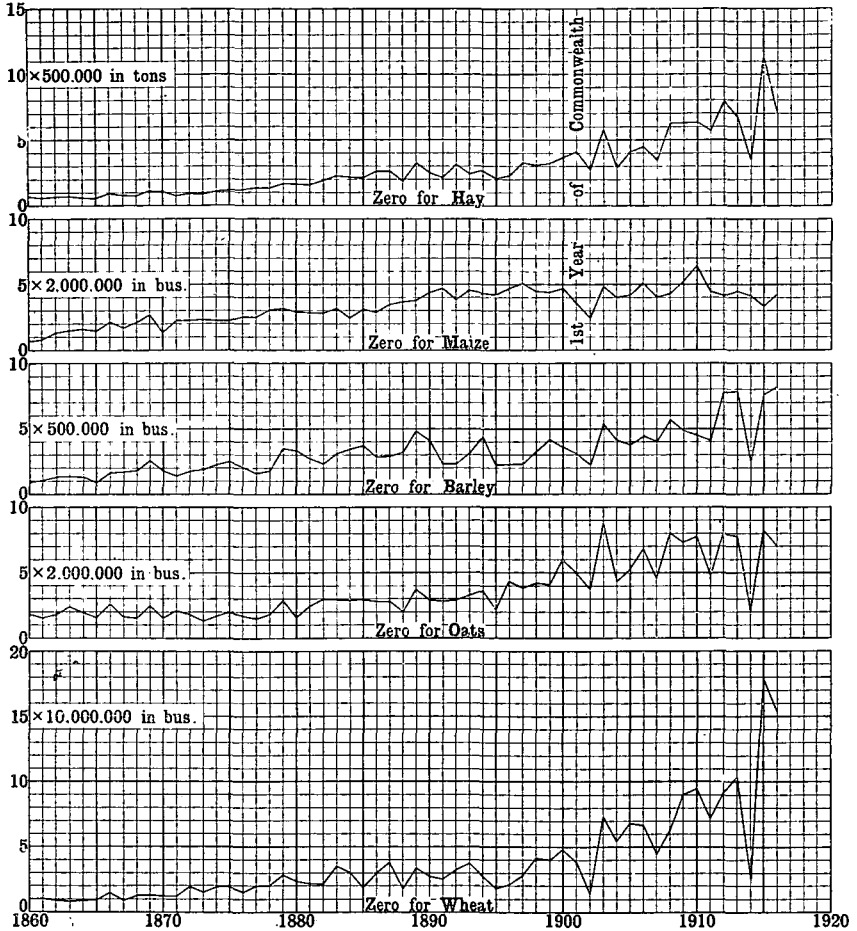
GRAPHS SHEWING THE AREA UNDER THE PRINCIPAL CROPS IN THE
COMMONWEALTH FROM 1860-1 to 1916-17.



(See pages—for wheat, 341; oats, 351; maize, 354; barley, 358; hay, 366; sugar-cane, 371; and vineyards, 375.)

EXPLANATION OF GRAPHS.—The of base 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 1916-17.



See pages—for wheat, 341; oats, 351; maize, 354; barley, 358; and hay, 366.)

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. **Statistics of Use of Fertilisers.**—The statistics available in connection with the use of manures in the Commonwealth for a series of years refer to all the States with the exception of Queensland; those for that State were collected for the first time for 1915-16. Particulars concerning New South Wales are given hereunder:—

FERTILISERS USED IN NEW SOUTH WALES, 1912-13 to 1916-17.

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.
1912-13 ...	3,737,085	1,642,078	43.94	170,312	38,918
1913-14 ...	4,567,592	2,224,623	48.71	166,503	50,476
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

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

FERTILISERS USED IN VICTORIA, 1912-13 to 1916-17.

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.
1912-13 ...	4,079,356	29,524	3,029,418	74.26	222,253	94,010
1913-14 ...	4,391,321	30,610	3,401,013	77.45	219,423	105,612
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

During 1915-16, 25,166 acres were manured in Queensland, 43,483 loads of natural and 7,608 tons of artificial manure being used. During 1916-17, 22,145 acres were manured, 34,811 loads of natural and 6,869 tons of artificial manure were used, and the percentage of area manured on total area under crop was 3.45 for the former and 2.50 for the latter season.

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

FERTILISERS USED IN SOUTH AUSTRALIA, 1912-13 to 1916-17.

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.
1912-13 ...	3,062,998	2,603,136	84.99	111,434	91,607
1913-14 ...	3,169,559	2,584,814	81.55	100,435	97,023
1914-15 ...	3,282,364	2,722,349	82.94	103,537	96,812
1915-16 ...	3,763,570	3,112,462	82.70	90,142	102,685
1916-17 ...	3,627,477	2,872,571	79.19	101,032	96,892

Corresponding particulars relative to Western Australia for the seasons 1912-13 to 1916-17 are given in the following table:—

FERTILISERS USED IN WESTERN AUSTRALIA, 1912-13 to 1916-17.

Season.	Total Area of Crops.	Area Manured.		Manure Used.	
		Aggregate.	Percentage to Total Area of Crops.	Natural (Stable-yard, etc.).	Artificial.
	Acres.	Acres.	%	Loads.	Tons.
1912-13...	1,199,991	1,120,334	93.36	55,085	47,563
1913-14...	1,537,923	1,459,218	94.88	58,390	58,962
1914-15...	1,867,547	1,808,504	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

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

FERTILISERS USED IN TASMANIA, 1912-13 to 1916-17.

Season.	Total Area of Crops.	Area Manured.		Manure Used.	
		Aggregate.	Percentage to Total Area of Crops.	Natural (Stableyard, etc.).	Artificial.
	Acres.	Acres.	%	Tons.	Tons.
1912-13...	286,065	137,653	48.12	27,328	9,272
1913-14...	264,140	136,764	51.78	30,530	14,398
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

6. Local Production of Fertilisers.—Statistics relative to the local production of fertilisers are incomplete, and detailed returns for fertiliser 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 97, made up as follows:—New South Wales, 21; Victoria, 38; Queensland, 18; South Australia, 12; Western Australia, 5; and Tasmania, 3. Approximately complete returns of the quantities of fertilisers used in the various States being now available, a comparison with the imports and exports gives valuable information, but, as already mentioned, such particulars are only available for five of the States prior to 1915-16, and even then do not furnish the whole of the information necessary.

7. Benefits Derived from the Use of Fertilisers.—There is little doubt that the increasing use throughout the Commonwealth of fertilisers, 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 fertilisers 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. The silos vary in capacity from 40 to 130 tons. 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 connection.

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 1912-13 to 1916-17, are furnished in the following table:—

COMMONWEALTH ENSILAGE-MAKING, 1912-13 to 1916-17.

State or Territory.	1912-13.		1913-14.		1914-15.		1915-16.		1916-17.	
	*Holdings.	Ensilage Made.	*Holdings.	Ensilage Made.	*Holdings.	Ensilage Made.	*Holdings.	Ensilage Made.	*Holdings.	Ensilage Made.
New South Wales ...	No. 144	Tons. 18,509	No. 129	Tons. 18,358	No. 83	Tons. 10,963	No. 130	Tons. 18,511	No. 119	Tons. 16,636
Victoria ...	237	17,877	270	19,505	161	9,055	269	16,356	179	10,974
Queensland ...	58	4,156	75	4,273	52	3,363	37	3,012	70	5,115
South Australia ...	28	2,200	16	778	6	681	43	1,688	20	1,795
Western Australia ...	23	479	23	658	11	403	12	518	12	278
Tasmania ...	20	424	17	662	10	231	17	849	7	114
Federal Territory ...	1	10	1	8	...	...	...	...	...	...
Northern Territory ...	...	...	...	...	...	...	...	...	1	55
Commonwealth ...	561	43,655	530	44,242	323	24,696	508	40,934	408	34,967

* 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 1916-17 returns shew a falling-off in all the States with the exception of Queensland.

§ 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 fertilisers 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 the tables given herewith, particulars of agricultural colleges and experimental farms in the several States of the Commonwealth in 1916-17 are shewn.

PARTICULARS OF AGRICULTURAL COLLEGES AND EXPERIMENTAL FARMS IN THE SEVERAL STATES OF THE COMMONWEALTH DURING THE SEASON 1916-17.

Particulars.	Unit of Quantity.	New South Wales.	Vic.	Q'land.	South Aust.	West. Aust.	Tasmania.	Northern Terr.	C'with.
No. of agricultural colleges	No.	1	2	1	1	1	...	...	6
" experimental farms ...	"	23	5	5	9	6	1	2	51
" students ...	"	170	164	29	30	15	*	...	408
" hands employed ...	"	393	118	74	96	67	9	10	767
Value of plant & machinery	£	40,766	9,990	9,391	10,908	8,023	1,507	1,700	82,285
produce for year ...	"	42,731	22,600	4,033	13,992	22,508	1,200	2,000	109,064
Receipts—									
Government grant ...	"	78,446	17,583	18,085	17,167	18,658	1,736	3,229	154,904
Fees ...	"	2,049	2,049	714	1,237	364	*	...	8,403
Sales of produce, &c. ...	"	47,541	18,470	6,365	7,861	31,264	1,011	139	118,308
Other ...	"	1,843	919	...	1,672	669	529	25	...
Total receipts ...	"	131,869	39,021	25,164	27,937	50,955	3,276	3,393	281,615
Expenditure—									
Salaries, professional ...	"	8,839	5,122	3,631	4,094	473	350	650	23,159
general ...	"	53,402	12,650	5,582	8,087	9,847	1,032	1,268	91,868
Buildings & maintenance	"	21,913	14,094	15,951	7,940	5,557	107	1,474	166,586
Other ...	"	47,715	7,155	...	7,816	35,078	1,787	1	...
Total expenditure ...	"	131,869	39,021	25,164	27,937	50,955	3,276	3,393	281,615
Agriculture, &c.—									
Area under cereals for grain	Acre	2,457	2,136	355	1,875	7,069	96	150	14,138
" hay ...	"	2,576	734	454	654	737	...	90	5,245
" fruit trees, &c. ...	"	294	96	16	100	13	40	25	584
" vines ...	"	159	91	7	62	1	...	...	320
" green fodder ...	"	1,016	610	254	309	312	...	53	2,554
" root crops ...	"	81	...	24	6	6	6	5	128
" other crops ...	"	136	184	91	117	25	...	51	604
Total under crop ...	"	6,719	3,851	1,201	3,123	8,163	142	374	23,573
Area of land in fallow ...	"	1,340	1,709	112	1,916	1,864	27	231	7,199
" under artificially sown grasses	"	945	88	540	10	121	419	44	2,167
New ground broken up during season ...	"	317	47	76	...	100	...	91	631
Previously cropped land lying idle ...	"	2,984	1,737	451	1,870	9,468	...	25	16,535
Total area of arable land	"	12,305	7,432	2,380	6,919	19,716	588	765	50,105
Balance of area ...	"	29,246	4,995	14,037	7,447	135,546	90	4,670	196,031
Total area ...	"	41,551	12,427	16,417	14,366	155,262	678	5,435	246,136
Live stock—									
Horses ...	No.	740	293	220	274	221	11	173	1,933
Dairy cows ...	"	585	195	134	82	90	33	70	1,189
All other cattle ...	"	494	217	453	73	1,890	43	231	3,401
Sheep ...	"	13,093	3,520	1,954	3,250	8,062	231	50	30,160
Pigs ...	"	733	233	234	315	332	32	52	1,931
Capacity of tanks or dams ...	Gal.	33,860,995	7,900,000	235,100	824,200	†205,000	20,000	11,150	43,056,445

* Closed temporarily to students during war. † Incomplete.

3. New South Wales.—In order to meet the demand for agricultural training, and for the purpose of conducting experiments in various branches of agriculture and of disseminating agricultural knowledge, an agricultural college and farm and twenty-three experimental farms, including two viticultural nurseries and an apiary, have been established by the New South Wales Government. Theoretical instruction in agriculture,

with practical illustrations, forms part of the curriculum of the Sydney Technical College. The School of Agriculture in the Sydney University, which has been established for seven years, is doing very satisfactory work. At the Hurlstone Continuation College there is a special course in both theoretical and practical agriculture for teachers. Instruction in "nature knowledge" is given in the State primary schools, many of which have their own experimental plots. As a means of further encouraging the study of agriculture, the Department of Public Instruction has a travelling inspector in agriculture, whose duty it is to visit the country and metropolitan schools, lecturing on the value, necessity, and advantages of agricultural knowledge, and giving practical demonstrations wherever practicable.

4. **Victoria.**—In 1884, the Agricultural Colleges Act, passed to make provision for the establishment of agricultural colleges and experimental farms in Victoria, provided for the permanent reservation from sale of 150,000 acres of Crown lands by way of endowment of agricultural colleges and experimental farms, which, together with other lands reserved as sites for such institutions prior to the passing of the Act, are vested in three trustees appointed by the Governor. Provision was made for the appointment of a Council of Agricultural Education, consisting of eleven members, five of whom are elected by the members of the Agricultural Societies of the State, five are nominated by the Governor, whilst the Secretary for Agriculture is also a member of the Council and its Treasurer. Two agricultural colleges and five experimental farms, orchards and vineyards were in existence in different parts of the State during 1916-17. There are five Agricultural High Schools under the control of the Education Department, while elementary experimental agriculture is taught at many of the State primary schools. Instruction in agriculture is also given at the technical schools at Melbourne and Bairnsdale.

5. **Queensland.**—Organised experimental agriculture in Queensland dates from the establishment of the Department of Agriculture and Stock, but such work as has been done in connection with stock-breeding, other than that carried on by private individuals, has been of later birth, and has been confined to dairy stock and draught horses. Agriculture in Queensland in the early nineties was upon the well-defined lines of the other States, so that the knowledge to be gained as to what could be profitably adapted to Queensland, with its varied climate and rainfall, covered a wide field. Instructors were appointed conversant with the different lines of agriculture, of which grain cultivation, dairying, fruit-growing, tobacco cultivation, and tropical agriculture, such as sugar, rubber and spices, are the most important. This has been followed by the establishment of an agricultural college, of farms in the temperate parts of the State, and of nurseries in the tropical parts. With wheaten grain, a system of experiments has been carried out for some years with the distinctive object of evolving a type of wheat adapted for Queensland, and as far as possible resistant to the attacks of rust. In dairying, a commencement was made by despatching to the different farming centres properly equipped travelling dairies with the latest appliances. The export of Queensland dairy produce has arisen through this effort. No travelling dairies are, however, now employed. A fruit farm has been established, at which fruits suitable for or likely to adapt themselves to the Queensland climate and conditions have been experimented with during a series of years. To cope with the insect and fungus pests to which such fruits are peculiarly susceptible, careful inspection is made of fruits in the markets and for export, and every effort is put forth to prevent the introduction of fresh diseases and to exterminate those which are already within the State.

6. **South Australia.**—To this State belongs the honour of starting the first experimental farm in the Commonwealth. As far back as the year 1879 a resolution was passed by the local Parliament in favour of the establishment of a School of Agriculture, with an experimental farm, under the charge of a professor of agriculture. Active operations in this connection were commenced in 1882, when the first series of plots of wheat were sown at Roseworthy. Experimental work, chiefly directed towards improving

the wheat yield, has been developed along three main lines, viz.: (a) the improvement of varieties of wheat, (b) the improvement of methods of cultivation, and (c) the use of manures. The Central Agricultural Bureau, established at Adelaide under the control of an Advisory Board, has an extensive membership distributed throughout the agricultural districts of the State. It assists farmers by the dissemination of knowledge; by helping to introduce new economic plants; by improving the breed of stock; and it acts as a means of keeping the Agricultural Department in touch with the producers. The branches of the bureau hold meetings at regular intervals in their several districts, ideas and methods as regards practical subjects are interchanged, and discussions are held on matters of general interest to agriculturists.

7. **Western Australia.**—A considerable amount of developmental work has been done of late years towards the promulgation of agricultural knowledge on the State agricultural college at Narrogin, on the experimental farms at Brunswick, Merredin, Denmark and Chapman and on the State farms at Avondale and Yandanooka carried on as business undertakings.

8. **Tasmania.**—In Tasmania there is a Council of Agriculture consisting of eleven members, whose duties are to collect and publish information of every kind calculated to prove beneficial to agriculturists, such as suitability of various districts for growth or production of animal and vegetable products, information respecting plants, methods of cultivation, breeding and feeding animals, and how best to improve the same; to prevent as far as possible the introduction and spread of diseases and pests, and to publish bulletins, abstracts, and reports containing all such information as may be desirable. Other matters embrace the employment of experts in any branch of agricultural science, distribution of plants and seeds for experiment, and the establishment of local boards of agriculture in different parts of the State. Lectures are given by the experts from time to time, and useful information and knowledge is diffused by means of the monthly gazette published by the Council, and also by means of special bulletins. There is an agricultural college and State farm consisting of 678 acres, which commenced operations during 1914, but the admission of students has been temporarily suspended during the war. Practically no agricultural teaching is given in the elementary schools.

§ 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. (See pages 272 *et seq.*)

2. **Aggregate of Transactions in each State, 1913 to 1917.**—The subjoined table gives aggregates of transactions in reference to advances to farmers in each State during the past five years :—

STATE GOVERNMENT ADVANCES DEPARTMENTS—AGGREGATE OF LOANS TO FARMERS, 1913 to 1917. (a)

State.	TOTAL ADVANCED TO 30TH JUNE.					BALANCE DUE AT 30TH JUNE.				
	1913.	1914.	1915.	1916.	1917.	1913.	1914.	1915.	1916.	1917.
	£	£	£	£	£	£	£	£	£	£
N.S.W.(b)...	2,423,955	3,531,263	3,918,978	4,119,842	4,281,697	1,396,336	2,297,981	2,514,078	2,513,332	2,522,674
Victoria ...	3,208,903	3,491,008	3,714,733	3,866,952	4,040,582	1,511,798	1,676,432	1,783,043	1,833,988	1,920,737
Q'nsland ...	623,498	851,600	1,147,996	1,517,040	1,810,910	470,795	636,790	880,204	1,186,895	1,428,530
S. Aust.(d) ...	2,370,076	2,601,450	2,769,609	2,831,631	2,847,017	1,150,020	1,264,417	1,330,026	1,300,877	1,232,705
W. Aust. ...	2,582,937	3,089,575	3,361,158	3,533,493	3,626,658	1,883,957	2,331,959	2,561,679	2,695,550	2,753,559
Tasmania	23,915	41,004	72,252	97,776	117,027	21,089	36,965	66,572	87,106	103,152
C'wealth ...	11,233,284	13,605,900	14,984,726	15,966,734	16,723,891	6,433,995	8,244,544	9,135,602	9,617,748	9,961,357
	PROFITS FOR YEAR ENDED 30TH JUNE.					ACCUMULATED PROFITS AT 30TH JUNE.				
	£	£	£	£	£	£	£	£	£	£
N.S.W.(b)...	10,335	(c)20,946	15,111	16,633	17,477	35,684	56,630	71,741	88,374	104,898
Victoria (e)	5,203	9,100	10,102	14,900	15,623	93,209	102,309	112,411	126,411	142,064
Q'nsland (e)	3,354	2,983	4,448	6,674	f	15,223	18,206	22,654	29,328	29,328
S. Aust.(d) ...	8,218	9,376	10,668	11,670	11,400	59,355	68,731	79,399	91,069	102,469
W. Aust. ...	9,783	9,607	9,363	7,706	2,894	55,675	65,282	74,645	82,351	85,245
Tasmania	472	295	712	1,278	1,238	503	798	1,509	2,787	4,025
C'wealth ...	37,365	52,307	50,404	57,961	48,632	259,649	311,956	362,359	420,320	468,029

(a) Compiled from figures furnished by the Government Savings Bank of Victoria. (b) Previous to 1914 for years ended 31st December prior. (c) For 18 months ended 30th June, 1914. (d) Includes loans to farmers and other producers and to local bodies on the security of their own rates. (e) Including profits in connection with House and similar loans. (f) Not shewn since amalgamation with Government Savings Bank. (g) See note(f).

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 1911-12, etc., will be found in previous issues of the Year Book (see No. 6, pages 417-25).

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 for the period 1860-1916 will be found on page 387. The crops so represented are as follows :—Wheat, hay, oats, maize, sugar-cane, barley, and vines.

2. **Production.**—On page 388 will be found a graphical representation of the aggregate yields in the Commonwealth since 1860 of wheat, oats, barley, maize, and hay.