WHEAT STUDIES

OF THE

FOOD RESEARCH INSTITUTE

VOL. IX, NO. 7 (Price $1.00) APRIL 1933

WORLD WHEAT CROPS, 1885-1932

NEW SERIES, WITH AREAS AND YIELDS, BY COUNTRIES

THIS study presents detailed statistics of wheat production, acreage, and yield per acre in 40 countries annually from 1919 to 1932, and in 39 countries from 1885 to 1918. From these data, summations are made which show "world" wheat production, acreage, and yield per acre within a land area unchanged from year to year. Tabulations hitherto available cover only "world" production, not acreage and yield per acre as well; they do not apply to identical land areas in pre-war and post-war years; they do not cover as many years as does the tabulation here presented; and they do not provide students with detailed data for individual countries.

In preparing 48-year series on "world" wheat production consistent with respect to territorial boundaries, it has been necessary in some instances to adjust available official statistics or to fill in gaps by direct estimates. The processes of adjustment and estimation are described in some detail.

All-inclusive figures on world wheat production cannot be compiled, even for recent years. There are no reliable data for areas (China and others) which may produce 1,000 million bushels a year. The omissions are of small consequence for most purposes. Our larger "world" series excludes some other areas for which data are available only for a brief period; in recent years these may have produced 200 million bushels.

Our two "world" series show trends of wheat production substantially less steeply upward than the trends shown by less homogeneous series; and even our series probably overstate the increase. The data given show that between 1885–89 and 1927–31, in the "world" excluding the USSR, the increase in wheat production was due 78 per cent to increase of acreage, and 22 per cent to increase of yield.

STANFORD UNIVERSITY, CALIFORNIA

April 1933

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Entered as second-class matter February 11, 1925, at the Post Office at Palo Alto, Stanford University Branch, California, under the Act of August 24, 1912.

Published by Stanford University for the Food Research Institute.

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NEW SERIES, WITH AREAS AND YIELDS, BY COUNTRIES

The main purpose of this study is to present a set of statistics to show, in detail not elsewhere available, the production, acreage, and yield per acre of wheat annually from 1885 in all countries of the world for which reasonably trustworthy statistics are available or can be estimated, for the whole period, with sufficient closeness to yield reasonable totals for certain large groups of countries.

The resulting data furnish a basis, useful either to the economic historian or to the student of the wheat market, for historical-statistical analysis either of wheat production, acreage, or yield per acre over nearly half a century, with such geographical groupings of countries as the investigator may select.

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Secondary purposes are (1) to present statistical series on wheat production in the world excluding China and southwestern Asia, and in the world excluding China, southwestern Asia, and Russia, which refer throughout half a century to production within identical or nearly identical territory; (2) to compare these new series with two well-known series; and (3) to describe the gaps and inconsistencies in available data and the methods whereby gaps were filled and inconsistencies adjusted.

A significant outcome of the investigation is that well-known series on "world" wheat production, excluding or including Russia, substantially exaggerate the average rate of increase during the past half a century. This occurs mainly because (1) the familiar series cover a somewhat larger territory in the later than in the earlier years, and (2) commonly accepted production statistics in earlier years of the period demonstrably understate the facts.

In general, present estimates of acreage in areas not covered by statistics compiled at the time must be somewhat uncertain, and estimates of yield per acre very rough. The student willing to keep in mind all the changes in scope of the original data may find it desirable for some purposes to work chiefly with the original statistics, bearing always in mind the fact that they are not comparable from period to period. This is not feasible for most users of the statistics, as is evidenced by the fact that the serious inconsistencies in the existing data have been wholly lost sight of, not only in broad compilations of "world" production, but in official publications of individual countries whose own statistics are not comparable from period to period. The only generally useful solution of the problem seems to be such a compilation as is here provided of statistics which, though in part based on rather rough estimates, are at least consistent and free of the major defects of previous compilations.

As will shortly appear, no effort is made here to present annual estimates of wheat production in the world *as a whole* in any year. In several countries where much wheat is grown, crop estimation has not yet been attempted, and in certain others it has been undertaken only within the past few years and is still in the early stage. It is impossible to prepare reasonably trustworthy annual estimates of world wheat production from 1885 for a land area that includes China, Turkey, Persia, Arabia, and Afghanistan, and Abyssinia. These important wheat-producing areas have to be omitted not only from our tabulation, but from any other that purports to cover identical territory through the past half-century.

Our most inclusive series is best described briefly as covering the "world excluding China and southwestern Asia." Actually it fails to cover certain other areas where wheat is grown; but these are relatively unimportant, the largest being Abyssinia and Mexico. For

those who wish to analyze wheat prices and trade in relation to wheat supplies, we regard as most useful our series which can be briefly described as covering the "world excluding China, southwestern Asia, and the USSR." This series is, so far as we are aware, the only "world" wheat-production series which excludes the USSR, covers practically identical land areas throughout, and extends back as far as 1885.[1]

All series tabulated in Appendix B (of which the foregoing are numbered 1 and 2) begin with 1885. They are so defined as to include the Indian crop harvested in March–May of that year, the later Northern Hemisphere crops harvested before its close, and the Southern Hemisphere crops harvested near the end of 1885 and in the early part of 1886.

The choice of 1885 as a starting-point was in part dictated by the statistics available. For example, the *Annuaire statistique de la France*, a publication which carries wheat-production statistics in 22 countries back to 1850, so far as they are available (but only every five years before 1876), gives annual data only for the United Kingdom and France in 1850 and 1855, with a decennial average for the Netherlands. Australia is added to the list in 1860; Roumania and Algeria in 1865; Sweden, Canada, and the United States in 1870; Denmark in 1875. The countries about which official statistics give a notion of crop outturns were thus 10 out of 22 in 1875, and only 14 by 1880. There were 18 by 1885 and 20 by 1887. The amount of pure guesswork involved in an attempt to estimate the "world" wheat crop for 1885 is therefore much less than would be involved in an attempt to estimate the crop of 1880. We have chosen to begin with 1885 rather than any other year from 1883 to 1888 merely in order to start at the middle year of the decade.

We present the figures in the detail given in Appendix B partly because no conveniently assembled set of statistics can be found which shows not only the production of wheat, but also the acreage and the yield per acre, over a long period and country by country. Production statistics alone are more commonly encountered. But acreage and yield statistics throw a good deal of light upon a question important to economic historians—the extent to which increase of production reflects increase of acreage on the one hand, and of yield per acre on the other. With reference solely to the world ex-USSR, China, and southwestern Asia, this question is discussed below (p. 258); and the conclusion is drawn that, of the increase (77 per cent) in wheat production between 1885–89 and 1927–31, 78 per cent was due to increase in acreage, and 22 per cent to increase in the average yield per acre.

I. GAPS IN AVAILABLE STATISTICS

Comprehensiveness of Recent Statistics

The most comprehensive detailed statement of wheat production throughout the world is published by the International Institute of Agriculture in its *International Yearbook of Agricultural Statistics*. In the *Yearbook* for 1930–31, a list is given of 68 countries (more precisely, 68 separate administrative areas), with accompanying statistics of wheat production in each area, so far as data were available, for the four years 1927–30. Statistics of production covering the full number of areas are given only for 1927.

Comparison of these 68 areas with a political map of the world indicates roughly the extent of land area for which no statistics of wheat production are given. Europe is well covered, the only omissions being Albania and the small principalities. Australia is cov-

[1] In Wheat Studies, November 1931, VIII, 65, were published production statistics by major producing areas, compiled by Holbrook Working, which achieved approximately the same consistency by breaking the period covered into three sub-periods. The first sub-period, beginning with 1883, showed production for countries accounting for about 90 per cent of the totals represented in the present compilation; the second sub-period, extending from 1893 to 1914, showed production figures agreeing closely with the present compilation; the third sub-period, beginning with 1920, utilized the fuller data available for recent years and showed totals 1–2 per cent above those of the present series. In the totals for all sub-periods in that compilation Russian exports were added to the production statistics for other areas.

ered completely. The territory not covered in South America is large, including Paraguay, Ecuador, Venezuela, and the three Guianas; it is also large in North America, including Greenland, Alaska, Newfoundland, the Caribbean islands, British Honduras, Honduras, Salvador, Nicaragua, Costa Rica, and Panama. For Africa, the list does not include any of the vast French territory except Morocco, Algeria, and Tunis; nor does it include Spanish Morocco, Rio de Oro, Gambia, Portuguese Guinea, Sierra Leone, Gold Coast, Nigeria, Rio Muni, Belgian Congo, British Southwest Africa, Bechuanaland, Portuguese East Africa, Tanganyika, British and Italian Somaliland, and Abyssinia. In Asia, the areas not covered are China (except Manchuria), the Philippines, the Dutch East Indies, British Guinea, North Borneo, the British Malay States, the Federated Malay States, Nepal, Siam, French Indo-China, Afghanistan, Persia, and Arabia.

The lack of wheat statistics from most of these areas, however, is not significant in the measurement of world wheat production. Wheat is probably grown in more than half of these regions. But huge northern regions such as Greenland produce less than is grown on a single large farm in a major wheat-producing country, and within the tropical regions that occupy so much of the land surface, wheat production is confined to very limited areas in the higher altitudes. Only a few of the many countries for which wheat statistics are lacking can be regarded as significant contributors to the world wheat supply.

These few, however, are important. Lacking statistics, no one can name them with absolute assurance. Certainly none lie in North America. In South America, the wheat crops of Ecuador and Venezuela might together equal the quantities produced in some of the smallest producers of Europe. In Europe, a little wheat is presumably grown in Albania. In Africa, the Abyssinian crop is a moderately sizable one. The important areas for which reports are lacking, however, are in Asia—China above all, but presumably also Persia, Arabia, and Afghanistan.

The average Chinese wheat crop is almost certainly one of the world's largest, but how large is quite uncertain. In 1922, Mr. Julean Arnold, United States commercial attaché at Peking, stated that "the amount must be upward of 100,000,000 bushels."[1] The Goode-Baker wheat map[2] gives average annual production in 1918–20 as 536 million bushels. The *China Year Book* for 1931 placed the "normal" crop at 600 million. The Chinese Directorate of Statistics in 1932 published an estimate of 940 million bushels for the "normal" crop of all China.[3] If in recent years the average Chinese crop has in fact run somewhere between 536 and 940 million bushels, China must be one of the three largest wheat-producing countries of the world, ranking with the USSR and the United States.

The combined average wheat crop in Ecuador, Venezuela, Albania, Abyssinia, Persia, Arabia, and Afghanistan may equal close to 150 million bushels. We may say arbitrarily that total production approximates no more than 5 million bushels in the first three of these countries. The Goode-Baker wheat map gives production in Abyssinia as 19 million. Mr. E. S. Haskell places the average Persian crop between 55 and 60 million bushels,[4] pointing out that the only complete estimate, 41 million bushels for the crop of 1925, was in the year of a "famine crop." On the assumption that *per capita* production in Afghanistan and Arabia would be the same as in Turkey and Persia (that is, between 5.5 and 6.0 bushels per year), total production in Afghanistan and Arabia would be around 70 million bushels.[5]

For purposes of broad comparison, we

[1] U.S. Department of Commerce, *Trade Information Bulletin No. 5*, March 1922.

[2] In the Goode-Baker Series of Economic Wall Maps, published by Rand, McNally and Company, Chicago; undated, but ca. 1927.

[3] *Chinese Economic Bulletin*, July 16, 1932, p. 34.

[4] Letter of January 29, 1933. During 1926 and 1927, Mr. Haskell served as Director General of Agriculture for the Government of Persia.

[5] The International Institute of Agriculture gives population estimates of 9 million in Afghanistan and 3.4 million in Arabia. The population of Turkey was 13.6 million in October 1927, and the average crop in 1927–32 was 80 million bushels. Mr. Haskell states that a generally accepted population estimate for Persia is 10 million persons.

think it fair to assume that the average wheat crop in China, Persia, Arabia, Afghanistan, Abyssinia, Ecuador, Venezuela, and Albania is somewhere between 900 and 1,000 million bushels—very roughly, a billion. Now total average "world" production as calculated by the International Institute in 1927–30 was 4,600 million; but in reaching this total no data were included for 7 of the 68 listed areas—namely, Colombia, Manchuria, Iraq, Palestine, Trans-Jordania, Syria and Lebanon, and Turkey. If we determine (employing some rough estimates) the production in these areas and add the figure to the International Institute's published "world" total, the result is an average "world" production of 4,760 million bushels in 1927–30. This is the largest "world" total based on detailed statistics by countries that can be compiled. For the same years, the United States Department of Agriculture (*Yearbook of Agriculture, 1932,* p. 586) gives data from which an average of 4,600 million bushels can be derived as a "world" total; and Broomhall's "world" total is only 4,380 million.

Even the largest total, 4,760 million bushels as derived from statistics covering 68 areas published by the International Institute, does not include the wheat grown in China ex-Manchuria, Persia, Arabia, Afghanistan, Abyssinia, Ecuador, Venezuela, and Albania. The total is probably somewhere around 1,000 million bushels too low to cover total world production. In other words, the highest current estimates of "world" wheat production probably cover only about 80 per cent, more or less, of the wheat actually produced in the world. It is quite impossible to say, however, how close the percentage covered is to 80 per cent, mainly because the outturn in China is so uncertain.

Degree of Comprehensiveness of Our Estimates

Without recourse to processes of estimation which would involve uncontrolled flights of the imagination, it is impossible to reach evaluations of the total world wheat crop year by year from 1885. The evidence regarding the size even of a "normal" Chinese wheat crop is discrepant, as we have seen; and evidence regarding annual fluctuations is practically nonexistent. Still less is known of average outturns and annual fluctuations in Arabia, Persia, Afghanistan, Abyssinia, and numerous smaller wheat-producing countries. Omissions from world totals of outturns in such countries as these are omissions by necessity, and are taken for granted in all familiar compilations.

Sharply in contrast, there are many countries, both large and small wheat-producers, for which estimates of wheat production have been issued regularly since 1885. Such estimates are mostly included as a matter of course in the familiar compilations of world wheat production. If data from a few of these countries are omitted, it is because the quantity of wheat involved is too small to assume significance.

A third group falls between these extremes. Official statistics may be available for some countries of this group only for a few years of the 48 between 1885 and 1931; for others, data may be available for all of the 48 years except one or two. Estimation designed to fill the gaps is obviously easier and more likely to be valid when the gaps are few than when they are numerous. If only four or five official evaluations of wheat crops in a particular country are available, the basis of estimation for the other 43 or 44 years is almost as slender as the basis for estimating annual outturns in China. In the process of preparing as inclusive a series of estimates as possible of the world wheat crop within a land area that remains the same each year,[1] further omissions therefore become necessary.

Our series designated "world" wheat production (Series 1, Appendix B) represents a summation of 40 separate post-war series[2] on production in various countries (counting the British Isles as one country). This is a sub-

[1] The estimates published by the U.S. Department of Agriculture (e.g., *Yearbook of Agriculture, 1932,* p. 586) do not apply to the same land area from year to year, but cover more territory in later than in early years of the period 1890–1931. See below, p. 256.

[2] For years prior to 1919, the number of series is 39, the difference arising solely from changes in names of countries and in national boundaries within eastern Europe.

stantially smaller number of series than is listed by the International Institute in its statement of wheat production (67 areas, if for purposes of comparison we include the Irish Free State as part of the British Isles). The areas listed by the International Institute but not included in our series are as follows: Luxemburg, Malta, Colombia, Guatemala, Mexico, Manchuria, Cyprus, Formosa, Iraq, Kwantung, Palestine, Trans-Jordania, Japanese Sakhalin, Syria and Lebanon, Turkey, Cyrenaica, Eritrea, Kenya, the Anglo-Egyptian Sudan, Tripolitania, Bolivia, Brazil, Peru, Angola, Basutoland, Northern Rhodesia, and Southern Rhodesia.

Amongst these 27, it is possible that the statistical basis for estimating wheat crops annually from 1885 to 1931 is as adequate for Luxemburg, Malta, Mexico, Cyprus, and Peru as it is for several countries whose crops we have undertaken to estimate. The omission of these five countries is accordingly partly arbitrary. For each, however, the gaps in available data are numerous. Omission of these five has little influence on a world total, for their production in 1926–29 averaged only 17 million bushels.

The remaining 22 omitted countries produced about 150 million bushels of wheat on the average in 1926–29. Of this quantity, nearly 120 million bushels was produced in only two, Turkey and Manchuria. Knowing the size of crops in these two countries (and others of the 22) in recent years, one could formulate surmises for earlier years. But the results would be highly unreliable unless there were clear evidence both of the direction of trend in acreage and of the probable direction and amount of year-to-year change in yield per acre. Evidence of this sort is not available.

From the point of view of the student of the wheat market, omission of all 27 of the areas named above from a series purporting to show world wheat production is of trifling importance. In the main, production in these areas individually or in the aggregate bears only remotely on international trade in wheat or on wheat prices in Europe and in the important wheat-exporting countries.

From the point of view of the economic historian, or of the student who wishes to investigate as closely as possible the trends of world wheat production and consumption, the omissions are less negligible. There can be no assurance that the trend of our series on "world" wheat production would correspond precisely with the trend of a series so constituted as to include all countries for which data are available in recent years. Still less is there assurance that the trend of our series would correspond closely with the trend of a series so constituted as to cover the whole world. It is possible to say that our series understates by some 170 million bushels the amount of wheat produced on the average in 1926–29 in 68 countries listed by the International Institute of Agriculture; but it is not possible to say how large the understatement was on the average in an earlier period, say 1885–89. It is likewise possible to show that our series understates the average annual wheat crop of the world as a whole by something like 1,200 million bushels in recent years. But it is not possible to say even within very wide limits how large the understatement may be in respect to periods antecedent to the past decade, especially a period as early as the decade 1885–95.

Gaps in Data from 1885

The amount of estimation necessary in order to fill gaps in the available wheat production statistics even of 40 countries (post-war boundaries) is substantial. By "estimation" we mean either (1) the process of arriving at a figure missing from the source documents; (2) the process of supplementing a figure appearing in those documents but palpably not intended to cover the whole territory of the country concerned; or (3) the process of adjusting a figure appearing in source documents, but demonstrably in error. It should be observed in passing that gaps in available statistics of wheat acreage and yield per acre are more numerous than gaps in available statistics of production. Here only gaps in production statistics are described in detail, though the gaps in acreage and yield per acre statistics are made clear in Appendix B.

So far as concerns statistics from 1919 to 1931, the gaps are few. The 40 countries included in our world total are listed below, grouped by continents.

NORTH AMERICA: United States, Canada.
SOUTH AMERICA: Argentina, Chile, Uruguay.
AUSTRALASIA: Australia, New Zealand.
AFRICA: Algeria, Tunis, French Morocco, Egypt, Union of South Africa.
ASIA: India, Japan, Chosen.
EUROPE: USSR (including Asiatic territory), Spain, Portugal, France, Italy, British Isles, Belgium, Netherlands, Switzerland, Germany, Denmark, Sweden, Norway, Finland, Estonia, Lithuania, Latvia, Poland, Czecho-Slovakia, Austria, Hungary, Jugo-Slavia, Roumania, Bulgaria, Greece.

Among these 40 countries, post-war data are missing or incomplete only for the USSR in 1919–24 and 1931–32, and for Czecho-Slovakia and Hungary in 1919.

Many more gaps appear in the available statistics from 1885 to 1918. In Appendix B we present statistics for 39 separate areas in these years. With regard to names, these 39 differ in some instances from the 40 areas for which post-war statistics are given; and in some instances identical names (e.g., Austria, Hungary) apply to different land areas in the pre-war and post-war years. The total land area covered by 38 of the 39 pre-war areas, however, is the same as the land area covered by the 40 post-war areas. The single area which has to be omitted from the pre-war list in order to achieve this comparability is "Other Areas Lost by Russia," a grouping made up of the pre-war Russian provinces of Livonia, Courland, Estonia, Vilno, Kovno, Gradno, and half of Volhynia. Statistics for this pre-war area are given in order that pre-war "world" production statistics may be presented comparable in land area covered with post-war "world" production excluding the USSR.

The gaps in available published production statistics, 1885–1918, may be described under four rubrics.

(1) For 19 out of the 39 areas, official production statistics not only are available (or can be derived from acreage and yield statistics) for each of the years 1885–1918, but can be accepted as published. These areas are Canada, Australia, India, France, Belgium, British Isles, Netherlands, Denmark, Norway,[1] Sweden, Finland, Spain, Portugal, Austria, Hungary, Bulgaria, Algeria, New Zealand, and Japan.

(2) For 4 out of the 39 areas, official production statistics are available (or can be derived from acreage and yield statistics) for each of the years 1885–1918, but some of the figures require adjustment. These areas are the United States, Russia, Italy, and Germany.

(3) For 13 out of the 39 areas, official production statistics are available for only part of the years 1885–1918; but the missing years can be filled in by resort to fairly simple methods of estimation. These areas are Argentina, Chile, Uruguay, Switzerland, Greece, Bosnia-Herzegovina, Congress Poland, Serbia, Roumania, Morocco, Tunis, Egypt, and Chosen.

(4) Finally, for 3 out of the 39 areas, official production statistics are available for only part of the years 1885–1918; and in some other years the available official data require adjustment. These areas are Bessarabia, "Other Areas Lost by Russia," and the Union of South Africa.

The following tabulation shows in detail the extent to which our estimates have been used to fill in gaps in the production statistics, or to adjust available statistics, of groups 2, 3, and 4 described above. The letter *O* shows years for which official statistics were available and usable. An *A* is shown in any year for which an official crop estimate was available, but required adjustment. An *E* is shown in any year for which an official crop estimate could not be found.

[1] Norway is included in this group although we have production statistics only for 1890 and 1900–18. From data giving average yields per acre in 1885–89 and 1891–99, and acreage statistics in 1875, 1890, and 1900, it is possible to derive production statistics for 1885–89 and 1891–99 which seem to be sufficiently near the truth to serve the general purpose of this study. It is not pretended that these statistics represent the actual course of production with sufficient closeness for specific analysis of Norway's own position.

	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18
Group 2																																		
United States	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	O	O	O	O	O	O	O	O
Russia	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	O	O	O	O	O	O	O	O	O	A	O	A
Italy	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Germany	A	A	A	A	A	A	A	A	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Group 3																																		
Morocco	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	O	O	O
Greece	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	O	E	E	O	O	O	O	O	O
Egypt	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	O	O	O	O	O	O	O	O	O	O
Chosen	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	O	O	O	O	O	O	O	O	O	O
Congress Poland	E	E	E	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	E	E	E	E	E	
Argentina	E	E	E	E	E	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Uruguay	E	E	E	E	E	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Switzerland	E	E	E	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	E	E	O	O	O	O	O	O	O	O	O	O	O
Tunis	E	E	E	E	E	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Bosnia-Herzegovina	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	E	E	E
Chile	E	E	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Serbia	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	E	E	
Roumania	E	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	E	O	O	
Group 4																																		
Bessarabia	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	O	A	O	O	O	O	O	O	O	O	A	A	E	E	E
Other lost by Russia	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	E	E	E
Union of South Africa	E	E	A	A	A	A	A	E	A	A	A	A	A	A	A	E	E	E	A	E	E	E	E	A	E	O	O	O	O	O	O	O	O	O

The number of adjustments and estimates was naturally largest in the first few years following 1885, when many countries had not yet begun to collect crop statistics, or were using methods later supplanted. The smallest number of adjustments and estimates was necessary in 1908–13; with the war, the number increased. Adjustments (which always represent increases of published official data) involved about 225 million bushels of wheat in 1885; 190 million in 1895; 85 million in 1905; 15 million in 1915. Estimates involved, in the same years, about 160, 70, 60, and 20 million bushels. The total quantity involved in adjustments and estimates in 1885 was thus about 385 million bushels, which represents 17 per cent of our "world" crop in that year. The percentage falls very low around 1908. Adjustments are quantitatively more important than estimates until 1907, the date when Russian statistics first covered the whole territory of the Russian Empire.

II. METHODS OF COMPILATION AND ESTIMATION

Changes in Boundaries

Changes in national boundaries, mainly following the war in 1914–18, give rise to insuperable difficulties in the preparation of detailed wheat-crop statistics by countries that can be regarded as strictly comparable from year to year over the whole period 1885–1932. In western Europe, Germany lost territory to France, Denmark, and Poland. In eastern Europe, Russia lost territory to the new nations of Estonia, Lithuania, Latvia, and Poland; and to Roumania. Bulgaria lost territory to Greece and Roumania. The truncated nations of post-war Austria and Hungary remained from the Austro-Hungarian Empire; but much Empire land went to Roumania and the new nations of Czecho-Slovakia, Poland, and Jugo-Slavia, and smaller areas passed to Italy. In the absence of wheat statistics applying to small administrative areas, it is impossible to construct a series showing wheat production from 1885 to 1932 within any one of the 16 post-war nations mentioned above except the USSR.

National boundaries remained unchanged,

however, in 22 of the 40 post-war countries for which data are given in Appendix B; and one may assume identical boundaries in two others (South Africa and Chosen, for which data prior to 1909 have to be estimated). Moreover, the territory gained by Italy and France, and the territory lost by Germany, involved wheat acreage and production so small in relation to the totals in each country that one may regard the wheat-crop statistics of each as adequately comparable from 1885 to 1932. This would not hold for rye-crop statistics of Germany, for the territory lost to Poland produced a substantial quantity of rye. The boundary changes affecting Bulgaria and Greece were also of minor importance.

Appendix B therefore contains 10 post-war series for which reasonably comparable data for 1885–1918 cannot be prepared. The countries involved are Czecho-Slovakia, Jugo-Slavia, Poland, Estonia, Lithuania, Latvia, Austria, Hungary, Roumania, and Denmark. Pre-war and war series, however, are given for 9 areas the territory of which went to one or the other of the 10 post-war countries; these 9 areas are Serbia, Bosnia-Herzegovina (both to Jugo-Slavia), Congress Poland (to Poland), Bessarabia (to Roumania), Other Areas Lost by Russia (to Estonia, Lithuania, Latvia, and Poland), Austria, Hungary, Roumania, and Denmark. Wheat production and acreage in the 9 pre-war areas as a group, excluding Denmark, would be closely comparable with data for the 10 post-war areas excluding Denmark. Precise comparability would not be achieved because the pre-war grouping includes some territory which went to post-war Italy, and excludes some German territory that went to post-war Poland.

A major purpose in preparing the pre-war series of wheat production and acreage in these 8 eastern European countries was to obtain a summation which yielded closely comparable statistics, 1885–1932, for a *group* of countries in eastern Europe. Our Series 24 satisfies this requirement, covering territory practically the same in all years. This series includes, in addition to the 8 pre-war and 9 post-war eastern European countries named in the preceding paragraph, the data for pre-war and post-war Finland, Bulgaria, and Greece. Eastern Europe as we define it therefore includes both in pre-war and post-war years the European land area lying between the present boundaries of the USSR on the east and the present boundaries of Italy–Switzerland – Germany – Sweden – Norway on the west, except that the pre-war area includes some territory now lying in Italy and excludes some territory now lying in Poland. This territorial discrepancy is very small in relation to the total area involved.

Since closely comparable wheat statistics can be compiled for eastern Europe from 1885 to 1932, it is possible also to compile closely comparable data for the "world" excluding Russia, as in Appendix B, Series 2. Boundary changes present no other outstanding difficulties. Consequently, if our series for eastern Europe is employed, any desired summation of individual series for other areas will prove to be closely comparable with regard to territory covered. Certain groupings given in Appendix B (Series 3, 4, 16, 36, and 44) are comparable in this important respect.

The process of preparing comparable series for groups of countries throughout the period 1885–1932 necessitated the use of some arbitrary method that would permit series to be "spliced" in such a way that changes in boundaries would not involve double counting or omissions of wheat production and acreage. We have sought in all instances to utilize or estimate data as of pre-war boundaries up to and including 1918. We have not been able in all instances to ascertain to what boundaries the statistics apply; there may therefore be some slight and unimportant omission or double counting, especially in 1917 or 1918. The main use of the method, however, was in estimating data to fill gaps in the statistics of eastern European countries; missing data for 1914–18 were filled with reference to pre-war boundaries and statistics, while missing data for 1919 were filled with reference to post-war boundaries and statistics.

Primary and Secondary Sources

An ideal method of preparing the detailed statistics given in Appendix B would be to

consult and collate the statistics officially gathered and published in each country. Accessible files of official documents were not adequate to permit us to employ this method.

The procedure actually followed was different as regards post-war data (1919–32) and pre-war and war-time data (1885–1918). The post-war statistics in Appendix B for 1920–32, except those for Russia and the British Isles (see Appendix A, paragraphs 1 and 17), are figures transmitted to us or published by the United States Department of Agriculture; without exception these figures are drawn from official documents directly by the Department, or indirectly through the International Institute of Agriculture. The post-war statistics for 1919, except a few which are our estimates and the Russian and British figures, are mainly conversions of figures published by the International Institute of Agriculture, which derives its data from official sources of the several countries. It seems safe to say that the post-war statistics given in Appendix B correspond exactly to what would be found in the official documents of each country. Our data, of course, are expressed in units of 60-pound bushels and of acres, while official data for foreign countries are expressed in different units, mainly quintals and hectares.

The pre-war and war-time statistics in Appendix B represent (aside from the estimates, which are considered below) compilations from and collation of source documents both primary and secondary. The precise sources of data are given in Appendix A. Primary official sources provide all of the available[1] production statistics for 11 out of the 39 pre-war areas.[2] The primary sources further yielded production statistics covering more than 5 years of the period 1885–1918 for 13[3] of the remaining 29 pre-war areas. Secondary sources provide all of the data, so far as available, for 15[4] of the pre-war areas; only one of these areas, Argentina, could be ranked as a major wheat-producing country just before the war.

The distinction between primary and secondary sources, however, appears to be unimportant. In the first place, comparison of data from primary and secondary sources showed only minor discrepancies. In the second place, the secondary sources themselves represent authoritative and careful compilations of data from primary sources. The important secondary sources are as follows: (1) the files and annual *Yearbooks* of the United States Department of Agriculture; (2) Frank R. Rutter, *Cereal Production of Europe* (U.S. Department of Agriculture, Bureau of Statistics Bulletin 68, Washington, 1908); (3) the *Annuaire statistique de la France*, 1926 and 1928; and (4) successive issues of the *International Yearbook of Agricultural Statistics*. For Russian data, extensive use was made of Vladimir P. Timoshenko, *Agricultural Russia and the Wheat Problem* (Grain Economics Series of the Food Research Institute, No. 1, Stanford University, California, 1932). The files of the United States Department of Agriculture, Rutter's bulletin, and Timoshenko's book give exact and complete citations to the primary sources from which data were derived. The data in the *Annuaire statistique*, the *International Yearbooks*, and the United States Department of Agriculture *Yearbooks* are specifically stated to be derived from official sources, though detailed citations are not given.

For three reasons, various discrepancies may appear, as between the several primary and secondary sources, in the production statistics of particular countries. (1) From time

[1] Some series do not include data for all years of the period 1885–1918, whether from primary or secondary sources.

[2] The United States, Canada, Australia, France, Italy, Germany, the British Isles, Bessarabia, Other Areas Lost by Russia, Algeria, and New Zealand. For these areas the statistics in Appendix B are taken or converted directly from primary sources, or are adjusted statistics based wholly on data from primary sources.

[3] These areas are Russia, India, the Netherlands, Denmark, Norway, Sweden, Bulgaria, Hungary, and Spain (for all of which data were found covering more than half of the 34 years 1885–1918); and Roumania, Congress Poland, Austria, and the Union of South Africa.

[4] These areas are Argentina, Belgium, Switzerland, Bosnia-Herzegovina, Serbia, Finland, Portugal, French Morocco, Tunis, Greece, Egypt, Japan, Chosen, Chile, and Uruguay.

to time data have been revised, but the revisions may not have been included in a series given in a secondary source, or in the particular primary source available to us. (2) The conversion factors employed in the secondary sources may have been different. (3) Misprints or numerical errors occasionally appear either in primary or in secondary sources.

The discrepancies (which proved on the whole to be unimportant, though rather numerous) were resolved as follows. Throughout the whole period 1885–1918, data appearing in primary sources were accepted as more authoritative than data from secondary sources. When a long series in a specific secondary source was in accord throughout part of its length with a shorter series in a primary source, that secondary source was accepted. For data covering the period 1885–1900, among the secondary sources the documented files of the United States Department of Agriculture were generally[1] given the preference over Rutter's bulletin (which would not include any revision published after 1908), over the *Annuaire statistique* (which is not documented and may or may not include late revisions), or over the Department's *Yearbooks* (which are not documented and usually present data for only a few years, so that revisions of early data are not included). For data covering the period 1901–18, among the secondary sources preference was given to the *International Yearbooks of Agricultural Statistics;* production statistics in the files of the United States Department of Agriculture were not consulted over this period.[2]

This general procedure resulted in series on wheat production, acreage, and yield per acre which we believe can be described as about as complete and accurate as any that might be obtained through the much more laborious process of compiling and collating data from all of the official source documents in existence. Some discrepancies, however, would doubtless be found if this were done. In particular, it has proved impossible to appraise the data given in secondary sources for Portugal, Belgium, Switzerland, Tunis, and Egypt in several years.

[1] For Belgium in 1888–1900, however, we have given the preference to data in the *Annuaire statistique.*

[2] Data on *acreage* in the files, however, were practically without exception in accord with data in the *International Yearbooks.*

Adjustments of Available Data, 1885–1918

In Section I above it was stated that the available production statistics of certain areas in certain years before 1919, whether from primary or from secondary sources, required adjustment before they could be accepted as component items of consistent series. The areas and years affected are the United States (1885–1910), Russia (1885–1906 and 1916), Italy (1885–99), Germany (1885–92), Bessarabia (1885–1903, 1905, 1914–15), Other Areas Lost by Russia (1885–1915), and the Union of South Africa (1887–1900, 1903, 1908).

Adjustment of the official United States statistics, 1885–1910, represents the work of Holbrook Working, presented in "Wheat Acreage and Production in the United States: A Revision of Official Estimates."[3] The official estimates of production minus the reported exports and estimated seed requirements during this period, especially in 1885–1902, fall far below the trend of the quantity of wheat milled for domestic consumption, as determined from censuses of flour production in 1879, 1889, 1899, and 1904. Since exports, seed use, and quantities milled for domestic consumption can be appraised fairly accurately, at least with regard to level of trend, it follows that the standing official production estimates must be too low. Working's adjustments increase the official estimates to a degree such that the resulting figures of production are large enough to be consistent with summations of (*a*) reported exports, (*b*) estimated seed use, (*c*) ordinates of trend of wheat ground for domestic consumption, as determined from reported flour production in census years, and (*d*) estimated quantities fed and wasted, based on the difference between official production estimates and trend of domestic flour retention after 1900. They

[3] Wheat Studies, June 1926, II, 237–64.

are also consistent with estimated changes in stocks, and with reported year-to-year changes in acreage. Working accepted the official estimates of yield per acre, and the year-to-year changes in acreage (after 1880), except as the latter had to be revised to bring the general level of the corresponding production estimates into line with the statistics of disposition.

As may be seen from comparison of Series 7 and 8 in Appendix B, the adjusted production statistics exceed the official estimates. Five-year averages of the excess are as follows:

Period	Million bushels	Percentage
1885–89	100.7	23.1
1890–94	144.5	48.4
1895–99	69.6	11.1
1900–04	18.2	2.7
1905–09	4.9	0.7

The United States Department of Agriculture is now engaged in a revision of official estimates; the revisions from 1919 have already been published and appear in Appendix B. We are authorized to state that the revisions for earlier years, as yet unpublished, will not differ materially from the estimates now standing. Unless the revised estimates substantially exceed those now standing, it will presumably prove difficult to reconcile the revised estimates with facts and tenable hypotheses regarding disposition statistics. We regard Working's adjustments as representing the facts on wheat production in the United States from 1885 to 1910 better than other series available at present. In the seven years since they have been published, they have not been criticized adversely. The forthcoming official revisions, however, may perhaps lead us to replace the data on yield per acre given in Series 8, and may necessitate alteration of the acreage statistics even if reason appears to continue giving preference to the general level of Working's adjustments of production statistics.[1]

Our adjustments of Russian official statistics (1885–1906 and 1916) are designed not to correct data which appear too low in the light of disposition statistics, but to supplement data which as they stand apply to part rather than all of the Russian Empire. From 1885 to 1887 the statistics covered only part of European Russia; the Polish and North Caucasian provinces of European Russia, and all provinces of Asiatic Russia, were omitted. From 1888 to 1891 the Polish provinces were included; from 1892 to 1894 the data cover all of European Russia, including both the Polish and the North Caucasian provinces. From 1895 to 1906 the data cover not only all of European Russia, but Asiatic Russia with the exception of Turkestan, Transcaucasia, and the Far East; and only from 1907 to 1915, and in 1917, do the statistics cover the whole Empire. In 1916, the data apply only to European Russia. The invaded territory, however, is not covered in 1914–17, and we have not attempted to fill this gap.

The problem was therefore to estimate production (*a*) in the Polish provinces, North Caucasus, and all of Asiatic Russia from 1885 to 1887; (*b*) in North Caucasus and all of Asiatic Russia from 1888 to 1891; (*c*) in all of Asiatic Russia from 1892 to 1894, and in 1916; and (*d*) in Turkestan, Transcaucasia, and the Far East from 1895 to 1906.

From official statistics it was possible to ascertain the wheat acreage in the Polish and North Caucasian provinces combined from 1893 to 1895, and the wheat acreage in the Polish provinces in 1887 and 1892. Rough interpolation and extrapolation of the Polish data yielded a series on probable Polish acreage from 1885 to 1892. These data added to estimates of total area in the European provinces excluding Poland and North Caucasus (these estimates themselves being based on data for 1881, 1887, and 1892) gave a series on probable acreage in European Russia excluding North Caucasus. The area in North Caucasus was reported for 1893 and 1895;

[1] Since this revision of the official estimates of production and acreage was made, Working has prepared estimates of changes in total United States stocks of wheat between the beginning and the end of each crop year from 1896–97 (WHEAT STUDIES, February 1928, IV, 135–80). These permit more detailed appraisal of production estimates in the light of disposition. They result in evidence that for 1898–1900 even Working's revised production estimates are 5–6 per cent too low, and for 1896 and 1901 perhaps 5 per cent too high. These were years for which he regarded his estimates as most uncertain.

and these figures, supplemented by interpolations and extrapolations based on the rate of increase shown by the derived series on European Russia excluding North Caucasus, yielded a series on probable acreage in North Caucasus. Then totals could be made showing probable acreage in all of European Russia, from 1885 to 1892.

In much the same way, overlapping official series showed the extent of wheat acreage in Asiatic Russia excluding Turkestan, Transcaucasia, and the Far East, from 1895 to 1916. The trend of these data was slightly upward from 1895 to 1907, and backward extrapolation of that trend seemed appropriate to fill in the missing years 1885–94. Thereupon it became possible to compile a series showing probable area in all of the Russian Empire except Transcaucasia, Turkestan, and the Far East over the period 1885–1916. The area in these three Asiatic provinces was reported for 1907–15, and was tending to increase slowly during these years. On the assumption that the trend was about the same in 1885–1906 as in 1907–15, data were supplied for the missing years. This was the final step in estimation of probable total acreage in the Russian Empire, 1885–1906. A figure for 1916 was supplied through rough estimation of the probable acreage in Turkestan, Transcaucasia, and the Far East, for which data were not reported in that year. Our figure for acreage in 1917, necessarily a very rough approximation in the absence of any reported statistics, is of a magnitude which, taken in relation to reported production, gives a figure for yield per acre in accord with the trend and with evidence that the yield was rather poor in 1917.

After areas were estimated, yields per acre were estimated on the assumption that yield in unreported areas changed from year to year about like yields in reported areas. From 1894 to 1905, yields per acre in all of European Russia exceeded yields per acre in European Russia excluding Poland and North Caucasus by 0.3 bushel on the average. Yields per acre in European Russia exclusive of Poland and North Caucasus were officially reported annually from 1885 to 1893; and by the addition of 0.3 bushel to these figures, the probable annual yields per acre in all of European Russia were calculated. From 1895 to about 1907, before wheat acreage expanded greatly in Asiatic Russia, the yields per acre in the Empire ex-Turkestan, Transcaucasia, and the Far East exceeded yields in European Russia by about 0.2 bushel on the average. The addition of this quantity to estimated and reported yields per acre in European Russia gave a series on probable yields per acre in the Empire ex-Turkestan, Transcaucasia, and the Far East 1885–93, with reported figures 1894–1915. Since this series showed little difference from yields in the Russian Empire as a whole, 1907–15, it was used as representing yield per acre in the Empire.

The production statistics in Series 6, so far as they differ from the official data in Series 5, represent our estimates of total acreage in the Russian Empire multiplied by our estimates of yield per acre. By five-year periods, the excess of our adjusted production statistics over the incomplete official statistics is as follows:

Period	Million bushels	Percentage
1885–89	128.4	55.5
1890–94	104.5	33.3
1895–99	51.1	12.3
1900–04	61.0	11.1

Our adjustments of official Italian production statistics, 1885–99, resemble those made for the United States. If one adds to the official crop statistics annual data on Italian net imports, the resulting series shows a sharp change in its general level, amounting to around 20–30 per cent, between years prior to and after 1900. This change, if reflecting the facts, must mean that per capita wheat consumption in Italy suddenly rose 20 to 30 per cent; and this is hardly credible. It appears that the Italian system of crop estimation was changed about in 1901, and again about in 1911. The first estimate of the crop of 1900 was 121 million bushels.[1] Later, this figure was raised to 135 million bushels;[2] still later to 147 million.[3] It is clear that in 1911

[1] *Bolletino di notizie agrairie*, November 1900, No. 28, p. 1210.

[2] *Annuario statistico Italiano*, 1904, p. 252.

[3] *Ibid.*, 1911, p. 100.

revised data were published for the crops of 1900–08, and that these data are currently reproduced in official Italian publications.[1] Apparently, however, the data for 1885–99 were never revised. We therefore apply to the 1885–99 figures an increase of 22 per cent; that is, the amount by which the final figure for 1900 exceeds the first estimate of the 1900 crop. This increase gives a trend of domestic utilization which is reasonable in the light of what is known of per capita wheat consumption. The absolute amount of our adjustment averages 46 million bushels in 1885–89.

In Germany also the methods of crop estimation were changed.[2] The first crop estimates for 1893–98 were revised upward by 10.8 per cent, but revisions were not made of earlier crops. We have raised the official data for 1885–92 by 10.8 per cent. The increase in absolute figures amounts to 10 million bushels on the average in 1885–89.

Other adjustments involve smaller magnitudes, and the somewhat complicated processes need not be described in detail. Fragmentary data on South African production prior to 1910, drawn entirely from secondary sources, were such that a sharp change in level was suggested as between 1885–1909 and 1910–18. Although the documentation in the sources provided no clue, it seemed probable that the published data referred to production in the Cape Colony alone. Using the published statistics to indicate the direction and magnitude of year-to-year changes in yield per acre and assuming that the acreage was increasing rather slowly, we have reached estimates of production in 1885–1909 that yield a more reasonable trend, 1885–1918, than the published data from secondary sources.

So far as concerns Bessarabia and Other Areas Lost by Russia, official statistics were in general such that satisfactory data on total acreage could be had for 1887, 1893, 1899, 1900, the average for 1901–05, and annually for 1906–13; on total production, for the average 1901–05, and annually in 1904 and 1906–13. In addition, official data covering production, acreage, and yield per acre on peasant land only were available (with minor exceptions) for each year of the period 1885–1915. From these data it was possible to ascertain in several years the ratio of peasant land in wheat to total land in wheat, and hence to estimate wheat acreage in all years of 1885–1915. Other official data sufficed to show the ratio of yield per acre on peasant land to yield per acre on all land, so that a series showing yields per acre annually, 1885–1915, could be calculated. The estimated total area multiplied by the estimated yield per acre gave the production statistics shown in Appendix B, Series 32 and 33.

Estimates to Fill Gaps

As we have seen, there were 13 areas for which production statistics for several years of the period 1885–1918 could not be found either in primary or in secondary sources, and in addition there were 2 areas (Bessarabia and Other Areas Lost by Russia) for which most of our figures represent adjustments of official data, but some represent our estimates. The processes of filling the gaps in these 15 series can be discussed most conveniently if we consider first the series in which the gaps are few and come early in the period; second, the series in which the gaps are numerous and in early rather than in late years; and, finally, the series in which the gaps are few and come mainly in the war years.

In the first group fall Argentina, Chile, Uruguay, and Switzerland. No official Argentine production statistics were found for the 5 years 1885–89.[3] Reliable estimates, however, could be formulated. Later data showed a smooth trend of domestic utilization (crops minus calendar year net exports). This trend projected backward indicated satisfactorily how much wheat must have been consumed within the country in each of the years 1885–89, for there can be little doubt that carry-

[1] See especially *ibid.*, 1931, p. 592.

[2] See Rutter, *Cereal Production of Europe*, p. 66; also Alonzo E. Taylor, "Prewar Crop Estimates in Germany," *Agricultural Yearbook, 1919*, pp. 61–68.

[3] Certain data described as "mere approximations" from trade sources are given for these years in U.S. Department of Agriculture, Section of Foreign Markets, *Circular No. 10*, October 1896. These figures, except for 1889, are palpably too low; that for 1889 is too high.

overs did not vary materially from year to year. To these ordinates of trend were added the calendar year net exports; the crop estimates thus derived cannot be far from the truth. Data for Chile were lacking only in 1885 and 1886. We have assumed that yields per acre were of average size, and that acreage was in line with the trend from 1901 to 1918. The same assumptions were employed to fill gaps in data for Uruguay (1885–89) and Switzerland[1] (1885–87 and 1906–07).

In the second group, characterized by numerous gaps in the early statistics, fall Greece, Tunis, Morocco, Egypt, and Chosen. In filling the gaps, we have followed the general principles (1) of attempting to ascertain probable trends in acreage during the missing years, by reference both to trends in later years and in neighboring countries, and (2) of applying to estimated acreages the average yields per acre in later years. For reasons given below, these principles seem most likely to result in reliable production statistics for Egypt, and least likely to result in reliable statistics for Greece and Chosen. Data for Greece are lacking from 1885–1910 and 1912–13. The basis for estimation is very insecure; by way of illustration, one authority quoted by Rutter[2] estimated the acreage early in the twentieth century at 690 thousand acres, while another authority used 1,401 thousand acres. In our calculations a trend of acreage is assumed such that the increase is close to 50 per cent between 1885 and 1911; and yields per acre are taken constant at the average (rounded) in later years for which data are reported. Data for Tunis are lacking only in 1885–89, and we have supplied constant figures slightly below the level of the following decade. Statistics for Morocco were lacking from 1885 to 1914. We have assumed that acreage in this period was increasing at approximately the same rate as in Algeria and Tunis, and that yield per acre was constant at the average (rounded) level of 1915–31. For Egypt, no production statistics were found covering the period 1885–1908. From 1895 to 1908, however, acreage statistics were available; and these multiplied by the average yield per acre in 1909–31 (rounded) result in fairly reliable production statistics, since yields per acre are not very variable in Egypt. In order to supply the production statistics from 1885 to 1894, it was assumed that the acreage was then increasing at the same rate as in 1895–1914, and that yield remained constant at the 1909–31 average. To supply data for Chosen, missing from 1885 to 1908, we assume yields per acre constant at the (rounded) 1909–31 level, and acreage increasing rather slowly to the level of 1910–12, though a little more rapidly than did the acreage in Japan.

The areas of the third group—those for which data are missing mainly in the war years—are Serbia (1916–17), Bosnia-Herzegovina (1916–18), Bessarabia (1916–18), Other Areas Lost by Russia (1916–18), Roumania (1885 and 1917), and Congress Poland (1885–87 and 1914–18).

Since these areas all lie in eastern Europe, it was possible to estimate the missing wartime statistics of each by reference to the statistics of acreage and yield per acre available for adjacent areas—Hungary, Austria, and Bulgaria. In general these data showed declines in both acreage and yield per acre in 1915–18, with an especially low yield per acre in 1918. Our estimates of acreage and yield per acre, and hence of production, accord broadly with the percentage changes shown in the adjacent areas for which data were reported. To supply the missing figure for Roumania in 1885, we have assumed acreage as in 1886, and yield per acre the average (rounded) in the period 1886–1900. To supply the missing figures for Congress Poland in 1885–87, the acreage (reported in 1887) was taken in line with the 1887–93 trend; the yield per acre in 1885 and 1887 at the average for 1888–97; and the yield per acre in 1886 well below this average because in the adjacent area the yield per acre of winter wheat was distinctly low.

[1] The reported acreage and production statistics for Switzerland result in yield per acre statistics which change abruptly in level between 1888–1905 and 1909–18. There appears to have been a drastic change in the measurement of acreage. Both the acreage and the yield per acre statistics look unreasonable for the period 1885–1905. Areas were not estimated annually in Switzerland and in several other countries before the war.

[2] *Op. cit.*, p. 70.

In concluding this description of methods, it is necessary to emphasize the fact that the objective was to compile series on wheat production, acreage, and yield per acre which *for large land areas or for certain groups of countries* can be taken as homogeneous and reasonably representative of the facts throughout the whole period 1885–1932. We have not sought to estimate production, acreage, or yield with the utmost precision in every individual country in every year, but merely to create an assurance that our figures were approximately correct as to general level. The data for groups of countries given in Appendix B are such that our rougher estimates play a very small part in determining the trend or the fluctuations in the several series. The part which they play is mainly to smooth out or lessen annual changes—to make the curves a little less variable than presumably they would have been if official statistics had been available for each country in every year. The method of adjustments applied to Russian Empire statistics, however, may tend slightly to exaggerate the year-to-year fluctuations.

Adjustments and Estimates of Post-War Data

Adjustments and estimates of post-war data were necessary only for Hungary and Czecho-Slovakia in 1919, and the USSR in 1918–24. Czecho-Slovakian and Russian statistics were incomplete as to territory covered, and no Hungarian data were available. The Czecho-Slovakian and Hungarian figures were supplied with reference to acreages in later years and to yields per acre in adjacent countries in 1919. For the USSR, the Gosplan's data 1918–24 did not cover production in Turkestan, Transcaucasia, and the Far East, and it was necessary to supply figures for this area. From the Gosplan's own data, it was possible to ascertain acreage and production in this area from 1925; and the Central Statistical Office has published figures for 1923 and 1924. For 1923 and 1924, therefore, we have added the data of the Central Statistical Office covering Turkestan, Transcaucasia, and the Far East to those of the Gosplan covering the rest of the USSR. For 1918 to 1922, we have assumed that production was fairly stable in Turkestan, Transcaucasia, and the Far East (where much wheat is grown under irrigation), the yields per acre running a little below the 1925–29 level.

We have not undertaken to adjust certain official post-war statistics that are open to question regarding their accuracy. German official data prior to 1928 have been questioned and revised upward by Jasny and Hanau.[1] The Canadian official estimates, 1924–27, look low in the light of disposition statistics, as do several Argentine estimates.[2] A sudden sharp increase in Czecho-Slovakian acreage and production estimates between 1925 and 1926 suggests that the earlier estimates are not comparable with the later ones; there was also a sharp increase in Polish acreage and production estimates between 1929 and 1930.[3] Post-war data given for the USSR in Appendix B (Series 5) have already undergone several sharp revisions, and may of course be revised further.

III. RESULTS AND QUALIFICATIONS

Qualifications

Before we undertake to point out some significant conclusions that appear when our new estimates of "world" wheat production are employed in place of older familiar series, it seems advisable to emphasize certain general qualifications of the series that we present.

In the first place, the series showing world wheat crops excluding China and southwestern Asia (Series 1) is not all-inclusive. It would not necessarily indicate, even if it were correct with respect to the areas included, the trend or the year-to-year changes in wheat production throughout the world as a whole. Wheat production in the omitted areas is

[1] For these corrections, 1924–27, see Wheat Studies, February 1933, IX, 180.

[2] See Wheat Studies, December 1932, IX, 131–32.

[3] See Appendix B, Series 29 and 31.

very large, as we have seen—perhaps as much as 1,200 million bushels in recent years. The bulk of this has always been grown in China, Asia Minor, Arabia, Persia, and Afghanistan. These are old countries where wheat has long been cultivated, and where the population seems to have grown relatively slowly. It therefore seems safe to infer that the trend of wheat production in the world as a whole over the past half-century has been less steeply upward than the trend shown by our series. The rate of increase in production was presumably smaller in the important areas omitted from our series than in the areas included.

In the second place, our "world" production series may somewhat misrepresent the trend of wheat production within the included areas. The official statistics themselves may not have recorded the facts accurately; and our estimates and adjustments may be based on fallacious assumptions. But how far either the official figures or our estimates and adjustments may be in error is not demonstrable.

The estimates and adjustments, however, are properly to be regarded as conservative ones. Our estimated yields per acre are never placed high in relation to officially reported yields per acre in the same or in later years; and our estimated acreages in early years always allow for expansion at rates reasonable as judged by official statistics of adjacent areas, by levels officially reported in the years immediately following the years for which estimates were made, or by what could be learned or reasonably postulated about population growth. In consequence, that part of the upward trend in "world" wheat production which rests upon our estimates and adjustments seems more likely to overstate than to understate the rate of increase.

That part of the upward trend in "world" wheat production which rests upon official statistics also seems likely to overstate the rate of increase. It seems altogether proper to infer that the general tendency has been for crop statistics to be put too low in early years, and to be revised upward as methods of estimation were improved. In Canada, Australia, Argentina, France, and the United States in recent years the common occurrence has been for first estimates of production to be increased in the light of later information. At least in Germany,[1] Italy, and the United States before the war, official estimates that had stood for several years were officially revised upward. Moreover, it is natural that early estimates should turn out too low. When systems of crop estimation are inaugurated, farmers are likely to understate acreage and yields on the supposition that full statement may bring increase of taxes—a fear likely to be dispelled later. Newly inaugurated systems of estimation seem likely to miss more acreage than they do when better established, merely because the estimation of acreage is very difficult. In some countries where the area is expanding rapidly, it seems likely that estimations tend to lag behind the facts; this has occurred in Canada. An important criticism of pre-war Russian official statistics, made by some Soviet statisticians, is that the estimates of *total grain* production just before the war were some 19 per cent too low, acreage and yield per acre being about equally understated (in percentage terms); this criticism, if valid, would in general apply to wheat, though not with identical percentages.[2]

Against these probabilities that official data in general tend to overstate rates of increase of pre-war figures, little or no evidence can be adduced that opposite tendencies exist. Our adjustments and estimates, based as they are upon official figures, presumably contribute to the overstatement. Consequently we believe that our "world" wheat production series tends to exaggerate the actual rate of increase over the last half a century within the specified territory. The slope of the trend is probably somewhat too steep, mainly reflecting too steep an increase in acreage.

[1] Those in Germany seem clearly to have overstated not only the increase in production, but also the general level; see Taylor, "Prewar Crop Estimates in Germany."

[2] On this subject see Timoshenko, *Agricultural Russia and the Wheat Problem*, pp. 388–92. Timoshenko holds that the pre-war official statistics of the Russian Empire are not comparable with the post-war official statistics of the USSR, even within identical boundaries, though it may not be clearly demonstrable whether the pre-war data are understated or the post-war data overstated.

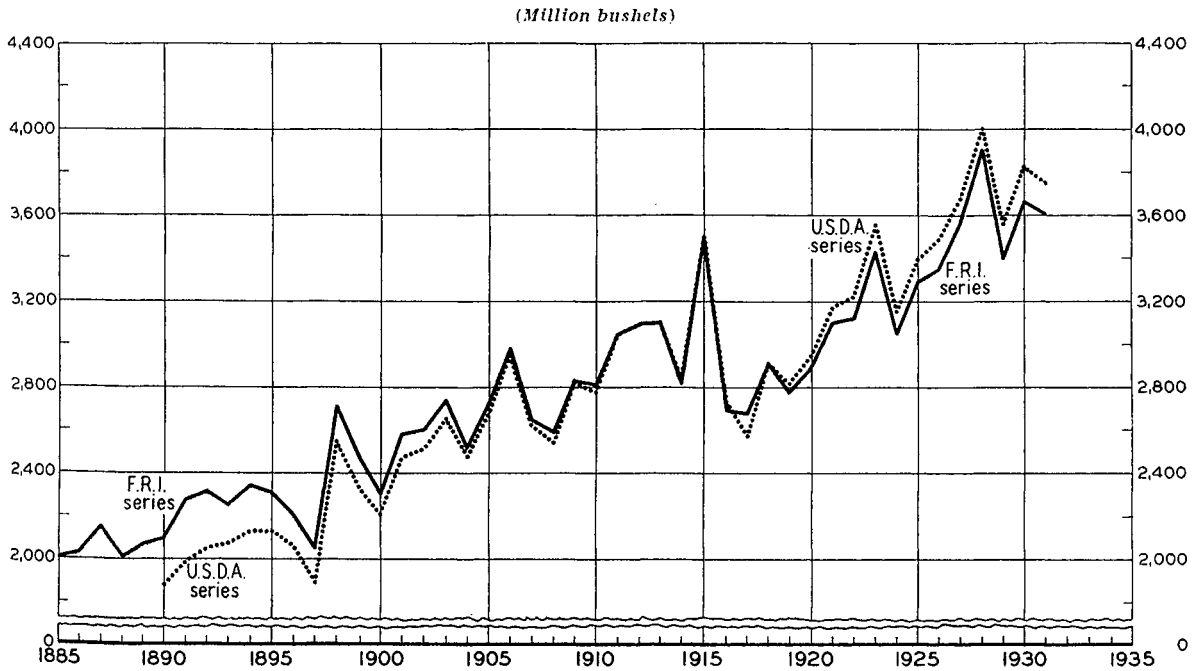
In the third place, the several series comprised in the "world" total are not equally reliable. In general the series which contain only official estimates and our adjustments of official estimates are more reliable than those which contain a large element of our estimates. In the absence of contemporary statistics the basis for retrospective estimation is slender at best. Moreover, our purpose has been to compile data for use in later inquiries concerning the behavior of acreage and yield per acre in large areas, which could not be much affected by imperfections in data for small constituent countries, provided that the levels and trends for these small countries are fairly accurate. Consequently we have been content to use simple methods of estimation for small constituent areas, emphasizing level and trend rather than year-to-year changes. Further research might have developed more accurate bases of estimation. Some of our series in which estimation has played a heavy part may nevertheless be as reliable as the official data for a few countries, including pre-war Belgium, Switzerland, Germany, and Russia, and post-war Germany, Canada, and Argentina. It is beyond the scope of this inquiry, however, to appraise in detail the relative accuracy of official statistics from various countries.

Comparisons with Familiar Series

In the United States, the most widely known and used series on "world" wheat production over a long period of years is probably one compiled by the Bureau of Agricultural Economics of the United States Department of Agriculture. In the *Yearbook of Agriculture* for 1932, this series is termed "world production excluding Russia and China"; the countries included within the world ex-Russia and China are not specified.

Chart 1 presents this series in relation to our estimates of wheat production in the

Chart 1.—Comparison of Two Series on Wheat Production in the "World," Russian Territory Excluded, 1885–1931*



* For F.R.I. series see Appendix B, Series 2; U.S.D.A. series from *Yearbook of Agriculture, 1932*, p. 586. Our series covers "world" production excluding China, southwestern Asia, and the land area of the USSR, and applies to identical land areas throughout. The U.S.D.A. series excludes Russian Empire pre-war territory and USSR post-war territory, and apparently does not cover identical territory throughout in other respects, including fewer countries than our series in early years and more countries in later years. Our series also includes in early years certain upward adjustments of official statistics.

"world excluding China, southwestern Asia, and Russia," 1890 to 1931. The differences are substantial. Our series runs 230 million bushels, or more than 11 per cent, *higher* than the Department's in 1890–94, but 133 million bushels, or nearly 4 per cent, *lower* in 1927–31. The aggregate increase shown by our series between 1890 and 1931 is 500 million bushels, an annual average of 12 million; the increase shown by the Department's series is 1,971 million bushels, an annual average increase of 48 million.

The reason is clear why our estimates fall below the Department's in recent post-war years: the Department includes more countries. Our series covers only 40 post-war areas. The Department's series includes this same 40, and in addition 6 more specified by name and others not specified by name.[1] Those specified by name were Luxemburg, Malta, Cyrenaica, Palestine, Syria and Lebanon, and Turkey, which together produced over 100 million bushels of the quantity (133 million bushels) by which the Department's estimate exceeded ours on the average in 1927–31.

The main reasons why our estimates so far exceed the Department's in early years are (*a*) that we include estimates for the territory lost by Russia (Congress Poland, Bessarabia, and Other Areas Lost by Russia), while the Department undoubtedly does not; and (*b*) that we include upward adjustments of official data for the United States, Italy, Germany, and the Union of South Africa, which the Department presumably does not include. The amount included in our estimates but presumably not included in the Department's under *a* and *b* above averages 224 million bushels in 1890–94, an amount nearly equal to the average excess (230 million bushels) of our estimates for the "world" ex-Russia over the Department's estimates in the same years. The close correspondence of these figures is partly fortuitous, for the Department may include areas which we do not include, while on the other hand our estimates for included countries may exceed the Department's estimates.

The excess of our pre-war estimates over the Department's declines irregularly from year to year, so that in some years just before the war the Department's totals equal or very slightly exceed ours. This suggests, since our totals regularly include production in the territory lost by Russia, that the Department's series includes more areas than the 39 included in ours. The decline in the difference between the two series rests partly on the fact that our adjustments of official data become progressively smaller in magnitude; and perhaps partly on the successive inclusion of new areas in the Department's series.

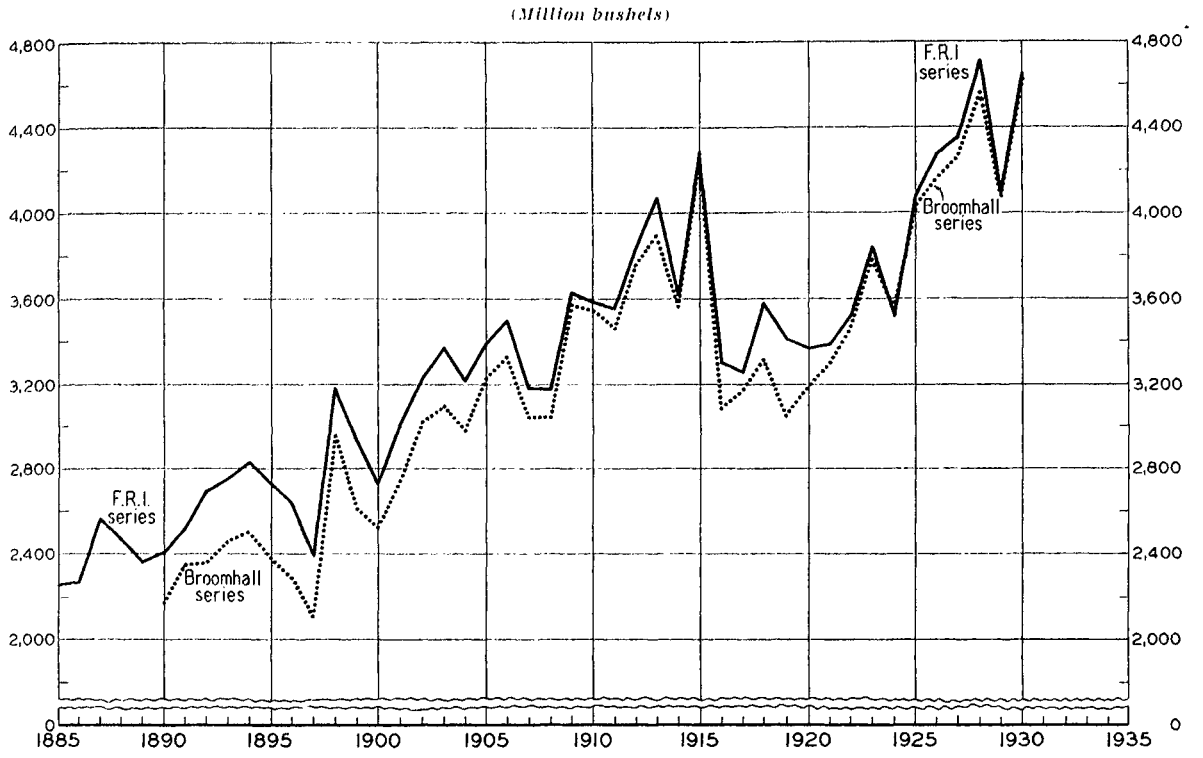
The obvious contrast between these two series is that the Department's points to a larger annual average increase in "world" wheat production than does ours. So far as concerns the *direction* of year-to-year change in production, the two series differ appreciably only in the change from 1892 to 1893. The *size* of year-to-year changes differs more strikingly. Such differences occur partly because the general trends of the series differ; but full explanation would require a detailed comparison of the components of each series, and this is not feasible.

Chart 2 presents a comparison of Broomhall's tabulation of "world" wheat crops including Russia[2] with our series (No. 1 in Appendix B) on "world" crops including Russia. Here also the differences are substantial. Our series runs 271 million bushels, or over 11 per cent, higher than Broomhall's on the average in 1890–94, but only 78 million bushels, or less than 2 per cent, higher on the average in 1926–30. The list of countries covered by the two series is nearly the same; the differences are that Broomhall includes data for Mexico while we do not, and we include data for Chosen while Broomhall does not. The excess of our totals over Broomhall's in recent years reflects merely the fact that we have employed the more recent revisions of official statistics. Our revised data for Russia, the United States, Canada, and Argentina exceed Broomhall's unrevised figures by 72 million bushels on the average in 1926–30, thus explaining

[1] See *World Wheat Prospects*, December 19, 1931, detailed tabulation of wheat production on pp. 4–5.

[2] This tabulation has been published annually for several years as a separate, and is obtainable through the *Corn Trade News*.

CHART 2.—COMPARISON OF TWO SERIES ON WHEAT PRODUCTION IN THE "WORLD," RUSSIAN TERRITORY INCLUDED, 1885–1930*



* For F.R.I. series see Appendix B, Series 1; Broomhall's series from a separate published by the *Corn Trade News*. Both series cover "world" production excluding important areas in China and southwestern Asia and many unimportant wheat-producing areas. The differences between the two series are due mainly to our use of "adjusted" official statistics and to our inclusion, in early years, of approximations to some crops which Broomhall omits.

almost all of the 78-million-bushel discrepancy in totals.

In the early years, the large excess of our figures over Broomhall's (271 million bushels) reflects mainly the fact that we use adjusted rather than unadjusted official data for Russia, the United States, Italy, Germany, and South Africa, but also the fact that Broomhall does not present figures for Egypt, Morocco, and Finland. The rather large discrepancies between the two series in the war years is due mainly to the use of different approximations to the production in Russia and some eastern European countries, and to Broomhall's omission of a figure for Roumania in 1917. The direction of year-to-year changes in production is the same in the two series except for the changes from 1916 to 1917 and 1919 to 1920; the differences in direction result from the use of different Russian statistics. The amounts of change are naturally rather widely divergent.

The inferences regarding rate of increase of production in the specified area, as regarding pre-war and post-war relationships, would be substantially different as one series or the other was used for comparison. We repeat here that our series presumably overstates the rate of increase strictly within the specified area, and presumably still further overstates the rate of increase of wheat production in the world as a whole. In particular, a substantially different inference regarding the relationships of production within the specified areas in immediate pre-war and recent post-war years is to be drawn if pre-war and post-war Russian statistics are regarded as not properly comparable.

INFLUENCE OF ACREAGE AND YIELD ON INCREASE OF PRODUCTION

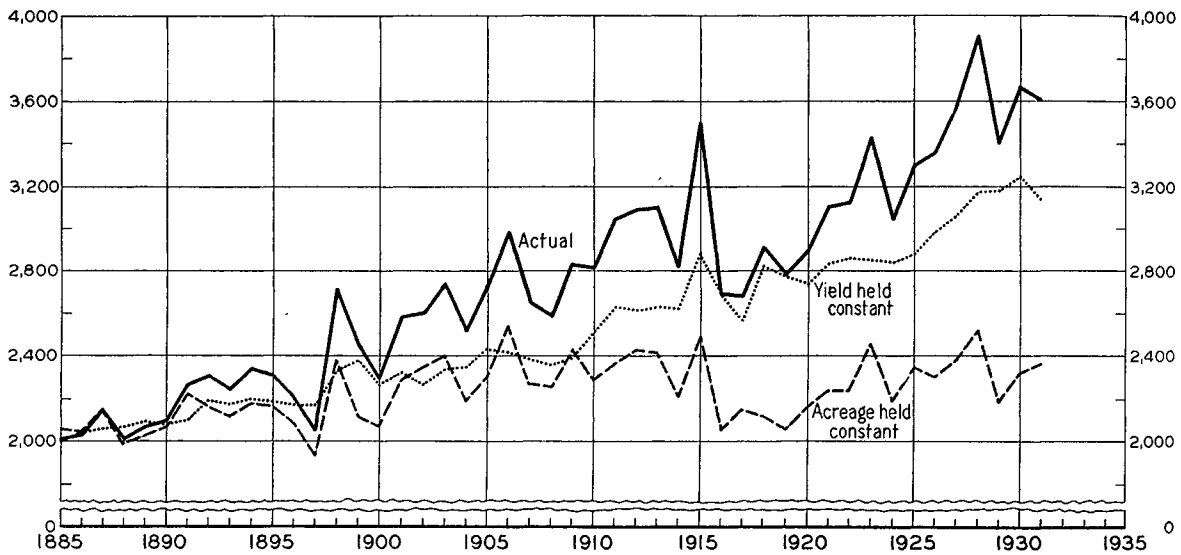
The fact has commonly been pointed out that the increase of "world" wheat production in post-war years or since the immediate

pre-war years has been due to increase of acreage rather than to increase of yield per acre. Most statements touching upon this subject have not applied to a period as long as half a century. The data presented in Appendix B permit a more detailed and precise examination of the subject than has hitherto been feasible.

Chart 3 shows wheat production from 1885 in the world ex-Russia (Series 2) as we have appraised it; and in addition what production would have been if the yield per acre had remained constant at its average 1885–89 level (the dotted line), and what production would have been if the acreage had remained constant at its average 1885–89 level (the line of short dashes).

CHART 3.—ACTUAL WHEAT PRODUCTION IN THE WORLD EX-USSR, 1885–1931, COMPARED WITH THEORETICAL PRODUCTION IF ACREAGE AND YIELD PER ACRE HAD REMAINED UNCHANGED*

(Million bushels)



* For data on "actual" production, see Appendix B, Series 2. The dotted line constitutes an index of acreage changes, calculated by multiplying actual acreages each year by the average yield per acre in 1885–89. The line of dashes constitutes an index of changes in yield per acre, calculated by multiplying actual yields per acre each year by the average acreage in 1885–89. These data suggest the extent to which actual production has increased on account of increase in acreage on the one hand, and on account of increase in yield per acre on the other.

The outstanding feature of the chart is a demonstration of the well-known fact that increase in production over the past half-century has been due much more to increase of acreage than to increase of production. On the average in the last five years of the period, the production was 176.7 per cent of the average in the first five years; the acreage 153.8 per cent; the yield per acre only 114.9 per cent. The increase in production was due 78 per cent to increase in acreage, but only 22 per cent to increase in yield per acre.

Another outstanding fact, and one seldom brought out in current discussion, is that increase in yield per acre was a much more important factor in increase of production before the war than over the whole period, while increase in acreage has been the sole factor in the increase of production between immediate pre-war years and the most recent post-war years. Between 1885–89 and 1909–13, production increased 44.8 per cent; acreage 24.5 per cent; and yield per acre 16.2 per cent. The increase of production was due 60 per cent to increase of acreage, and 40 per cent to increase of yield per acre. But between 1909–13 and 1927–31, when production increased 22 per cent and acreage 23 per cent, there was a very small decline in yield per acre, so that the increase in production was due entirely to increase in acreage.

Finally, the data on production, acreage, and yield per acre, as treated in Chart 3, pro-

vide a useful commentary on the familiar statement that over short periods wheat crops vary with changes in yields, but over long periods with changes in acreage. One fact brought out by the chart is that the crops of 1916–20, which were small in the light of the pre-war trend, were small mainly because yield per acre, not acreage, was reduced. Another fact is that strikingly large crops, trend considered, have resulted sometimes from a yield per acre far above the trend, sometimes from exceptional yield and exceptional acreage, but never from exceptional acreage alone. The crops of 1898, 1906, 1915, 1923, and 1928 in the world ex-Russia can reasonably be selected as exceptionally large ones. Those of 1906, 1923, and 1928 were exceptional, short-time trends considered, because yields per acre were exceptional; those of 1898 and 1915 were exceptional not only because yields were good, but also because the acreages were exceptional. It is clear that, so far as concerns this series, wheat crops vary over long periods somewhat with yield per acre, though more with acreage; and over short periods, somewhat with acreage, though more with yield per acre. Other series for particular smaller areas would certainly show variability of production resulting more largely from variability of yield; still others would show variability of production resulting more largely from variability of acreage.

This study is the work of M. K. Bennett

APPENDIX A

SOURCES OF DATA

DATA FOR 1919–32

Except as concerns Russia (1918–24), Czecho-Slovakia (1919), and Hungary (1919), data on production and acreage given for the years 1919–32 are as recorded, from official source documents of the countries concerned, by the United States Department of Agriculture (1920–31) and the International Institute of Agriculture (1919). Data on yield per acre are mainly our calculations, production divided by acreage. Czecho-Slovakian and Hungarian figures for 1919 are our rough approximations. Unadjusted statistics for the USSR (1918–24, Series 5) are as given for the USSR excluding Turkestan, Transcaucasia, and the Far East in V. P. Timoshenko, *Agricultural Russia and the Wheat Problem* (Grain Economics Series of the Food Research Institute, No. 1, Stanford University, California, 1932), citing *Encyclopedia of Soviet Exports* (Berlin, 1928). Adjusted statistics for the USSR (1918–24, Series 6) are as described above, p. 253.

With the exceptions noted, the data in Appendix B, 1919–32, may properly be regarded as the equivalent of data published in the official documents of each country. The units used in Appendix B to express production and yield per acre, however, are bushels of 60 pounds. The fact that we employ bushels of 60 pounds causes our production and yield per acre statistics for the British Isles to differ from official British statistics expressed in measured Imperial bushels.

DATA FOR 1885–1918

The following references to source documents apply only to statistics of production and acreage given in Appendix B, except in instances when sources of yield per acre statistics are specifically designated. In the main, statistics of yield per acre are derived from statistics of production and acreage.

The references are (*a*) to all production and acreage statistics, 1885–1918, that are printed in Roman type; and (*b*) to certain but not all of the production and acreage statistics printed in italic type. The figures in italics in Series 6, 8, 14, 15, 31–33, and 45 represent, either in all years or in some years, our adjustments of published statistics; and references to these published statistics are given below. The figures in italics in Series 9, 10, 18, 20, 22, 25, 26, 29, 30, 35, 37–39, 41–43, and 48–50 represent our estimates; since no published figure was found for a figure printed in italic type in any of these series, reference to sources is impossible.

References are not given to data in Series 1–4, 16, 24, 36, and 44; these series are summations of statistics in various areas, as designated in footnotes.

5. RUSSIA (the Russian Empire, not including Finland). Production: 1885–91 from Frank R. Rutter, *Cereal Production of Europe* (U.S. Department of Agriculture, Bureau of Statistics Bulletin 68, Washington, 1908), p. 81; 1892–1917 from Timoshenko, p. 524. Acreage: 1885–92 from Rutter, p. 81; 1893–1916 from Timoshenko, p. 522. Yield per Acre: 1885–92 from Rutter, p. 81; 1893–1916 derived from production and acreage statistics. These secondary sources cite official Russian publications.

6. RUSSIA. Adjusted data of Series 5, as described in text, pp. 249–50.

7. UNITED STATES. Production, Acreage, Yield per Acre: 1885–1918, from *Yearbook of Agriculture, 1932*, p. 577. We are authorized to say that these data are in process of revision, but that the revisions are not materially different from the data here reproduced.

8. UNITED STATES. Data in italics are adjustments of official data made by Holbrook Working; see WHEAT STUDIES, June 1926, II, 260–61. Data in Roman type identical with data in Series 7.

9. CANADA. Production: 1885–1918, from Canadian *Monthly Bulletin of Agricultural Statistics*, September 1932, pp. 312–13. Acreage (spring wheat sown, winter harvested): 1890 and 1900 (census data) from files of the U.S. Department of Agriculture; 1901–09, from *International Yearbook of Agricultural Statistics, 1910* and *1913–14*; 1910–18, from successive issues of the *Canada Yearbook*.

10. ARGENTINA. Production and Acreage Sown: 1890–1900 from files of the U.S.D.A.; 1901–18 from successive issues of *International Yearbook;* acreage in 1887 from *Annuaire statistique de la France, 1928*. Acreage Harvested: available only from 1909; data from files of the U.S.D.A.

11. AUSTRALIA. Production, Acreage, Yield per Acre: 1885–1918, from Commonwealth Bureau of Census and Statistics, *Production Bulletin No. 20* (Melbourne, 1927), pp. 186–88.

12. INDIA. Production and Acreage: 1885–90 from U.S.D.A., Section of Foreign Markets, *Circular No. 10,* 1896; 1891–1900, from files of the U.S.D.A.; 1901–18, from WHEAT STUDIES, July 1927, III, 398–99, citing annual reports of the Commercial Intelligence Department of India on *Acreage, Production, and Yield of the Principal Crops in India.*

13. FRANCE. Production and Acreage: 1885–1918, from *Annuaire statistique de la France, 1928.*

14. ITALY. Production: 1885–1918, basic data

(here adjusted, 1885–99, by an increase of 22 per cent) from *Annuario statistico Italiano, 1931,* p. 592. Acreage: 1890–95, from *ibid., 1897,* p. 99; 1901–8, from *International Yearbook, 1910,* p. 99, the basic data, 1904–8, here being adjusted downward; 1909–18, from successive issues of the *Annuario statistico Italiano.*

15. GERMANY. Production: 1885–92, basic data from *Vierteljahrshefte zur Statistik des Deutschen Reich,* here raised 10.8 per cent—see text, p. 253; 1893–1918 from successive issues of the *Vierteljahrshefte.* Acreage: same source.

17. BRITISH ISLES (exclusive of the Isle of Man and Channel Islands). Production and Acreage: basic data, 1885–1931, from *Agricultural Produce Statistics, 1891,* pp. 2–3; *Agricultural Statistics, 1905,* pp. 92–93; *ibid., 1914,* XLIX, Pt. 2, pp. 170–71; *ibid., 1915,* L, Pt. 2, p. 100; *ibid., 1916,* LI, Pt. 2, p. 58; *ibid., 1918,* LIII, Pt. 2, p. 54; *ibid., 1924,* LIX, Pt. 2, p. 84; *ibid., 1931,* LXVI, Pt. 1, p. 78.

Production data 1885–1905 for England, Wales, and Scotland converted from measured Imperial bushels at 61.8 pounds per bushel, the approximate average weight per measured Imperial bushel in England and Wales, 1906–31; data 1885–1905 for Ireland as officially calculated in 60-pound bushels from original data in hundredweights. Production data 1906–11 for England, Wales, and Scotland converted from measured Imperial quarters at reported annual weights per measured bushel; data 1906–11 for Ireland converted at the rate of eight 60-pound bushels per quarter. After 1912, production data converted to 60-pound bushels from reported figures in thousand tons.

Acreage data as reported.

18. BELGIUM. Production: 1885–88, estimates by Rutter, p. 57; 1889–1900 from *Annuaire statistique de la France, 1928* (these figures run higher than data for the same years given by Rutter); 1901–18 from successive issues of the *International Yearbook.* Acreage: 1885, 1895, and 1900 from Rutter, p. 57; 1901–18 from *International Yearbook.*

19. NETHERLANDS. Production and Acreage: 1885–94 from files of the U.S.D.A.; 1895–1918 from *Annuaire statistique du Royaume des Pays-Bas, 1909, 1914, 1922.*

20. SWITZERLAND. Production and Acreage: 1888–1905 from Rutter, p. 94; 1906–18 (production data missing in 1906 and 1907) from *International Yearbook.*

21. DENMARK. Production and Acreage: 1885–96 from files of the U.S.D.A.; 1897–1918 from *Hosten I Danmark Reviderede Tabeller For Hvert Aarene 1897–1907, ibid., 1908–14,* and *Statistisk Aarbog.*

22. NORWAY. Production: 1890 and 1900 from files of the U.S.D.A.; 1885–89 and 1891–99 derived from data on acreage and yield per acre; 1901–18 from *Statistisk Aarbok for Kongeriket Norge.* Acreage: census data 1890, 1900, 1907, 1914, 1917; 1885–89 and 1891–99 our interpolations; 1901–6, 1908–13, 1915–16, and 1918 interpolations from *International Yearbook.* Yield per Acre: 1885–89 and 1891–99 are averages from Rutter, p. 75; other figures derived.

23. SWEDEN. Production: 1885–1900 from files of the U.S.D.A.; 1900–18 from *Statistisk Arsbök för Sverige.* Acreage: 1885–1899 from *Annuaire statistique de la France, 1928;* 1900–18 from *Statistisk Arsbök.*

25. BULGARIA. Production: 1885–88, 1893–96, and 1901–2 from *Annuaire statistique de la France;* 1889–92, 1897–1900, and 1903–12 from *Annuaire statistique du Royaume de Bulgarie, 1912,* p. 132; 1913–18 from *International Yearbook.* Acreage: 1897–99 and 1903–12 from *Annuaire statistique du Royaume de Bulgarie;* 1900–2 from *Annuaire statistique de la France;* 1913–18 from *International Yearbook.*

26. ROUMANIA. Production and Acreage: 1886–1900 from files of the U.S.D.A.; 1901–3, 1916, and 1918 from *International Yearbook;* 1904–15 from *Annuaire statistique de la Roumanie, 1915–16,* pp. 26–29.

27. AUSTRIA. Production and Acreage: 1885–86, 1888–91, 1893–96, and 1898–1900 from files of the U.S.D.A.; 1887, 1892, 1897, 1902, and 1907–12 from *Statistische Rückblicke aus Österreich* (Vienna, 1913), p. 24; 1903–6 and 1917–18 from *International Yearbook;* 1913–16 from *Österreichisches Statistisches Handbuch,* 1916–17, p. 55.

28. HUNGARY. Production and Acreage: 1885–1913 from *Annuaire statistique hongrois,* 1894, pp. 102–3, and 1913, pp. 88, 234; 1914–18 from *International Yearbook.*

29. BOSNIA-HERZEGOVINA. Production: 1885–1905 from Rutter, p. 55; 1906–15 from successive *Yearbooks* of the U.S.D.A. Acreage: 1886 and 1895 from Rutter, p. 55; 1906–13 from *Yearbooks* of the U.S.D.A.

30. SERBIA. Production: 1885 from Broomhall's *Corn Trade News;* 1886–87 from U.S. Department of Agriculture: *Report of the Statistician, No. 83,* April 1891; 1888–96 and 1912–15 from *Annuaire statistique de la France;* 1897–1900 from Rutter, p. 86; 1901–11 from *International Yearbook.* Acreage: 1893 from *Annuaire statistique;* 1897–1900 from Rutter, p. 86; 1901–11 from *International Yearbook.*

31. CONGRESS POLAND (the 10 Polish provinces of pre-war Russia). Production: 1888–91 derived from data in Rutter, p. 81; 1892 from Broomhall's *Corn Trade News,* January 29, 1894; 1893–98 from *Yearbooks* of the U.S.D.A. for 1897 and 1900; 1899–1903 and 1905–6 from U.S.D.A. *Yearbook, 1922;* 1904 from *Annuaire de la Russie, 1904* (St. Petersburg, 1905); 1907–13 from *Recueil des don-*

nées statistiques et économiques sur l'industrie agricole en Russie et dans les pays étrangers (Petrograd, 1913 and 1915). Acreage: 1887 from Rutter, p. 81; 1893–94 from Broomhall, *loc. cit.;* 1899–1906 derived from production and yield per acre statistics in U.S.D.A. *Yearbook, 1922;* 1907–13 from *Recueil* etc. Yield per Acre: derived except 1899–1906, which are from U.S.D.A. *Yearbook, 1922.*

32. BESSARABIA. Production, Acreage, Yield per Acre on peasant farms only: 1885–1915, from *Svod urozhainykh svedenii za gody 1883–1915* [*Collection of Crop Statistics 1883–1915*] (Moscow, 1928). Production, all farms: 1904 from *Annuaire de la Russie, 1904;* 1906 from U.S. Department of Agriculture *Bureau of Statistics Bulletin 84,* 1911; 1907–13 from *Recueil des données statistiques et économiques,* cited above. Acreage all farms: same as production for 1906–13; 1887, 1893, 1899, and 1900 from *Svod statisticheskikh svedienii po selskomu khozyaistvu Rossii k konsu XIX veka vypusk I* [*Collection of Statistical Information on the Agriculture of Russia to the End of the Nineteenth Century*] (St. Petersburg, 1902).

All figures given in the table are adjustments of official figures 1885–1915, and our estimates 1916–18.

33. OTHER AREAS LOST BY RUSSIA. Same sources as for Bessarabia, Series 32.

35. FINLAND. Production: 1885–89 from Rutter, p. 63; 1890–1918 from files of the U.S.D.A. Acreage: 1909–18 from files of the U.S.D.A.

37. SPAIN. Production: 1885–89 from *Corn Trade News;* 1890–99 from files of the U.S.D.A.; 1900–18 from *Annuario estadistico de España, 1920,* p. 56. Acreage: 1885 from *Corn Trade News;* 1890–99 from files of the U.S.D.A.; 1900 from *Annuaire statistique de la France;* 1901–18 from *International Yearbook.* Official data for 1900–18 in the *Annuario,* p. 46, do not agree with the figures given by the International Institute; but the International Institute data are in agreement with figures in the files of the U.S.D.A., which are taken from an official Spanish source not available to us.

38. PORTUGAL. Production: 1885 and 1903 from Rutter, pp. 76, 77; 1886–90 from U.S. Department of Agriculture, *Report of the Statistician, No. 83,* April 1891; 1891–1902, 1904, 1909–10, 1912–13 from successive *Yearbooks* of the U.S.D.A.; 1905–8, 1911, 1914–18 from *International Yearbook.* Acreage: 1885 and 1903 from Rutter, *loc. cit.;* 1911–18 from *International Yearbook.*

39. FRENCH MOROCCO. Production and Acreage: 1915–18 from *Annuaire statistique de la France.*

40. ALGERIA. Production and Acreage: 1885–1918 from *ibid.*

41. TUNIS. Production: 1890–1900 from U.S.D.A. *Yearbook;* 1901–18 from *Annuaire statistique de la France.* Acreage: 1901–18 from *ibid.*

42. GREECE. Production: 1909–18 from *International Yearbook.*

43. EGYPT. Production: 1909–18 from *International Yearbook.* Acreage: 1895–1909 and 1918 from *Annuaire statistique de l'Egypte, 1910,* pp. 236–37, and *1921–22,* p. 98; 1910–17 from *International Yearbook.*

45. UNION OF SOUTH AFRICA. Production: 1910–18 from *Official Year Book of the Union of South Africa and of Basutoland, Bechuanaland Protectorate, and Swaziland, 1928–29,* p. 402; data for certain earlier years (1887–1900, 1903, and 1908) are available in U.S.D.A. files and *Yearbooks,* and *International Yearbook,* but appear to be incomplete as to territory covered. Acreage: 1910–18 from *International Yearbook.*

46. NEW ZEALAND. Production and Acreage: 1885–1918 from *New Zealand Official Yearbook.*

47. JAPAN. Production and Acreage: 1885–1900 from files of the U.S.D.A.; 1901–18 from *International Yearbook.* These data check with five-year averages given in WHEAT STUDIES, June 1930, VI, 373; the averages were made from official statistics in *Statistical Report on Wheat, Statistical Annual of the Empire of Japan,* and *Statistical Abstracts of the Ministry of Agriculture and Forestry.*

48. CHOSEN. Production and Acreage: 1909–18 from files of the U.S.D.A.

49. CHILE. Production: 1887–1918 from *Yearbooks* of the U.S.D.A. Acreage: 1901–5 and 1907–18 from *International Yearbook.*

50. URUGUAY. Production: 1891–1918 from files and *Yearbooks* of the U.S.D.A. Acreage: 1891–93, 1898–1900 from files of U.S.D.A.; 1901–8, 1910–18 from *International Yearbook.*

APPENDIX B

DETAILED TABLES

Except in summary series, the figures in Roman type in the following tables represent official data, as published in sources cited in Appendix A. Italicized figures represent either our adjustments of official statistics, or our estimates where official data were lacking. Although our adjustments and estimates enter into the several summary series (1–4, 16, 33, 36, and 44), we have not employed italics to indicate this.

Production statistics are in million bushels of 60 pounds; acreage in million acres; yield per acre in bushels of 60 pounds.

Year	1. "World"[a]			2. "World ex-USSR"[b]			"World ex-USSR"					
							3. Four major exporters[c]			4. All others[d]		
	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield
1885	2,260.3	192.6	11.7	2,005.8	151.9	13.2	509.8	48.9	10.4	1,496.0	103.0	14.5
1886	2,273.9	196.1	11.6	2,029.0	154.7	13.1	617.1	52.7	12.3	1,381.9	102.0	13.5
1887	2,558.2	198.2	12.9	2,153.5	156.2	13.8	657.9	54.5	12.1	1,495.6	101.7	14.7
1888	2,467.7	199.5	12.4	2,011.1	157.0	12.8	583.7	54.6	10.7	1,427.4	102.4	13.9
1889	2,365.7	201.8	11.7	2,069.3	158.8	13.0	712.0	56.7	12.6	1,357.3	102.1	13.3
1890	2,404.3	201.5	11.9	2,103.9	157.7	13.3	616.1	55.4	11.1	1,487.8	102.3	14.5
1891	2,515.0	203.6	12.4	2,272.8	159.2	14.3	890.9	60.3	14.8	1,381.9	98.9	14.0
1892	2,687.7	211.4	12.7	2,313.0	166.6	13.9	820.2	61.6	13.3	1,492.8	105.0	14.2
1893	2,746.9	210.3	13.1	2,247.4	165.0	13.6	700.0	59.4	11.8	1,547.4	105.6	14.7
1894	2,830.6	212.6	13.3	2,339.7	166.8	14.0	766.1	60.4	12.7	1,573.6	106.4	14.8
1895	2,730.9	210.2	13.0	2,307.3	166.1	13.9	774.7	60.7	12.8	1,532.6	105.4	14.5
1896	2,639.3	212.6	12.4	2,213.1	164.6	13.4	698.1	63.5	11.0	1,515.0	101.1	15.0
1897	2,389.1	213.5	11.2	2,048.0	164.6	12.4	813.7	66.1	12.3	1,234.3	98.5	12.5
1898	3,177.0	225.9	14.1	2,707.9	176.8	15.3	1,041.3	72.4	14.4	1,666.6	104.4	16.0
1899	2,928.7	232.2	12.6	2,458.7	180.4	13.6	880.7	74.1	11.9	1,578.0	106.3	14.8
1900	2,730.2	226.8	12.0	2,299.9	172.4	13.3	817.4	72.8	11.2	1,482.5	99.6	14.9
1901	3,003.4	232.4	12.9	2,578.5	176.0	14.7	1,009.2	72.6	13.9	1,569.3	103.4	15.2
1902	3,221.1	229.1	14.1	2,600.5	172.0	15.1	947.7	68.8	13.8	1,652.8	103.2	16.0
1903	3,364.2	236.4	14.2	2,736.0	177.1	15.4	963.9	73.5	13.1	1,772.1	103.6	17.1
1904	3,214.6	240.0	13.4	2,522.4	178.5	14.1	855.2	69.3	12.3	1,667.2	109.2	15.3
1905	3,377.5	249.3	13.5	2,725.6	184.6	14.8	1,036.7	74.6	13.9	1,688.9	110.0	15.4
1906	3,488.2	249.4	14.0	2,983.1	183.2	16.3	1,107.6	74.2	14.9	1,875.5	109.0	17.2
1907	3,177.9	243.9	13.0	2,646.5	181.0	14.6	967.1	70.9	13.6	1,679.4	110.1	15.3
1908	3,170.8	243.8	13.0	2,588.3	179.1	14.5	985.7	73.6	13.4	1,602.6	105.5	15.2
1909	3,627.8	249.3	14.6	2,829.0	181.2	15.6	1,100.9	73.9	14.9	1,728.1	107.3	16.1
1910	3,585.2	264.6	13.5	2,810.2	190.6	14.7	1,033.1	78.5	13.2	1,777.1	112.1	15.9
1911	3,557.8	276.0	12.9	3,044.4	199.7	15.2	1,090.0	85.1	12.8	1,954.4	114.6	17.1
1912	3,835.5	272.0	14.1	3,089.6	198.1	15.6	1,233.9	81.2	15.2	1,855.7	116.9	15.9
1913	4,069.8	278.8	14.6	3,100.7	199.8	15.5	1,203.1	86.8	13.9	1,897.6	113.0	16.8
1914	3,617.6	279.2	13.0	2,818.5	198.9	14.2	1,246.4	88.9	14.0	1,572.1	110.0	14.3
1915	4,279.3	292.4	14.6	3,500.9	218.6	16.0	1,767.4	104.5	16.9	1,733.5	114.1	15.2
1916	3,294.4	272.2	12.1	2,689.8	203.7	13.2	1,135.5	95.3	11.9	1,554.3	108.4	14.3
1917	3,253.8	262.3	12.4	2,676.5	194.1	13.8	1,220.1	87.5	13.9	1,456.4	106.6	13.7
1918	3,580.8	283.7	12.6	2,907.8	213.7	13.6	1,366.1	101.7	13.4	1,541.7	112.0	13.8
1919	3,406.8	278.4	12.2	2,776.8	210.4	13.2	1,408.4	116.7	12.1	1,368.4	93.7	14.6
1920	3,363.9	274.1	12.3	2,889.9	208.1	13.9	1,408.5	104.7	13.5	1,481.4	103.4	14.3
1921	3,384.8	267.2	12.7	3,098.8	215.2	14.4	1,440.0	111.8	12.9	1,658.8	103.4	16.0
1922	3,523.0	250.9	14.0	3,118.0	216.9	14.4	1,551.7	109.8	14.1	1,566.3	107.1	14.6
1923	3,844.4	259.9	14.8	3,427.2	216.5	15.8	1,606.5	105.5	15.2	1,820.7	111.0	16.4
1924	3,518.1	269.3	13.1	3,044.1	215.6	14.1	1,457.9	103.2	14.1	1,586.2	112.4	14.1
1925	4,075.1	281.6	14.5	3,292.8	218.5	15.1	1,370.2	102.6	13.4	1,922.6	115.9	16.6
1926	4,267.6	300.3	14.2	3,353.8	226.4	14.8	1,631.5	110.7	14.7	1,722.3	115.7	14.9
1927	4,351.6	309.8	14.0	3,567.0	232.4	15.3	1,754.8	115.0	15.3	1,812.2	117.4	15.4
1928	4,712.3	309.0	15.3	3,905.0	240.5	16.2	2,001.6	121.0	16.5	1,903.4	119.5	15.9
1929	4,096.3	314.4	13.0	3,402.7	240.9	14.1	1,406.6	122.4	11.5	1,996.1	118.5	16.8
1930	4,652.7	326.5	14.3	3,663.5	246.0	14.9	1,724.0	125.4	13.7	1,939.5	120.6	16.1
1931	.....	.....	....	3,620.9	238.0	15.2	1,630.9	113.4	14.4	1,990.0	124.6	16.0
1932	.....	.....	....	3,619.4	243.6	14.9	1,590.7	117.8	13.5	2,028.7	125.8	16.1

[a] Excluding large wheat-producing areas in China and southwestern Asia, and also numerous insignificant producing areas. This series is the summation of Series 2 and 6, from which (1885–1917) is subtracted the sum of Series 31, 32, and 33.

[b] Summation of Series 3 and 4.

[c] United States, Canada, Argentina, Australia (Series 8–11).

[d] Summation of Series 12–16, 24, 36, and 44.

Year	5. Russia (unadjusted)			6. Russia (adjusted)			7. United States (unadjusted)			8. United States (adjusted)		
	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield
1885	178.1[a]		6.2[a]	*284.1*	*43.7*	*6.5*	357.1	34.2	10.4	*432.3*	*41.6*	10.4
1886	163.5[a]	28.9[a]	5.7[a]	*266.4*	*44.4*	*6.0*	457.2	36.8	12.4	*555.0*	*44.8*	12.4
1887	278.7[a]		9.7[a]	*436.5*	*45.0*	*9.7*	456.3	37.6	12.1	*558.8*	*46.2*	12.1
1888	328.4[b]		10.4[b]	*492.5*	*45.6*	*10.8*	415.9	37.3	11.1	*516.3*	*46.5*	11.1
1889	208.0[b]	31.5[b]	6.6[b]	*318.8*	*46.2*	*6.9*	434.4	33.6	12.9	*618.4*	*47.9*	12.9
1890	212.3[b]		6.7[b]	*328.3*	*46.9*	*7.0*	378.1	34.0	11.1	*515.7*	*46.5*	11.1
1891	172.7[b]		5.5[b]	*270.8*	*47.5*	*5.7*	584.5	37.8	15.5	*787.1*	*50.8*	15.5
1892	324.2[a]	33.9[b]	7.5[b]	*408.9*	*48.1*	*8.5*	528.0	39.6	13.3	*680.7*	*51.2*	13.3
1893	441.3[a]	39.5[a]	11.2[a]	*554.9*	*48.8*	*11.4*	427.6	37.9	11.3	*539.4*	*47.7*	11.3
1894	418.1[a]	39.7[a]	10.5[a]	*527.9*	*49.2*	*10.7*	516.5	39.4	13.1	*634.2*	*48.4*	13.1
1895	413.4[d]	42.2[d]	9.8[d]	*466.5*	*47.6*	*9.8*	569.5	40.8	13.9	*668.9*	*48.1*	13.9
1896	412.0[d]	45.9[d]	9.0[d]	*462.5*	*51.5*	*9.0*	544.2	43.9	12.4	*612.6*	*49.4*	12.4
1897	340.2[d]	46.7[d]	7.3[d]	*381.5*	*52.4*	*7.3*	610.3	46.0	13.3	*685.0*	*51.5*	13.3
1898	459.3[d]	47.0[d]	9.8[d]	*515.9*	*52.8*	*9.8*	772.2	51.0	15.1	*831.6*	*55.1*	15.1
1899	454.1[d]	49.7[d]	9.2[d]	*508.2*	*55.6*	*9.1*	636.1	52.6	12.1	*682.2*	*56.4*	12.1
1900	423.0[d]	52.3[d]	8.1[d]	*471.6*	*58.3*	*8.1*	602.7	51.4	11.7	*638.6*	*54.6*	11.7
1901	427.8[d]	54.3[d]	7.9[d]	*476.0*	*60.4*	*7.9*	788.6	52.5	15.0	*828.9*	*55.3*	15.0
1902	607.4[d]	55.1[d]	11.0[d]	*675.5*	*61.3*	*11.0*	724.8	49.6	14.6	*737.9*	*50.5*	14.6
1903	621.4[d]	57.2[d]	10.9[d]	*689.6*	*63.5*	*10.9*	663.9	51.6	12.9	*681.5*	*52.8*	12.9
1904	666.8[d]	59.2[d]	11.3[d]	*738.7*	*65.6*	*11.3*	596.9	47.8	12.5	*581.0*	*46.5*	12.5
1905	636.3[d]	62.2[d]	10.2[d]	*702.8*	*68.7*	*10.2*	726.8	49.4	14.7	*727.2*	*49.5*	14.7
1906	508.4[d]	63.6[d]	8.0[d]	*560.8*	*70.2*	*8.0*	756.8	47.8	15.8	*759.7*	*48.1*	15.8
1907	570.6[e]	66.7[e]	8.6[e]	570.6	66.7	8.6	638.0	45.1	14.1	*636.8*	*45.2*	14.1
1908	627.6[e]	68.4[e]	9.2[e]	627.6	68.4	9.2	644.7	46.0	14.0	*654.5*	*46.8*	14.0
1909	846.2[e]	71.7[e]	11.8[e]	846.2	71.7	11.8	700.4	44.3	15.8	*712.7*	*45.1*	15.8
1910	836.2[e]	77.9[e]	10.7[e]	836.2	77.9	10.7	635.1	45.7	13.9	*659.9*	*46.8*	13.9
1911	563.5[e]	80.1[e]	7.0[e]	563.5	80.1	7.0	621.3	49.5	12.5	621.3	49.5	12.5
1912	801.5[e]	77.8[e]	10.3[e]	801.5	77.8	10.3	730.3	45.8	15.9	730.3	45.8	15.9
1913	1,027.7[e]	82.6[e]	12.4[e]	1,027.7	82.6	12.4	763.4	50.2	15.2	763.4	50.2	15.2
1914	833.6[f]	83.9[f]	9.9[f]	833.6	83.9	9.9	891.0	53.5	16.6	891.0	53.5	16.6
1915	826.8[f]	77.2[f]	10.7[f]	826.8	77.2	10.7	1,025.8	60.5	17.0	1,025.8	60.5	17.0
1916	440.1[g]	63.3[h]	....	*644.4*	*71.6*	*9.0*	636.3	52.3	12.2	636.3	52.3	12.2
1917	608.3[f]	....	....	608.3	*71.0*	*8.6*	636.7	45.1	14.1	636.7	45.1	14.1
1918	615.7[i]	65.2[i]	9.4[i]	*673.0*	*70.0*	*9.6*	921.4	59.2	15.6	921.4	59.2	15.6
1919	575.4[i]	63.1[i]	9.1[i]	*630.0*	*68.0*	*9.3*	952.1	73.7	12.9	952.1	73.7	12.9
1920	421.9[i]	61.0[i]	6.9[i]	*474.0*	*66.0*	*7.2*	843.3	62.4	13.5	843.3	62.4	13.5
1921	235.9[i]	47.9[i]	4.9[i]	*286.0*	*52.0*	*5.5*	819.0	64.6	12.7	819.0	64.6	12.7
1922	354.5[i]	29.8[i]	11.9[i]	*405.0*	*34.0*	*11.9*	846.7	61.4	13.8	846.7	61.4	13.8
1923	354.5[i]	38.4[i]	9.2[i]	*417.2*	*43.4*	*9.6*	759.5	56.9	13.3	759.5	56.9	13.3
1924	424.3[j]	48.5[j]	8.8[j]	*474.0*	*53.7*	*8.8*	840.1	52.5	16.0	840.1	52.5	16.0
1925	782.3[k]	63.1[k]	12.4[k]	782.3	63.1	12.4	669.1	52.4	12.8	669.1	52.4	12.8
1926	913.8[k]	73.9[k]	12.4[k]	913.8	73.9	12.4	833.5	56.8	14.7	833.5	56.8	14.7
1927	776.0[k]	79.0[k]	9.8[k]	784.6	77.4	10.1	874.6	59.6	14.7	874.6	59.6	14.7
1928	807.3[k]	68.6[k]	11.8[k]	807.3	68.5	11.8	926.1	59.3	15.6	926.1	59.3	15.6
1929	693.6[k]	73.5[k]	9.4[k]	693.6	73.5	9.4	812.6	62.7	13.0	812.6	62.7	13.0
1930	989.1[k]	80.5[k]	12.3[k]	989.1	80.5	12.3	857.4	61.1	14.0	857.4	61.1	14.0
1931	.....	92.1[k]	....	.....	92.1	....	900.2	55.3	16.3	900.2	55.3	16.3
1932	.....	....	....	.....	....	....	726.8	55.2	13.2	726.8	55.2	13.2

[a] European Russia excluding Polish and North Caucasian provinces.
[b] European Russia excluding North Caucasian provinces.
[c] Total European Russia, 64 provinces.
[d] Total European Russia and 8 provinces of Asiatic Russia, but not including Turkestan, Transcaucasia, and the Far East.
[e] Total Russian Empire.
[f] Total Russian Empire excluding invaded territory.
[g] European Russia only, excluding invaded territory.
[h] Russian Empire excluding Turkestan, Transcaucasia, and the Far East, and excluding invaded territory.
[i] USSR excluding Turkestan, Transcaucasia, and the Far East.
[j] USSR excluding Turkestan and Transcaucasia.
[k] Total USSR.

Year	9. Canada			10. Argentina				11. Australia			12. India		
	Prod.	Acreage	Yield	Prod.	Acreage		Yield sown	Prod.	Acreage	Yield	Prod.	Acreage	Yield
					Sown	Harv.							
1885	42.8	*2.53*	*16.9*	*16.7*	*1.80*	.....	*9.3*	18.0	2.98	6.0	299.2	27.82	10.8
1886	38.3	*2.57*	*14.9*	*24.0*	*1.90*	.....	*12.6*	29.8	3.42	8.7	258.3	27.41	9.4
1887	39.0	*2.60*	*15.0*	*21.9*	2.01	.....	*10.9*	38.2	3.65	10.5	238.6	26.74	8.9
1888	33.0	*2.63*	*12.5*	*17.0*	*2.30*	.....	*7.4*	17.4	3.20	5.4	266.9	26.85	9.9
1889	30.9	*2.67*	*11.6*	*28.7*	*2.60*	.....	*11.0*	34.0	3.53	9.6	237.5	25.91	9.2
1890	42.2	2.70	15.6	31.1	2.97	.....	10.5	27.1	3.23	8.4	228.6	24.77	9.2
1891	42.1	*2.86*	*14.7*	36.0	3.26	.....	11.0	25.7	3.34	7.7	256.7	26.58	9.7
1892	48.2	*3.02*	*16.0*	58.5	3.95	.....	14.8	32.8	3.44	9.5	227.4	27.03	8.4
1893	41.3	*3.18*	*13.0*	82.2	4.55	.....	18.1	37.1	3.92	9.5	285.6	27.76	10.3
1894	42.6	*3.32*	*12.8*	61.4	4.94	.....	12.4	27.9	3.70	7.5	271.4	28.72	9.4
1895	41.1	*3.48*	*11.8*	46.4	5.58	.....	8.3	18.3	3.52	5.2	261.3	28.42	9.2
1896	33.0	*3.63*	*9.1*	31.6	6.18	.....	5.1	20.9	4.28	4.9	200.9	24.07	8.3
1897	47.1	*3.78*	*12.5*	53.4	6.43	.....	8.3	28.2	4.36	6.5	200.2	20.58	9.7
1898	63.3	*3.93*	*16.1*	105.0	7.91	.....	13.3	41.4	5.47	7.6	269.1	24.54	11.0
1899	56.8	*4.08*	*13.9*	101.7	8.03	.....	12.7	40.0	5.61	7.1	255.3	25.37	10.1
1900	55.6	4.23	13.1	74.8	8.35	.....	9.0	48.4	5.67	8.5	200.0	18.69	10.7
1901	85.3	4.03	21.2	56.4	8.15	.....	6.9	38.6	5.12	7.5	264.8	23.86	11.1
1902	93.6	3.96	23.6	103.8	9.13	.....	11.4	12.4	5.16	2.4	227.4	23.45	9.7
1903	78.5	4.42	17.8	129.7	10.67	.....	12.2	74.2	5.57	13.3	297.6	23.40	12.7
1904	69.0	4.43	15.6	150.7	12.12	.....	12.4	54.5	6.27	8.7	359.9	28.41	12.7
1905	106.1	4.96	21.4	134.9	14.02	.....	9.6	68.5	6.12	11.2	283.1	28.47	9.9
1906	125.5	6.10	20.6	156.0	14.07	.....	11.1	66.4	5.98	11.1	320.0	26.36	12.1
1907	93.1	6.10	15.3	192.5	14.23	.....	13.5	44.7	5.38	8.3	317.0	29.21	10.9
1908	112.4	6.61	17.0	156.2	14.98	.....	10.4	62.6	5.26	11.9	228.7	22.91	10.0
1909	166.7	7.75	21.5	131.1	14.42	13.23	9.1	90.4	6.59	13.7	285.2	26.24	10.9
1910	132.1	8.86	14.9	146.0	15.45	14.51	9.4	95.1	7.37	12.9	359.6	28.11	12.8
1911	230.9	11.10	20.8	166.2	17.04	15.74	9.8	71.6	7.43	9.6	375.6	30.57	10.7
1912	224.2	11.00	20.4	187.4	17.10	16.56	11.0	92.0	7.34	12.5	370.5	31.14	11.9
1913	231.7	11.02	21.0	104.7	16.25	14.37	6.4	103.3	9.29	11.1	368.2	30.07	12.2
1914	161.3	10.29	15.7	169.2	15.47	14.31	10.9	24.9	9.65	2.6	312.4	28.50	11.0
1915	393.5	15.11	26.0	169.0	16.42	15.64	10.3	179.1	12.48	14.3	377.0	32.48	11.6
1916	262.8	15.37	17.1	84.0	16.09	12.05	5.2	152.4	11.53	13.2	323.0	30.32	10.7
1917	233.7	14.76	15.8	235.0	17.88	16.22	13.1	114.7	9.78	11.7	382.1	32.94	11.6
1918	189.1	17.54	10.8	180.0	16.98	14.85	10.6	75.6	7.99	9.5	370.4	35.49	10.4
1919	193.3	19.13	10.1	217.0	17.41	16.90	12.5	46.0	6.42	7.2	280.3	23.80	10.6
1920	263.2	18.23	14.4	156.1	15.01	13.22	10.4	145.9	9.07	16.1	377.9	29.95	12.6
1921	300.9	23.26	12.9	191.0	14.24	14.10	13.4	129.1	9.72	13.3	250.4	25.78	9.7
1922	399.8	22.42	17.8	195.8	16.25	16.06	12.1	109.4	9.76	11.2	367.0	28.21	13.0
1923	474.2	21.89	21.7	247.8	17.19	17.04	14.4	125.0	9.54	13.1	372.4	30.85	12.1
1924	262.1	22.06	11.9	191.1	17.79	15.98	10.7	164.6	10.82	15.2	360.6	31.18	11.6
1925	395.5	20.79	19.0	191.1	19.19	17.62	10.0	114.5	10.20	11.2	331.0	31.78	10.4
1926	407.1	22.90	17.8	230.1	19.27	18.95	11.9	160.8	11.69	13.8	324.7	30.47	10.7
1927	479.7	22.46	21.4	282.3	20.69	20.20	13.6	118.2	12.28	9.6	335.0	31.30	10.7
1928	566.7	24.12	23.5	349.1	22.78	20.08	15.3	159.7	14.84	10.8	290.9	32.19	9.0
1929	304.5	25.26	12.1	162.6	19.49	13.59	8.3	126.9	14.98	8.5	320.7	31.97	10.0
1930	420.7	24.90	16.9	232.3	21.28	19.67	11.1	213.6	18.16	11.8	390.8	30.47	12.8
1931	321.3	26.20	12.3	219.7	17.30	.....	13.1	189.7	14.60	13.0	347.4	32.19	10.8
1932	428.5	27.18	15.8	235.4	19.79	17.79	11.9	200.0	15.58	12.8	337.0	33.75	10.0

Year	13. France			14. Italy			15. Germany			16. Other northwestern Europe[a]		
	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield
1885	313.0	17.19	18.2	*144.3*	*11.00*	*13.1*	*106.2*	4.74	*22.4*	118.6	3.86	30.7
1886	302.8	17.19	17.6	*147.6*	*11.00*	*13.4*	*108.6*	4.74	*22.9*	99.3	3.65	27.2
1887	320.0	17.22	18.6	*155.6*	*11.00*	*14.1*	*115.2*	4.74	*24.3*	116.5	3.68	31.7
1888	275.6	17.24	16.0	*135.7*	*11.00*	*12.3*	*103.0*	4.78	*21.6*	107.9	3.92	27.5
1889	305.7	17.39	17.6	*134.2*	*11.00*	*12.2*	*96.6*	4.83	*20.0*	115.5	3.79	30.5
1890	329.6	17.45	18.9	*162.0*	10.89	*14.9*	*115.3*	4.84	*23.8*	117.4	3.69	31.8
1891	215.0	14.22	15.1	*174.3*	11.12	*15.7*	*95.0*	4.66	*20.4*	109.8	3.51	31.3
1892	310.8	17.26	18.0	*142.5*	11.19	*12.7*	*128.8*	4.88	*26.4*	100.0	3.44	29.1
1893	277.8	17.48	15.9	*166.7*	11.26	*14.8*	125.1	5.05	24.8	85.7	3.06	28.0
1894	344.3	17.28	19.9	*149.8*	11.30	*13.3*	122.6	4.90	25.0	95.8	3.05	31.4
1895	339.5	17.30	19.6	*145.1*	11.35	*12.8*	116.5	4.77	24.4	73.0	2.49	29.3
1896	340.2	16.98	20.0	*179.0*	*11.50*	*15.6*	125.7	4.76	26.4	95.1	2.76	34.5
1897	242.1	16.27	14.9	*107.1*	*11.60*	*9.2*	119.9	4.75	25.2	89.3	2.96	30.2
1898	364.9	17.21	21.2	*169.2*	*11.70*	*14.5*	132.6	4.87	27.2	110.2	3.22	34.2
1899	365.6	17.15	21.3	*169.9*	*11.75*	*14.5*	141.4	4.98	28.4	101.5	3.11	32.6
1900	325.5	16.96	19.2	147.3	*11.80*	*12.5*	141.1	5.06	27.9	88.6	2.94	30.1
1901	310.9	16.79	18.5	181.5	11.91	15.2	91.8	3.91	23.5	83.1	2.71	30.7
1902	327.9	16.22	20.2	150.6	11.74	12.8	143.3	4.73	30.3	93.0	2.82	33.0
1903	363.0	16.01	22.7	203.2	11.98	17.0	130.6	4.47	29.2	81.3	2.59	31.4
1904	299.6	16.13	18.6	184.8	*11.75*	*15.7*	139.8	4.74	29.5	70.8	2.41	29.4
1905	334.8	16.09	20.8	176.7	*11.75*	*15.0*	136.0	4.76	28.6	92.7	2.87	32.3
1906	328.7	16.10	20.4	194.4	*11.75*	*16.5*	144.8	4.78	30.3	95.5	2.74	34.9
1907	381.2	16.25	23.5	195.5	*11.75*	*16.6*	127.8	4.32	29.6	92.9	2.62	35.5
1908	316.7	16.22	19.5	167.9	*11.75*	*14.3*	138.4	4.66	29.7	89.1	2.62	34.0
1909	359.2	16.30	22.0	190.4	11.64	16.4	138.0	4.53	30.5	98.3	2.84	34.6
1910	253.0	16.20	15.6	153.4	11.76	13.0	141.9	4.80	29.6	92.4	2.85	32.4
1911	322.3	15.90	20.3	192.4	11.74	16.4	149.4	4.88	30.6	106.9	2.96	36.1
1912	334.3	16.24	20.6	165.7	11.75	14.1	160.2	4.76	33.7	94.4	3.02	31.3
1913	319.4	16.17	19.8	214.8	11.72	18.3	171.1	4.88	35.1	99.2	2.87	34.6
1914	282.7	14.97	18.9	169.6	11.78	14.4	145.9	4.93	29.6	104.0	3.00	34.7
1915	222.8	13.56	16.4	170.5	12.50	13.6	141.7	4.95	28.6	113.1	3.38	33.5
1916	204.9	12.43	16.5	176.5	11.68	15.1	113.4	4.16	27.3	91.6	3.05	30.0
1917	134.5	10.36	13.0	140.0	10.56	13.3	83.9	3.75	22.4	90.4	3.08	29.4
1918	225.6	10.92	20.7	183.3	10.79	17.0	93.3	3.73	25.0	128.1	3.88	33.0
1919	187.1	11.63	16.1	169.8	10.59	16.0	79.0	3.21	24.6	107.9	3.53	30.6
1920	236.9	12.59	18.8	141.3	11.29	12.5	82.6	3.40	24.3	96.6	3.14	30.8
1921	323.5	13.30	24.3	192.8	11.78	16.4	107.8	3.56	30.3	128.4	3.34	38.3
1922	243.3	13.07	18.6	161.6	11.49	14.1	71.9	3.40	21.2	105.2	3.25	32.4
1923	275.6	13.67	20.2	224.8	11.55	19.5	106.4	3.65	29.2	104.4	3.04	34.3
1924	281.2	13.62	20.6	170.1	11.28	15.1	89.2	3.62	24.6	88.0	2.69	32.7
1925	330.3	13.87	23.8	240.8	11.67	20.6	118.2	3.84	30.8	101.4	2.76	36.7
1926	231.8	12.97	17.9	220.6	12.15	18.2	95.4	3.96	24.1	96.2	2.96	32.5
1927	276.1	13.06	21.1	195.8	12.30	15.9	120.5	4.32	27.9	109.3	3.28	33.3
1928	281.3	12.96	21.7	228.6	12.26	18.6	141.6	4.27	33.2	111.2	3.02	36.8
1929	337.3	13.34	25.3	260.1	11.79	22.1	123.1	3.96	31.1	105.5	2.88	36.6
1930	228.1	13.20	17.3	210.1	11.92	17.6	139.2	4.40	31.6	100.1	3.09	32.4
1931	264.1	12.84	20.6	244.8	11.87	20.6	155.5	5.36	29.0	93.3	2.99	31.2
1932	331.4	13.23	25.0	276.1	12.24	22.6	183.8	5.63	32.6	115.8	3.27	35.4

[a] British Isles, Belgium, Netherlands, Switzerland, Denmark, Norway, Sweden (Series 17–23).

Year	17. British Isles			18. Belgium			19. Netherlands			20. Switzerland			21. Denmark		
	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield
1885.....	82.0	2.55	32.2	*16.6*	.603	*27.5*	6.33	.209	30.3	*4.10*	*.185*	*22.0*	5.13	.128	40.1
1886.....	65.2	2.36	27.6	*15.8*	*.587*	*26.9*	5.24	.199	26.3	*4.10*	*.185*	*22.0*	4.72	.125	37.8
1887.....	78.4	2.39	32.8	*17.0*	*.572*	*29.7*	6.89	.211	32.6	*4.10*	*.185*	*22.0*	5.36	.123	43.6
1888.....	76.7	2.66	28.8	15.1	*.556*	*27.2*	5.24	.209	25.1	3.60	.183	19.7	3.29	.120	27.4
1889.....	78.1	2.54	30.7	19.1	*.540*	*35.4*	6.47	.211	30.7	3.60	.183	19.7	4.19	.116	36.1
1890.....	78.2	2.48	31.5	21.3	*.524*	*40.6*	5.43	.210	25.9	4.50	.183	24.6	3.78	.111	34.0
1891.....	76.9	2.39	32.2	16.2	*.509*	*31.8*	3.50	.145	24.1	4.20	.174	24.2	4.18	.107	39.1
1892.....	62.5	2.30	27.2	18.7	*.493*	*37.9*	5.38	.183	29.4	4.30	.174	24.7	4.26	.102	41.8
1893.....	52.4	1.95	26.9	16.9	*.477*	*35.4*	4.97	.175	28.4	3.30	.174	19.0	3.86	.098	39.4
1894.....	62.5	1.98	31.6	17.3	*.461*	*37.5*	4.17	.160	26.1	3.90	.165	23.6	3.26	.094	34.7
1895.....	39.4	1.45	27.2	18.4	.446	41.3	4.28	.153	28.0	3.40	.165	20.6	3.47	.089	39.0
1896.....	60.0	1.73	34.7	18.4	*.440*	*41.8*	5.05	.154	32.8	2.90	.165	17.6	3.69	.085	43.4
1897.....	57.9	1.94	29.8	15.1	*.434*	*34.8*	4.29	.154	27.9	3.40	.160	21.2	3.60	.088	40.9
1898.....	77.1	2.16	35.7	15.4	*.429*	*35.9*	5.41	.181	29.9	4.00	.164	24.4	3.21	.091	35.3
1899.....	69.2	2.05	33.8	14.0	*.423*	*33.1*	5.10	.178	28.6	4.10	.164	25.0	4.06	.095	42.7
1900.....	55.9	1.90	29.4	14.0	.417	33.6	4.67	.158	29.6	4.10	.164	25.0	4.14	.098	42.2
1901.....	55.5	1.74	31.9	14.1	.410	34.4	4.16	.135	30.8	3.60	.164	22.0	0.98	.032	30.6
1902.....	60.0	1.77	33.9	14.5	.416	34.9	5.02	.152	33.0	4.00	.164	24.4	4.53	.101	44.8
1903.....	50.2	1.62	31.0	12.4	.355	34.9	4.19	.137	30.6	4.20	.164	25.6	4.46	.101	44.2
1904.....	39.0	1.41	27.7	13.8	.393	35.1	4.35	.134	32.5	3.90	.157	24.8	4.28	.101	42.4
1905.....	62.1	1.84	33.8	12.4	.403	30.8	4.77	.151	31.6	3.50	.157	22.3	4.07	.101	40.3
1906.....	63.5	1.80	35.3	13.0	.371	35.0	4.86	.140	34.7	*3.00*	.100	*30.0*	4.16	.101	41.2
1907.....	58.0	1.66	34.9	15.8	.393	40.2	5.24	.134	39.1	*3.00*	.100	*30.0*	4.35	.101	43.1
1908.....	55.5	1.66	33.4	13.4	.378	35.4	5.04	.139	36.3	3.49	.106	32.9	4.58	.107	42.8
1909.....	64.2	1.87	34.3	14.6	.390	37.4	3.88	.127	30.6	3.57	.105	34.0	4.34	.114	38.1
1910.....	57.8	1.86	31.1	14.0	.399	35.1	4.37	.135	32.4	2.76	.105	26.3	5.47	.095	57.6
1911.....	68.0	1.95	34.9	15.8	.399	39.6	5.57	.142	39.2	3.52	.105	33.5	5.68	.127	44.7
1912.....	57.4	1.97	29.1	15.4	.397	38.8	5.22	.143	36.5	3.18	.104	30.6	5.05	.115	43.9
1913.....	58.8	1.79	32.8	14.8	.394	37.6	5.08	.141	36.0	3.55	.105	33.8	7.19	.144	49.9
1914.....	65.1	1.91	34.1	14.0	.400	35.0	5.72	.148	38.6	3.28	.103	31.8	6.69	.155	43.2
1915.....	76.4	2.33	32.8	7.9	*.280*	*28.2*	6.96	.163	42.7	3.96	.114	34.7	7.98	.164	48.7
1916.....	61.0	2.05	29.8	6.5	*.260*	*25.0*	4.59	.134	34.2	4.08	.124	32.9	6.04	.152	39.7
1917.....	65.6	2.10	31.2	5.0	*.235*	*21.3*	3.71	.121	30.7	4.48	.139	32.2	4.30	.131	32.8
1918.....	96.3	2.79	34.5	4.9	.232	21.1	5.27	.148	35.6	5.32	.151	35.2	6.33	.140	45.2
1919.....	71.4	2.37	30.1	10.6	.343	30.9	5.69	.168	33.9	3.89	.130	29.9	5.92	.128	46.2
1920.....	58.0	1.98	29.3	10.3	.306	33.7	5.99	.152	39.4	3.59	.119	30.2	7.39	.180	41.1
1921.....	77.1	2.08	37.1	14.5	.343	42.3	8.56	.180	47.6	3.80	.117	32.5	11.14	.220	50.6
1922.....	66.5	2.07	32.1	10.6	.300	35.3	6.16	.150	41.1	2.55	.110	23.2	9.25	.237	39.0
1923.....	60.5	1.84	32.9	13.4	.345	38.8	6.21	.154	40.3	3.84	.112	34.3	8.86	.205	43.2
1924.....	53.9	1.63	33.1	13.0	.340	38.2	4.63	.118	39.2	3.33	.111	30.0	5.86	.149	39.3
1925.....	53.8	1.57	34.3	14.5	.365	39.7	5.74	.132	43.5	3.76	.112	33.6	9.75	.199	49.0
1926.....	52.2	1.68	31.1	12.8	.354	36.2	5.49	.132	41.6	4.24	.134	31.6	8.77	.252	34.8
1927.....	57.2	1.74	32.9	16.3	.391	41.7	6.16	.153	40.3	4.34	.134	32.4	9.41	.274	34.3
1928.....	50.9	1.49	34.2	17.2	.408	42.2	7.34	.148	49.6	4.47	.134	33.4	12.21	.252	48.5
1929.....	50.9	1.41	36.1	13.2	.356	37.1	5.47	.112	48.8	4.37	.134	32.6	11.77	.260	45.3
1930.....	43.3	1.43	30.3	13.2	.411	32.1	6.06	.142	42.7	5.77	.180	32.1	10.22	.249	41.0
1931.....	38.6	1.27	30.4	13.8	.381	36.2	6.75	.191	35.3	5.48	.179	30.6	10.05	.259	38.8
1932.....	44.1	1.37	32.2	15.1	.391	38.6	13.69	.293	46.7	5.65	.182	31.0	10.66	.259	41.2

Year	22. Norway			23. Sweden			24. Eastern Europe[a]			25. Bulgaria			26. Roumania		
	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield
1885.....	*0.267*	*.011*	*24.3*	4.13	.178	23.2	274.2	18.62	14.7	27.6	*1.90*	*14.4*	*43.5*	*2.90*	*15.0*
1886.....	*0.267*	*.011*	*24.3*	4.02	.180	22.3	242.4	18.73	12.9	26.5	*1.91*	*13.9*	34.6	2.90	11.9
1887.....	*0.267*	*.011*	*24.3*	4.53	.183	24.8	319.9	18.61	17.2	25.7	*1.92*	*13.4*	47.5	2.79	17.0
1888.....	*0.267*	*.011*	*24.3*	3.72	.183	20.3	330.3	19.11	17.3	30.1	*1.93*	*15.6*	57.9	3.10	18.7
1889.....	*0.267*	*.011*	*24.3*	3.82	.188	20.3	253.3	19.63	12.9	34.8	*1.94*	*17.9*	50.0	3.31	15.1
1890.....	0.263	.011	23.9	3.96	.174	22.8	321.2	20.35	15.8	30.3	*1.95*	*15.5*	52.0	3.73	13.9
1891.....	*0.307*	*.011*	*27.9*	4.47	.175	25.5	311.5	20.50	15.2	38.5	*1.96*	*19.6*	48.5	3.81	12.7
1892.....	*0.307*	*.011*	*27.9*	4.55	.176	25.8	352.4	20.81	16.9	40.8	*1.97*	*20.7*	63.9	3.70	17.3
1893.....	*0.307*	*.011*	*27.9*	3.96	.175	22.6	375.7	21.09	17.8	36.7	*1.98*	*18.5*	60.8	3.22	18.9
1894.....	*0.307*	*.011*	*27.9*	4.33	.175	24.7	319.3	20.97	15.2	26.1	*1.99*	*13.1*	43.6	3.44	12.7
1895.....	*0.307*	*.011*	*27.9*	3.78	.176	21.5	367.2	20.92	17.6	32.0	*2.00*	*16.0*	68.4	3.55	19.3
1896.....	*0.294*	*.011*	*26.7*	4.77	.176	27.1	361.3	21.09	17.1	40.0	*2.00*	*20.0*	71.2	3.72	19.1
1897.....	*0.294*	*.011*	*26.7*	4.74	.178	26.6	242.1	20.62	11.7	28.9	2.17	13.3	36.4	3.94	9.2
1898.....	*0.294*	*.011*	*26.7*	4.74	.183	25.9	337.9	20.91	16.2	34.0	1.93	17.6	58.5	3.59	16.3
1899.....	*0.294*	*.011*	*26.7*	4.73	.186	25.4	301.4	22.28	13.5	21.6	2.04	10.6	26.1	4.11	6.4
1900.....	0.326	.013	25.1	5.51	.192	28.7	327.5	22.31	14.7	25.9	2.03	12.8	56.7	3.93	14.4
1901.....	0.318	.013	24.5	4.47	.195	22.9	343.8	22.62	15.2	32.0	2.01	15.9	71.7	4.04	17.7
1902.....	0.264	.013	20.3	4.66	.202	23.0	420.3	22.52	18.7	40.0	2.00	20.0	79.0	3.67	21.5
1903.....	0.306	.013	23.5	5.53	.201	27.5	410.0	23.19	17.7	35.6	2.00	17.8	75.3	3.97	19.0
1904.....	0.212	.013	16.3	5.25	.200	26.2	360.4	23.68	15.2	42.2	2.26	18.7	55.5	4.25	13.1
1905.....	0.328	.013	25.2	5.53	.206	26.8	430.1	24.47	17.6	34.9	2.42	14.4	104.8	4.84	21.7
1906.....	0.302	.013	23.2	6.69	.212	31.5	489.0	25.13	19.5	39.1	2.50	15.6	112.3	5.00	22.5
1907.....	0.289	.012	24.1	6.18	.217	28.5	299.3	23.34	12.8	23.5	2.42	9.7	42.8	4.24	10.1
1908.....	0.329	.012	27.4	7.05	.225	31.3	379.1	24.22	15.7	36.5	2.42	15.1	55.5	4.45	12.5
1909.....	0.312	.012	26.0	7.41	.237	31.3	340.6	23.24	14.7	32.1	2.57	12.5	58.8	4.17	14.1
1910.....	0.293	.012	24.4	7.70	.241	31.9	468.6	25.02	18.7	42.3	2.69	15.7	110.8	4.81	23.0
1911.....	0.270	.012	22.5	8.11	.251	32.3	461.2	24.63	18.7	48.3	2.76	17.5	95.7	4.77	20.1
1912.....	0.331	.012	27.6	7.80	.259	30.1	455.1	25.79	17.6	44.8	2.89	15.5	89.4	5.11	17.5
1913.....	0.324	.012	27.0	9.50	.290	32.8	426.6	22.88	18.6	43.5	2.47	17.6	84.2	4.01	21.0
1914.....	0.269	.012	22.4	8.91	.288	30.9	271.3	23.05	11.8	23.2	2.53	9.2	46.3	5.22	8.9
1915.....	0.284	.014	20.3	9.66	.315	30.7	376.1	22.45	16.8	35.5	2.41	14.7	89.8	4.71	19.1
1916.....	0.316	.014	22.6	9.04	.318	28.4	307.8	21.56	14.3	29.6	2.38	12.4	78.5	4.84	16.2
1917.....	0.430	.022	19.6	6.93	.329	21.1	291.2	20.94	13.9	29.1	2.48	11.7	*70.0*	*5.00*	*14.0*
1918.....	1.087	.041	26.5	8.89	.379	23.4	195.9	21.28	9.2	23.2	2.44	9.5	21.0	5.68	3.7
1919.....	1.071	.041	26.1	9.35	.347	27.0	243.7	15.48	15.7	29.8	2.06	14.5	66.1	4.27	15.5
1920.....	0.999	.040	25.0	10.32	.358	28.8	230.0	17.38	13.2	29.9	2.17	13.8	61.3	5.00	12.3
1921.....	0.972	.041	23.7	12.34	.358	34.5	302.7	19.61	15.4	29.2	2.23	13.1	78.6	6.15	12.8
1922.....	0.643	.025	25.7	9.51	.356	26.7	317.5	21.41	14.8	32.6	2.30	14.2	92.0	6.55	14.0
1923.....	0.587	.025	23.5	11.00	.362	30.4	366.0	21.54	17.0	29.1	2.38	12.2	102.1	6.65	15.4
1924.....	0.493	.021	23.5	6.80	.322	21.1	288.9	23.62	12.2	24.7	2.49	9.9	70.4	7.84	9.0
1925.....	0.490	.022	22.3	13.36	.363	36.8	419.4	24.24	17.3	41.4	2.55	16.2	104.7	8.16	12.8
1926.....	0.586	.022	26.6	12.15	.381	31.9	403.4	24.80	16.3	36.5	2.62	13.9	110.9	8.22	13.5
1927.....	0.605	.025	24.2	15.32	.561	27.3	402.6	25.14	16.0	42.1	2.67	15.8	96.7	7.66	12.6
1928.....	0.798	.028	28.5	18.33	.561	32.7	503.1	25.85	19.5	49.2	2.81	17.5	115.5	7.92	14.6
1929.....	0.750	.030	25.0	19.01	.574	33.1	447.1	25.15	17.8	33.2	2.66	12.5	99.8	6.76	14.8
1930.....	0.720	.030	24.0	20.82	.646	32.2	513.4	27.39	18.7	57.3	3.01	19.0	130.8	7.55	17.3
1931.....	0.592	.029	20.4	18.05	.684	26.4	516.5	28.97	17.8	61.2	2.96	20.7	135.3	8.57	15.8
1932.....	0.785	.028	28.0	25.83	.747	34.6	358.1	27.11	13.2	50.6	3.08	16.4	55.5	7.09	7.8

[a] Before 1919: Bulgaria, Roumania, Austria, Hungary, Bosnia-Herzegovina, Serbia, Congress Poland, Bessarabia, Other Areas Lost by Russia, and Finland (Series 25–33, 35); after 1919: Bulgaria, Roumania, Austria, Hungary, Czecho-Slovakia, Jugo-Slavia, Poland, Estonia, Lithuania, Latvia, Finland (Series 25–35).

Year	27. Austria			28. Hungary			29. Bosnia-Herzegovina (1885–1918); Czecho-Slovakia (1919–32)			30. Serbia (1885–1918); Jugo-Slavia (1919–32)			31. Congress Poland (1885–1918); Poland (1919–32)		
	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield
1885.....	47.2	2.95	16.0	119.8	7.17	16.7	1.69	*0.200*	*8.5*	4.70	*0.500*	*9.4*	*13.0*	*1.00*	*13.0*
1886.....	43.6	2.90	15.0	109.9	7.23	15.2	1.68	0.200	8.4	4.50	*0.530*	*9.1*	*10.0*	*1.00*	*10.0*
1887.....	51.8	2.88	18.0	155.8	7.28	21.4	2.16	*0.203*	*10.6*	5.00	*0.550*	*15.0*	*12.0*	0.92	*13.0*
1888.....	51.0	2.93	17.4	145.1	7.28	19.9	2.07	*0.206*	*10.1*	8.08	*0.580*	*13.8*	14.4	*1.00*	*14.4*
1889.....	37.5	2.70	13.9	97.7	7.64	12.8	1.56	*0.209*	*7.5*	9.19	*0.600*	*15.3*	10.1	*1.10*	*9.2*
1890.....	42.9	2.84	15.1	158.0	7.82	20.2	2.95	*0.212*	*13.9*	6.98	*0.650*	*10.7*	12.2	*1.20*	*10.2*
1891.....	39.5	2.75	14.4	145.5	7.93	18.3	2.62	*0.215*	*12.2*	8.08	*0.690*	*11.7*	12.2	*1.20*	*10.2*
1892.....	49.6	2.78	17.8	149.2	8.09	18.4	3.59	*0.218*	*16.5*	11.02	*0.720*	*15.5*	23.6	*1.30*	*18.2*
1893.....	42.7	2.77	15.4	168.7	8.65	19.5	2.47	*0.221*	*11.2*	8.82	0.783	11.3	21.6	1.38	15.7
1894.....	47.3	2.71	17.5	154.3	8.48	18.2	2.79	*0.224*	*12.5*	8.08	*0.750*	*10.8*	16.8	1.22	13.8
1895.....	40.3	2.63	15.3	172.0	8.31	20.7	2.63	0.225	11.7	8.82	*0.725*	*12.2*	17.4	*1.30*	*13.4*
1896.....	41.8	2.62	16.0	161.3	8.31	19.4	2.46	*0.233*	*10.6*	8.08	*0.700*	*11.5*	19.5	*1.30*	*15.0*
1897.....	34.5	2.62	13.2	87.0	7.45	11.7	1.48	*0.240*	*6.2*	13.23	0.691	19.1	17.8	*1.30*	*13.7*
1898.....	46.9	2.61	18.0	139.6	8.16	17.1	2.30	*0.248*	*9.3*	9.55	0.696	13.7	21.7	*1.30*	*16.7*
1899.....	50.2	2.65	18.9	150.3	8.44	17.8	3.02	*0.255*	*11.8*	11.76	0.998	11.8	21.5	1.31	16.4
1900.....	40.9	2.63	15.6	152.1	8.81	17.3	2.32	*0.263*	*8.8*	8.08	0.766	10.5	19.7	1.32	14.9
1901.....	44.0	2.64	16.7	134.6	8.87	15.2	2.17	*0.270*	*8.0*	8.10	0.753	10.8	14.4	1.24	11.6
1902.....	49.7	2.61	19.0	182.9	8.95	20.4	2.38	*0.278*	*8.6*	11.41	0.805	14.2	20.3	1.31	15.6
1903.....	46.2	2.60	17.8	176.6	9.23	19.1	3.90	*0.285*	*13.7*	10.89	0.860	12.7	19.3	1.29	15.0
1904.....	53.7	2.75	19.5	146.9	9.13	16.1	3.75	*0.293*	*12.8*	11.68	0.905	12.9	21.2	1.24	17.1
1905.....	54.5	2.78	19.6	170.6	9.20	18.5	3.02	*0.300*	*10.1*	11.26	0.920	12.2	20.2	1.22	16.6
1906.....	58.3	2.88	20.2	207.6	9.52	21.8	2.69	0.324	8.3	13.21	0.921	14.3	21.2	1.26	16.8
1907.....	52.4	2.91	18.0	130.8	8.78	14.9	2.17	0.248	8.8	8.38	0.908	9.2	18.2	1.24	14.7
1908.....	62.1	2.96	21.0	165.3	9.47	17.5	3.02	0.272	11.1	11.49	0.938	12.2	21.2	1.22	17.4
1909.....	58.5	2.94	19.9	124.9	8.80	14.2	2.59	0.205	12.7	16.14	0.923	17.5	21.2	1.23	17.3
1910.....	57.6	3.00	19.2	181.1	9.38	19.3	2.67	0.247	10.8	12.78	0.953	13.4	22.8	1.26	18.1
1911.....	58.9	3.00	19.6	189.9	9.16	20.7	2.94	0.193	15.2	15.31	0.955	16.0	24.1	1.26	19.2
1912.....	69.6	3.11	22.4	184.8	9.58	19.3	2.99	0.247	12.1	7.72	*0.970*	*8.0*	24.6	1.25	19.7
1913.....	59.6	3.00	19.9	167.2	8.53	19.6	3.84	0.320	12.0	9.55	*0.900*	*10.6*	24.0	1.31	18.3
1914.....	38.2	1.66	23.0	117.9	8.86	13.3	2.50	*0.300*	*8.3*	8.45	*0.900*	*9.4*	*13.2*	*1.20*	*11.0*
1915.....	32.4	1.84	17.6	157.6	8.88	17.7	3.00	*0.275*	*10.9*	9.19	*0.880*	*10.4*	*18.0*	*1.20*	*15.0*
1916.....	27.8	2.01	13.8	120.5	8.10	14.9	*2.50*	*0.250*	*10.0*	8.82	*0.860*	*10.3*	*14.0*	*1.00*	*14.0*
1917.....	25.2	2.04	12.4	123.2	7.58	16.3	*2.25*	*0.225*	*10.0*	*10.20*	*0.850*	*12.0*	*9.6*	*0.80*	*12.0*
1918.....	22.2	1.93	11.5	95.1	7.57	12.6	*1.60*	*0.200*	*8.0*	*8.40*	*0.840*	*10.0*	*8.8*	*0.80*	*11.0*
1919.....	5.11	0.371	13.8	*44.0*	*2.60*	*16.9*	*27.8*	*1.50*	18.5	51.1	3.38	15.1	15.8	1.06	14.9
1920.....	5.52	0.378	14.6	37.9	2.66	14.2	26.4	1.57	16.8	43.0	3.56	12.1	22.7	1.79	12.7
1921.....	6.53	0.378	17.3	52.7	2.89	18.2	38.7	1.56	24.8	51.8	3.70	14.0	40.5	2.42	16.7
1922.....	7.42	0.460	16.1	54.7	3.52	15.5	33.6	1.53	22.0	44.5	3.67	12.1	46.8	3.02	15.5
1923.....	8.89	0.475	18.7	67.7	3.29	20.6	36.2	1.51	24.0	61.1	3.84	15.9	54.9	2.99	18.4
1924.....	8.49	0.482	17.6	51.6	3.50	14.7	32.2	1.51	21.4	57.8	4.24	13.6	37.5	3.16	11.9
1925.....	10.67	0.484	22.0	71.7	3.52	20.4	39.3	1.53	25.7	78.6	4.31	18.2	63.9	3.20	20.0
1926.....	9.44	0.500	18.9	74.9	3.71	20.2	39.9	1.80	22.2	71.4	4.18	17.1	52.5	3.25	16.2
1927.....	11.96	0.505	23.7	76.9	4.02	19.1	47.2	1.85	25.5	56.6	4.52	12.5	61.1	3.36	18.2
1928.....	12.92	0.514	25.1	99.2	4.14	24.0	52.9	1.92	27.5	103.3	4.68	22.1	59.2	3.19	18.6
1929.....	11.56	0.515	22.4	75.0	3.71	20.2	52.9	2.02	26.2	95.0	5.21	18.2	65.9	3.53	18.7
1930.....	12.01	0.508	23.6	84.3	4.19	20.1	50.6	1.97	25.7	80.3	5.25	15.3	82.3	4.07	20.2
1931.....	11.01	0.517	21.3	72.6	4.12	17.6	41.2	2.06	20.0	98.8	5.40	18.3	83.2	4.50	18.5
1932.....	13.01	0.536	24.3	64.4	3.90	16.5	53.8	2.06	26.1	53.5	5.24	10.2	49.5	4.26	11.6

Year	32. Bessarabia (1885–1918); Estonia (1919–32)			33. Other areas lost by Russia (1885–1918);[a] Lithuania (1919–32)			34. Latvia			35. Finland			36. Mediterranean countries ex-Italy[b]		
	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield
1885.....	*10.4*	*1.45*	*7.2*	*6.22*	*.548*	*11.4*	....	....	....	0.118	*.007*	*16.9*	193.3	16.14	12.0
1886.....	*6.0*	*1.48*	*4.1*	*5.46*	*.571*	*9.6*	....	....	....	0.133	*.007*	*19.0*	170.3	15.59	10.9
1887.....	*12.4*	1.50	*8.3*	*7.40*	*.561*	*13.2*	....	....	....	0.157	*.007*	*22.4*	174.0	15.79	11.0
1888.....	*14.7*	*1.49*	*9.9*	*6.82*	*.586*	*11.6*	....	....	....	0.148	*.007*	*21.1*	155.1	15.62	9.9
1889.....	*7.1*	*1.53*	*4.6*	*5.20*	*.595*	*8.7*	....	....	....	0.150	*.007*	*21.4*	155.3	15.64	9.9
1890.....	*10.3*	*1.31*	*7.9*	*5.38*	*.627*	*8.6*	....	....	....	0.145	*.008*	*18.1*	164.1	16.39	10.0
1891.....	*9.4*	*1.31*	*7.2*	*7.03*	*.630*	*11.2*	....	....	....	0.126	*.008*	*15.8*	160.2	14.30	11.2
1892.....	*3.2*	*1.35*	*2.4*	*7.41*	*.674*	*11.0*	....	....	....	0.113	*.008*	*14.1*	170.1	16.24	10.5
1893.....	*26.2*	1.45	*18.1*	*7.59*	*.629*	*12.1*	....	....	....	0.127	*.008*	*15.9*	172.4	15.93	10.8
1894.....	*11.9*	*1.52*	*7.8*	*8.31*	*.630*	*13.2*	....	....	....	0.148	*.009*	*16.4*	210.0	16.18	13.0
1895.....	*18.4*	*1.54*	*11.9*	*7.09*	*.629*	*11.3*	....	....	....	0.147	*.009*	*16.3*	175.5	15.97	11.0
1896.....	*8.1*	*1.55*	*5.2*	*8.69*	*.644*	*13.5*	....	....	....	0.149	*.009*	*16.6*	163.2	15.77	10.3
1897.....	*15.1*	*1.55*	*9.7*	*7.54*	*.645*	*11.7*	....	....	....	0.158	*.009*	*17.6*	176.9	17.46	10.1
1898.....	*15.8*	*1.70*	*9.3*	*9.35*	*.663*	*14.1*	....	....	....	0.159	*.009*	*17.7*	216.5	17.50	12.4
1899.....	*5.7*	1.77	*3.2*	*11.03*	*.702*	*15.7*	....	....	....	0.144	*.009*	*16.0*	182.6	17.20	10.6
1900.....	*12.4*	1.82	*6.8*	*9.21*	*.734*	*12.5*	....	....	....	0.158	*.009*	*17.6*	199.3	17.80	11.2
1901.....	*25.7*	*2.02*	*12.7*	*10.98*	*.764*	*14.4*	....	....	....	0.140	*.009*	*15.6*	237.1	17.43	13.6
1902.....	*23.0*	*2.13*	*10.8*	*11.56*	*.764*	*15.1*	....	....	....	0.079	*.008*	*9.9*	235.5	17.72	13.3
1903.....	*30.2*	*2.16*	*14.0*	*11.91*	*.784*	*15.2*	....	....	....	0.130	*.008*	*16.2*	231.8	17.65	13.1
1904.....	12.9	*2.07*	*6.2*	*12.39*	*.774*	*16.0*	....	....	....	0.133	*.008*	*16.6*	191.4	17.78	10.8
1905.....	*19.8*	*2.00*	*9.9*	*10.90*	*.785*	*13.9*	....	....	....	0.129	*.008*	*16.1*	181.2	17.33	10.5
1906.....	25.4	1.97	12.9	*9.09*	*.750*	*12.1*	....	....	....	0.151	*.008*	*18.9*	242.3	17.91	13.5
1907.....	13.5	1.89	7.1	*7.45*	*.700*	*10.6*	....	....	....	0.140	*.008*	*17.5*	198.7	17.90	11.1
1908.....	13.1	1.78	7.4	*10.81*	*.701*	*15.4*	....	....	....	0.111	*.008*	*13.9*	212.3	18.37	11.6
1909.....	16.0	1.71	9.4	*10.23*	*.686*	*14.9*	....	....	....	0.134	.008	16.8	248.6	18.36	13.5
1910.....	27.3	1.97	13.9	*11.13*	*.701*	*15.9*	....	....	....	0.124	.008	15.5	241.4	18.85	12.8
1911.....	15.5	1.83	8.5	*10.46*	*.697*	*15.0*	....	....	....	0.140	.009	15.6	270.1	19.29	14.0
1912.....	19.4	1.89	10.3	*11.65*	*.738*	*15.8*	....	....	....	0.120	.009	13.3	201.3	19.50	10.3
1913.....	23.5	1.62	14.5	*11.05*	*.709*	*15.6*	....	....	....	0.165	.009	18.3	228.8	19.68	11.6
1914.....	*11.2*	*1.71*	*6.5*	*10.13*	*.662*	*15.3*	....	....	....	0.196	.010	19.6	218.9	19.08	11.5
1915.....	*21.4*	*1.72*	*12.4*	*8.97*	*.522*	*17.2*	....	....	....	0.260	.012	21.7	254.0	19.61	13.0
1916.....	*18.0*	*1.50*	*12.0*	*7.80*	*.600*	*13.0*	....	....	....	0.247	.016	15.4	260.2	20.07	13.0
1917.....	*15.4*	*1.40*	*11.0*	*6.05*	*.550*	*11.0*	....	....	....	0.228	.018	12.7	239.4	19.17	12.5
1918.....	*10.4*	*1.30*	*8.0*	*5.00*	*.500*	*10.0*	....	....	....	0.214	.018	11.9	262.1	20.46	12.8
1919.....	0.47	0.033	14.2	2.65	.148	17.9	0.57	.038	15.0	0.261	.019	13.7	225.4	20.40	11.0
1920.....	0.38	0.032	11.8	2.20	.162	13.6	0.39	.039	10.0	0.267	.022	12.1	231.3	20.38	11.3
1921.....	0.50	0.031	16.3	2.84	.179	15.9	0.78	.046	17.0	0.579	.028	20.7	262.4	20.39	12.9
1922.....	0.76	0.052	14.6	3.41	.201	17.0	0.96	.070	13.7	0.710	.038	18.7	216.0	20.93	10.3
1923.....	0.74	0.056	13.2	2.97	.201	14.8	1.64	.106	15.5	0.687	.038	18.1	285.9	21.13	13.5
1924.....	0.54	0.044	12.3	3.32	.210	15.8	1.58	.106	14.9	0.790	.037	21.4	225.5	21.18	10.6
1925.....	0.79	0.051	15.5	5.29	.277	19.1	2.16	.119	18.2	0.929	.038	24.4	290.9	22.16	13.1
1926.....	0.88	0.059	14.9	4.18	.303	13.8	1.86	.122	15.2	0.924	.039	23.7	262.0	22.82	11.5
1927.....	1.08	0.067	16.1	5.25	.297	17.7	2.64	.145	18.2	1.064	.044	24.2	273.4	21.94	12.5
1928.....	1.04	0.070	14.8	6.33	.393	16.1	2.50	.164	15.2	0.998	.046	21.7	249.2	22.94	10.9
1929.....	1.26	0.082	15.4	9.33	.488	19.1	2.34	.145	16.1	0.764	.034	22.5	298.9	23.08	13.0
1930.....	1.64	0.090	18.2	8.90	.526	16.9	4.07	.179	22.7	1.210	.051	23.7	273.9	24.12	11.4
1931.....	1.74	0.099	17.6	6.86	.478	14.4	3.39	.215	15.8	1.161	.047	24.7	275.0	23.65	11.6
1932.....	2.08	0.128	16.2	9.36	.514	18.2	5.08	.255	19.9	1.260	.050	25.2	334.6	24.04	13.9

[a] Provinces of Livonia, Courland, Estonia, Vilno, Kovno, Grodno, and half of Volhynia.
[b] Spain, Portugal, Morocco, Algeria, Tunis, Greece, Egypt (Series 37–43).

Year	37. Spain			38. Portugal			39. French Morocco			40. Algeria			41. Tunis		
	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield
1885.....	113.5	8.40	13.5	4.21	0.659	6.4	*10.3*	*1.03*	*10.0*	24.3	3.25	7.5	*5.00*	*1.00*	*5.0*
1886.....	86.0	*8.00*	*10.8*	8.23	*0.664*	*12.4*	*10.4*	*1.04*	*10.0*	24.6	3.08	8.0	*5.00*	*1.00*	*5.0*
1887.....	95.0	*8.20*	*11.6*	6.00	*0.669*	*9.0*	*10.5*	*1.05*	*10.0*	21.3	3.05	7.0	*5.00*	*1.00*	*5.0*
1888.....	75.9	*8.00*	*9.5*	7.09	*0.673*	*10.5*	*10.6*	*1.06*	*10.0*	20.2	3.06	6.6	*5.00*	*1.00*	*5.0*
1889.....	75.6	*8.30*	*9.1*	8.51	*0.678*	*12.6*	*10.7*	*1.07*	*10.0*	19.1	2.75	6.9	*5.00*	*1.00*	*5.0*
1890.....	75.5	8.56	8.8	8.25	*0.682*	*12.0*	*10.8*	*1.08*	*10.0*	28.7	3.22	8.9	4.30	*1.00*	*4.3*
1891.....	72.6	6.56	11.1	7.00	*0.687*	*10.2*	*10.9*	*1.09*	*10.0*	26.1	3.10	8.4	7.00	*1.00*	*7.0*
1892.....	87.3	8.37	10.4	6.00	*0.691*	*8.7*	*11.0*	*1.10*	*10.0*	19.8	3.16	6.3	8.00	*1.00*	*8.0*
1893.....	93.5	7.95	11.8	5.50	*0.695*	*7.9*	*11.1*	*1.11*	*10.0*	20.2	3.24	6.2	4.00	*1.00*	*4.0*
1894.....	110.0	8.25	13.3	9.00	*0.700*	*12.9*	*11.2*	*1.12*	*10.0*	30.9	3.17	9.7	10.70	*1.00*	*10.7*
1895.....	84.5	7.86	10.8	7.00	*0.704*	*9.9*	*11.3*	*1.13*	*10.0*	26.1	3.27	8.0	7.50	*1.00*	*7.5*
1896.....	79.2	7.83	10.1	5.60	*0.709*	*7.9*	*11.4*	*1.14*	*10.0*	22.8	3.12	7.3	5.60	*1.00*	*5.6*
1897.....	94.7	9.53	9.9	8.20	*0.713*	*11.5*	*11.5*	*1.15*	*10.0*	19.8	3.12	6.3	5.00	*1.00*	*5.0*
1898.....	125.1	9.54	13.1	7.80	*0.717*	*10.9*	*11.6*	*1.16*	*10.0*	27.2	3.11	8.7	6.50	*1.00*	*6.5*
1899.....	97.7	9.05	10.8	6.40	*0.722*	*8.9*	*11.7*	*1.17*	*10.0*	22.4	3.22	7.0	4.80	*1.00*	*4.8*
1900.....	100.7	9.56	10.5	8.00	*0.727*	*11.0*	*11.8*	*1.18*	*10.0*	33.4	3.26	10.2	4.90	*1.00*	*4.9*
1901.....	136.9	9.17	14.9	10.00	*0.732*	*13.7*	*11.9*	*1.19*	*10.0*	32.3	3.23	10.0	4.59	0.99	4.6
1902.....	133.5	9.15	14.6	10.40	*0.737*	*14.1*	*12.0*	*1.20*	*10.0*	33.8	3.43	9.9	4.27	1.08	4.0
1903.....	129.0	8.98	14.4	8.80	0.741	11.9	*12.2*	*1.22*	*10.0*	34.2	3.50	9.8	7.79	1.14	6.8
1904.....	95.4	9.02	10.6	9.00	*0.799*	*11.3*	*12.4*	*1.24*	*10.0*	25.4	3.43	7.4	8.72	1.20	7.3
1905.....	92.5	8.88	10.4	7.72	*0.857*	*9.0*	*12.6*	*1.26*	*10.0*	25.7	3.40	7.6	4.07	0.91	4.5
1906.....	140.7	9.30	15.1	9.55	*0.916*	*10.4*	*12.8*	*1.28*	*10.0*	34.2	3.32	10.3	5.08	1.01	5.0
1907.....	100.3	9.14	11.0	7.57	*0.975*	7.8	*13.0*	*1.30*	*10.0*	31.2	3.26	9.6	6.54	1.13	5.8
1908.....	120.0	9.28	12.9	6.94	*1.034*	*6.7*	*13.2*	*1.32*	*10.0*	29.8	3.60	8.3	3.67	1.09	3.4
1909.....	144.1	9.35	15.4	6.50	*1.093*	*5.9*	*13.4*	*1.34*	*10.0*	35.6	3.43	10.4	6.43	1.00	6.4
1910.....	137.5	9.41	14.6	9.12	*1.152*	7.9	*13.6*	*1.36*	*10.0*	36.0	3.55	10.1	4.04	1.22	3.3
1911.....	148.5	9.71	15.3	11.85	1.211	9.8	*13.8*	*1.38*	*10.0*	39.3	3.43	11.5	8.63	1.40	6.2
1912.....	109.8	9.63	11.4	6.76	1.211	5.6	*14.0*	*1.40*	*10.0*	27.2	3.62	7.5	3.86	1.41	2.7
1913.....	112.4	9.64	11.7	9.19	1.211	7.6	*14.2*	*1.42*	*10.0*	37.5	3.58	10.5	8.16	1.52	5.4
1914.....	116.1	9.68	12.0	7.02	0.928	7.6	*14.5*	*1.45*	*10.0*	33.1	3.63	9.1	2.20	1.00	2.2
1915.....	139.3	10.04	13.9	6.62	0.932	7.1	17.9	1.36	13.2	33.8	3.42	9.9	8.27	1.35	6.1
1916.....	152.3	10.15	15.0	7.42	0.928	8.0	18.4	1.51	12.2	32.0	3.66	8.7	5.51	1.48	3.7
1917.....	142.7	10.34	13.8	7.43	0.684	10.9	15.7	1.46	10.8	25.0	3.07	8.1	7.31	1.45	5.0
1918.....	135.7	10.23	13.3	9.58	1.012	9.5	22.7	1.87	12.1	36.4	3.37	10.8	11.94	1.60	7.5
1919.....	129.3	10.38	12.5	8.18	1.103	7.4	16.4	2.11	7.8	24.6	3.01	8.2	6.98	1.41	5.0
1920.....	138.6	10.25	13.5	10.38	1.098	9.5	18.0	2.00	9.0	16.2	3.45	4.7	5.23	1.32	4.0
1921.....	145.1	10.39	14.0	9.26	1.090	8.5	23.2	1.96	11.8	28.5	3.04	9.4	8.96	1.50	6.0
1922.....	125.5	10.31	12.2	10.01	1.156	8.7	12.9	2.07	6.2	18.9	3.74	5.1	3.67	1.07	3.4
1923.....	157.1	10.49	15.0	13.19	1.055	12.5	20.0	2.25	8.9	36.2	3.12	11.6	9.92	1.61	6.2
1924.....	121.8	10.38	11.7	10.57	1.039	10.2	28.8	2.46	11.7	17.3	3.53	4.9	5.15	1.20	4.3
1925.....	162.6	10.72	15.2	12.49	1.052	11.9	23.9	2.62	9.1	32.7	3.61	9.1	11.76	1.63	7.2
1926.....	146.6	10.78	13.6	8.56	1.063	8.1	20.6	2.56	8.0	23.6	3.74	6.3	13.04	1.84	7.1
1927.....	144.8	10.83	13.4	11.45	1.064	10.8	23.5	2.30	10.2	28.3	3.47	8.2	8.08	1.38	5.9
1928.....	122.6	10.57	11.6	7.55	1.102	6.9	24.7	2.67	9.3	30.3	3.66	8.3	13.70	2.02	6.8
1929.....	154.2	10.62	14.5	10.64	1.075	9.9	31.8	3.01	10.6	33.3	3.80	8.8	12.31	1.73	7.1
1930.....	146.7	11.13	13.2	13.82	1.104	12.5	21.3	2.96	7.2	32.2	4.03	8.0	10.40	1.92	5.4
1931.....	134.4	11.24	12.0	13.00	1.271	10.2	29.7	2.48	12.0	25.6	3.64	7.0	13.96	1.98	7.1
1932.....	178.5	11.19	16.0	18.14	1.359	13.3	22.0	2.45	9.0	29.2	3.70	7.9	14.70	2.10	7.0

Year	42. Greece			43. Egypt			44. Minor ex-European countries[a]			45. Union of South Africa		
	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield
1885	*6.00*	*0.600*	*10.0*	*30.0*	*1.20*	*25.0*	47.2	3.68	12.8	*5.31*	*0.625*	*8.5*
1886	*6.10*	*0.610*	*10.0*	*30.0*	*1.20*	*25.0*	52.6	3.74	14.1	*5.36*	*0.630*	*8.5*
1887	*6.20*	*0.620*	*10.0*	*30.0*	*1.20*	*25.0*	55.8	3.88	14.4	*6.03*	*0.635*	*9.5*
1888	*6.31*	*0.631*	*10.0*	*30.0*	*1.20*	*25.0*	52.9	3.87	13.7	*6.08*	*0.640*	*9.5*
1889	*6.41*	*0.641*	*10.0*	*30.0*	*1.20*	*25.0*	59.2	3.92	15.1	*6.13*	*0.645*	*9.5*
1890	*6.51*	*0.651*	*10.0*	*30.0*	*1.20*	*25.0*	49.6	3.90	12.7	*4.88*	*0.650*	*7.5*
1891	*6.62*	*0.662*	*10.0*	*30.0*	*1.20*	*25.0*	59.4	3.98	14.9	*5.57*	*0.655*	*8.5*
1892	*6.72*	*0.672*	*10.0*	*31.3*	*1.25*	*25.0*	60.8	4.11	14.8	*6.27*	*0.660*	*9.5*
1893	*6.82*	*0.682*	*10.0*	*31.3*	*1.25*	*25.0*	58.4	3.96	14.7	*6.32*	*0.665*	*9.5*
1894	*6.93*	*0.693*	*10.0*	*31.3*	*1.25*	*25.0*	60.4	4.01	15.1	*5.70*	*0.670*	*8.5*
1895	*7.03*	*0.703*	*10.0*	*32.5*	1.30	*25.0*	54.5	4.18	13.0	*5.40*	*0.675*	*8.0*
1896	*7.13*	*0.713*	*10.0*	*31.5*	1.26	*25.0*	49.6	4.14	12.0	*5.44*	*0.680*	*8.0*
1897	*7.24*	*0.724*	*10.0*	*30.5*	1.22	*25.0*	56.7	4.24	13.4	*5.48*	*0.685*	*8.0*
1898	*7.34*	*0.734*	*10.0*	*31.0*	1.24	*25.0*	66.2	4.43	14.9	*5.52*	*0.690*	*8.0*
1899	*7.44*	*0.744*	*10.0*	*32.2*	1.29	*25.0*	60.3	4.44	13.6	*5.56*	*0.695*	*8.0*
1900	*7.54*	*0.754*	*10.0*	*33.0*	1.32	*25.0*	53.2	4.03	13.2	*5.95*	*0.700*	*8.5*
1901	*7.65*	*0.765*	*10.0*	*33.8*	1.35	*25.0*	56.3	4.20	13.4	*5.99*	*0.705*	*8.5*
1902	*7.75*	*0.775*	*10.0*	*33.8*	1.35	*25.0*	54.8	3.97	13.8	*6.04*	*0.710*	*8.5*
1903	*7.85*	*0.785*	*10.0*	*32.0*	1.28	*25.0*	54.6	4.34	12.6	*6.08*	*0.715*	*8.5*
1904	*7.96*	*0.796*	*10.0*	*32.5*	1.30	*25.0*	60.5	4.27	14.2	*6.12*	*0.720*	*8.5*
1905	*8.06*	*0.806*	*10.0*	*30.5*	1.22	*25.0*	54.3	4.24	12.8	*6.16*	*0.725*	*8.5*
1906	*8.16*	*0.816*	*10.0*	*31.8*	1.27	*25.0*	60.8	4.23	14.4	*6.20*	*0.730*	*8.5*
1907	*8.27*	*0.827*	*10.0*	*31.8*	1.27	*25.0*	67.0	4.68	14.3	*6.25*	*0.735*	*8.5*
1908	*8.37*	*0.837*	*10.0*	*30.3*	1.21	*25.0*	70.4	4.75	14.8	*6.66*	*0.740*	*9.0*
1909	*8.47*	*0.847*	*10.0*	34.1	1.30	26.2	67.8	4.18	16.2	*6.33*	*0.745*	*8.5*
1910	*8.58*	*0.858*	*10.0*	32.6	1.30	25.1	66.8	4.50	14.8	6.03	0.801	7.5
1911	12.62	0.868	14.5	35.4	1.29	27.4	76.5	4.67	16.4	6.50	0.724	9.0
1912	*9.00*	*0.900*	*10.0*	30.7	1.33	23.1	74.2	4.70	15.8	7.00	0.724	9.7
1913	*9.50*	*0.950*	*10.0*	37.8	1.36	27.8	69.5	4.72	14.7	7.54	0.724	10.4
1914	13.11	1.088	12.0	32.9	1.30	25.3	67.3	4.71	14.3	8.12	0.724	11.2
1915	9.05	0.914	9.9	39.1	1.59	24.6	78.3	5.19	15.1	7.31	0.786	9.3
1916	8.11	0.895	9.0	36.5	1.45	25.2	76.9	5.10	15.1	6.50	0.754	8.6
1917	11.50	1.045	11.0	29.8	1.12	26.6	94.9	5.75	16.5	10.15	0.986	10.3
1918	13.72	1.092	12.6	32.1	1.29	24.9	83.0	5.46	15.2	8.34	0.956	8.7
1919	9.81	1.068	9.2	30.1	1.32	22.8	75.2	5.03	15.0	5.49	0.820	6.7
1920	11.19	1.076	10.4	31.7	1.19	26.6	84.8	5.24	16.2	7.61	0.875	8.7
1921	10.34	0.949	10.9	37.0	1.46	25.3	90.8	5.64	16.1	8.67	0.992	8.7
1922	9.02	1.062	8.5	36.0	1.52	23.7	83.8	5.38	15.6	6.27	0.848	7.4
1923	8.78	1.063	8.3	40.7	1.54	26.4	85.2	5.62	15.2	5.97	0.779	7.7
1924	7.72	1.153	6.7	34.2	1.42	24.1	82.7	5.24	15.8	7.13	0.755	9.4
1925	11.22	1.149	9.8	36.2	1.38	26.2	90.6	5.56	16.3	9.21	0.968	9.5
1926	12.40	1.304	9.5	37.2	1.53	24.3	88.2	5.61	15.7	8.04	0.881	9.1
1927	12.97	1.233	10.5	44.3	1.66	26.7	99.5	6.08	16.4	5.68	0.774	7.3
1928	13.09	1.329	9.9	37.3	1.59	23.5	97.5	5.98	16.3	7.24	0.825	8.8
1929	11.43	1.237	9.2	45.2	1.61	28.1	103.4	6.30	16.4	10.63	1.152	9.2
1930	9.71	1.396	7.0	39.8	1.58	25.2	83.9	6.00	14.0	9.30	1.137	8.2
1931	12.20	1.390	8.8	46.1	1.65	27.9	93.4	6.72	13.9	13.71	1.723	8.0
1932	19.47	1.483	13.1	52.6	1.76	29.9	91.9	6.59	13.9	9.33	1.800	5.2

[a] Union of South Africa, New Zealand, Japan, Chosen, Chile, Uruguay (Series 45–50).

Year	46. New Zealand			47. Japan			48. Chosen			49. Chile			50. Uruguay		
	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield	Prod.	Acreage	Yield
1885.....	4.24	.174	24.4	12.4	0.98	12.7	*5.29*	*.460*	*11.5*	*15.0*	*1.00*	*15.0*	*5.00*	*0.450*	*11.1*
1886.....	6.30	.253	24.9	16.5	0.99	16.7	*5.35*	*.465*	*11.5*	*15.0*	*1.00*	*15.0*	*4.00*	*0.400*	*10.0*
1887.....	9.42	.357	26.4	15.6	0.96	16.2	*5.40*	*.470*	*11.5*	14.4	*1.00*	*14.4*	*5.00*	*0.450*	*11.1*
1888.....	8.77	.362	24.2	15.8	0.99	16.0	*5.46*	*.475*	*11.5*	12.8	*1.00*	*12.8*	*4.00*	*0.400*	*10.0*
1889.....	8.45	.334	25.3	16.5	1.07	15.4	*5.52*	*.480*	*11.5*	18.6	*1.00*	*18.6*	4.00	*0.400*	*10.0*
1890.....	5.72	.301	19.0	12.6	1.12	11.2	*5.58*	*.485*	*11.5*	18.0	*1.00*	*18.0*	2.80	*0.350*	8.0
1891.....	10.26	.402	25.5	18.1	1.04	17.4	*5.64*	*.490*	*11.5*	16.5	*1.00*	*16.5*	3.33	0.393	8.5
1892.....	8.38	.381	22.0	15.7	1.06	14.8	*5.69*	*.495*	*11.5*	19.0	*1.00*	*19.0*	5.76	0.512	11.2
1893.....	4.89	.243	20.1	16.5	1.04	15.9	*5.75*	*.500*	*11.5*	16.0	*1.00*	*16.0*	9.00	0.504	17.9
1894.....	3.61	.149	24.2	20.3	1.09	18.6	*5.81*	*.505*	*11.5*	15.0	*1.00*	*15.0*	10.00	*0.600*	*16.7*
1895.....	6.84	.245	27.9	20.4	1.10	18.5	*5.86*	*.510*	*11.5*	12.0	*1.00*	*12.0*	4.06	*0.650*	*6.2*
1896.....	5.93	.259	22.9	18.2	1.09	16.7	*5.92*	*.515*	*11.5*	10.5	*1.00*	*10.5*	3.60	*0.600*	*6.0*
1897.....	5.67	.316	17.9	19.5	1.12	17.4	*5.98*	*.520*	*11.5*	14.0	*1.00*	*14.0*	6.00	*0.600*	*10.0*
1898.....	13.07	.399	32.8	21.4	1.14	18.8	*6.04*	*.525*	*11.5*	13.0	*1.00*	*13.0*	7.16	0.678	10.6
1899.....	8.58	.270	31.8	21.2	1.14	18.6	*6.10*	*.530*	*11.5*	12.0	*1.00*	*12.0*	6.89	0.811	8.5
1900.....	6.53	.206	31.7	21.8	1.15	19.0	*6.21*	*.540*	*11.5*	9.0	*0.75*	*12.0*	3.67	0.683	5.4
1901.....	4.04	.163	24.8	21.7	1.19	18.2	*6.32*	*.550*	*11.5*	10.6	0.86	12.3	7.60	0.723	10.5
1902.....	7.45	.194	38.4	19.6	1.19	16.5	*6.38*	*.555*	*11.5*	10.1	0.66	15.3	5.24	0.656	8.0
1903.....	7.89	.230	34.3	9.3	1.15	8.1	*6.44*	*.560*	*11.5*	17.9	1.04	17.2	7.00	*0.650*	*10.8*
1904.....	9.10	.258	35.3	19.1	1.12	17.1	*6.56*	*.570*	*11.5*	12.1	0.96	12.6	7.57	0.644	11.8
1905.....	6.79	.222	30.6	17.9	1.11	16.1	*6.61*	*.575*	*11.5*	12.2	0.90	13.6	4.61	0.713	6.5
1906.....	5.60	.206	27.2	19.7	1.09	18.1	*6.67*	*.580*	*11.5*	15.8	1.00	15.8	6.87	0.623	11.0
1907.....	5.56	.193	28.8	22.1	1.09	20.3	*6.73*	*.585*	*11.5*	18.9	1.14	16.6	7.43	0.932	8.0
1908.....	8.77	.252	34.8	21.9	1.10	19.9	*6.78*	*.590*	*11.5*	17.7	1.38	12.8	8.60	0.684	12.6
1909.....	8.66	.311	27.8	21.6	1.11	19.5	3.83	.272	14.1	19.7	1.09	18.1	7.75	*0.650*	*11.9*
1910.....	8.28	.322	25.7	22.2	1.17	19.0	6.17	.595	10.4	18.2	0.97	18.8	5.97	0.637	9.4
1911.....	7.29	.215	33.9	24.2	1.22	19.8	7.21	.626	11.5	22.5	1.09	20.6	8.76	0.799	11.0
1912.....	5.17	.190	27.2	25.0	1.22	20.5	8.02	.655	12.2	23.6	1.10	21.5	5.46	0.816	6.7
1913.....	5.23	.167	31.3	25.2	1.18	21.4	9.26	.722	12.8	16.4	1.02	16.1	5.89	0.911	6.5
1914.....	6.57	.230	28.6	21.6	1.17	18.5	8.34	.730	11.4	19.0	1.07	17.8	3.60	0.783	4.6
1915.....	7.12	.329	21.6	25.2	1.23	20.5	8.65	.754	11.5	20.2	1.14	17.7	9.87	0.950	10.4
1916.....	5.08	.219	23.2	28.4	1.30	21.8	9.07	.774	11.7	22.5	1.27	17.7	5.39	0.780	6.9
1917.....	6.80	.281	24.2	32.7	1.39	23.5	9.15	.815	11.2	23.1	1.30	17.8	13.06	0.976	13.4
1918.....	6.56	.208	31.5	31.0	1.39	22.3	9.90	.844	11.7	20.3	1.22	16.6	6.89	0.840	8.2
1919.....	4.55	.140	32.5	30.7	1.34	22.9	8.55	.850	10.1	19.9	1.20	16.6	5.95	0.681	8.7
1920.....	6.87	.220	31.2	28.4	1.31	21.7	10.98	.871	12.6	23.2	1.26	18.4	7.77	0.700	11.1
1921.....	10.57	.353	29.9	26.9	1.26	21.3	11.11	.876	12.7	23.6	1.35	17.5	9.97	0.812	12.3
1922.....	8.40	.276	30.4	27.6	1.23	22.4	10.53	.890	11.8	25.9	1.47	17.6	5.15	0.663	7.8
1923.....	4.18	.174	24.0	25.0	1.20	20.8	8.60	.873	9.9	28.1	1.54	18.2	13.34	1.055	12.6
1924.....	5.45	.167	32.6	25.4	1.15	22.1	10.29	.884	12.8	24.5	1.43	17.1	9.91	0.850	11.7
1925.....	4.62	.152	30.4	29.5	1.15	25.7	10.51	.887	11.8	26.7	1.45	18.4	10.02	0.957	10.5
1926.....	7.95	.220	36.1	28.4	1.15	24.7	10.24	.895	11.4	23.3	1.48	15.7	10.24	0.988	10.4
1927.....	9.54	.261	36.6	29.2	1.16	25.2	9.04	.897	10.1	30.6	1.84	16.6	15.40	1.151	13.4
1928.....	8.83	.255	34.6	30.8	1.20	25.7	8.60	.896	9.6	29.7	1.72	17.3	12.30	1.085	11.3
1929.....	7.24	.237	30.5	30.5	1.21	25.2	8.32	.874	9.5	33.5	1.73	19.4	13.16	1.097	12.0
1930.....	7.58	.249	30.4	29.5	1.20	24.6	8.99	.848	10.6	21.2	1.61	13.2	7.37	0.959	7.7
1931.....	6.66	.276	24.1	30.9	1.23	25.1	8.95	.817	11.0	21.2	1.52	13.9	11.97	1.153	10.4
1932.....	10.00	.270	37.0	32.5	1.24	26.2	8.30	.866	9.6	21.8	1.57	13.9	10.00	0.840	11.9

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