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UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

AGRICULTURAL SURVEY OF EUROPE
FRANCE

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TRENDS IN FRENCH AGRICULTURE

During the later decades of the nineteenth and the first quarter of the twentieth century French agriculture has shifted from an extensive system of farming that emphasized cereal production to an intensified animal husbandry. This shift has been accompanied by a decrease in cereal acreages and an expansion in the acreages of pastures, meadows, roots, and forage crops.

The present trends in wheat and meat production were initiated during the first part of the 32-year period, 1882 to 1913, at the time of the great increase throughout the world in the supply of foodstuffs and raw agricultural materials. During the early years of this period the prices of cereals decreased more rapidly than those of meats, and French agriculture was prompt in making adjustments in order to sustain as little injury as might be from these influences of price depression. The adjustments included alterations in acreage and numbers and types of animals maintained, but, particularly, they included improvement in the varieties, breeds, and methods of cultivation and feeding employed.

¹The field work of the agricultural survey of rural France was done by Asher Hobson, American permanent delegate to the International Institute at Rome, Italy. The survey of Paris and the meat industry was made by E. C. Bowen and R. F. R. Martin, formerly of the Bureau of Agricultural Economics. A preliminary report based upon Mr. Hobson's survey was published in mimeographed form. Mr. Martin's summary of the meat situation was published in *Foreign Crops and Markets*. The present Bulletin brings the French situation up to date and presents the facts in a more nearly complete form than has ever been done before. Pauline A. McDonnell, Bureau of Agricultural Economics, has given valuable assistance in preparing the bulletin.

Beginning with the early nineties, the rapid accumulation of peoples in cities and industrial centers throughout western Europe created increased demands for foodstuffs and raw materials. World demand maintained a close relationship to world supply and prices rose accordingly.

The price of meats increased more rapidly than the price of cereals; and in adjusting his practices to reap the greatest possible benefit from these price differentials, the French farmer intensified those trends in his agricultural operations upon which he had entered in the first instance as measures of self-protection. Consciously or unconsciously, the French farmer has exhibited marked acumen in his adjustments to the changing economic conditions throughout the world during more than three-quarters of a century.

The world market was flooded with cheap cotton from America and the French farmer abandoned his fields of flax and hemp and restricted his production of fibers, as cheap factory-made cotton goods replaced homespun woollens and linens.

The world market was flooded with wheat and the French farmer intensified livestock production.

The world market was flooded with wool and the French farmer emphasized meat production.

The world market is now being flooded with frozen beef, mutton, and pork and the French farmer is manifesting a tendency to concentrate on dairy production.

At the end of the eighteenth century fully 78 per cent of the French population lived in more or less isolated rural communities. Such primitive means of transportation as existed could not be employed to move agricultural products any considerable distance from the locality in which they were produced without adding so greatly to their cost that distribution of surpluses except within a restricted radius from the point of production was impracticable. Each district, therefore, endeavored to produce its own necessities of life and local agriculture was developed in a large measure to meet local needs as far as local conditions of soil and climate would permit. Self-sufficiency, which for centuries had been the keynote in local farming, later developed into a national tradition. In normal years there was usually sufficient surplus production adequately to maintain the populations of the cities and in years of plenty relatively small amounts of agricultural products were exported to neighboring countries. On the other hand, in abnormal years deficit production was attended by high prices in urban centers, thereby creating serious distress. For 50 years following the French Revolution a few short harvests meant scarcity of bread in Paris, a condition that was likely to be followed by political disturbances or even the overthrow of the existing form of government.

This half century was a period of generally good prices which continued for another 30 years during the time of rapid improvement in ways of distribution (wagons and railroads, canals and steamboats) facilitating an expansion in commerce. A period of good prices fostered a general expansion of agriculture throughout France, forests were cut, the peasants moved to formerly unutilized lands and virgin acres were brought under cultivation. This period of expansion was accompanied by an increased acreage of wheat, the use of which as a bread cereal more and more supplanted that of rye and other coarser grains among the common people.

For almost a century before the World War, the average production of wheat during each succeeding decade showed an increase reaching a maximum in 1907. During the interim between the periods 1815-1820 and 1909-1913, wheat production more than doubled; but disappearance of wheat almost trebled. Increased disappearance was more closely related to a higher standard of living and to the extension of the use of wheat to the masses of the people than to increased population. During the interval between the periods 1815-1820 and 1909-1913, the population increased only 39 per cent; whereas per capita disappearance of wheat increased 111 per cent. Consumption outstripped domestic production and since 1861 France has been forced to depend more and more upon importation to supplement deficit home production.

Between 1789 and 1909-1913 estimated consumption of meat in France, including Alsace-Lorraine, increased from 37.5 to 105.4 pounds per capita. Meat production just before the World War was more than four times as great as at the time of the French Revolution, so that the country was nearly independent of outside sources of supply, importing only about 2 per cent² of the total requirement. The more pressing problem of French agriculture was to supply the nation with sufficient bread. About 13.2 per cent of the wheat requirement came from overseas.

Beginning in May, 1881, wheat production has been protected by tariffs from the depressing influence of cheap wheat from overseas, but the effect on price was not noticeable until 1885. Stimulated by prices well above the world market, methods were improved and yields per acre as well as total production increased. But in spite of the fact that prices continued increasingly good, the acreage of wheat, after attaining a maximum in 1893, steadily tended to decrease. As will be seen later, this decrease in wheat acreage in spite of good prices is an illustration of the close observance given by the farmers to an economic balance in their agriculture.

In France, more than in any other country in Europe, trends in agricultural development have been determined by economic expediency. Wheat acreage was abandoned not so much because wheat production in France was less profitable, but because there was greater profit in animal husbandry, and for 30 years before the war wheat areas and the production of animal products fluctuated with the variations in the ratio of the price of bread to the price of meat in Paris.

Between 1862 and 1892 the numbers of cattle and swine increased—the former 897,000 and the latter, 1,383,000; whereas numbers of sheep fell off 8,414,000 and horses 119,000, resulting in a net decrease in numbers of livestock of some 6,000,000. The real development of the animal industry did not take definite form until the score or more years just preceding the war, that is, from 1892 to 1913. This development did not express itself so much in large increases in numbers. In fact sheep fell off nearly 5,000,000 head and swine about 400,000; whereas the horse-breeding industry gained over 400,000 and cattle somewhat more than 1,000,000. The gain of 1,079,000 cattle between 1892 (the year of the last general census) and 1913 was not in itself remarkable in view of the fact

² Includes the meat equivalent of the net importations of live animals.

that during the decade 1882-1892 cattle had increased over 700,000. A comparison of the conditions at the beginning with those at the close of the 10 years ended 1892, however, shows that the average dressed weight of cattle had changed only 2 pounds (from 582 to 584) whereas during the five-year period ended 1913 the average dressed weight of beef cattle was 687.8 pounds, representing an average gain of 103.8 pounds per head between 1892 and 1913. Similarly the average dressed weight of calves increased 60.4 pounds and of swine 37.6 pounds, whereas sheep showed a very slight decrease.

The intensification of animal husbandry took the form of improvement in weight and quality of marketed animals, and although the records of milk production are fragmentary, export data indicate a similar expansion of the dairy industry. More and better feeding stuffs were in demand.

During the 21 years preceding the war, the production of field crops largely for home consumption and for feeding to livestock became an established farm policy. Cereals came to occupy a minor place among the marketable surpluses of the farm which for the most part took the form of milk, butter, cheese, eggs, poultry, and wool, with an occasional animal taken to town on market days. Just before the war the sales of animals and animal products accounted for 70 per cent of the cash income of the typical middle-sized French farm.

Not only had the acreages under wheat and other cereals become restricted but there was a marked decrease in the acreage of industrial plants and all other field crops except fodder and forage plants; whereas an outstanding phenomenon of this period was the marked expansion of meadows and pastures. France was surely going to grass; but was doing so through an intensification of agriculture on the best lands and the abandonment to permanent grass of those submarginal areas whose cultivation had not proved sufficiently profitable.

These changes from extensive field-crop production to intensive animal husbandry were initiated in response to economic factors involved in profit and loss, but they were intensified and hastened by changes in the numbers of people living in rural districts and in the constituency of the farm-labor classes.

In a country like France, in which for a decade or more before the war the population had been practically static and immigration slight, the rapid growth of cities could take place only at the expense of the rural communities,³ to the detriment of agriculture.

The city populations of France nearly doubled during the 60 years ended in 1911, increasing from 9,100,000 in 1851 to 17,509,000. On the other hand rural populations decreased from 26,600,000 to 22,093,000 during these three score years, resulting in a loss of 4,507,000 inhabitants to villages, hamlets, and outlying farms.

This decrease in rural population indicates a loss in farmers and their families but the fact remains that there was an actual increase of 1,319,000 in the numbers of those classified as farm laborers during the last 45 years of this period. But a tremendous change had occurred in the character of that labor. The number of men

³ Those communities with 2,000 inhabitants or less are classified as rural. The greater portion of these inhabitants are farm families; but in such communities are also found industrial workers, artisans, small-mine operators, merchants, officials and professional men and their families.

engaged in the pursuit of agriculture decreased 51,000 between 1866 and 1911, whereas the number of women classified as farm laborers increased 1,370,000.⁴

The general trends in French agriculture at the out break of the war may thus be summarized as: Change from cereals to forage crops; expansion of grasslands; intensification of animal husbandry; and replacement of men by women on the farms.

The type of agriculture thus developed rendered France relatively independent of outside sources of supply as regards meat of which only about 2 per cent of total requirements had to be imported. Exportable surpluses of draft animals and cattle were produced and there was a net ad valorem exportation of dairy products although France imported more cheese than was shipped from France to other lands. On the whole, trade in animals and animal products appeared as a credit item on the international balance sheet of the nation.

Cereals, particularly wheat and oats, were imported in very considerable quantities, but all things considered, before the war France was nearly self-sufficient in regard to foodstuffs.

EFFECTS OF WORLD WAR ON AGRICULTURAL TRENDS

The immediate effect of the World War was primarily an enormous depletion of the nation's man power and secondarily the devastation of a large area, including some of the richest agricultural sections in the country.

The general effect of the war upon French agriculture was to intensify each of those four trends which had characterized the farming of the country at the outbreak of hostilities. These effects influenced in a similar manner, though to a different degree, the 77 Departments outside the war zone, the 10 Departments occupied in whole or in part by war operations and the 3 Departments of Alsace-Lorraine restored to France at the end of the war.

During the war France lost 1,636,000 of those engaged in war activities. In addition, deaths among civilians exceeded births by 944,000.⁵ In 1919 there were 233,000 excess civilian deaths in France, including Alsace-Lorraine. Thus, France entered upon reconstruction at the beginning of 1920 with a loss of population approximating at least 2,813,000.

Probably two-thirds of this number represented effective man power. Farm labor was depleted through these losses of man power. The country districts of France lost nearly 2,000,000 inhabitants, for the most part men, between 1911 and 1921. During this decade the cities lost only 300,000. This great discrepancy between rural and urban losses is not accounted for by war losses alone, for city populations have been recouped through large migrations from country districts to the cities and industrial centers since 1919.

In 1911 there were 683,000 more females than males in France. The excess female population since the war has been estimated at

⁴ The migration of men from the farms was very pronounced between 1896 and 1911. During these 15 years the number of males engaged in agriculture decreased 396,000; female farm laborers increased 483,000.

⁵ These population losses during 1914 to 1918 refer to the 87 Departments of France exclusive of the 3 Departments of Alsace-Lorraine which were not included in French population statistics until 1919. The figures given here do not include differences due to immigration and emigration.

more than 2,000,000. Of this excess female population a larger proportion is now found in the rural districts than in 1911, on account of war losses and the steady drift of young men to the cities who are attracted by high wages and better living conditions, for the scale of wages has increased more rapidly than has the cost of living.

The depletion of farm labor is not indicated alone by the actual numerical decrease in farm population. The effectiveness of males still actually residing in rural communities is lessened because of disease and mutilations incident to the war.

Various estimates have been made of the devastation in the war zone. The limits of the zone involved in war operations varied from time to time. The maximum area invaded is estimated at 10,514,325 acres, about one-thirteenth part of the country, of which 8,242,989 acres were "occupied for a long time."

The Department (county) of Ardennes (1,293,783 acres) was wholly occupied during the war and no data from this Department appear in French statistics between 1914 and 1918. In the Departments of Aisne, Marne, Mèuse, Meurthe-et-Moselle, Nord, Oise, Pas-de-Calais, Somme, and Vosges, 6,948,251 acres were occupied the greater part of the war period.

It has been estimated that the devastation of plowlands in the war zone exceeded 4,750,000 acres and that losses of livestock in the 10 occupied Departments exceeded 50 per cent of the 1909-1913 average.

Outside the war zone, lack of man power forced millions of acres out of cultivation and the requisitions of the Government reduced French herds by millions of animals.

At the end of the war France reacquired Alsace-Lorraine which she had been forced to cede to Germany in 1872. From the viewpoint of land utilization the accession of Alsace-Lorraine was without appreciable effect upon the French agricultural situation, since the land was utilized in these Provinces in about the same manner as in the remainder of France, except that the proportion of root crops, meadows, and forests was somewhat higher in the former than in the latter. Generally speaking, Alsace-Lorraine was an agriculturally deficit region requiring an annual import of some 6,500,000 bushels of wheat and 2,000,000 bushels of oats. There was a probable meat deficit equivalent to 44,248 mature cattle, 9,043 calves, and 66,505 hogs. A small surplus of sheep, probably 45,491 head, were produced. But all things considered, the acquisition of Alsace-Lorraine laid an added burden upon the agricultural resources of the French nation.

France, including Alsace-Lorraine, entered upon active reconstruction of agriculture in 1919. By the end of 1920 there were 9,898,000 acres less under cultivation to field crops than before the war (1909-1913). More than 1,500,000 acres had reverted to pastures, nearly 1,000,000 acres had been returned to forests and nearly 3,000,000 acres additional were classified as nonproductive. Over 5,000,000 acres more land lay fallow than was the case before the war. There were 7,725,000 less acres under cereals, 1,149,000 less acres under roots and tubers, and 986,000 less acres under meadows in rotation, forage, and fodder plants than was the average case before the war.

During the four-year period ended 1924, France had succeeded in recovering 1,563,000 acres of cereal lands, 520,000 acres of roots

and tubers, 735,000 acres of meadows in rotation, forage, and fodder plants and smaller gains had been made in acreages under some of the other field crops. But by the end of 1924 France had recovered in all only 2,771,000 acres cultivated to field crops or about 693,000 acres per year. In 1925 preliminary estimates indicated that there was an additional gain of 612,000 acres in field crops. The total acreage under field crops has been thus brought up to 87.8 per cent of the 1909-1913 average.

Permanent grass between 1921 and 1924 increased 230,000 acres, and preliminary estimates indicated that in 1925 there was an additional gain of 256,000 acres, bringing the total up to 27,495,000 as compared with an average of 25,457,000 acres during 1909-1913.

These data indicate that whereas in 1925 field-crop areas had lost 12.2 per cent, permanent grass had gained 8 per cent in acreage as compared with 1909-1913. This indicates even more favorable forage conditions for the expansion of the livestock industry than before the war.⁶

The shortage of labor is the prime operative in retarding the recovery of field crop acreage but lack of working capital is also one of the important deterrent factors which have hastened the steady encroachment of permanent grass upon lands that were formerly kept under the plow. It is reported that large numbers of tenants who before the war had sufficient working capital, have bought land with their savings and, having expended their money in purchase of land, have not the liquid capital efficiently to operate their newly acquired acres.

Livestock numbers in 1921 were 32,658,000 as contrasted with an average of 44,677,000 during 1909-1913, a decrease of 26.9 per cent. In 1925, livestock numbers had increased to 35,422,000 or 20.7 per cent below the 1909-1913 average, but a gain of 6.2 per cent over 1921. In 1921 cereal acreage was 19.8 per cent below the 1909-1913 average and in 1925 it was 17.7 per cent below, representing a gain of 2.1 per cent over 1921.

The animal industry is recovering its pre-war status at a more rapid rate than is the cultivation of field crops. The recovery toward a pre-war status per 1,000 inhabitants of important livestock has been most nearly complete in the case of cattle which had reached 98.3 per cent of the 1909-1913 average numbers in 1925; followed by horses, 88.5 per cent normal, and swine 80.4 per cent. Sheep numbers in 1925 were only 64.9 per cent of the 1909-1913 average.

This indicates that native beef and veal supplies in 1925 were nearly (about 88 per cent) up to the pre-war normal, and native flocks and mutton supplies were below two-thirds of the 1909-1913 average, with pork supplies ranging midway between, (about 76 per cent). On the whole there has been a falling off in domestic meat production.

On the other hand the demand for meat in urban and industrial centers has increased. Not only has there been an actual increase in the numbers⁷ of city dwellers; but, after the war ex-service men who had acquired a taste for beef and mutton in the army have

⁶ It should be noted that the gains in hay and pasturage have been somewhat offset by losses in straw.

⁷ A preliminary estimate of city populations for 1925 indicates at least 13,616,000 or 107,000 more than the 1909-1913 average. This estimate is undoubtedly low.

demanded more and better meat in recent years. The high wage scale since the war has enabled industrial workers in general to establish a higher standard of living than was possible before the war.

The pre-war per capita consumption of meat was approximately 105.4 pounds; city dwellers consumed about 116.9 and rural inhabitants about 96.1 pounds per capita. In the cities the per capita consumption was approximately 75.8 pounds of beef and veal, 13.8 pounds of mutton and goat meat, and 27.3 pounds of pork. In rural districts about 27.7 pounds of beef and veal, 6 pounds of mutton and goat meat, and 62.4 pounds of pork were consumed per inhabitant.

In 1925 the general per capita disappearance of meat was 93.1 pounds. Consumption in the cities had increased to 119.4 pounds, or 2.5 pounds above pre-war, whereas estimated disappearance in rural districts was only 70.3 pounds per capita,⁸ or 25.8 pounds below the 1909-1913 average. It is probable that the per capita decrease in rural disappearance of meat is not as great as the estimates based upon the reported livestock statistics would indicate, since there are probably more cattle, sheep, swine, and goats than the published statistics indicate. But there has been a very materially lessened rural consumption and a very materially increased urban demand during the five-year period ended 1925. It is the urban demand, as modified by the domestic surplus, that quantitatively and qualitatively determines the international trade in a food product.

In 1925 the cities of France consumed approximately 76.2 pounds of beef and veal, 11.1 pounds of mutton and goat meat, and 32.1 pounds of pork per inhabitant, a per capita increase in beef and veal of 0.4 pound, an increase of 4.8 pounds of pork, and a small decrease in mutton of 2.7 pounds.

The domestic supply of meat animals has been considerably below the 1909-1913 average, so that the French nation has had recourse to heavy importations of meat since the war. During 1909-1913 the net importations of fresh, frozen, and cured meats totaled only 7,836 short tons. During 1925 importations were over sixteen times as great, reaching 127,204 short tons.

One of the features of the meat situation that has been an outstanding development of war-time conditions has been the use of imported frozen meat. At first introduced for the use of the army and Government institutions, its use has been extended to private families. At Havre, 25.1 per cent of the beef consumed in 1923 was the imported frozen product, whereas in 1924 frozen beef represented 42.4 per cent of total consumption. Seventy per cent of the mutton consumed at Havre in 1924 was frozen as compared with 60.6 per cent in 1923. The price of frozen meat,⁹ which is considerably below that of the fresh product, has extended its use to masses of the population who had previously found it beyond their means.

The consumption of bread is approximately normal, perhaps somewhat higher than before the war. With the trend of cereal production downward, it is probable that French importation of wheat at least will equal or even exceed what it was before the war. But

⁸ A preliminary approximation places the 1925 rural population at 21,504,000 or 1,395,000 below the 1909-1913 average. This figure for rural population may be high. The rural population comprises a higher proportion of females than before the war and, as a rule, women eat less meat per individual than do men.

⁹ The retail price of frozen beef handled by the cooperative selling associations in Paris during 1921-1925 ranged well below the wholesale price of second and third quality beef quoted at the Yvette market.

unless the price relationships between bread and meat are materially changed, it is probable that meat production will continue to be more profitable than the production of cereals and that further expansions in animal industry may be expected. The degree of this expansion will depend upon available supplies of feeding stuffs, and unless greater productivity is forthcoming from her soils, France must import concentrated feeds in order to increase the flocks and herds to the point of meeting the meat requirements of her people.

It is probable that, just as the influx of cheap wheat from overseas increased wheat consumption at the same time that the acreage planted to wheat was being decreased, so now the influx of cheap frozen meat will extend the use of meat to the masses of urban dwellers. At the same time the availability of cheap frozen meat is bound to react upon the price of the native product. History repeating itself indicates that the French farmer will follow the example of Danish and British agriculture and concentrate his efforts upon dairy and other high-priced animal products.

As far as the American farmer is concerned the United States has relatively only a small interest in the French meat situation, as indicated in Table 1.

TABLE 1.—Meats and lard: Net imports into France from all countries contrasted with those from the United States, 1909-1913, 1924, and 1925 ¹ (33, 35)

[In thousand pounds—i. e., 000 omitted]

Meats	From all countries ²			From the United States		
	Average 1909-1913	1924	1925	Average 1909-1913	1924	1925 ³
Beef and veal:						
Fresh	4 -3,493	6,471	13,324	(⁴)		1
Frozen	(⁵)	180,698	189,521	(⁶)	243	
Salted	-101	1,279	873	1	980	11
Mutton and lamb:						
Fresh	6 321	2,662	1,853	(⁷)	(⁸)	
Frozen	(⁹)	21,563	21,718	(¹⁰)	(¹¹)	
Pork:						
Fresh	7 3,730	72,928	12,451	(¹²)		23
Frozen	(¹³)	3,742	3,808	(¹⁴)	384	
Cured	10,654	32,845	10,673	2,324	25,565	1,105
Sausage	4,562	-1,209	189	940	1,636	1,368
Total meats	15,673	320,979	254,407	3,165	28,808	2,508
Percentage of total				20.2	9.0	1.0
Lard	13,524	48,623	27,561	10,815	32,863	11,594

¹ Italic numbers in parenthesis refer to literature cited, p. 179.

² Minus sign (-) indicates net exports.

³ 1925, except lard, not available from French sources so taken from United States trade in order to obtain an approximate comparison of the French meat trade with the United States.

⁴ See footnote 5 on Table 117.

⁵ If any, the amount was negligible, so was included in other countries.

⁶ See footnote 7 on Table 131.

⁷ See footnote 8 on Table 141.

⁸ Includes a small amount of beef noses between 1910 and 1913.

Before the war French meat importations from the United States were limited to a little over 1,112 tons of cured pork, some 470 tons of sausage, and about a half ton of salted beef, which represented about 20.2 per cent of the total French import. Although during and following the war our meat trade was considerable, it has dwindled until in 1925 we exported to France only 552 tons of cured pork, 684 tons of sausage, and minor amounts of fresh pork and beef and cured beef amounting in all to only 1 per cent of the total import.

Our trade with France in cereals has had a higher commercial interest for American agriculture than has that in meats as indicated in Table 2.

TABLE 2.—Cereals: Net imports into France from all countries contrasted with those from the United States, 1909-1913, 1924, and 1925 (33, 35)

Cereal	From all countries			From the United States		
	Average 1909-1913	1924	1925	Average 1909-1913	1924	1925
Wheat.....	<i>Short tons</i> 1, 308, 660	<i>Short tons</i> 1, 532, 880	<i>Short tons</i> 1, 333, 230	<i>Short tons</i> 75, 570	<i>Short tons</i> 65, 220	<i>Short tons</i> 272, 850
Rye.....	80, 304	56, 168	25, 508	(¹)	30, 044	2, 240
Barley.....	135, 312	119, 376	15, 864	(²)	192	(²)
Oats.....	¹ 467, 824	22, 656	156, 912	¹ 14, 848	624	59, 904
Corn.....	521, 528	618, 324	560, 112	17, 584	9, 660	532
Total.....	2, 513, 628	2, 349, 404	2, 091, 626	108, 002	105, 740	335, 526
Percentage of total.....				4.3	4.5	16.0

¹ A deficit for Alsace-Lorraine has been added.

² If any, not classified as from United States but included with other countries, whose individual trade was negligible.

³ Two-year average.

Before the war France purchased from the United States 4.3 per cent of her normal cereal import. During the war shipments from the United States to France greatly increased, but by 1924 had returned practically to the pre-war level. During 1925 large shipments of wheat and oats brought our cereal trade with France to almost four times the pre-war normal.

During 1925 French importations of cotton from the United States returned to almost the pre-war average, whereas the trade in tobacco increased 50 per cent.

It is probable that international trade in agricultural products between the United States and France will develop as regards cereals, tobacco, and cotton, but probably very little change is to be expected in our trade in meats unless it takes a downward trend.

LOCATION AND PHYSICAL CHARACTERISTICS OF FRANCE

France is situated midway between the Equator and the North Pole. The southern point of continental France reaches 42° 20' and the northernmost point 51° 5' north latitude. Lying within about the same parallels as the States of Oregon and Washington and southern British Columbia, the temperature of France is greatly modified by the Gulf Stream and the Mediterranean Sea, a situation which exerts a profound influence upon the agriculture of the country. The "region of the north" along the Belgian frontier, lies just north of the isotherm 50° F. and has about the same mean annual temperature as Seattle. The July temperature of France is about the same as that of the southern part of California and the Peninsula of Lower California.

The rainfall averages about 30.7 inches.

France, roughly hexagonal in shape, is bounded on three sides by water (the English Channel, the Atlantic Ocean, and the Mediterranean Sea), on two sides by mountains (the Alps and the Pyrenees) and on the remaining northeastern side by Belgium, Lux-

emburg, and Germany. If a line is drawn from Givet near the Belgian frontier (fig. 1) to Bayonne near the western extremity of the Spanish frontier, France is divided into two parts, of which the southeastern and somewhat larger portion contains all the mountains and high plateaus. Northwest of this dividing line is found for the most part a rolling, well-watered country, the western extremity of the great European plain. In the extreme northwest, the granite highlands of Brittany separate the English Channel from the Atlantic.



FIG. 1.—PHYSICAL CHARACTERISTICS OF FRANCE

A line drawn from Givet near the Belgian frontier to Bayonne near the western extremity of the Spanish frontier divides France into two parts, with the mountainous regions to the south and east and the plains regions to the north and west. The "massif central" region is separated from the Alps by the Rhone Valley and from the Pyrenees Mountains by the valley of the Garonne.

France, including Alsace-Lorraine, on a total area of about 210,054 square miles, supported a population of about 39,200,000 in 1920. The areas of California and Washington totaling 222,483 square miles in 1920 carried a population of 4,783,482.

By far the larger portion of France lies within the watersheds of four great river systems whose extent and characteristics are indicated in Table 3.

TABLE 3.—River basins in France (18, p. 28)

River	Altitude of source		Tributaries		Area of basin	Navi- gable length	Empties into the—
	Feet	Miles	Right bank	Left bank			
Seine.....	1,545	482	Aube Marne (Oise), Oise (Aisne).	Yonne, Loing, Eure.	29,923	408	English Channel.
Loire.....	4,511	609	Arroux Aron, Nièvre maine Maine (Mayen- ne Sarthe, Loir).	Allier, Cher, In- dre, Vienne, Sèvre nantaise.	8,108	513	Atlantic Ocean.
Garonne.....	16,142	447	Tarn (Aveyron), Lot Dordogne.	-----	9,579	293	Do.
Rhone.....	5,741	505	Ain, Saone.....	Isere, Drome, Dur- ance.	38,181	304	Mediterranean Sea.

¹ In Spain.

² Switzerland.

The narrow valley of the Rhone River and the plain of Burgundy, extending almost due north and south, separate the Alps from the "massif central" plateau. The broad, fertile valley of the Garonne and its tributaries (Bassin d' Aquitaine) lies between the central plateau and the Pyrenees Mountains. The Loire River system occupies, for the most part, the undulating plain region between the "massif central" plateau, the Brittany highlands, and the hills of Normandy. The Seine Valley, including Bassin Ile de France, comprises the richest agricultural section of northeastern France. The small areas of the country outside these four main watersheds are well watered by minor river systems, among which the Somme, the Charante, the Adour, and the Aude are the most important.

The higher peaks of the Alps intercept the moisture-laden air currents from the Atlantic, the generally low temperature causing abundant precipitation; so that this part of the country is one of the regions of the most abundant rainfall in France. But the soils are of recent igneous origin and consequently are of inferior fertility. There are about 100 days on which frosts occur and, although average summer temperature ranges from 68 to 73° F., the region is poorly adapted to field crops except in sheltered valleys, and the extensive plateaus are suited to little else than summer pastures. Pastures and forests characterize this portion of France and although wheat is the major field crop, the relative area is small. The greater portion of this region is near the margin of profitable field-crop production and animal industry is the chief agricultural occupation.

The Mediterranean coast, including the southern Alps, the eastern Pyrenees and the valley of the Rhone, north to the point at which it begins to narrow (Departments of Ardeche and Drome) is characterized by torrential autumn rains. In the eastern Pyrenees the yearly rainfall is only 14.2 inches, the least in all France. The summers are dry and hot. There are seldom more than 30 days on which frosts occur and these are generally light. The Mediterranean coast line is south of the isotherm 57.2° F., which is approximately the mean temperature of Los Angeles. Agriculturally, this region is characterized by extensive vineyards and orchards of olives, citrus fruits, and nuts. Tobacco and cereals are cultivated but the yields of the cereals do not compare with those of the northeastern Departments. Swine production is an important industry in the southern Rhone Valley.

The central and upper Rhone Valley and the plain of Burgundy have a climate peculiar to themselves. There are abundant equinoxial rains. Frosts do not occur more than 60 days in the year. Summer temperatures average well above 68° F., and winter temperatures range around 37°. Vineyards are predominant and olive cultivation extends well north into the valley. The soils are for the most part good and cereal production is an important branch of agriculture.

The "massif central" region, comprising an area of more than 32,800 square miles, is broken by moderately high peaks, attaining a maximum altitude of 6,188 feet in the Puy de Sancy. The elevated plateaus and upland river valleys of this region are characterized by lean granite soils, which are poorly adapted to tillage. The climate is rigorous, there being more than 100 days of frosts, although the summer temperature ranges around 68° F. Precipitation varies greatly. The Department of Lozere, averaging yearly 78.7 inches of rainfall, is one of the heaviest precipitation centers in France. In some Departments (Cantal, Lozere) pastures and meadows are more extensive than the plowed lands, but in the greater part of this region the soils are so poor that rye and buckwheat are more important field crops than wheat. Grazing is the leading agricultural occupation.

The moisture-laden southwest winds create a belt of heavy precipitation throughout the region north of the Pyrenees (except, as noted above, in the eastern part), which extends along the coast, including the dune regions of Landes and southwestern Gironde. Frosts occur during 30 to 70 days, according to altitude; but, on the whole, the winters are mild, averaging 42.8° F. The combination of warm and abundant rainfall, renders this region particularly adapted to corn. Wheat is a profitable crop in the river valleys of the center and west and rye and oats are characteristic of the east. Here, as in the Alps, large sections are fit only for summer pastures and the acreage of grasslands generally exceeds that of plowlands. In the mountainous sections cattle raising is the leading branch of the animal industry, and along the coast in the dune country sheep herding prevails.

In the Brittany highlands altitudes reach not more than 1,283 feet above sea level. The prevailing northwest winds of summer create a region of abundant and frequent rainfall. There are only 30 to 40 days during which frosts occur; the winters are mild and the summers cool. The soils of the plateaus are better adapted to rye, but the coastal plain and river valleys are fertile and wheat and oats are important crops. A large percentage of the region is given over to pastures and luxuriant meadows. With the exception of a narrow strip between the highlands and the English Channel, the whole of northwestern France between the Seine and the Loire is devoted to the livestock industry. Pear orchards abound, and this portion of France is famous for its production of cider. Field-crop production, except as an adjunct of the livestock industry, is of secondary importance.

The watershed of the Seine contains the richest agricultural region of France. For the most part rainfall is sufficient, 23.6 to 31.5 inches, with the exception of a district extending somewhat east and west of Paris in which precipitation is intermittent and comes chiefly in the fall, averaging 19.7 to 23.6 inches annually. The winters are

mild, with about 70 days during which the temperature falls to freezing or below, and the summers are mild. Wheat and oats are the chief field crops and only a small percentage of the land is under permanent grass.

The topographical conditions in the valleys of the Loire and Garonne are similar to those of the Seine. The character of the soils in the countries near the mouths of all three rivers is such that large acreages are devoted to permanent grass. Animal industry under such conditions becomes an important part of farming but throughout the greater portion of each of these river basins field-crop pro-

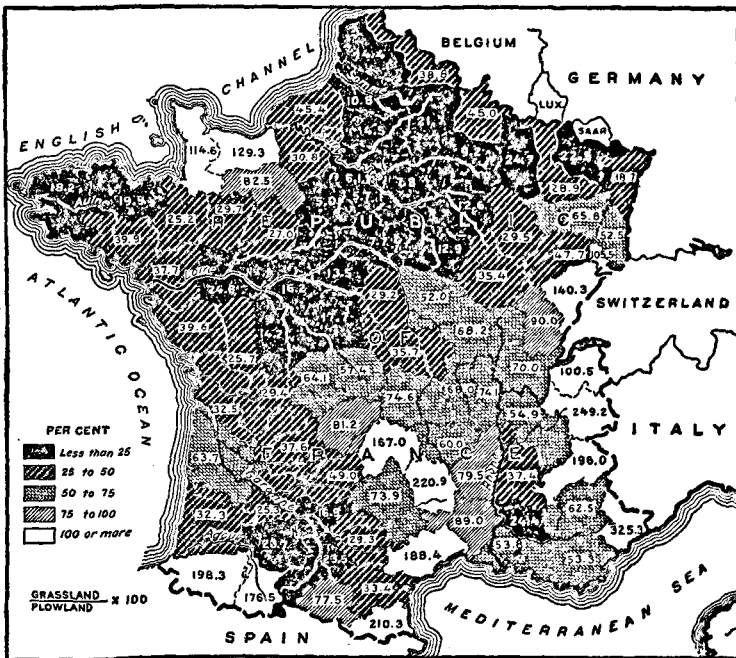


FIG. 2.—RELATION OF GRASSLAND TO PLOWLAND IN FRANCE IN 1913

Each number represents 100 times the quotient of the area of grassland in the respective county divided by the area of plowland. The most intensively cultivated lands of France are located well back from the coast. The best lands are found in the river basins before they merge into the regions of the foothills, where increasingly greater areas not well adapted to tillage are given over to grass, as are the sandy and marshy lands near the coast.

duction plays the leading rôle. In the southern valleys of the Seine, along the Loire and the Garonne and its tributaries, extensive vineyards abound.

The word which best characterizes France is "variety." Parts of the country are similar to the lowlands of Germany and to southern England, other parts are similar to the highlands of Austria, and still others are not unlike Greece. As regards soils, rainfall, and temperature conditions, France is admirably adapted to a well-rounded agriculture of great diversity.

The regions best adapted to field-crop production can be differentiated from those in which tillage is less profitable than grazing

by determining in each Department (county) the ratio of permanent grass ("prés naturels, herbages, pâturages et pacages") to the plowlands. In Figure 2 the relationship of grasslands to plowlands in 1913 for each Department is indicated by a number which is in each case $\frac{\text{grasslands}}{\text{plowlands}} \times 100$.

In those Departments represented by solid black areas on the map there were from 4 to 20 times as many acres under the plow in 1913 as were given over to permanent grass. The greater part of each of these Departments is crop land. In general, these most intensively cultivated lands are located well back from the coast, where either the sandy or marshy character of the soils renders large acreages fit only for pastures and meadows. The best lands are found in the river basins before these merge into the foothills where increasingly greater areas not well adapted to tillage also have been given over to grass. In the upper Alps, the Pyrenees, and the "massif central" regions, as well as in certain regions along the Mediterranean and the English Channel, agricultural lands consist for the most part of meadows and pastures. In those Departments represented by unshaded areas on the map the acreage of permanent grass equaled or exceeded the plowland, in 1913, including fallow lands and grass in rotation.

In Table 4 the plowlands of France are contrasted with the grasslands, forests, and lands not suitable for cultivation in 1913.

TABLE 4.—Plowlands of France contrasted with grassland, forest, and land not suitable for cultivation, 1913

Group	Percentage ratio ¹	Total area	Plowland ²	Grassland ³	Ratio grass to plowland	Forests	Ratio forests to plowland	Land not suitable for cultivation	Ratio land not suitable for cultivation to plowland
		1,000 acres	1,000 acres	1,000 acres		1,000 acres		1,000 acres	
1	0-24	85,914	22,193	3,350	0.151	5,368	0.242	1,627	0.073
2	25-49	41,667	20,374	6,914	.339	7,767	.381	2,441	.120
3	50-74	25,610	8,995	5,773	.642	5,765	.641	1,976	.220
4	75-100	8,207	2,390	1,990	.833	1,933	.809	922	.386
5	More than 100	17,398	3,815	6,333	1.660	3,166	.830	2,012	.527
Total ⁴		128,696	67,767	24,360	.422	23,999	.415	8,978	.155
Corsica		2,150	675	468	.693	431	.639	395	.585
Alsace-Lorraine ⁵		3,688	1,599	554	.346	1,084	.678	1,222	.....

¹ Grassland ÷ plowland × 100.
² Includes cereals and food grains other than cereals; sugar beets and other industrial plants; potatoes and other tubers and roots; grasses in rotation and other forage and fodder crops; fallow lands, etc.
³ Includes natural meadows, herbages, and pasturages.
⁴ Does not include Corsica and Alsace-Lorraine.
⁵ Total area includes some land unaccounted for.
⁶ Year 1912.
⁷ Not comparable with other groups since this was derived by subtracting all other land reported from total area, therefore includes area not accounted for.
 France (48), 1913.
 Alsace-Lorraine, compiled from Statistisches Jahrbuch für Elsass-Lothringen, 1912 (100, p. 58, 60).
 The groups include the Departments whose ratios, grassland : plowland come within the percentage ratios given.

According to this rough grouping, the lands of France fall into five categories. Group 1, in which there is a very small ratio of grassland to plowland averaging 0.151; Group 2, in which there was about one-third as much grassland as plowland. (These two groups

of the better agricultural lands, including portions of Alsace-Lorraine, comprise about 60 per cent of the area of France.) Group 3, constituting 19 per cent of the area of France, includes Departments in which there was about two-third as much grassland as plowland in 1913. The rest of the country, about 21 per cent of the total area, represented by Groups 4 and 5, are classed as regions poorly adapted to field crop production.

According to Table 4, there is a rough analogy between grasslands, forests, and lands not suitable for cultivation in the relationship they bear to plowlands.

In Table 5, the relationships, in 1923, between plowlands, grasslands, forests, and lands not suitable for cultivation are indicated. It will be noted that the ratio of grassland to plowland in each of the five groups has increased. In Group 1 this increase has been relatively small, the ratio having been 0.151 in 1913 against 0.176 in 1923—a difference of only 0.025. In Group 5 there has been a relatively large change in the ratio of grassland to plowland, the 1913 ratio having been 1.660 as contrasted with 1.961 in 1923, a difference of 0.301. This indicates a greater tendency to abandon submarginal lands in the regions poorly adapted to field crops than in the best agricultural regions. This is in accordance with probable expectancy.

In the aggregate, however, there has been an abandonment of more than 1,000,000 acres of plowland in the best agricultural regions (Group 1), as compared with 482,000 acres in the poorest regions (Group 5). Factors other than the submarginal character of the soil have been operative in throwing such a large number of acres in the best agricultural regions out of cultivation.

TABLE 5.—*Plowlands of France contrasted with grassland, forest, and land not suitable for cultivation, 1923 (46)*

Group ¹	Total area	Total plowland	Total grassland	Ratio grassland to plowland	Forests	Ratio forests to plowland	Land not suitable for cultivation	Ratio land not cultivated to plowland
	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>1,000 acres</i>		<i>1,000 acres</i>		<i>1,000 acres</i>	
1.....	35,914	21,134	3,724	0.176	5,369	0.254	2,192	0.104
2.....	41,567	19,382	7,422	.353	7,773	.401	2,925	.151
3.....	25,610	8,384	6,044	.721	5,791	.691	2,390	.285
4.....	8,208	2,189	2,166	.989	1,935	.884	946	.432
5.....	17,397	3,333	6,536	1.961	3,177	.953	2,289	.697
Total ²	123,696	54,422	25,892	.476	24,045	.442	10,742	.197
Corsica.....	2,150	81	473	5.840	431	5.321	969	11.963
Alsace-Lorraine.....	3,588	1,535	646	.421	1,091	.711	26	.0169

¹ Groups include the same Departments that were included in the respective groups of 1913. (See general note, Table 4.)

² Does not include Corsica and Alsace-Lorraine.

³ Total area includes some land unaccounted for.

TRENDS IN POPULATION

Although five times as densely populated as the United States, France is not thickly settled when compared with her immediate neighbors. Belgium has over three times as many inhabitants per square mile. The density of population in the Netherlands is nearly as great as that of Belgium, and that of the British Isles is more than twice that of France.

TABLE 6.—Average population of France and of Alsace-Lorraine, 1871–1925 (55, t. 33, pp. 11, 12; t. 40, p. 12)

Average period or year and boundary	Population		Births ¹			Deaths ¹			Marriages			Excess births over deaths		
	Total	Index No. ²	Total	Per 100 inhabitants		Total	Per 100 inhabitants		Total	Per 100 inhabitants		Total	Per 100 inhabitants	
				Total	Index No. ²		Total	Index No. ²		Total	Index No. ²		Total	Index No. ²
France, excluding Alsace-Lorraine:														
Average—	<i>Thousand</i>		<i>Thousand</i>	<i>Number</i>		<i>Thousand</i>	<i>Number</i>		<i>Thousand</i>	<i>Number</i>		<i>Thousand</i>	<i>Number</i>	
1871–1880.....	36,700	92.8	935	2.54	133.0	871	2.37	129.5	295	0.803	64	0.174	223.1	
1881–1890.....	38,063	96.1	909	2.39	125.1	842	2.21	120.8	280	.735	67	0.176	225.6	
1891–1900.....	38,569	97.4	853	2.21	115.7	829	2.15	117.5	290	.752	70.0	0.182	229.5	
1901–1910.....	39,245	99.1	807	2.08	107.9	761	1.94	106.0	305	.777	46	.117	150.0	
1911–1913.....	39,702	100.2	746	1.88	98.4	724	1.82	99.5	306	.771	22	.055	70.5	
1909–1913.....	39,615	100.0	757	1.91	100.0	726	1.83	100.0	307	.775	31	.078	100.0	
1914–1918.....	38,260	96.6	472	1.23	64.4	661	1.73	94.5	153	.400	51.6			
Alsace-Lorraine:														
Average—														
1872–1880.....	1,517	84.6	53.2	3.51	135.0	40.2	2.65	155.9	11.5	.758	103.7	13.0	.857	94.8
1881–1890.....	1,535	85.6	48.4	3.15	121.2	37.8	2.46	144.7	10.4	.678	92.7	10.6	.691	76.4
1891–1900.....	1,575	87.8	49.8	3.16	121.5	35.5	2.25	132.4	11.9	.756	103.4	14.3	.908	100.4
1901–1910.....	1,733	96.7	51.4	2.97	114.2	33.7	1.94	114.1	13.2	.762	104.2	17.7	1.021	112.9
1911–1913.....	1,801	100.4	45.3	2.52	96.9	30.3	1.68	98.8	13.1	.727	99.5	15.0	.833	92.1
1909–1913.....	1,793	100.0	46.7	2.60	100.0	30.5	1.70	100.0	13.1	.731	100.0	16.2	.904	100.0
France, including Alsace-Lorraine:														
1909–1913.....	41,408	100.0	804	1.94	100.0	757	1.83	100.0	320	.773	100.0	47	.114	100.0
1919.....	38,700	83.5	504	1.30	97.0	737	1.90	103.8	553	1.429	184.9			
1920.....	39,200	84.7	524	1.33	100.8	674	1.72	94.0	624	1.592	208.0	160	408	357.6
1921.....	39,240	84.8	513	1.33	106.7	696	1.77	96.7	456	1.162	150.3	117	298	261.4
1922.....	39,360	85.1	760	1.93	99.5	689	1.75	95.6	383	.973	125.9	71	180	157.0
1923.....	39,620	85.7	762	1.92	99.0	667	1.68	91.8	357	.901	116.6	95	240	210.8
1924.....	39,870	86.3	752	1.89	97.4	680	1.71	93.4	356	.893	115.5	72	181	158.5
1925.....	40,120													

¹ Births and deaths do not include infants stillborn. The statistics of Alsace-Lorraine have been corrected in this regard.

² 1909–1913 average = 100.

³ Death of civil population only. The total number of deaths during 1914–1918 averaged 988,000 annually.

⁴ The German Imperial Government maintained an army in Alsace-Lorraine recruited from other parts of the Empire as follows: 1875, 31,198; 1885, 41,363; 1895, 77,214; 1905, 74,820; 1910, 82,278. From lack of the 10-year averages of total population the military population at the middle of the period has been deducted. From the averages 1911–1913 and 1909–1913 was deducted 82,276, the military population in 1910.

⁵ Estimated.

For the years 1872–1911 for births, deaths, and marriages, and for total population up to 1911 (99, p. 29).

The total population for 1912 and 1913 was estimated by adding to each preceding year the excess of births over deaths during that year and then subtracting 6,300. 1912 and 1913 births, deaths, and marriages for Alsace-Lorraine (76).

Emigration has never been an important factor in French population changes. The movement of French people to other lands has never been large, and during the last 10 years it has practically ceased. Likewise immigration, until 1922, has been an insignificant factor. In 1921 there were less than 250,000 naturalized citizens within the boundaries of France although the number of foreigners, mostly tourists and imported laborers reached 1,500,000.

Usually French families are small. It will be noted in the following analysis of the size of the family for the year 1911, that nearly two-thirds of the families had two children or less.

Number of children per family (83, p. 77)	Number of families (83, p. 77)	Number of children per family (83, p. 77)	Number of families (83, p. 77)
None.....	1,686,915	5 or 6.....	793,185
1.....	3,011,026	7 or more.....	331,072
2.....	2,557,943	Not declared.....	919,565
3.....	1,516,043		
4.....	880,914	All families.....	11,690,663

The small size of the family furnishes a very limited margin for replacement and growth of population.

From 1891 to 1900, the average yearly excess of births over deaths in a population of 38,569,000 was only 24,000, or 0.06 per cent. During the next decade the excess births increased somewhat, so that for the average period 1909-1913 this excess of births over deaths in a population of 39,615,000 was 31,000, or 0.08 per cent.

The significance of this low birth rate can be realized by contrasting the conditions in France with that in Alsace-Lorraine where during 1909-1913, with a civil population of only 1,793,000, the excess of births over deaths was 16,200, or 0.9 per cent. During this five-year period the population in Alsace-Lorraine increased more than 10 times as rapidly as in France.

The small-sized family, the low birth rate and relatively unimportant immigration have been conditions of long standing and deep-seated origin associated with the social, economic, and legal structure of the French Republic and the customs and habits of the people. There is little probability that these conditions will change, although the nation fully appreciates the seriousness of the situation as is shown by the substantial inducements offered to parents who will assume the obligation of rearing larger-than-usual families. Prizes are presented, marks of honor are bestowed, and Government railway and interest rates are reduced to parents with more than the usual number of children. In recent years the immigration of laborers who might become desirable citizens has been encouraged.

THE AGRICULTURAL POPULATION

France is essentially an agricultural country. In 1911, 55.8 per cent of the inhabitants lived in rural districts and in towns and villages having less than 2,000 inhabitants.¹⁰ But in France, as in the United States, there is grave concern over the drift to the city. The extent of this drifting tendency is shown in Table 7.

¹⁰ See note 3, page 4.

TABLE 7.—Decrease in proportion of rural to urban population in France, 1790–1921

Year	Urban †	Rural	Year	Urban †	Rural
	Per cent	Per cent		Per cent	Per cent
1790.....	22.00	78.0	1881.....	34.76	65.24
1846.....	24.42	75.58	1886.....	35.95	64.05
1851.....	25.52	74.48	1891.....	37.34	62.66
1856.....	27.31	72.69	1896.....	39.01	60.99
1861.....	28.86	71.14	1901.....	40.98	59.02
1866.....	30.46	69.54	1906.....	42.15	57.85
1872.....	31.06	68.94	1911.....	44.22	55.78
1876.....	32.44	67.56	1921.....	46.40	53.60

† Inhabitants of communes of over 2,000 inhabitants classified as urban.

1790 (13, p. 170); 1846–1896 (78, p. 204); 1891–1911, calculated from populations in *Annuaire Statistique* (66, t. 40, p. 18, 15); 1921 (10).

There has been a steady drift of population from the land toward the cities during the last 130 years, but agriculture is still the predominant industry in France as is further brought out by the fact that of all those gainfully employed in 1911 over 40 per cent were engaged in agriculture. Table 8 gives the comparison.

TABLE 8.—Total working population classified as to occupation, 1866–1911 (18, p. 174; 29, t. 3, p. 174; t. 5, p. 5)

Classification	April–May, 1866		Mar. 29, 1896		Mar. 24, 1901		Mar. 4, 1906		Mar. 5, 1911	
	Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent	Total	Per cent
Agriculture and forestry.....	17,198	47.6	8,430	44.5	8,178	41.5	8,779	42.4	8,517	40.7
Fisheries.....	34	.2	72	.4	68	.3	78	.4	55	.3
Industry and transport.....	4,696	31.0	6,568	34.7	7,213	36.6	7,451	35.9	7,535	36.0
Commerce, credit, banks.....	986	6.5	1,556	8.2	1,764	9.0	1,941	9.4	2,053	9.8
Liberal professions and public services.....	599	4.0	832	4.4	920	4.7	932	4.5	1,224	5.8
Servants.....	1,273	8.4	903	4.8	956	4.9	946	4.5	929	4.4
Army.....	339	2.3	567	3.0	597	3.0	594	2.9	618	3.0
Total.....	15,125	100.0	18,928	100.0	19,696	100.0	20,721	100.0	20,931	100.0
Not gainfully employed.....	22,924		19,299		18,736		18,124			
Not classified.....	18		42		19					
Total population.....	38,067		38,269		38,451		38,845			

‡ Includes 1,868,000 women.
 § Includes 2,755,000 women.
 ¶ Includes 2,659,000 women.

‡ Includes 3,325,000 women.
 § Includes 3,239,000 women.

In a country with a rapidly increasing population like the United States a decrease in the proportion of the people living in the country may not be serious. The proportion living in the city may increase more rapidly, but the rural districts are at the same time receiving a healthy increase in absolute numbers. In a nation with a slowly increasing or nearly static population, however, a rapid increase in city numbers means an absolute decrease in rural population, including a large proportion of young men. The population status under such conditions assumes serious proportions because of its direct relation to farm labor. An analysis of the data in Table 8, develops the fact that between 1896 and 1911 the percentage of the total working population that was engaged in agriculture and

forestry decreased from 44.5 to 40.7 although there was a gain of 87,000 in actual numbers during this period. The significance of these population changes is indicated in Table 9.

TABLE 9.—*Agricultural working population classified according to sex in France*
(In thousands—i. e., 000 omitted)

Sex	1896	1911	Difference
Male.....	5,675	5,279	-396
Female.....	2,755	3,238	+483
Total.....	8,430	8,517	+87

During the 15-year period ended 1911 the number of men engaged in agriculture had decreased 396,000. It is probable that the rural districts lost not only this number of men but a considerable proportion of this number of families. The actual change in total rural population between 1891 and 1911 is given as a reduction from 24,032,000 to 22,093,000 (63, p. 81). The general trend had been the replacement of men by women in farm work, there being 483,000 more women classified as farm workers in 1911 than in 1896. Large numbers of women also had entered the industrial field. During the period 1896 to 1911 the numbers of all those engaged in industry had increased 967,000, of whom 446,000 were women.

The estimated population (87 Departments) in March, 1914 was 39,800,000 and in the three Departments of Alsace-Lorraine the civil population was approximately 1,812,000, resulting in a total (90 Departments) of 41,612,000. The estimated population (90 Departments) in 1919 was 38,700,000 indicating, by difference, a total loss of 2,912,000. This is not far from correct since the excess of deaths over births (77 unoccupied Departments)¹¹ during 1914-1918 and in 90 Departments in 1919 was 2,813,000 as shown in Table 10, the difference being accounted for by the unrecorded but probable excess of deaths over births in Alsace-Lorraine and the 10 occupied Departments during 1914 to 1918.

TABLE 10.—*Comparison of births and deaths in France during the period 1914-1924**
(55, t. 40, p. 12)

[In thousands—i. e., 000 omitted]

Year	Popula- tion	Births	Deaths		Excess of civil deaths over births	Excess births over civil deaths
			Civil	Military		
1914.....	39,800	710	648	442	.....	62
1915.....	38,800	450	646	384	196	.....
1916.....	38,200	360	608	322	248	.....
1917.....	37,600	390	613	207	223	.....
1918.....	36,900	450	789	281	339	.....
1919 ^b	38,700	504	737	.....	233	.....
1920.....	39,200	834	674	.....	.....	160
1921.....	39,240	813	696	.....	.....	117
1922.....	39,360	760	689	.....	.....	71
1923.....	39,620	762	667	.....	.....	95
1924.....	39,870	752	680	.....	.....	-72

* Includes Alsace-Lorraine beginning 1919.

^b As reported in *Annuaire Statistique* (55, t. 38, p. 12). In *Annuaire Statistique* 1921 (55, t. 40, p. 14) the excess of deaths over births for 87 Departments is 228,963. In Alsace-Lorraine there is an excess of 1,836 births over deaths reported. These figures were revised but not differentiated the following year.

^c Civil deaths 1914-1918 (62, p. 67).

¹¹ During the war period, 1914-1918, 10 Departments were occupied wholly or in part by war activities which made data unavailable.

There was a statistical increase of 212,000 in the population of France and Alsace-Lorraine between 1911 to 1914 and a similar gain of 540,000 between 1919 to 1921, equivalent to a gain of 752,000. The difference between 2,912,000—the statistical loss between 1914 and 1919—and 752,000 indicates a net statistical loss of 2,160,000 in the population of France between 1911 and 1921. The significance of this population loss to French agriculture can be approximated by comparing data on urban and rural population for 87 Departments as of March 5, 1911, published by the French Government and for the 3 Departments of Alsace-Lorraine as of December 1, 1910, published by the German Government with the French Government estimate based upon the census of March 6, 1921, for all 90 Departments (present boundaries). Based upon these data the compilation of Table 11 has been made to indicate the significance of those changes that occurred between 1911 and 1921.

TABLE 11.—Rural and urban populations of France, 1911 and 1921

[In thousands—i. e., 000 omitted]

Region	Date	Urban	Rural ¹	Not differentiated	Total population
France (63, p. 81), 87 Departments.....	Mar. 5, 1911	17,509	22,093	3	39,605
Alsace-Lorraine, ² 3 Departments.....	Mar. —, 1911	965	794	6	1,765
Total.....		18,504	22,887	9	41,400
France (63, p. 81), 90 Departments.....	Mar. 6, 1921	18,206	21,004	30	39,240
Difference.....		-298	-1,883	+21	-2,160

¹ Communities with less than 2,000 inhabitants.
² *Annuaire Statistique* (55, t. 40, p. 13) places the legal population of France at 39,605,000 in 1911 and at 39,240,000 in 1921.
³ *Statistisches Jahrbuch für Elsass-Lothringen, 1912* (29, p. 29) gives the total population December 1, 1910, at 1,868,900 to which should be added 1,750 the quarterly average increase during 1911 to obtain total population as of March, 1911. The military population at the beginning of 1911 was 81,600, leaving the civil population at approximately 1,789,000. In the 1910 *Statistisches Jahrbuch* (66, p. 14) 994,904 legal population were found in communities of more than 2,000 inhabitants. Subtracting this urban population from total civil population leaves 794,000 as the approximate rural population.
⁴ There were in the military organization in Alsace-Lorraine, about 6,000 men whose status as city or country born is not differentiated.

Between 1911 and 1921 rural districts lost approximately 1,883,000 or 87 per cent of the total loss of population in all of France. This represents war losses, excess of deaths over births, and migrations to the cities. These migrations from rural districts have so compensated the war-time losses of cities that the urban population was statistically only 298,000 less in 1921 than in 1911.

The loss in agricultural population has involved more men than women. The data on this subject for the 87 Departments (former boundaries) have not yet been published, but the data as shown in Table 12, for Alsace-Lorraine are given as being particularly significant.

TABLE 12.—Agricultural laborers in Alsace-Lorraine 1907 and 1921 (29, p. 304)

Item	Men	Women	Total
1907.....	188,610	150,361	338,971
1921.....	153,030	141,234	294,264
Decrease.....	35,580	9,147	44,727
Percentage of decrease.....	18.9	6.1	13.2

During the 14 years ended 1921 the agriculture of Alsace-Lorraine lost nearly four times as many men as women; whereas enterprises other than agriculture gained 25,534 men and lost 5,637 women. (29, p. 304).

Data for other parts of France are not yet available but it is self-evident that the war influences depleted the male portion of the population more than the female and accentuated the tendencies that were crystalizing before the war of a replacement of men by women on the farms.

Not only is there to-day a higher percentage of women among the workers on the farms than was the case before the war, but the effective power of the men still found in the rural districts has been diminished through mutilation and disease as indicated in Table 13.

TABLE 13.—*Male population of France classified as to occupation and number of ex-service men in each group applying for medical aid*

Profession or occupation	Between ages 20 and 49 (according to the census of 1911)		Ex-service men applying for medical treatment in 1922	
	Number	Percentage	Number	Percentage
Agriculture.....	2,638,000	34.7	359,774	43.8
Industries.....	2,226,000	29.3	195,294	23.8
Transportation.....	461,000	6.1	28,561	3.5
Commerce, credit and banks.....	770,000	10.1	81,882	10.0
Liberal professions.....	225,000	2.9	21,013	2.5
Domestics.....	91,000	1.2	35,630	4.3
Clergy.....	31,000	.4	1,591	.2
State employees.....	338,000	4.4	81,772	9.9
Functionaries.....	303,000	4.0	10,853	1.3
Other professions.....	172,000	2.3	.....	.....
Without professions.....	349,000	4.6	5,679	0.7
Total.....	7,602,000	100.0	822,079	100.0

More than 800,000 ex-service men applied for medical aid during 1922; 43.8 per cent of these applicants were men engaged in agriculture as compared with 23.8 per cent engaged in industries. Those engaged in industrial occupations may have been in better position to defray their own expense, but it is significant that the percentage of applicants for aid in 1922 engaged in agriculture was higher than was the percentage of men between the ages of 20 to 49 actually engaged in agriculture in 1911.

Agriculture suffered the greatest relative reduction in actual numbers and probably the greatest reduction in physical well-being of any industry during the war operations.

Since the war the young men have been abandoning the rural districts, so the farm work has been left more and more to women, old men, children, and disabled ex-service men.

The situation became acute in 1920 and 1921 and recourse was had to inducing foreign labor to immigrate to France. The results of this immigration between 1922 and 1924 are indicated in Table 14.

TABLE 14.—Immigration of laborers into France, according to nationalities, 1922–1924 (57, t. 13, p. 342; t. 14, p. 343)

Nationality	1922		1923		1924	
	Entered	Departed	Entered	Departed	Entered	Departed
Belgians.....	24,826	1,236	33,912	3,832	34,714	2,740
Spaniards.....	46,635	11,477	36,497	11,203	14,982	13,805
Portuguese.....	8,174	1,432	11,767	4,052	14,206	7,093
Italians.....	57,199	33,484	112,475	39,383	97,577	23,920
Czechoslovakians.....	1,030	13	4,330		10,090	
Poles.....	37,447	1,850	54,673	61	38,048	89
Others.....	6,341	812	9,223	1,420	29,748	105
Total.....	181,652	50,304	262,877	59,951	239,365	47,752

¹ Revised to conform with figures given in *Annuaire Général de la France et de l'Étranger*, 1925 (64, p. 89).

Even before the war the disproportion between the economic development of France and the low national birth rate had necessitated recourse to the employment of foreign labor. In 1906, approximately 265,000 foreigners were employed in the industries and 44,753 were engaged as agricultural laborers. The war accentuated the labor shortage, and immigration bureaus were organized to encourage workers to come to France and to distribute laborers to centers of demand. By the end of the war more than 100,000 workers had been brought into the country. Since the war, labor bureaus have increased their activities in supplying labor shortages with foreign workers (91, pp. 163–166).

During the three-year period ended 1924 nearly 684,000 foreigners—for the most part able-bodied young men—came to France to engage more or less permanently in the industries of the country. Of this number about 158,000 departed from France during these three years, leaving a net gain of 526,000.

The numbers of these foreigners employed in agriculture and in the other industries during the years 1922 and 1923 are given in Table 15. The manufacturing industries offer the greater attraction but agriculture has obtained considerable relief since 1901.

TABLE 15.—Disposition among industries of immigrant labor in France, 1921–1923 (64, p. 89)

Year	Entering France	Disposition in—		Departing from France
		Industry	Agriculture	
1921.....	24,400	(¹)	(¹)	62,500
1922.....	181,652	107,787	73,865	50,304
1923.....	262,877	184,265	78,622	59,951

¹ Not available.

Recourse has been made also to labor-saving machinery and improved methods in French farming including the application of electricity and other motive power, but the small size of the fields and the natural conservatism of women workers have made the fullest use of new machines and methods, as offsets to population losses, very difficult.

UTILIZATION OF LAND

Between the time of the French Revolution in 1790 and the middle of the last century there had been a general expansion in agriculture. Lands that for centuries had lain unproductive as state and church lands or as parks and pleasure grounds of large private estates were put into cultivation. Even extensive tracts of forests were cut over and the soil plowed. Large holdings were divided into small farms and the number of landed proprietors, for the most part peasants, was greatly increased. Lack of comparable data renders it impossible to determine the extent of these changes except in a very general way. A rough approximation of the manner in which lands were utilized in 1790 is contrasted with the estimates made in 1862 in Table 16.

TABLE 16.—Utilization of land in France and Alsace-Lorraine, 1790 and 1862¹

(In thousands—i. e., 000 omitted)

Utilization of land	France, including Alsace-Lorraine		Alsace- Lorraine, 1862	France, excluding Alsace- Lorraine, 1862
	1790	1862		
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
Plowland.....	51,891	65,652	1,875	63,977
Meadows.....	9,266	12,407	396	12,011
Vineyards.....	4,077	5,735	71	5,664
Gardens.....	1,256	(?)	(?)	(?)
Forests and woods.....	30,888	23,022	1,032	21,990
Uncultivated and not otherwise classified.....	37,085	27,627	414	27,213
Total.....	134,443	134,443	3,588	130,855

¹ 1790 (78, p. 188); 1862, France (59, p. 169); 1862, Alsace-Lorraine (85).² Included in "not otherwise classified."³ Difference between total area given in Table 20, and sum of other areas.

During this period, in France (including Alsace-Lorraine) more than 13,761,000 acres of additional land had been brought under the plow, 3,141,000 acres more meadowlands had been put under permanent grass and there were 1,658,000 acres more in vineyards.

In 1869 the French Ministry of Agriculture dropped Alsace-Lorraine from its records. In Table 16 the acreages of plowlands, meadows, vineyards, and forests in Alsace-Lorraine in 1862 have been deducted from the figures given for total France, and in the last column of the table are found acreages fairly comparable with the 1883-1892 averages given in Table 17.

It will be noted that between 1862 and the 10-year period ended 1892, total plowlands had decreased 296,000 acres, while meadows had remained practically unchanged. Forests had increased about 1,500,000 acres, indicating that probably certain areas put into cultivation had been found submarginal and had been abandoned, to revert to woodlands. It is probable that the general expansion in the lands put under plow ceased shortly after the middle of the nineteenth century.

TABLE 17.—Utilization of land in France, excluding Alsace-Lorraine, 1883-1913 (47)

Utilization of land	1883-1892	1893-1902	1903-1912	1909-1913
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
Cereals.....	36,562	35,732	33,487	33,493
Leguminous plants.....	765	824	1,773	737
Roots and tubers.....	1 5,460	1 6,110	6,622	6,938
Industrial plants.....	1 515	353	252	231
Vegetables.....	1 446	1 489	526	590
Forage and fodder plants.....	1 7,328	1 7,810	9,152	9,412
Temporary meadows.....	1 1,109	1 360	621	680
Fallow.....	10 11,496	-----	10 7,126	10 6,448
Total plowland.....	63,681	-----	11 58,559	58,530
Meadows.....	12,020	11,123	11,823	12,076
Pastures.....	11 9,173	11 9,339	12,404	12,826
Gardens and orchards.....	-----	-----	11 3,252	3,208
Vineyards.....	4,708	4,252	4,064	4,091
Forests.....	23,528	-----	11 23,403	23,608
Unproductive.....	9,633	-----	11 9,441	9,427
Not otherwise classified.....	-----	-----	7,884	7,089
Total.....	11 130,854	11 130,854	11 130,830	130,855

1 Includes 9-year average for green beans and peas 1904-1912.
 2 10-year average for potatoes, sugar beets, and fodder beets. French statistics include Jerusalem artichokes, rutabagas, turnips, and distillery beets which are unavailable for this period; so acreage for 1903 is used for Jerusalem artichokes, rutabagas and turnips, and 1902 for distillery beets.
 3 10-year averages for tobacco and hops, 9-year averages 1884-1892 for hemp, flax, and colza, and 8-year averages 1885-1892 for rapeseed and poppy.
 4 1 year only—1892.
 5 1893-1902 not available; so approximated, same as 1903.
 6 10-year averages for all crops except green fodder, which is approximated to be the same as 1900, since it is not available prior to that time.
 7 3-year average for green fodder included—1900-1902.
 8 1 year only—1892.
 9 3-year average—1900-1902.
 10 Obtained by subtracting the total crops above mentioned from total plowland. Includes tillable lands whether under crops or not.
 11 4-year average—1909-1912.
 12 1 year only, 1894, for herbage and 1902 for pasturages. Not available before.
 13 1 year only, 1902, for pastures and 9-year average, 1894-1902, for herbage.
 14 Total area for 1909 used.

For more than 30 years before the World War gradual but persistent changes had been taking place in the agriculture of France. The farmers of the nation had been slowly seeding more and more of their plowlands to grass, abandoning the cultivation of cereals,¹² industrial and leguminous plants, and putting more acres into roots, tubers, and annual forage crops. These changes in the relative acreages laid down to different field crops marked a general shift from extensive field-crop production to intensive animal industry. Field crops, except wheat, were produced more and more for feeding cattle, horses, and swine, the cash income of the farm being obtained in increasing proportion from the sale of animals and animal products, until during 1913-14 more than 70 per cent of the total receipts of "middle-sized" farms was derived from this source of revenue.

During the season 1913-14 an inquiry into the receipts of 26 "middle-sized" farms showed that 72.7 per cent of the total farm income was derived from the sale of animals, milk, butter, cheese, and other animal products, and 25.2 per cent was derived from the sale

¹² Except oats and, just before the war, barley.

of cereals and other field crops. In 1917-18, about 72.3 per cent of the cash income from such farms was derived from the sale of animals and their products, and the sales of cereals and other field crops brought in about 26 per cent.

EFFECT OF WORLD WAR UPON LAND UTILIZATION

The war deprived French agriculture of from 60 to 80 per cent of its male laborers, some 3,284,000 farmers having been mobilized by 1918. Immediately following the opening of hostilities, the larger part of 10 of the most productive Departments was occupied by war operations with the Central Powers. A portion of this occupied territory was badly devastated. The immediate effect of the World War was to cut down man power, which reacted to cut down the acreage of all crops requiring hand labor and to increase areas of crops that could be produced with less expenditure of labor. Cereals, leguminous plants, industrial plants, roots, and tubers decreased greatly during the war period, whereas grasslands and fallow lands were increased.

THE TEN OCCUPIED DEPARTMENTS

One-thirteenth part of the total area (87 Departments) was invaded during the war. The devastated section was far more important agriculturally and industrially than is indicated by this proportion to total area. Its relative importance is brought out by the fact that the invaded territory paid one-fifth of the aggregate taxes before the war. An approximation of the devastating effects of the war within the occupied Departments may be obtained from the following:

Reconstruction of liberated regions to January 1, 1925 (17, p. 280)

Population:		
Population in 1914.....	4,690,183	
Population which left on account of the war.....	2,615,116	
Population, Jan. 1, 1925.....	4,278,426	
Soil:		
Devastated.....	acres..	8,169,991
Cleared of projectiles, railway tracks, and trenches, etc., January 1925.....	acres..	7,783,650
Agricultural land:		
Area devastated.....	do..	4,752,917
Under plow, January, 1925.....	do..	4,473,251

It is difficult to formulate an opinion from the foregoing data as to the significance of the devastation in the occupied regions upon agricultural operations. The *Statistique Agricole Annuelle* carries no report from Ardennes for 1918 and it is probable that the areas cultivated to various crops in the nine partially occupied Departments in 1918 was greater than reported since 2,075,000 people, by far the greatest portion of whom must have been peasants, refused to leave their homes even under the stress of war. Therefore, it is probable that the war damage was less than that indicated by the difference between the areas reported in 1913 and those reported in 1918, but was certainly greater than the difference between areas reported in 1913 and 1919, because reconstruction had been in progress during this latter year.

¹¹ A later report from Meurthe-et-Moselle indicates that this number has been overstated.

Based upon this point of view, Table 18 was prepared to indicate, although only in a very approximate way, the general effects of the war upon the utilization of the land in the nine partially occupied Departments.

TABLE 18.—Utilization of land in nine Departments¹ of France partially occupied by war operations, 1913, 1918, 1919, and 1923 (46)

Utilization of land	1913	1918	1919	1923	
				Total	Percentage of 1913
Plowland:	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Per cent</i>
Cereals.....	4,867	1,964	2,583	4,188	86.0
Leguminous plants.....	87	48	69	77	88.5
Roots and tubers.....	1,255	363	552	880	70.1
Industrial plants.....	45	12	29	18	40.0
Vegetables.....	7	2	4	6	85.7
Forage and fodder plants.....	1,131	561	633	908	80.3
Temporary meadows.....	48	36	43	65	135.4
Fallow.....	882	2,111	2,759	1,733	196.5
Total.....	8,322	5,097	6,672	7,875	94.6
Other land:					
Meadows.....	841	544	786	883	105.0
Pastures.....	945	581	904	1,067	115.0
Gardens and orchards.....	245	130	192	222	90.6
Vineyards.....	63	42	42	37	58.7
Forests.....	2,595	2,595	2,595	2,595	100.0
Unproductive.....	359	560	1,395	690	192.2
Not otherwise classified.....	780	4,601	1,564	761	97.6
Total area.....	14,150	14,150	14,150	14,150	100.0

¹ The 9 Departments are Aisne, Marne, Meurthe-et-Moselle, Meuse, Nord, Oise, Pas-de-Calais, Somme, and Vosges. Ardennes is not classified in 1918, so is excluded throughout this comparison. Its total area is 1,294,000 acres.

In these nine Departments areas under field crops were reported at 7,440,000 acres in 1913, against 2,986,000 acres in 1918 and 3,913,000 acres in 1919. This indicates a falling off of 47 to 60 per cent. Meadows and pastures, as reported in 1918, were, in like manner, 37 per cent below 1913, whereas in 1919 they were only 5 per cent below, indicating a rapid abandonment of plowlands, allowing these to remain in grass rather than putting them under the plow. Till lands not plowed increased enormously, reported areas in 1918 being 239 per cent, and in 1919 as great as 313 per cent of those reported in 1913.

Soon after the signing of the armistice the French began to restore, as far as possible, the devastation resulting from the war. The reclamation has been accomplished largely by means of power cultivation, although as late as 1925 certain areas had not been touched by the plow.

In 1923 the area under field crops in the nine partially occupied Departments had increased to 82.6 per cent of 1913, fallow land had decreased to 196.5 per cent; and of the lands that could be plowed in 1913 fully 94.6 per cent were ready for cultivation in 1923.

On January 21, 1925, it was estimated that 4,473,251 acres in the entire war zone were ready for cultivation, leaving 280,000 acres still unreclaimed.

In 1923 the reported area of meadows was 105 per cent and pastures 115 per cent of 1913.

THE 77 DEPARTMENTS OUTSIDE THE WAR ZONE

Outside of the war zone the effects of the war upon agriculture were of an economic nature associated with the fluctuating conditions of prosperity and depression (including shortage of labor, wagons, and animals during the years 1914 to 1918) rather than actual destruction of homes or devastation of the soil.¹⁴

The manner in which the land was reported to have been utilized in the 77 unoccupied Departments in 1918, 1919, and 1923 as contrasted with 1913 is given in Table 19.

TABLE 19.—Utilization of land in France in 77 Departments, exclusive of Departments occupied by war operations,¹ 1913, 1918, 1919, and 1923 (46)

Utilization of land	1913	1918	1919	1923	
				Total	Percentage of 1913
Plowland:					
Cereals.....	28,176	20,638	20,911	23,851	84.7
Leguminous plants.....	683	580	607	638	93.4
Roots and tubers.....	5,777	4,665	4,719	5,206	90.1
Industrial plants.....	183	115	136	133	72.7
Vegetables.....	615	537	490	555	90.2
Forage and fodder plants.....	8,386	7,392	7,424	7,702	91.8
Temporary meadows.....	506	795	802	858	169.6
Fallow.....	5,210	11,779	11,513	8,368	160.6
Total.....	49,536	46,501	46,602	47,311	95.5
Other land:					
Meadows.....	11,160	10,827	10,946	11,167	100.1
Pastures.....	11,619	13,340	13,215	13,228	113.8
Gardens and orchards.....	2,780	2,476	2,528	2,522	90.7
Vineyards.....	3,931	3,829	3,810	3,870	98.4
Forests.....	21,489	21,489	21,489	21,535	100.2
Unproductive.....	8,990	10,681	10,630	10,266	114.2
Not otherwise classified.....	5,897	6,259	5,982	5,503	93.3
Total area.....	115,402	115,402	115,402	115,402	100.0

¹ Excludes Aisne, Ardennes, Marne, Meurthe-et-Moselle, Meuse, Nord, Oise, Pas-de-Calais, Somme, Vosges, and Alsace-Lorraine.

Whereas in the devastated regions reported acreages under field crops were 47 to 60 per cent below 1913, in 1918 and 1919 they were 21 to 22 per cent below in the 77 Departments outside the war zone. Meadows and pastures were 37 to 5 per cent below 1913 in the former territory, whereas in the latter they had increased 6 per cent above the 1913 acreage.

In 1918 the till lands unplowed were 239 per cent of the 1913 area in the devastated regions as compared with 226 per cent in the 77 Departments outside the war zone, indicating the great scarcity of farm labor throughout France.

¹⁴ A total of only 957 acres was occupied by war operations in Belfort, Seine-Inferieure, Seine, and Seine-et-Oise. No attempt has been made to approximate the influence of the war upon this small area, which has been considered negligible.

The general effect of the war upon land utilization in the 87 Departments was evidenced by a reduction in the areas under field crops and by an increase in the areas under grass.

There are no data upon which to base an estimate of the effect of the war upon the utilization of the land in Alsace-Lorraine and it is not possible to approximate the degree to which postwar France has changed in the manner of her land utilization without taking Alsace-Lorraine into consideration. The average manner in which land was utilized during 1909-1913 in Alsace-Lorraine and in the 87 Departments of France (former boundaries) appears in Table 20.

TABLE 20.—Utilization of land in France and Alsace-Lorraine, average 1909-1913

Utilization of land	France, former boundaries		Alsace-Lorraine		France, present boundaries	
	Acres	Per cent	Acres	Per cent	Acres	Per cent
Plowland:						
Cereals.....	33,492,772	57.2	910,885	56.6	24,403,657	57.2
Leguminous plants.....	737,337	1.3	14,053	0.9	751,390	1.2
Roots and tubers.....	6,937,997	11.8	344,969	21.4	7,252,966	12.1
Industrial plants.....	231,253	0.4	17,438	1.1	248,691	0.4
Vegetables.....	590,361	1.0	8,873	0.6	599,234	1.0
Forage, fodder plants.....	9,411,626	16.1	216,526	13.5	9,628,152	16.0
Temporary meadows.....	680,457	1.2	17,932	1.1	698,389	1.2
Untilled (fallow land).....	6,443,588	11.0	77,960	4.8	6,526,548	10.9
Total.....	58,530,391	100.0	1,608,636	100.0	60,139,027	100.0
All land:						
Plowland.....	58,530,391	44.7	1,608,636	44.8	60,139,027	44.7
Meadows.....	12,075,708	9.2	470,830	13.1	12,546,538	9.3
Pastures.....	12,626,032	9.8	84,328	2.4	12,910,360	9.6
Gardens and orchards.....	3,207,739	2.5	53,480	1.5	3,261,219	2.4
Vineyards.....	4,090,582	3.1	75,163	2.1	4,165,765	3.1
Forests.....	23,608,480	18.1	1,083,778	30.2	24,692,258	18.4
Unproductive.....	16,515,994	12.6	212,108	5.9	16,728,102	12.5
Total area.....	130,854,926	100.0	3,588,343	100.0	134,443,269	100.0

France (48, 1909-1913); Alsace Lorraine (50, 47, 48; 98.)

EFFECT OF ACCESSION OF ALSACE-LORRAINE UPON AVERAGE MANNER OF UTILIZATION OF LAND

By comparing the data in each of the three columns of Table 20, it will be noted that in Alsace-Lorraine before the war somewhat larger percentages of the total area were devoted to roots and tubers, meadows, and forests than in France (former boundaries). Nevertheless these differences were relatively so small that, comparing France (present boundaries) with France (former boundaries), they affected the total manner of land utilization only a few tenths of 1 per cent more or less.

The statistical year book for Alsace-Lorraine, prepared under German control, was first published in 1907 and was discontinued with the 1913-14 issue, so that before and after those dates, until the reorganization of these Departments by the French, information is fragmentary,

TABLE 21.—Utilization of land in France, including Alsace-Lorraine, average 1909-1913 and 1920(46)-1925(42)

[In thousand acres—i. e., 000 omitted]

Utilization of land	Average, 1909-1913	1920	1921	1922	1923	Average, 1920-1923	1924	1925
Plowland:								
Cereals.....	34,404	26,679	27,606	27,450	28,039	27,443	28,242	28,311
Leguminous plants.....	751	760	788	838	734	780	786	1,755
Roots and tubers.....	7,283	6,134	6,290	6,389	6,453	6,316	6,654	7,793
Industrial plants.....	249	226	184	168	169	187	158	160
Vegetables.....	599	575	434	546	560	529	570	562
Forage and fodder plants.....	9,628	8,458	8,632	8,569	8,880	8,635	9,105	8,812
Temporary meadows.....	698	882	921	912	947	915	970	972
Untilled (fallow land).....	6,527	12,107	11,189	10,566	10,256	11,030	10,256	10,256
Total.....	60,139	55,821	56,044	55,438	56,038	55,835	56,741	57,621
Other land:								
Meadows.....	12,547	12,411	12,549	12,541	12,613	12,528	12,721	12,977
Pastures.....	12,910	14,466	14,460	14,363	14,398	14,422	14,518	14,518
Gardens and orchards.....	3,261	2,897	2,860	2,822	2,782	2,840	.....	.....
Vineyards.....	4,166	3,901	3,933	3,971	3,975	3,945	.....	.....
Forests.....	24,692	25,521	25,567	25,567	25,567	25,556	.....	.....
Unproductive and not classified.....	16,728	11,486	11,339	11,507	11,736	11,517	.....	.....
		7,936	7,682	8,225	7,325	7,792	.....	.....
Total area.....	134,448	134,439	134,434	134,434	134,434	134,435	.....	.....

1 Figures for green beans and peas in shell approximated to be the same as 1924, since 1925 is not available.

2 Figures for colza, rapeseed, and poppy approximated to be the same as 1924, since 1925 is not available.

3 Approximated to be same as 1923.

4 Approximated to be same as 1924.

POSTWAR UTILIZATION OF LAND IN FRANCE

Table 21 contrasts the utilization of the land during each of the years 1920 to 1925 with the average pre-war period 1909-1913. These data pertain to France, including Alsace-Lorraine, and are best understood when compared with the long-time trends of land utilization before the war, as brought out in Figure 3.

The index numbers of the pre-war periods 1882-1892, 1893-1902, 1903-1912, and the years 1914, 1918, and 1919 referred to the average of the five-year period 1909-1913 in France (without Alsace-Lorraine) as a base, are plotted in graphic form in Figure 3, together with the index numbers of the postwar years, referred to the average of the five-year period 1909-1913 in France (including Alsace-Lorraine) as a base. The pre-war and postwar data are comparable, as far as their relationship to the 1909-1913 period are concerned. The 1914 and 1918 data are only approximate because the reports from the occupied departments are incomplete.

The total plowland had been gradually decreasing during the 20 years before the war, whereas untilled pastures and meadows had steadily increased, indicating a tendency toward intensified animal industry rather than the extensive growing of field crops.

This tendency toward greater animal production was accompanied by a steady extension of the acreages planted to root crops and forage plants. The gradual decrease in cereals, leguminous plants, and industrial plants is a significant result of the greater profit to be obtained from the sale of meat and other animal products as compared with field crops and to changes in the economic life of the French people followed, for example, by the substitution of clothing made from cotton for homespun garments from flax or wool.

The events attending the war accentuated these changes that had already been taking place, more particularly with reference to per-

manent grasslands (meadows and pastures) as well as cereal crops, increasing the acreage of the former and greatly decreasing that of the latter. Lack of man power also reduced the areas of roots and tilled forage crops and resulted in relatively large areas of plowland lying idle or fallow. Figure 3 shows that French agriculture emerged from the war period exhibiting a series of new levels.

Largely because of lack of man power, about 16 per cent less land was cultivated to field crops yearly (1920-1923) than before the war, total plowed lands were about 7 per cent less, and permanent grasslands about 6 per cent more than was the case during 1909-1913. Root and forage crops were about 12 per cent less than before the war, showing a tendency toward more rapid recovery than other field crops, which were 19 per cent below the 1909-1913 average.

It is probable that the new levels of land utilization established in French agriculture during the World War and postwar years are

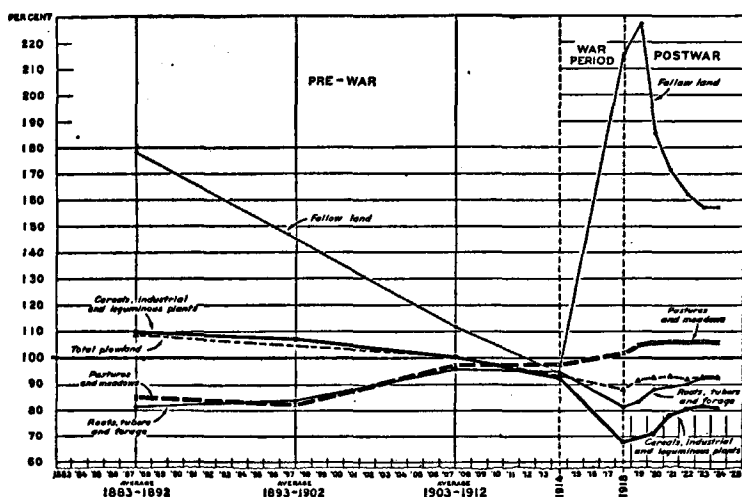


FIG. 3.—UTILIZATION OF LAND IN FRANCE. AVERAGE 1909-1913=100

Total plowland, as well as acreage to cereals, industrial, and leguminous plants, had been decreasing steadily before the war, whereas pastures and meadows, as well as areas of roots, tubers, and forage plants had been steadily increasing. Since the war, pastures and meadows have been increased greatly, and large areas are lying idle as fallow land. Roots, tubers, and forage plants have tended to recover their pre-war acreage more rapidly than other field crops.

indicative of trends that are bound to become more or less permanent. The great expansion of cereal acreage in the United States, Canada, and other countries is rendering cereal production not only in France but in central and western Europe less and less profitable and the farmers of these countries are turning their attention to more remunerative lines of farming, in spite of attempts on the part of Governments to bring the agriculture of each country as far as possible up to a stage of self-sufficiency in bread cereals.

RELATION OF SIZE OF FARMS TO TYPE OF FARMING

Small properties have existed in France for centuries. The division of the land into very small holdings dates back to the enfranchisement of the rural inhabitants several centuries ago. Even under

the feudal system, peasants farmed small holdings and since that time the subdivision of the land has continued. From time to time there has been also a counter movement and great holdings like crown lands, church lands, and the estates of the nobility have been consolidated. At the time of the Revolution of 1790 there were about 4,000,000 landowners in France, of whom the greater portion, perhaps 80 per cent, were peasants, who owned approximately 40 per cent of the land. After the Revolution large holdings were split up and divided among the landless farm laborers and holders of minute plots. By 1825 the number of proprietors had increased to 6,500,000 and by 1875 it is estimated that there were twice as many landowners as in 1790 (78, p. 185-188).

In 1882 it is estimated that the 122,467,368 acres of agricultural and forest lands of France were divided into 12,115,277 properties ranging from less than an acre to several hundred acres and averaging 10.1 acres each. Of this number, 11,255,374 were less than 25 acres in size, 696,579 were between 25 and 99 acres, and 163,324 were larger than 99 acres. These 12,000,000 properties did not represent consolidated holdings similar to the fields of an American farm grouped about the house and barn of the farmer. They were made up of 125,214,671 small parcels of land, averaging 10.3 parcels to a property.

The parcels belonging to each owner are often scattered in various localities in different directions and at different distances from the villages in which a vast majority of the farmers live.

The agricultural holdings of a single proprietor comprise one or more properties, so that in 1882 the 125,000,000 small parcels constituting 12,000,000 properties were comprised in 5,672,007 land holdings. The number and size of holdings in 1882 and in 1892 are given in Table 22.

TABLE 22.—*Land holdings classified by size in France, 1882 and 1892 (33, p. 367; 60, p. 301)*

Size of holding	1882				1892			
	Land holdings		Acreage		Land holdings		Acreage	
	Total	Per-centage	Total	Per-centage	Total	Per-centage	Total	Per-centage
	<i>Number</i>	<i>Per cent</i>	<i>Acres</i>	<i>Per cent</i>	<i>Number</i>	<i>Per cent</i>	<i>Acres</i>	<i>Per cent</i>
Less than 1 hectare ¹	2,167,667	38.2	2,678,161	2.2	2,235,405	39.2	3,279,758	2.7
1 to 5 hectares.....	1,865,878	32.9	13,831,754	11.3	1,829,259	32.1	27,785,653	22.8
5 to 10 hectares.....	769,152	13.6	14,254,309	11.6	788,299	13.8		
10 to 20 hectares.....	431,353	7.6	15,968,099	13.1	429,407	7.5	35,368,412	29.0
20 to 30 hectares.....	198,041	3.5	12,233,983	10.0	189,664	3.3		
30 to 40 hectares.....	97,828	1.7	8,461,519	6.9	92,047	1.6	55,581,191	45.5
40 to 50 hectares.....	56,419	1.0			53,343	.9		
50 to 100 hectares.....	56,866	1.0			52,048	.9	55,581,191	45.5
100 to 200 hectares.....	20,044	.4	55,019,543	44.9	22,777	.4		
200 to 300 hectares.....	5,585	.1			6,223	.1	4,280	
More than 300 hectares.....	2,574				4,280	.1		
Total.....	5,672,007	100.0	122,467,368	100.0	5,702,752	100.0	122,015,014	100.0

¹ 1 hectare equals 2.471 acres.

² This number of holdings, representing 12,115,277 properties, subdivided into 125,214,671 parcels of land, was owned by 4,835,246 proprietors (78, p. 189, 190, 217).

The excessive division into small parcels of the lands of France extends even to the very small holdings, so that a holding of 2.5 acres may be scattered in two or more localities. Only on the larger holdings is it possible to find fields that are comparable with those in the United States.

Peasant families cling tenaciously to their possession of the land. The characteristics of each tiny field are known and family traditions have been built up as to methods of tilling and caring for these bits of property. As regards the lands of France, habits, customs, and practices change much more slowly than in our own country. In the United States there is a saying that "every farm is for sale." In France it could be said with an equal degree of accuracy as representing a tendency that "no farm is for sale."¹⁵ Although there have been many more land transactions since the World War than formerly, land changes hands less frequently in France than in the United States.

The last general census was taken in 1892. Compared with conditions existing in 1882, the total number of holdings had increased slightly. The area of holdings less than 2.5 acres gained about 602,000 acres and those over 99 acres in size gained 562,000 acres.

The small size and scattered location of French farm lands constitutes one of the recognized drawbacks to the industry, and in 1908-9 the French Ministry of Agriculture made a special inquiry into the matter. In 42 Departments the number of small holdings had increased, in 17 it had remained stationary, and in 13 it had decreased. In 15 Departments the data collected were not comparable with those collected from the remainder of France, but the conclusion of the ministry was that the number of holdings had increased during the preceding 20 years.

It has been stated that the subdivision of the lands was accentuated during the war, but it is probable that these reported changes were apparent rather than real. Many cash-and-share renters purchased the lands they had previously cultivated because in general the price receivable for agricultural products had increased more rapidly than had land values. But it is more probable that large holdings were purchased by merchants and manufacturers who had made large profits during the war than that these properties passed into the hands of peasants for subdivision. The depreciation of the franc rendered it possible for foreigners to acquire land more easily than natives of the same class and it is probable that a very considerable number of immigrants from other countries have settled on the soil of France.

There has been no sudden change in the system of land tenure comparable with the splitting up of the large estates of Russia and Rumania, and if more land has passed into the hands of the peasants since the war the movement has been a continuance of the tendency that has been in operation for more than a century.

¹⁵ The "Merite Agricole," an honorary badge, has been awarded by the French Government to farmers whose families have been on the same land for more than a century. One farm family is able to trace the connection of its ancestry with the land for a period of 900 years, and 200, 300, and 400 years are not uncommon records.

In the reconstruction of the devastated regions, where old landmarks had been obliterated, there has been an attempt to remedy the evil of the scattered fields that entailed an enormous loss of time in going from one plot to another. A law was passed making it possible for a landowner to receive a single plot of land equivalent to the total acreage of his previous holdings. In Meurthe-et-Moselle, for example, the peasants of 15 villages availed themselves of this law and reduced the number of their plots from 24,359 small scattered parcels to 5,911 fair-sized fields.

But this has not materially changed the situation of French agriculture as a whole. The average size of holdings to-day is probably no greater than it was 30 or 40 years ago, and perhaps is less. A general idea of the difference between the size of farms in France and the United States may be obtained by comparing the data as of 1892 for France given in Table 22 and for the United States in 1920 as given in Table 23.

TABLE 23.—*Farms classified by size and geographic division in the United States, 1920 (104, p. 1008)*

Geographic divisions	Area per farm	Area of improved land per farm	Total farms	Size of farms										
				Under 3 acres	3 to 9 acres	10 to 19 acres	20 to 49 acres	50 to 99 acres	100 to 174 acres	175 to 259 acres	260 to 499 acres	500 to 999 acres	1,000 acres or over	
North Atlantic.....	99.0	56.2	581,711	.7	7.3	7.7	16.8	27.2	26.5	9.0	4.0	0.6	0.2	
South Atlantic.....	84.4	41.9	1,158,976	.2	4.9	11.1	34.6	24.2	15.1	5.3	3.3	1.0	.3	
East North Central.....	108.5	81.0	1,084,744	.2	3.9	4.2	15.9	30.9	30.0	10.0	4.3	.5	.1	
West North Central.....	234.3	156.2	1,096,951	.2	2.0	2.0	7.4	15.6	32.0	15.4	18.0	5.6	1.8	
South Central.....	123.2	63.0	2,047,688	.2	3.5	11.1	32.7	23.0	17.8	5.4	4.2	1.3	.8	
Far Western.....	362.7	113.0	478,273	1.2	7.0	8.4	17.0	12.4	16.5	5.9	17.4	8.9	5.3	
United States.....	148.2	78.0	6,448,343	.3	4.2	7.9	23.3	22.9	22.5	8.2	7.4	2.3	1.0	

In the United States over 41 per cent of the farms in 1920 contained 100 acres or more; in France in 1892 only 2.5 per cent of the holdings were larger than 99 acres. This small percentage of the number of the farms of France, however, contained 45.5 per cent of the total farm acreage and 39.2 per cent of the plowlands. Whereas in France fully 85.1 per cent of the holdings were less than 25 acres in size in 1892, only 12.4 per cent of the farms of the United States contained less than 20 acres in 1920.

France is a land of small farms well tilled. This fact goes a long way toward explaining how a country one-fourteenth the size of the United States is able to grow food to supply nearly all of the requirements of a population one-third as great.

The manner in which the lands of France were utilized in 1892 on holdings of various sizes is indicated in Table 24.

TABLE 24.—*The relation of size of farms in France to type of farming, 1892 (38, p. 357)*

Item	Less than 1 hectare ¹	1 to 10 hectares	10 to 40 hectares	Over 40 hectares	Total
Holdings:					
Number.....	2,235,405	2,617,558	711,118	138,671	5,702,752
Per cent.....	39.2	45.9	12.5	2.4	100.0
Cultivated area:	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
Flowland.....	1,777,884	16,442,034	20,678,564	25,064,094	63,962,576
Prairies, meadows, pastures, and orchards.....	518,910	4,741,849	5,902,478	5,039,110	16,202,247
Vineyards.....	336,550	1,575,262	1,156,181	1,381,042	4,449,035
Gardens.....	191,750	406,727	306,651	274,528	1,179,656
Woods and forests.....	246,853	2,491,262	3,946,681	14,151,664	20,836,460
Total cultivated.....	3,071,947	25,657,134	31,990,555	45,910,438	106,630,074
Area not cultivated.....	207,811	2,128,519	3,377,857	9,670,753	15,384,940
Total area.....	3,279,758	27,785,653	35,368,412	55,581,191	122,015,014

¹ One hectare equals 2.471 acres.

It is estimated that in the Central States of the United States 7.5 acres are required to produce the food for an average farm family of five adults, the food including fruits, meats, dairy products, etc. Additional acreage is required for work animals. Living conditions in France are not on the high plane maintained in the United States, but it is safe to infer that no net marketable surpluses were, on the average, produced upon the 2,235,405 holdings averaging 1.3 acres each of cultivated land excluding woods and forests. It is probable that one or more members of the family of such small proprietors had to engage in employment outside their own lands in order to live.

In the next class of small farmers, 2,617,558 properties contain 27,785,653 acres, averaging 10.6 acres each; but if woodlands and uncultivated areas are deducted, 23,165,872 acres, or an average of 8.9 acres per holding, were available for field crops, grasslands, orchards, vineyards, and gardens. This acreage is barely sufficient to produce food for an average family and maintenance for a very meager number of farm animals.

Considering the two classes of "small" and "very small" holdings together, it is safe to infer that, on the average, 85 per cent of the land holdings representing 30.3 per cent of the cultivated area, exclusive of woods and forests, and averaging only 5.4 acres, could not produce sufficient field crops per holding to furnish food for an average family of five adults and the feed for the farm animals maintained, except on a basis of a standard of living far below that of rural United States.

Taken as a whole, it is probable that this class of farms did not, on the average, produce a net marketable surplus and that a very considerable proportion of the members of the owners' families were obliged to seek outside employment. In 1892 it was reported that

500,144 landowners rented fields in addition to those that they possessed; 727,374 engaged themselves to other landowners as day laborers; and 147,128 worked the land of other farmers on shares.

About 12.4 per cent of the holdings are classified as medium-sized farms, ranging from 25 to 99 acres. There were 711,118 such holdings in 1892 representing 32.7 per cent of the cultivated lands, exclusive of forests and averaging 39.4 acres per holding. A majority of the farms in this class were smaller than the mean of the class limits which is 62 acres, but it is probable that the type of agriculture was that of medium-sized farms in other lands—that is, animal husbandry. According to estimates by Hennequin in 1919 (80), a medium-sized farm of 62 acres in France would market during the year about 1,500 francs worth of wheat and about 1,200 francs worth of other field crops, as compared with an income of 7,000 francs from the sales of animals and animal products.

About 37 per cent of the cultivated lands, exclusive of forests, were comprised in holdings of more than 99 acres each. There were 138,671 such holdings in 1892. It is probable that although these larger holdings produced considerable surpluses of animals and animal products, they were the chief source of the grain supply of the country.

About a third of the cultivated area comprises medium-sized holdings, allowing the farmers' families modest but comfortable livings but yielding only small marketable surpluses. A large portion of the field crops produced are consumed on such farms. As is usual throughout Europe, each such small farm maintains a horse or two, a few cattle, swine, sheep, and fowls. The marketing operations of the farmers are usually confined to butter, cheese, eggs, fowls, and, as occasion demands, some of the larger animals are sold. In but relatively few instances is animal production conducted upon a business basis comparable with the feeding operations of our Middle Western States.

OWNERSHIP AND TENANCY

The last reliable and complete figures on ownership and tenancy are to be found in the agricultural census of 1892. Table 25 is given merely as illustrating a tendency.

TABLE 25.—*Farm ownership and tenancy in France, 1892 (38, p. 369, 370)*

Class	Farms		Cultivated area ¹	
	Number	Per cent	Acres	Per cent
Occupying owners.....	3,387,245	70.67	45,279,592	52.79
Cash tenants.....	1,061,401	22.15	31,265,765	36.37
Share tenants.....	344,168	7.18	9,308,257	10.85
Total.....	4,792,814	100.00	85,793,614	100.00

¹ Excluding woods and forests.

² The number of farm operators in 1892 is less than the number of holdings indicated in Tables 22 and 24. This is because a number of owners did not operate their own holdings but rented them for cash or on shares. A renter might operate several holdings.

As has been stated, the large number of occupying owners is in part due to the fact that farm laborers owning their cottage plots are classed as occupying owners. The census of 1892 reported that 727,374 men employed as day laborers each owned a piece of land.

The figures in Table 25 are significant in that they show that nearly half the area in 1892 was farmed by tenants, principally cash tenants.

It is the opinion of well-informed observers that the depreciated franc has enabled many tenants to become occupying owners since the war, because land values have not gone up as much as the franc has decreased. These changes in ownership, however, have not tended to change materially the relative size of the farms or the character of farming since these purchasers have usually bought the lands they formerly rented and have continued the same character of farm operations as those in which they were previously engaged.

PRE-WAR PROGRESS OF FRENCH AGRICULTURE

The progress in French agriculture during the 30 years before the World War, though perceptible, was insignificant as compared with that of Germany. Between 1881-1885 and 1909-1913 the cereal acreage in France decreased from 37,041,000 to 33,493,000 acres, as indicated in Table 26. Although there was a falling off of 3,548,000 acres, production increased 36,566,000 bushels, from 784,598,000 bushels during 1881-1885 to 821,164,000 bushels during 1909-1913—an increase of 4.7 per cent. During this same period, German cereal production increased 95.9 per cent, rising from 700,160,000 bushels produced upon 33,330,000 acres in 1880 to 1,371,383,000 produced upon 35,704,000 acres during 1909-1913.

In France, the per capita production of cereals just kept pace with the increasing population. Employing the 1883 population, 37,860,000 inhabitants, and the 1881-1885 production figures given above, results in 20.7 bushels per capita; the 1909-1913 population, 39,615,000 inhabitants, and the 1909-1913 average production gives also 20.7 bushels per capita. In Germany, on the other hand, population increased from 45,220,000 in 1882 to 64,926,000 in 1910, while per capita production rose from 15.5 to 21.1 bushels.

In France, the number of horses, cattle, and swine increased 4,553,000 between 1883 and 1913 as contrasted with an increase of 22,695,000 in Germany (Table 27).

TABLE 26.—Cereals and potatoes: Production and acreage during 1881-1885 as compared with the pre-war average, 1909-1913

[In thousands—i. e., 000 omitted]

Crop	Average, 1881-1885		Average, 1909-1913	
	Acreage	Production	Acreage	Production
	<i>Acres</i>	<i>Bushels</i>	<i>Acres</i>	<i>Bushels</i>
Wheat.....	17, 134	309, 983	16, 159	317, 636
Rye.....	4, 333	72, 436	2, 960	49, 025
Maslin.....	917	17, 092	324	5, 947
Total bread cereals.....	22, 384	399, 521	19, 443	372, 608
Barley.....	2, 524	54, 047	1, 866	48, 183
Oats.....	8, 950	275, 580	9, 900	355, 278
Corn.....	1, 505	24, 312	1, 155	22, 259
Buckwheat.....	1, 565	29, 422	1, 174	22, 147
Millet.....	113	1, 716	55	659
Total cereals.....	37, 041	784, 598	33, 493	821, 164
Potatoes.....	1 3, 454	1 374, 952	3, 838	489, 377

¹ Four-year average, 1882-1885.

Several factors are associated with the slow development of French agriculture. In the first place by way of contrast the increase in population in Germany during these 30 years was over 10 times that of France—19,704,000 in the former, against 1,930,000 in the latter. Farm labor in Germany was abundant and cheap; in France it was scarce. In France there was no such pressure of increased food requirement to meet the demands of a rapidly growing population as in Germany and consequently no such stimulus from the side of the Government to induce French agriculture to produce because, relatively, import requirements remained small. On 84,278,000 acres of plowland and grassland, Germany produced 550,219,000 bushels more cereals and twice the number of horses, cattle, and swine that France produced on 83,432,000 acres of similar though more fertile lands.

This contrast is all the more striking in view of the more favorable climatic location of France whose soils are on the average unquestionably superior to those of Germany. France, brought under the conditions of rigorous tillage, could undoubtedly achieve as great progress as Germany and could possibly more than double the production of cereals and livestock recorded in 1913.

The average French farm, however, is not organized on a commercial basis but is rather a homestead designed to meet as far as possible the modest wants of the farmer's family, so it is not sufficiently capitalized to admit of efficient businesslike management. Furthermore, French peasants are not organized into practical credit associations to the degree that is characteristic of German, Swiss, or Danish agriculture.

TABLE 27.—*Livestock: Number in France and Germany, 1883 and 1913*

[In thousands—i. e., 000 omitted]

Class	France			Germany		
	1883	1913	Difference	1883	1913	Difference
Horses.....	2,852	3,222	+370	3,523	4,558	+1,035
Cattle.....	11,794	14,788	+2,994	15,787	20,994	+5,207
Swine.....	5,847	7,036	+1,189	9,206	25,659	+16,453
Goats.....	1,462	1,435	-27	2,641	3,548	+ 807
Total increase.....			+4,526			+23,602
Sheep.....	21,640	16,131	-5,509	19,190	5,521	-13,669
Total.....	43,595	42,612	-983	60,347	60,280	+66
Population.....	37,860	39,790	+1,930	45,222	64,926	+19,704

* Population of 1882.

* Population of 1910.

France (50); Germany 1883 (66, Bd. 34, p. 49); 1913 (75).

French agriculture has also been handicapped by the fact that the farm itself was made up of several small plots, often less than an acre in extent scattered in various directions and at varying distances from the peasant's home, thus rendering the use of modern labor-

saving machinery impractical and in most instances impossible. The only recourse is to hand labor and this can not be economically utilized because of the scattered locations of the peasant's fields. The fields of the small landholders are well tilled but the marketable surpluses are insignificant or lacking altogether. Nearly a third of the area of France is occupied by farms of this type. The very fact that of the 5,702,752 landowners 4,853,000 possess on the average only 6.4 acres of land discourages large families. In 1921 the total number of families in all of France is given at 11,697,000 and the number of children at 22,919,000, scarcely two children per family. The adult male members of most such families seek employment outside the limits of their own agricultural holdings so that the actual working of the land in a very large number of cases falls to the women. These farm women are conservative, to say the least, adhering to the customs and habits of local farm tradition. Under such conditions the introduction of new methods is extremely difficult.

Nevertheless and in spite of these handicaps, French agriculture exhibited considerable progress during the three decades preceding the war. No small part of this progress was attributable to the increased use of commercial fertilizers as indicated in Table 28.

TABLE 28.—Use of commercial fertilizers in France, 1899, 1909, 1913, and 1923 (13, p. 48, 246)

[In thousand short tons—i. e., 000 omitted]

Fertilizer	1899	1909	1913	1923
Superphosphate.....	1,080	1,653	2,149	2,373
Thomas slag.....	187	276	551	432
Other phosphates.....	331	220	441	1,587
Potash salts.....	96	17	150	363
Nitrate of soda.....	198	291	331	288
Other nitrogenous salts.....				164
Ammonium sulphate.....	55	90	105	169

RELATIVE STATUS OF FIELD CROPS AND LIVESTOCK

The area seeded to the leading agricultural products within the present boundaries, contrasting the pre-war period 1909-1913 with the latest years for which statistics are available, are given in Table 29. These data show that the percentage of the cereal acreage devoted to wheat was about the same in 1925 as on the average during 1909-1913. Rye, maslin, and corn had fallen off a few tenths of 1 per cent, whereas oats and barley had gained somewhat in relative importance. Roots and tubers, particularly forage beets have exhibited a tendency to recover more rapidly their pre-war acreage than have the five chief cereals.

The average production for the pre-war period 1909-1913 contrasted with that for the years 1921 to 1924 and with official estimates for 1925, is given in Table 30.

TABLE 29.—Chief cereals, tubers, and beets: Area seeded in France, average 1909-1913 and annual 1921-1925

Crop	Present boundaries											
	Average 1909-1913		1921		1922		1923		1924		1925	
	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent
Wheat.....	16,500	49.7	13,300	49.8	13,072	49.3	13,672	50.4	13,620	49.9	13,872	50.6
Rye.....	3,095	9.3	2,227	8.3	2,195	8.3	2,215	8.1	2,196	8.0	2,147	7.8
Maslin ¹	346	1.1	282	1.1	273	1.0	274	1.0	246	0.9	224	.9
Spelt.....	² 1		(³)		(³)		(³)		(³)		(³)	
Total bread cereals.....	19,942	60.1	15,809	59.2	15,540	58.6	16,161	59.5	16,062	58.8	16,253	59.3
Barley.....	1,988	6.0	1,679	6.3	1,712	6.4	1,684	6.2	1,765	6.6	1,727	6.3
Oats.....	10,084	30.4	8,421	31.5	8,491	32.0	8,457	31.2	8,636	31.6	8,569	31.5
Corn.....	⁴ 1,160	3.5	814	3.0	790	3.0	845	3.1	846	3.1	854	3.1
Total chief cereals.....	33,174	100.0	26,723	100.0	26,533	100.0	27,147	100.0	27,309	100.0	27,433	100.0
Decrease below pre-war average.....			6,451	19.4	6,641	20.0	6,027	18.2	5,865	17.7	5,741	17.3
Potatoes.....	4,066		3,595		3,619		3,586		3,615		3,619	
Jerusalem artichokes.....	⁵ 255		281		290		302		315		324	
Beets (sugar).....	⁶ 611		298		323		406		503		483	
Beets (distillery).....	⁷ 129		50		54		61		63		59	
Beets (forage).....	⁸ 1,796		1,626		1,673		1,682		1,721		2,905	

¹ Wheat and rye mixed.
² Alsace-Lorrains only (71).
³ Not reported.
⁴ France excluding Alsace-Lorraine, 1,155,000.
⁵ France excluding Alsace-Lorraine, 254,000.
⁶ France excluding Alsace-Lorraine, 609,000.
⁷ Alsace-Lorraine not included; see footnote 8.
⁸ Contains a small acreage seeded to distillery beets in Alsace-Lorraine, France excluding Alsace-Lorraine, 1,687,000 acres.
 1909-1913 for France (45); Alsace-Lorraine (30, p. 48; 98).
 1921-1925 (48).

TABLE 30.—Chief cereals, tubers, and beets: Production in France, average 1909-1913 and annual 1921-1925

Crop	Present boundaries						
	Average, 1909-1913	1921	1922	1923	1924	1925	
	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	
Wheat.....	325,644	323,467	243,315	275,599	281,179	330,338	
Rye.....	52,501	44,392	38,412	36,517	40,241	43,663	
Maslin ¹	² 6,480	5,878	4,547	5,016	4,574	4,711	
Spelt.....	³ 32	(⁴)	(⁴)	(⁴)	(⁴)	(⁴)	
Total bread cereals.....	384,657	373,737	286,274	317,102	325,994	378,712	
Barley.....	52,826	38,318	40,908	45,024	48,051	47,161	
Oats.....	368,462	244,455	288,264	336,944	305,535	327,649	
Corn.....	⁵ 22,289	10,393	12,675	12,673	18,027	20,003	
Total chief cereals.....	828,234	666,903	628,121	711,743	697,607	773,524	
Decrease below pre-war average.....		161,331	200,113	116,491	130,627	54,710	
Decrease, percentage.....		19.5	24.2	14.1	15.8	8.6	
Potatoes (1,000 bushels).....	526,793	303,324	464,661	364,446	564,020	558,313	
Jerusalem artichokes (1,000 short tons).....	⁶ 1,775	1,314	1,480	1,432	2,191	2,764	
Beets (sugar) (1,000 short tons).....	⁶ 499	2,271	3,628	4,174	6,369	5,250	
Beets (distillery) (1,000 short tons).....	⁷ 2,154	415	737	798	747	714	
Beets (forage) (1,000 short tons).....	⁸ 24,190	15,770	22,324	19,356	26,304	24,795	

¹ Wheat and rye mixed.
² Figure for France excluding Alsace-Lorraine, 5,947,000, and 533,000 bushels estimated for Alsace-Lorraine; total 6,480,000 bushels.
³ Alsace-Lorraine only (71).
⁴ Not reported.
⁵ Alsace-Lorraine not included.
 1909-1913 average: France (45); Alsace-Lorraine (31, p. 20, 21). 1921-1925 (48).

TABLE 31.—Chief cereals, tubers, and beets: Crop yields per acre in France, average 1909–1913 and 1921–1925

Crop	Present boundaries					
	Average, 1909-1913	1921	1922	1923	1924	1925
Wheat.....	Bushels 19.7	Bushels 24.3	Bushels 18.6	Bushels 20.2	Bushels 20.6	Bushels 23.8
Rye.....	17.0	19.9	17.5	16.5	18.3	20.3
Meslin ¹	18.7	20.8	16.7	18.3	18.6	20.1
Spelt.....	32.0	(²)	(²)	(²)	(²)	(²)
Total bread cereals.....	19.3	23.6	18.4	19.6	20.3	23.3
Barley.....	26.6	22.8	23.9	26.7	27.2	27.3
Oats.....	36.5	29.0	33.9	39.8	35.4	38.1
Corn.....	19.3	12.8	16.0	15.0	21.3	23.4
Total chief cereals.....	25.0	25.0	23.7	26.2	25.5	28.2
Potatoes.....	129.6	84.9	128.4	101.6	156.0	154.3
Jerusalem artichokes.....	Short tons 17.0	Short tons 4.7	Short tons 5.1	Short tons 4.7	Short tons 7.0	Short tons 8.5
Beets (sugar).....	10.6	7.6	11.2	10.3	12.7	11.0
Beets (distillery).....	16.7	8.3	13.6	12.1	11.9	12.1
Beets (forage).....	13.5	9.7	13.3	11.5	15.3	8.5

¹ Wheat and rye mixed.

² Not reported.

³ Alsace-Lorraine not included.

Table 32 gives the distribution per 100 inhabitants of area seeded and the production of the chief agricultural crops indicated in Tables 29 and 30.

The per capita acreage of the five chief cereals and of potatoes has tended to remain nearly static since the war. Acreages of sugar beets and Jerusalem artichokes have increased somewhat, forage beet acreage has been normal during 1922 to 1924; but in 1925 rose to 7.2 as compared with 4.3 acres per 100 inhabitants during 1909–1913.

Production has fluctuated. The significance of these fluctuations will be considered in the discussions of the individual crops to follow.

TABLE 32.—Chief cereals, tubers, and beets: Acreage and production per 100 inhabitants in France, average 1909–1913 and 1921–1925

Crop	Present boundaries											
	Pre-war average 1909-1913		1921		1922		1923		1924		1925	
Wheat.....	Acres 39.9	Bush. 786.4	Acres 33.9	Bush. 824.3	Acres 33.2	Bush. 618.2	Acres 34.5	Bush. 696.5	Acres 34.2	Bush. 705.2	Acres 34.6	Bush. 823.4
Rye.....	7.5	126.8	5.7	113.1	5.6	97.6	5.6	92.2	5.5	100.9	5.4	108.8
Meslin.....	8	15.6	7	15.0	7	11.5	7	12.7	6	11.5	6	11.7
Total bread cereals.....	48.1	928.8	40.3	952.4	39.5	727.3	40.8	800.4	40.3	817.6	40.6	943.9
Barley.....	4.8	127.6	4.3	97.6	4.3	103.9	4.3	113.6	4.4	120.5	4.3	117.5
Oats.....	24.4	889.8	21.4	623.0	21.6	732.4	21.3	850.4	21.7	766.3	21.4	816.7
Corn.....	12.9	156.8	2.1	26.5	2.0	32.2	2.1	32.0	2.1	45.2	2.1	49.9
Total chief cereals.....	80.2	2,002.5	68.1	1,699.5	67.4	1,595.8	68.5	1,796.4	68.5	1,749.6	68.4	1,928.0
Decrease below pre-war.....			12.1	303.0	12.8	406.7	11.7	206.1	11.7	252.9	11.8	74.5
Per cent of decrease.....			15.1	15.1	16.0	20.3	14.6	10.3	14.6	12.6	14.7	3.7
Potatoes.....	9.8	1,272.2	9.2	778.1	9.2	1,180.5	9.1	919.9	9.1	1,414.6	9.0	1,391.6
Jerusalem artichokes.....	1.6	14.5	.7	3.9	.7	3.8	.8	3.6	.8	5.5	.8	6.9
Beets (sugar).....	1.5	16.4	.8	5.8	.8	9.2	1.0	10.5	1.3	16.0	1.2	13.2
Beets (distillery).....	1.3	16.4	1.1	1.1	1.1	1.9	.2	1.9	.2	1.9	1.1	1.8
Beets (forage).....	14.8	61.1	4.1	40.2	4.3	66.7	4.2	48.9	4.3	66.0	7.2	61.8

¹ Alsace-Lorraine not included.

See Table 6 for populations.

The numbers of the various classes of livestock before the war contrasted with 1921, 1924, and 1925 are given in Table 33.

TABLE 33.—*Livestock: Number in France, average 1909–1913, 1921, 1924, and 1925*

Livestock	Present boundaries							
	1909-1913		1921		1924		1925	
	Total	Per 1,000 inhabitants	Total	Per 1,000 inhabitants	Total	Per 1,000 inhabitants	Total	Per 1,000 inhabitants
	<i>Thousands</i>	<i>Number</i>	<i>Thousands</i>	<i>Number</i>	<i>Thousands</i>	<i>Number</i>	<i>Thousands</i>	<i>Number</i>
Horses.....	3,360	81.1	2,708	69.0	2,659	71.7	2,840	71.8
Mules.....	193	4.7	186	4.7	163	4.9	188	4.7
Asses.....	362	8.7	296	7.5	280	7.0	273	6.8
Cattle.....	15,089	364.4	13,343	340.0	14,025	351.8	14,373	358.3
Sheep.....	16,744	404.4	9,600	244.6	10,172	255.1	10,537	262.6
Swine.....	7,435	179.6	5,166	131.7	5,802	145.5	6,793	144.4
Goats.....	1,494	36.1	1,361	34.7	1,377	34.5	1,378	34.3
Total.....	44,677	1,079.0	32,658	832.2	34,708	870.5	35,422	882.9
Decrease below pre-war.....			12,019	246.8	9,969	208.5	9,255	196.1
Per cent of decrease.....			26.9	22.9	22.3	19.3	20.7	18.2

See Table 6 for populations.
 1909-1913 for France (50), Alsace-Lorraine (66).
 1921 (68, p. 265).
 1924 (8).
 1925 (45).

In 1921, acreage of cereals per 100 inhabitants was 15.1 per cent below the pre-war normal. In 1923 and 1924 increased acreage had gained somewhat upon the slightly increasing population of France so that per capita cereal areas were 14.6 per cent below the 1909-1913 average and in 1925 an increase in acreage accompanied by a slight increase in population brought the acreage to 14.7 per cent below normal.

After the disorganization immediately following the war had been brought somewhat to order in 1921, and a comprehensive enumeration of livestock had been made, it was found that their numbers per 1,000 inhabitants were 22.9 per cent below the pre-war normal as contrasted with 15.1 per cent for cereals, 6.1 per cent for potatoes, and 4.7 per cent for fodder beets.

In 1925 the per capita number of livestock was 18.2 per cent below the 1909-1913 average as contrasted with cereals, 15.6 per cent, potatoes 8.2 per cent, while forage beets were above normal acreage.

The per capita relationship of livestock to population has tended to regain its pre-war normal more rapidly than in the case of cereals or potatoes, but less rapidly than fodder and forage plants.

CEREALS

It is probable that for centuries before the French Revolution the best agricultural lands of the country were under cultivation largely to cereals. The nobility of France, just as was the case with the nobility of Russia and Rumania in more recent years, doubtless depended upon the sale of wheat, oats, and barley for the larger part of their cash income, selecting the most fertile lands for their own uses. Just as was the case in Russia and Rumania, the peasants were forced to cultivate the mediocre and poorer soils. Before the Revolution there were about 4,000,000 landowners in France, in-

cluding the church, the nobles, and the peasants. There are no detailed data relative to the cereal acreage during this pre-revolutionary period;¹⁶ but in 1815 the estimates made at the beginning of Louis XVIII's reign indicate that there were 31,752,000 acres under cereals.

By 1825, the number of landowners had increased to 6,500,000 and the area under cereals had expanded to 33,333,000 acres. Estate and church lands had been divided among the land-hungry peasants who cultivated not only the old fields but also acres hitherto uncultivated, even cutting down forests and putting these lands under the plow. In 1850 there were 7,500,000 landowners seeding 36,594,000 acres to cereals. This is an increase of 1,000,000 owners and over 3,000,000 acres of cereals. Between the years 1850 and 1875 there was an additional increase of 500,000 landowners; but the area under cereals reached only 36,761,000 acres.¹⁷

The great expansion in cereal lands took place between the time of the Revolution of 1790 and the year 1850. By this time all of the

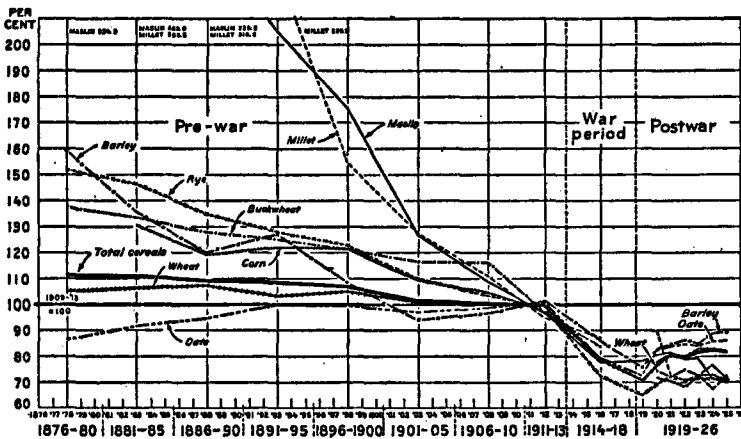


FIG. 4.—TRENDS IN CEREAL ACREAGES IN FRANCE, 1876-1925

Before the war the general trend in field-crop production was toward decreased production in cereals. Oats and (from the beginning of the twentieth century) barley were the only exceptions. After the war, barley, oats, and wheat have shown the strongest tendencies to recover their former importance. Other cereals have fluctuated far below their pre-war acreage.

better lands and much submarginal land were under cultivation. During the next 25 years there was little change.

The average of the five-year period ended 1880 (Table 34) indicates a small improvement in cereal acreage; but from then until the beginning of the World War each succeeding five-year average (Table 35) shows a steady decline.

Not only was there an abandonment of submarginal cereal lands throughout France during the 30 years preceding the war, but among the cereals themselves changes in relative acreage had been effected as it became relatively less profitable to seed one or another of these field crops. The relative degree to which various cereals were abandoned is indicated in Figure 4.

¹⁶ Grandeau places "cereals and other grains" at 33,358,500 acres in 1789 (78, p. 175).

¹⁷ Figures for 1875 do not include data from Alsace-Lorraine which were not carried in French statistics after 1869. In 1850 the area under cereals in those three departments was 927,000 acres.

TABLE 34.—Cereals: Acreage in France and Alsace-Lorraine 1815, 1869 (53) and 1876-1880 (54)

[In thousand acres—i. e., 000 omitted]

Crop	France, including Alsace-Lorraine		Alsace-Lorraine ¹	France, excluding Alsace-Lorraine	
	1815	1869	1869	1869	1876-1880
Wheat.....	11,346	17,381	485	16,896	17,050
Rye.....	6,360	4,784	78	4,706	4,601
Maslin.....	2,264	1,311	28	1,283	1,083
Oats.....	6,175	8,192	236	7,956	8,453
Barley.....	2,851	2,709	158	2,551	2,971
Buckwheat.....	1,618	1,699	2	1,697	1,612
Corn and millet.....	1,338	1,654	7	1,647	1,569
Total.....	31,752	37,730	994	36,736	37,239

¹ Acreage for Moselle, Bas-Rhin, and Haut-Rhin (Alsace-Lorraine) not carried in French statistics after 1869 until 1920. These figures include the small acreage of a district in Haut-Rhin known as Belfort, which was not ceded to Germany. No data regarding Belfort appear in French statistics until 1874 at which time total cereals equaled 29,750 acres.

TABLE 35.—Cereals: Trends in acreage in France and Alsace-Lorraine, 1876-1925

[In thousand acres—i. e., 000 omitted]

Crop and boundary	1876-1880	1881-1885	1886-1890	1891-1895	1896-1900	1901-1905	1906-1910
Wheat:							
France, former boundary.....	17,050	17,134	17,298	16,708	16,913	16,247	16,214
Alsace-Lorraine.....	¹ 474	² 450	³ 436	⁴ 422	394	373	352
Total France, present boundary.....	17,524	17,684	17,734	17,130	17,307	16,620	16,566
Rye:							
France, former boundary.....	4,501	4,333	3,991	3,785	3,625	3,253	3,052
Alsace-Lorraine.....	¹ 100	² 89	³ 109	⁴ 129	118	127	133
Total France, present boundary.....	4,601	4,422	4,100	3,914	3,743	3,380	3,185
Maslin ⁵ (averages from 1876-1880 to 1909-1913 for France, former boundary; includes Alsace-Lorraine from 1909-1913 on).....	1,083	917	775	664	569	410	352
Total bread cereals (averages from 1876-1880 to 1909-1913 for France, former boundary; includes Alsace-Lorraine from 1909-1913 on).....	22,634	22,384	22,064	21,157	21,107	19,910	19,618
Buckwheat.....	1,612	1,565	1,500	1,468	1,420	1,365	1,244
Corn.....	⁶ 1,569	1,505	1,376	1,407	1,400	1,260	1,206
Millet.....	(⁷)	113	120	126	85	70	61
Barley:							
France, former boundary.....	2,971	2,524	2,237	2,370	2,021	1,753	1,796
Alsace-Lorraine.....	² 137	³ 144	⁴ 134	⁵ 124	132	127	123
Total France, present boundary.....	3,108	2,668	2,371	2,494	2,153	1,880	1,919
Oats:							
France, former boundary.....	8,453	8,950	9,256	9,760	9,723	9,493	9,637
Alsace-Lorraine.....	¹ 230	² 255	³ 252	⁴ 249	270	275	280
Total France, present boundary.....	8,683	9,205	9,508	10,009	9,993	9,768	9,917
Total cereals (averages from 1876-1880 to 1909-1913 for France former boundary includes Alsace-Lorraine from 1909-1913 on).....	37,239	37,041	36,553	36,288	35,756	33,851	33,562

¹ 1878 only, other years not available.² 1883 only, other years not available.³ Official figures for Alsace-Lorraine not available. This figure was estimated by taking the average of the figures given in 1881-1885 and 1891-1895.⁴ Three-year average. Beginning with 1883 the census was taken each year.⁵ Wheat and rye mixed.⁶ Includes millet.⁷ Included in corn. Not separately stated prior to 1879 in *Annuaire Statistique de la France*.

TABLE 35.—Cereals: Trends in acreage in France and Alsace-Lorraine, 1876-1925—Continued

Crop and boundary	1911-1913	1914-1918 ^a	1909-1913	1919-1923	1924	1925
Wheat:						
France, former boundary.....	16,100	12,464	16,159			
Alsace-Lorraine.....	339	241	341			
Total France, present boundary.....	16,439	12,705	16,500	12,853	13,620	13,872
Rye:						
France, former boundary.....	2,925	2,130	2,960			
Alsace-Lorraine.....	136	95	135			
Total France, present boundary.....	3,061	2,225	3,096	2,159	2,196	2,147
Maslin^b (averages from 1876-1880, to 1909-1913 for France, former boundary; includes Alsace-Lorraine from 1909-1913 on)	312	250	346	275	246	234
Total bread cereals (averages from 1876-1880 to 1909-1913 for France, former boundary; includes Alsace-Lorraine from 1909-1913 on)	19,337	14,844	19,941	15,287	16,062	16,253
Buckwheat.....	1,131	976	¹⁰ 1,176	¹¹ 861	896	838
Corn.....	1,120	909	¹⁰ 1,160	¹¹ 820	846	854
Millet.....	52	48	¹⁰ 55	¹¹ 42	37	40
Barley:						
France, former boundary.....	1,888	1,593	1,866			
Alsace-Lorraine.....	121	99	122			
Total France, present boundary.....	2,009	1,692	1,988	1,644	1,765	1,727
Oats:						
France, former boundary.....	9,845	7,748	9,800			
Alsace-Lorraine.....	284	218	284			
Total France, present boundary.....	10,129	7,966	10,084	8,159	8,636	8,590
Total cereals (averages from 1876-1880 to 1909-1913 for France, former boundary; includes Alsace-Lorraine from 1909-1913 on)	33,373	26,118	¹⁰ 34,404	26,843	28,242	28,311

^a These are figures as reported in official sources, and include reports from the Departments wholly or in part involved in war operations. Data from these Departments were incomplete, and for that reason reported acreage during the war period is not comparable with other years.

^b Wheat and rye mixed.

¹⁰ Includes Alsace-Lorraine, 22,000 acres for maslin, 2,000 acres for buckwheat, 5,000 acres for corn, less than 500 acres for millet, and 911,000 acres for total cereals.

¹¹ 4-year average, 1920-1923. Alsace-Lorraine not available for 1919.

France (48, 44, 48). Alsace-Lorraine (38).

Figure 4 represents the relative manner in which cereal acreages have changed since 1876. In this figure the index numbers obtained from the data contained in Table 35, referred to the 1909-1913 average as a base, are plotted in graphic form. It is readily seen that the pre-war abandonment of cereal acreage fell into three categories. Before the war millet and maslin were being eliminated from French agriculture very rapidly. Rye production was being viewed with less and less favor. Rates of decrease in acreages seeded to buckwheat and corn ran about parallel. The wheat curve and the curve for total cereals are nearly the same, since wheat is by far the most extensively cultivated cereal, 48 per cent of the total cereal land having been under this crop in 1909-1913. Horse breeding, consequently oat production, increased rapidly during the three decades preceding the World War as indicated by the almost continuously upward trend of the oats curve.

The pertinent fact brought out by this diagram is that the general trend of French agriculture just before the war was toward a decrease in acreages seeded to all cereals, except oats and barley. Those field crops returning the least profit were being most rapidly eliminated from French farms.

EFFECT OF THE WORLD WAR UPON CEREAL PRODUCTION

In the nine Departments partially occupied by the Central Powers, cereal acreage decreased enormously during the war, ranging in 1918 and 1919 from 46.8 to 59.5 per cent below the pre-war average. In the 77 Departments outside the war zone the cereal acreage ranged between 72.9 and 73.9 per cent of normal; in Alsace-Lorraine the reported acreage ranged from 40.4 per cent in 1918 to 17.7 per cent in 1919 below the 1909-1913 average as indicated in Table 36.

At the close of the war, as the condition of French agriculture became more and more serious, the Government instituted a number of measures to increase the cereal productivity of the farming industry, the most efficacious of which was raising the price of wheat. Non-interest-bearing loans were extended to farmers in certain sections of the country and other forms of encouragement have been tendered.

The total cereal acreage has tended to recover most rapidly in those regions where the most Government aid has been extended, the 10 occupied Departments and Alsace-Lorraine in 1925 being respectively 87.3 and 88.7 per cent of normal as compared with 80.2 per cent in the 77 Departments outside the war zone. Total cereal acreage in France, 90 Departments, in 1925 was 18.5 per cent below normal as compared with 8 per cent above normal for meadows and pastures.

TABLE 36.—Cereals: Acreage in the occupied and unoccupied Departments of France and Alsace-Lorraine, average 1909-1913, 1918, 1919, and 1925 (50, 42, 46)

Region	Average, 1909- 1913	1918		1919		1925	
		Total area	Per- centage of 1909- 1913	Total area	Per- centage of 1909- 1913	Total area	Per- centage of 1909- 1913
	1,000 acres	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent
9 Departments ¹	4,851	1,964	40.5	2,583	53.2	4,253	87.7
Ardennes ²	351	(?)	.....	63	17.9	287	81.8
10 Departments.....	5,202	.....	.....	2,646	50.9	4,540	87.3
77 Departments ³	28,291	20,638	72.9	20,911	73.9	22,963	81.1
Alsace-Lorraine (3 Departments).....	911	543	59.6	4750	82.3	808	88.7
Total France.....	34,404	.....	.....	24,307	70.7	28,311	82.3

¹ 9 Departments are Aisne, Marne, Meurthe-et-Moselle, Meuse, Nord, Oise, Pas-de-Calais, Somme, and Vosges. They were at various times involved wholly or in part in war operations.

² Ardennes was wholly occupied during the war period, making data unavailable during that time.

³ The 77 Departments that were free from war operations.

⁴ 1919 figures for wheat, rye, oats, and barley. Other cereals not reported for 1919, so estimated to be the same as 1920.

During the five-year period 1909-1913 cereal production occupied the most important place in the cultivation of field crops in France with more than 57 per cent of the total plowland under cereals as compared with 29.3 per cent under temporary grass, fodder, and forage plants, roots, and tubers; leguminous and industrial plants and vegetables occupied only 1.2, 0.4, and 1 per cent, respectively. Eleven per cent of the plowland lay fallow.

In 1925 cereal acreage had fallen off to 49.1 per cent and fallow lands had correspondingly risen to 17.8 per cent of the estimated total plowlands, the areas of other field crops remaining in about the same relative proportions as before the war.

As indicated in Figure 4, cereals fall into two groups, according as they have tended to recover their pre-war status. Barley and oats followed by wheat, form one group, having tended to recover acreage more rapidly than other cereals. Rye, corn, and buckwheat have tended to recover very slowly.

It is probable that as a result of the war and postwar influences new levels of relative importance are being established among cereals

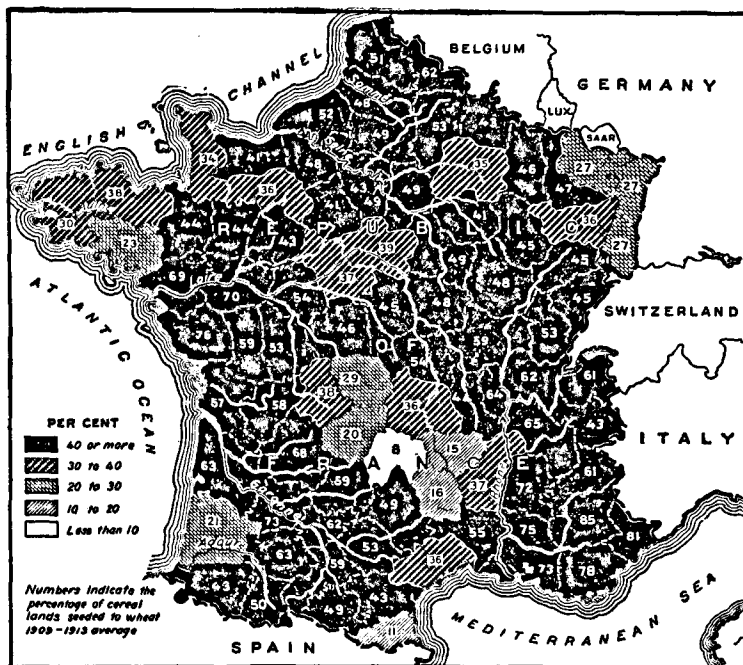


FIG. 5.—CEREAL LANDS SEED TO WHEAT IN FRANCE DURING THE PERIOD 1909-1913

Wheat was the major cereal crop in 63 of the 86 Departments of continental France during this period, being exceeded in 14 Departments and in Alsace-Lorraine by oats, in 7 Departments by rye, and in 2 Departments by corn.

in France, with emphasis on the production of stock-feeding cereals. It is also probable that in the future development of French agriculture cereal production will occupy a somewhat relatively less important place than it did before the war. But in this regard these war and postwar influences are simply the intensification of trends in French agriculture that, initiated in the early eighties, have continued at least up to 1925.

WHEAT

France is a wheat-growing nation to a greater degree than any other country in the world except Italy. More than 12 per cent of the total area and 48 per cent of the lands seeded to cereals were

devoted to wheat during the period 1909-1913. The pre-war per capita consumption of wheat (about 8 bushels per year) was greater in France than in any other European country except Belgium;¹⁸ the average (1909-1913) net disappearance reaching 317,608,000 bushels—exceeded only by the disappearance in Russia. Net production during this period averaged 280,470,000 bushels, which placed France third among the wheat-producing nations of the world, ranking next after the United States and Russia and ahead of India, Austria-Hungary, and Italy. Although for years it has been the aim of the French Government to make the country independent of outside wheat supplies, this aim has not been attained since 1877. Since that date it has been necessary to supplement domestic production to a greater or less extent with importations, averaging during the pre-war period, 1909-1913, about 37,138,000 bushels net. (Fig. 5.)

During the 33 years ended in 1913, wheat production was maintained at a relatively high level, reaching the apex with 381,223,000 bushels in 1907 and averaging well above 300,000,000 bushels for the entire period. The maintenance of production at this high level was possible only through the application of fertilizers, improvement in cultural methods, and the use of selected varieties of seed, because in spite of every encouragement given by the French Government, the area that was seeded to wheat during these 33 years had steadily decreased. Beginning with the decade 1881-1890, France (87 Departments) averaged 17,216,000 acres under wheat; there was during the next 10 years a decline to 16,810,000 (average for 1891-1900) followed by a further average decline to 16,231,000 during 1901-1910; during the three-year period, 1911-1913, an additional 131,000 acres went out of cultivation.

In Alsace-Lorraine (three Departments) similar conditions obtained. Wheat acreage was first recorded by the German statistical office in 1893; the average for the eight-year period ended 1900 was 404,000 acres. The average acreage for 1901-1910 was 363,000; during the three-year period ended 1913 the average had further decreased to 339,000.

The general effect of the World War was to hasten and intensify this downward trend in wheat acreage throughout France.

Effect of the World War upon wheat production

In the 77 Departments of France that lay outside the war zone the reduction in wheat acreage was the result of the general depressing influences of the war upon the agriculture of the country; in the 10 occupied Departments and in Alsace-Lorraine actual devastation of wheat lands further reduced the acreage between 1914 and 1918. The striking contrast between conditions in the areas affected by war operations and those in which for the most part economic factors were operative is brought out in Table 37.

As has been stated before, acreage, production, and livestock returns were made from portions of all the occupied departments except Ardennes throughout the war period. It is probable that some wheat was produced in the portions of these Departments from which no returns were received since more than 2,075,000 inhabitants, of whom by far the largest number were peasants; refused to leave

¹⁸ Disappearance of wheat in the United States which in 1889 was estimated at 5.48 bushels had declined to 4.25 bushels in 1925.

their homes within the war zone. Actual devastation of wheat lands or even reduction in wheat acreage was thus probably less than the difference between the reported acreage in 1918 and the average of the 1909-1913 period. Immediately following the armistice, reconstruction began, so that the depressing effect of all war influences must have been greater than the difference between the reported acreage of 1919 and the average acreage of 1909-1913. The falling off in wheat acreage that may be ascribed to war influences may be conveniently considered to lie somewhere between the two differences obtained by subtracting the acreages reported in 1918 or 1919 from the 1909-1913 average.

TABLE 37.—Wheat: Areas seeded in occupied and unoccupied departments of France and in Alsace-Lorraine, average 1909-1913, 1918, 1919 (46) and 1925 (42)

Region	Average 1909-1913	1918		1919		1925 ¹	
		Total area	Percentage of 1909-1913	Total area	Percentage of 1909-1913	Total area	Percentage of 1909-1913
	1,000 acres	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent
9 Departments.....	2,310	888	38.4	1,101	47.7	2,016	87.3
Ardennes.....	152			16	10.5	119	78.3
10 Departments.....	2,462			1,117	45.4	2,135	86.7
77 Departments.....	13,697	10,105	73.8	10,259	74.9	11,444	83.6
Alsace-Lorraine (3 Departments).....	341	187	54.8	257	75.4	293	85.9
Total, France.....	16,500			11,633	70.5	13,872	84.1

¹ Preliminary estimate.

See footnote to Table 36 pertaining to occupied and unoccupied Departments.

In the 77 Departments outside the war zone wheat acreage reached the low point of 9,452,000 acres in 1917, increasing to 10,105,000 acres in 1918. It was possible to maintain this acreage only by relieving from military duty the men who had begun their initial compulsory military service in the years 1888, 1889, 1890, and 1891 and returning them, as well as certain auxiliary forces, to the land. All of these classes of laborers numbered roughly 250,000 men, of whom 165,000 were small landowning farmers. To these was added a contingent of 55,000 men composed partly of colonial labor and partly of prisoners of war. The more extended use of machinery was also encouraged as a war measure wherever the size of the landholdings rendered this practicable.

As a further endeavor to check this falling off in acreage, the French Government systematically advanced the requisition price in order to make wheat production more profitable. The average price of wheat rose from \$1.47 per bushel in 1914 to \$1.55 in 1915 and was successively increased from \$1.57 to \$2.44 and then to \$3.64 between the dates September 1, 1916, and August 1, 1919. In 1919 the acreage of wheat in the 77 Departments outside the war zone had increased to 10,259,000 acres or to 75 per cent of normal. In this year, the nine partially occupied Departments reported 1,101,000 acres or 47.7 per cent of 1909-1913, and Alsace-Lorraine seeded 257,000 acres which was 75 per cent of normal. In Ardennes, which was completely occupied during the war period, only 10.5 per cent of the 1909-1913 wheat acreage is reported to have been seeded in 1919.

Postwar wheat situation in France

France, including Alsace-Lorraine, emerged from the World War in 1919 with an acreage of wheat 4,867,000 acres below the 1909-1913 average; the net production had been reduced 127,256,000 bushels. Importations, however, were only 41,844,000 bushels larger than normal, resulting in a disappearance 85,412,000 bushels below the 1909-1913 average. To meet this situation of deficit production the nation was continued upon restricted rations and bread was standardized to contain 10 per cent of substitutes—rye and rice being employed. Flour was milled to a coarser quality than was legal before the war. These conditions continued until 1924 when the use of substitutes was reduced to 8 per cent.

Acreage was increased in 1920 to 12,586,000 acres and in 1921 to 13,300,000, but in 1922 it fell off 228,000 acres. Production and imports during this latter year were low and statistical per capita disappearance fell to 6 bushels a year, the lowest point since 1860, except during the war when it also reached 6 bushels in 1917. A "raise-wheat campaign" was inaugurated by the French ministry in 1922 which was followed by an increase of 600,000 acres in 1923 of which 509,000 acres were located in the 77 Departments outside the war zone. In 1924 there was a falling off of acreage in the former war zone and a slight increase in other parts of France, resulting in a net decrease of 52,000 acres below 1923. Returns for 1925 indicate an increase in wheat acreage of about 252,000 acres, bringing the total acreage in the 90 Departments up to 13,872,000 acres, or 84.1 per cent of normal.

The remarkable feat of bringing the wheat acreage of the war zone more nearly back to normal (86.7 per cent of 1909-1913) than in other parts of France has been affected through Government aid. By the law of August 9, 1920, a bounty of 81 francs¹⁹ was granted for each acre cultivated to wheat in the devastated regions. This has doubtless brought a considerable acreage of submarginal land under wheat that will probably be given over to other crops or revert to grass when the bounty is removed.

Since the war the French Government has continued to make every effort to bring wheat acreage back to normal, the most effective method having been the price fixed for requisitioned wheat. The price of wheat on the Paris market remained fixed at 19.9 francs per bushel from August 1, 1919, until September 1, 1920, when it was increased to 27.2 francs per bushel, where it remained until August 1, 1921, at which time unrestricted trade in wheat was permitted and prices temporarily fell. Since that time prices have fluctuated but have tended to increase steadily, averaging 20.6, 23.9, and 26.1 francs per bushel, respectively, during the seasons August 1 to July 31, 1921-22, 1922-23, 1923-24; during the season 1924-25 the price averaged 34.3 francs per bushel.¹⁹ The price of wheat on the Paris market has advanced rapidly during the last four years but the area seeded to wheat has not responded to this price stimulus sufficiently to recover its pre-war status. In 1925 it was still 2,628,000 acres below the 1909-1913 average.

This inability on the part of France to regain its former wheat acreage is due in a large measure to lack of man power, but several

¹⁹ See Table 151 for average yearly values of the franc.

other factors have been involved in establishing the trend that will determine the future of this branch of French agriculture. One of the chief factors thus involved is the relative profit to be obtained by the French farmer from the sale of his wheat as contrasted with that obtainable from the sale of his animals and animal products.

Before this contrast is made, the significance of wheat production and trade to the economic and political life of France is here reviewed.

Consumption (disappearance) of wheat in relation to acreage and production, price and importation

It is not possible to measure accurately the year-to-year consumption of wheat over a long series of years, because there are no available data regarding stocks carried over from one season to the next, and in the earlier French statistics importations and exportations are available for calendar years only rather than for the 12 months intervening between one crop and the next. From available series of data, however, it is possible to obtain an approximation of the general trends of the relationships among the factors of acreage, production, and importations in their bearing upon consumption (disappearance) as presented in Table 38.

TABLE 38.—Wheat: Acreage, production, imports, and approximate disappearance in France, total and per capita average 1815-1820 to 1919-1923, and annual 1914-1925¹

Year	Population		Acreage				Seed used ²		Production			
	Number	Index number	Total	Per capita		Per acre	Total	Total	Excluding seed			
				Total	Index number				Total	Per capita	Total	Index number
Pre-war period (including Alsace-Lorraine prior to 1871):												
Average—												
1815-1820	29,791	71.9	11,405	0.383	96.2	2.23	25,433	132,115	106,682	3.58	51.5	
1821-1830	31,474	78.0	12,337	.392	98.5	2.23	27,512	160,629	133,117	4.23	60.9	
1831-1840	33,356	80.6	13,152	.394	99.0	2.23	29,329	184,083	154,754	4.64	66.8	
1841-1850	35,097	84.8	14,340	.409	102.8	2.23	31,978	219,330	187,352	5.34	76.8	
1851-1860	36,197	87.4	15,876	.439	110.3	2.23	35,403	248,220	212,617	5.88	84.6	
1861-1870	37,683	91.0	17,108	.454	114.1	2.23	38,151	272,796	234,645	6.23	89.6	
1871-1880	36,780	92.8	16,929	.461	113.0	2.23	37,752	269,080	231,328	6.29	88.8	
1881-1890	38,083	96.1	17,216	.452	110.8	2.27	39,080	308,358	269,278	7.07	99.9	
1891-1900	38,569	97.4	16,810	.436	106.9	2.29	38,495	312,563	274,068	7.11	100.4	
1901-1910	39,245	99.1	16,231	.414	101.5	2.30	37,331	327,500	290,169	7.39	104.4	
1911-1913	39,702	100.2	16,100	.406	99.5	2.31	37,191	325,847	298,156	7.26	102.5	
1909-1913 ³	39,615	100.0	16,159	.408	100.0	2.30	37,166	317,636	290,470	7.08	100.0	
War period ⁴												
Average—												
1914-1918	36,260	-----	12,464	.344	-----	-----	28,455	214,137	185,682	5.12	-----	
1914	37,800	-----	14,975	.398	-----	2.30	34,442	282,689	245,247	6.57	-----	
1915	36,800	-----	13,564	.369	-----	2.27	30,790	222,776	191,886	5.22	-----	
1916	36,200	-----	12,429	.343	-----	2.28	28,338	204,908	176,570	4.88	-----	
1917	35,600	-----	10,357	.291	-----	2.24	23,200	134,575	111,375	3.13	-----	
1918	34,900	-----	10,993	.315	-----	2.32	25,504	225,736	200,232	5.74	-----	

¹ Includes Alsace-Lorraine prior to 1871 and after 1918.

² 200 liters per hectare, according to the Yearbook of Agricultural Statistics 1913-14 (32, p. 715). Weight of a liter for each year from same sources as acreage and production.

³ Base for pre war period, except prior to 1871. See footnote 1.

⁴ These are figures as reported in official sources and include reports from the Departments, wholly or in part, involved in war operations. Data from these Departments were incomplete, and for that reason reported acreage and production during the war period are not comparable with other years.

⁵ Official census of France, less 2,000,000, which is the lowest estimate of the number of inhabitants in the war zone during the war period (5).

TABLE 38.—Wheat: Acreage, production, imports, and approximate disappearance in France, total and per capita average 1815-1820 to 1919-1923, and annual 1914-1925—Continued.

Year	Population		Acreage			Seed used		Production				
	Number	Index number	Total	Per capita		Per acre	Total	Total	Excluding seed			
				Total	Index number				Total	Total	Per capita	
Postwar period (including Alsace-Lorraine):												
Average—												
1909-1913 ⁶	741,408	100.0	16,500	0.398	100.0	.....	38,053	325,644	287,591	6.95	100.0	
1919-1923.....	39,224	94.7	12,853	.328	82.4	.....	29,402	253,274	223,872	5.71	82.2	
1919.....	38,700	93.5	11,633	.301	75.6	2.30	26,756	187,091	160,336	4.14	59.6	
1920.....	39,200	94.7	12,586	.321	80.7	2.28	28,696	236,929	208,233	5.31	70.4	
1921.....	39,240	94.8	13,300	.339	85.2	2.25	29,925	223,467	203,542	7.48	107.6	
1922.....	39,360	95.1	13,072	.332	83.4	2.32	30,327	243,315	212,868	6.41	77.8	
1923.....	39,620	95.7	13,672	.345	86.7	2.29	31,309	275,509	244,290	6.17	88.8	
1924.....	39,870	96.3	13,820	.342	85.9	2.32	31,598	281,179	249,581	6.26	90.1	
1925.....	40,120	96.9	13,872	.346	86.9	2.32	32,183	330,338	298,155	7.43	106.9	

Year	Importation (net)				Disappearance (net)			
	Total	Number days supply	Per capita		Total	Per capita		Daily
			Total	Index number		Total	Index number	
Pre-war period (including Alsace-Lorraine prior to 1871):								
Average—								
1815-1820.....	1,000 bushels	10.9	0.110	10.4	109,961	3.691	46.1	301.3
1821-1830.....	990	2.7	.031	3.3	134,107	4.261	53.3	367.4
1831-1840.....	1,643	3.8	.049	5.2	156,397	4.669	58.6	428.5
1841-1850.....	2,683	5.2	.076	8.1	190,035	5.415	67.7	520.6
1851-1860.....	636	1.1	.018	1.9	213,453	5.897	73.7	584.8
1861-1870.....	9,205	13.8	.244	23.2	243,850	6.471	80.9	608.1
1871-1880.....	28,446	40.0	.774	82.6	259,774	7.067	88.2	711.7
1881-1890.....	38,551	45.7	.012	108.0	307,829	8.083	100.8	843.3
1891-1900.....	35,189	41.5	.012	97.3	309,257	8.018	100.0	847.3
1901-1910.....	9,622	11.7	.245	26.1	299,791	7.639	95.3	821.3
1911-1913.....	53,527	67.2	.349	143.9	841,683	8.606	107.3	836.1
1909-1913 ⁶	37,138	42.7	.937	100.0	317,608	8.017	100.0	870.2
War period: ⁴								
Average—								
1914-1918.....	79,670	109.6	2.197	.....	265,352	7.318	.....	727.0
1914.....	62,389	73.3	1.651	.....	310,636	8.218	.....	851.1
1915.....	71,594	99.1	1.945	.....	263,580	7.163	.....	722.1
1916.....	105,555	136.6	2.916	.....	282,125	7.794	.....	772.9
1917.....	87,057	160.1	2.445	.....	198,432	5.574	.....	543.6
1918.....	71,757	96.3	2.056	.....	271,969	7.793	.....	745.2
Postwar period (including Alsace-Lorraine):								
Average—								
1909-1913 ⁶	1143,581	48.0	1.053	100.0	331,182	7.998	100.0	907.3
1919-1923.....	56,681	73.7	1.445	137.2	280,553	7.153	89.4	768.6
1919.....	85,435	126.9	2.208	209.7	245,770	6.351	79.4	673.3
1920.....	86,598	107.2	2.209	209.8	294,831	7.521	94.0	807.8
1921.....	39,520	43.3	1.007	95.6	333,062	8.488	106.1	912.5
1922.....	29,112	34.3	.562	53.4	235,100	5.673	74.7	644.1
1923.....	49,739	61.7	1.255	119.2	298,999	7.420	92.8	805.5
1924.....	51,096	62.0	1.282	121.7	300,677	7.541	94.3	823.8
1925.....	44,441	47.3	1.108	105.2	342,596	8.539	106.8	638.6

¹ Base for pre-war period, except prior to 1871. See footnote 1, p. 51.
² These are figures as reported in official sources and include reports from the Departments, wholly or in part, involved in war operations. Data from these Departments were incomplete, and for that reason reported area and production during the war period are not comparable with other years.
³ Base for postwar period and prior to 1871. See footnote 1, p. 51.
⁴ 1909-1913 average population plus 1,793,000, the population of Alsace-Lorraine in 1910, excluding military population.
⁵ 1909-1913 average seed plus 887,000 bushels average seed for 341,000 acres in Alsace-Lorraine calculated at 2.6 bushels per acre. (See footnote 2, Table 43.)
⁶ Estimated.
⁷ 5-year average 1816-1820.
⁸ 1909-1913 average net import plus 6,453,000 bushels estimated as the average wheat deficit of Alsace-Lorraine. (See Table 43.)

Population (55, t. 38, p. 11, 12; t. 40, p. 12).
 Acreage and production: France (42, 52); Alsace-Lorraine (32).
 Imports (33, 37, 49).

Importations of wheat into France from 1815 to 1860 were relatively small, ranging between 3 and 0.3 per cent of total disappearance. Stimulated by the general prosperity of the nation and by rising prices after 1830, the area and production of wheat increased more rapidly during these 45 years than did the slowly increasing population that, however, consumed progressively greater amounts of wheat per capita, abandoning more and more the use of coarser grains, particularly the use of rye as a breadstuff. Beginning with 3.7 bushels per capita in 1815-1820, consumption (disappearance) rose to an average of 5.9 bushels during 1851-1860.

The story of the grain trade of France during the last quarter of the eighteenth century and the first half of the nineteenth century is one of sporadic exports during the years of plenty and low prices and (as compared with later years) small imports during seasons of scarcity and high prices. Transportation was very poor throughout these 75 years. Distribution was poor. Areas planted to wheat were largely in response to the needs of local consumption, and fluctuations in climatic conditions might be attended with local abundance or want. During these years Paris and a few of the other large cities were always centers of political unrest, and usually in times of scarcity the French Government strove to expedite the transport of imported food supplies to these centers of disturbance, but was not always successful in alleviating the wants of the turbulent city dwellers, so that revolts were frequent. During the century preceding the establishment of the present French Republic a successful revolt in Paris was usually attended by a change in the governmental constitution of France.

TABLE 39.—Grain trade of France and the United States, with prices of wheat in France, Great Britain, and the United States, 1778 to 1820¹

Year	France		Great Britain	United States ²		Remarks
	Net ex-ports (-), net im-ports (+) ³	Price per hecto-liter ⁴	Price per quarter ⁵	Ex- port price per bush- el	Net ex- ports ⁶	
	<i>1,000 bushels</i>	<i>Francs</i>	<i>s. d.</i>	<i>Cents</i>	<i>1,000 bushels</i>	
1778..	+2,078	14.70	43 3	-----	-----	
1779..	-675	13.61	54 8	-----	-----	
1780..	-3,542	12.62	36 9	-----	-----	
1781..	-3,424	13.47	46 0	-----	-----	
1782..	+418	15.29	49 3	-----	-----	
1783..	-220	15.07	54 3	-----	-----	
1784..	-884	15.35	50 4	-----	-----	
1785..	-973	14.89	43 1	-----	-----	
1786..	-146	14.12	40 0	-----	-----	
1787..	-1,608	14.18	42 5	-----	-----	
1788..	-1,769	16.12	46 4	-----	-----	
1789..	+6,438	21.90	52 9	-----	-----	
1790..	+5,720	19.48	54 9	124	4,748	French Revolution.
1791..	-----	16.25	46 7	100	4,117	Bill of Rights and Constitution, Sept. 3-14, 1791.
1792..	-----	22.10	43 0	-----	4,976	
1793..	-----	35.03	49 3	-----	6,824	
1797..	-----	19.48	53 9	-----	2,694	
1798..	-----	17.07	51 10	-----	2,853	
1799..	-----	16.20	69 0	-----	2,606	
1800..	-1,403	21.50	113 10	-----	3,292	
1801..	-63	24.39	119 6	-----	5,752	
1802..	+3,515	24.16	69 10	-----	6,062	Aug. 2. Senate consulate organized.
1803..	+505	18.81	58 10	-----	7,246	
1804..	-1,350	20.18	62 3	-----	4,177	Napoleon elected to imperial throne.
1805..	-3,389	20.18	89 9	-----	3,905	
1806..	-396	20.18	79 1	133	4,000	
1807..	-948	18.60	75 4	125	7,422	
1808..	-2,039	16.07	81 4	125	1,406	Years of plenty, during which Napoleon established absolute authority.
1809..	-1,848	15.17	97 4	125	4,625	
1810..	-3,261	19.61	106 5	150	4,318	
1811..	+3,607	26.13	95 3	175	7,442	
1812..	+5,012	34.34	126 6	194	7,271	Three years of want. Bread in Paris rises to 20.4 centimes per pound.
1813..	+2,102	22.51	109 9	175	6,563	
1814..	-5,212	17.78	74 4	-----	966	Napoleonic constitution overthrown June 4, 1814. Louis XVIII becomes King. Legislative chambers reestablished.
1815..	-2,292	19.53	65 7	125	4,331	
1816..	+1,452	28.31	78 6	175	3,698	
1817..	+5,843	36.16	96 11	225	7,492	
1818..	+4,808	24.65	86 3	200	5,985	
1819..	+3,105	18.42	74 6	126	3,835	
1820..	+1,187	19.13	67 10	75	6,907	

¹ Years not given are not available.
² Years ending Sept. 30 for the United States.
³ 1778-1815 includes grain, flour, and meal of every description, but it is estimated that over 50 per cent was wheat; after 1815, wheat and wheat flour only.
⁴ 1 hectoliter equals 2.5377 Winchester bushels.
⁵ 1 quarter equals 480 pounds.
⁶ Wheat, including flour. Domestic exports plus reexports, minus imports.
Imports and exports for France 1778-1815 and prices for France and Great Britain 1778-1820 (22); imports and exports 1816-1820 for France, (49); exports for United States (27).
Prices for United States obtained by dividing total export value by total number of bushels exported (27, p. 14).

TABLE 40.—Wheat, including wheat flour: Trade of France and the United States and prices of wheat in France, Great Britain, and the United States, 1821 to 1870

Year	France		Great Britain	United States		Remarks
	Net imports (+), net exports (-)	Price per quintal ¹	Price per quarter ²	Price per bushel	Net exports ³	
1821	+1,153	23.72	56 1	81	5,306	
1822	-608	20.66	44 7	70	4,144	
1823	-576	23.36	53 4	132	3,788	
1824	-572	21.63	63 11	102	5,003	Years of comparative plenty in France.
1825	+436	20.99	68 6	103	4,086	
1826	-1,449	21.14	58 8	86	4,331	
1827	-555	23.28	58 6	67	4,363	
1828	+2,634	20.38	60 5	76	4,312	Three years of distress; bread in Paris 23.8 centimes per pound in 1830.
1829	+4,147	30.00	66 3	159	4,100	Hereditary peerage suppressed August 14, 1830; Louis Philippe ascends the throne.
1830	+5,295	30.05	64 3	102	6,181	
1831	+2,422	29.95	66 4	130	9,441	
1832	+11,685	23.65	59 9	106	4,412	
1833	-624	21.80	52 11	92	4,809	Three large harvests in Great Britain.
1834	-727	20.20	46 2	107	4,212	
1835	-752	20.16	39 4	108	3,625	
1836	-248	23.90	48 6	100	1,755	Six years of plenty in France.
1837	-508	24.57	55 10	157	+2,389	
1838	-1,515	25.83	64 7	129	1,323	Very deficient harvest in Great Britain, 1838.
1839	+1,085	28.90	70 8	150	4,662	
1840	+5,621	28.40	66 4	114	11,207	
1841	-1,023	24.95	64 4	118	8,447	
1842	-815	25.43	57 3	114	7,232	Big crops in Europe.
1843	+4,788	27.40	60 1	104	4,507	
1844	+5,782	25.96	61 3	99	7,751	
1845	-824	26.44	50 10	99	6,366	Bad harvest in Germany.
1846	+12,868	31.70	54 8	110	13,060	Bad harvest in Great Britain and France.
1847	+27,279	38.22	69 9	138	26,307	Irish famine. Short crops and distress in France. War of barricades and outbreaks of workers in France.
1848	-1,860	21.83	50 6	132	12,357	Louis Napoleon elected President of second Republic Nov. 4, 1848. Bad harvest in Great Britain.
1849	-8,144	26.20	44 3	123	12,063	Import duty reduced to 1 shilling in Great Britain in 1849. May corner.
1850	-11,974	19 12	40 2	127	5,701	
1851	-13,086	19 04	38 6	109	11,590	
1852	-5,764	23.28	40 6	111	10,273	Napoleon establishes himself Emperor Jan. 14, 1852.
1853	+10,325	29.64	53 1	136	18,040	Bad crops in Europe.
1854	+14,656	38.31	72 6	197	26,588	
1855	+9,604	38.94	74 8	220	2,675	1854-1856, Crimean War. Bad crops in Germany. Corner May, June, and July, 1855.
1856	+23,712	40.47	69 1	113	19,951	
1857	+9,695	31.50	56 3	63	22,199	Mutiny in India. Corner May, June, and July.
1858	-12,749	21.87	44 2	62	21,690	Corner in August.
1859	-18,673	22.26	43 9	82	9,632	Italian war.
1860	-11,281	26.88	53 3	92	12,721	Corner May and June.
1861	+34,354	32.36	55 4	73	43,119	Corner May, 1861.
1862	+15,779	30.50	55 5	67	55,201	Civil war in United States. Commercial panic 1862.
1863	+4,503	25.55	44 9	69	54,854	British imports exceed domestic production.
1864	-3,426	23.54	40 2	74	36,796	1863, large harvest in England. Polish insurrection. 1864, Schleswig Holstein war. English drought. Large harvest.
1865	-12,225	21.89	41 11	72	21,415	Wet English summer. Cattle plague.
1866	-16,596	26.33	49 11	94	11,557	Wet English harvest. Austro-Prussian war. Austro-Italian war. Poor French crops.
1867	+23,008	34.74	64 5	145	10,828	1866-1868, bad German harvests; 1867, large English crop. Corner April-May.
1868	+26,639	34.69	63 9	123	24,550	1867-68, years of want and high prices in France.
1869	+2,659	26.64	48 2	84	23,314	Suez Canal opened.
1870	+14,450	26.70	46 11	84	53,126	Franco-Prussian war. 1870, large English crop.

¹ 1 quintal equals 220.46 pounds. ² 1821 to 1849, years ending Sept. 30. 1849-1870, years ending June 30. ³ 1 quarter equals 480 pounds. ⁴ Net import.

French wheat trade and prices (49).

Great Britain: Prices from 1821-1847 (22). 1847-1857 calculated from Broomhall's chart (15). After 1862 foreign wheat became the principal sort used in Great Britain and good North American wheat on the spot in Liverpool has been taken as the price basis by Broomhall. 1858-1870 (4).

United States: 1821 to 1839 price obtained by dividing total value of exports by number of bushels exported as found in Senate Report 259 (27). 1840 to 1855 price of winter wheat in New York (10, p. 63). Average of high and low prices January, April, July, and October. 1856 to 1870 price of No. 2 red winter at Chicago (6). The computed net export figure is domestic exports plus reexports minus imports. Domestic exports data for 1821 to 1850 (27). Export data 1851 to 1870 compiled from Foreign Commerce and Navigation of the United States, 1851-1870 (108). Imports 1824-1864 compiled from Foreign Commerce and Navigation of the United States, 1824-1864 (101). Dutiable imports 1855-1861 from Foreign Commerce and Navigation of the United States, 1855-1861 (101). Free imports from Senate Executive Document No. 106 (73, p. 32). All imports 1862-1870 from Foreign Commerce and Navigation of the United States (101). Reexports compiled from Foreign Commerce and Navigation of the United States, 1824-1870 (108).

TABLE 41.—Wheat, including wheat flour: Trade of France and the United States and prices of wheat in France, Great Britain, and the United States, 1871-1925, contrasted with world production, 1890-1925

Year	France			Great Britain		United States		Reported world production	Remarks
	Net imports ¹	Price per quintal ²	Price per bushel ³	Price per quarter ⁴	Price per bushel ⁵	Price per bushel	Net exports ⁶		
	1,000 bushels	Francs	Cents	s. d.	Cents	Cents	1,000 bushels	1,000 bushels	
1871	37,949	34.16	180	56 8	172	109	52,195	-----	
1872	4,139	30.58	161	57 0	173	111	37,687	-----	
1873	10,890	33.57	177	58 8	178	103	50,705	-----	
1874	23,862	32.66	172	55 8	169	98	90,418	-----	Famine in Bengal. Large United Kingdom and French crops.
1875	7-5,079	23.54	124	45 2	137	86	72,845	-----	Poor English crop.
1876	10,327	26.59	140	46 2	140	92	74,508	-----	
1877	7-1,445	31.09	164	56 9	172	121	57,148	-----	Large English harvest. Wet summer.
1878	49,106	29.90	158	46 5	141	95	92,028	-----	Bad English harvest. Increased United States exports.
1879	80,880	28.20	149	43 10	133	99	150,253	-----	
1880	73,834	29.96	158	44 4	135	105	183,453	-----	Wet harvest in Europe.
1881	47,266	28.82	152	45 4	138	115	186,264	-----	
1882	48,466	27.69	146	45 1	137	118	121,733	-----	Poor English crop; large imports into Great Britain from India.
1883	38,412	24.83	131	41 7	126	102	147,699	-----	Big English crop.
1884	40,697	23.10	122	35 9	109	83	111,604	-----	Fine English crop; large British imports from India and Russia.
1885	24,568	21.17	112	32 10	100	88	132,640	-----	First arrivals of Argentine wheat in Liverpool.
1886	26,899	21.55	114	31 2	95	76	94,525	-----	Good crops and big imports into Great Britain. Chicago corner.
1887	33,661	22.87	121	32 6	99	75	153,881	-----	Large Russian supply.
1888	42,654	24.75	131	31 10	97	88	119,533	-----	Do.
1889	42,920	23.54	124	29 9	90	86	88,687	-----	Do.
1890	39,967	24.71	130	31 9	96	89	109,449	1,957,335	
1891	75,544	27.14	143	37 1	112	96	106,218	2,016,036	Wet English harvest. Crop failure in Russia and France.
1892	70,766	23.12	122	30 4	92	78	225,042	2,192,472	Large American exports.
1893	36,596	20.97	111	26 4	80	68	191,517	2,443,072	
1894	45,571	19.41	103	22 11	70	57	163,317	2,357,727	
1895	17,606	18.25	97	23 0	70	62	143,923	2,276,811	
1896	5,975	18.53	98	26 3	80	67	126,690	2,328,627	
1897	19,140	24.79	131	30 3	92	86	145,983	2,112,010	Failure Indian and Argentine crops. Poor Italian and French crops.
1898	71,620	25.31	133	34 2	103	90	217,129	2,867,948	Leiter corner. French-Italian wheat duties suspended.
1899	4,685	19.40	102	25 9	78	71	222,678	2,643,177	Spanish-American War. Large world crop.
1900	4,385	18.71	99	26 11	81	71	186,074	2,478,739	Large Argentine surplus.
1901	6,139	19.63	104	26 11	81	72	216,056	2,701,163	Large American crop. German crop failure.
1902	9,681	20.98	111	28 1	85	75	234,694	2,913,652	
1903	17,906	22.14	117	26 9	81	78	203,087	3,111,340	Large Russian surplus.
1904	7,757	22.07	117	28 4	86	103	120,679	3,006,388	Large Indian, Russian, and Argentine supplies.
1905	5,761	22.78	120	29 9	90	101	41,414	3,130,443	Russian revolution.
1906	10,052	22.54	118	28 4	85	80	97,380	3,253,900	Large American crop.
1907	12,607	23.08	122	30 7	92	87	146,710	3,012,480	Small American crop. Big Argentine surplus.
1908	1,209	22.41	118	32 2	97	97	162,832	3,077,785	Big Argentine surplus.
1909	2,499	23.31	123	36 11	112	122	113,815	3,551,056	Big Russian surplus. Small Argentine surplus.
1910	22,612	25.21	133	31 8	96	106	86,168	3,477,180	Big Russian surplus.
1911	78,794	25.53	134	31 9	97	92	68,167	3,522,157	Small Russian surplus. Injured Canadian crop. Big French demand.
1912	25,234	29.06	153	34 9	106	104	76,277	3,782,788	Small Russian surplus.

¹ Calendar years.² 1 quintal equals 220.46 pounds.³ To convert francs to cents, 1871 to 1889, 1 franc equals 19.38 cents. 1890 to 1925, yearly average exchange rates used. (See Table 151.)⁴ 1 quarter equals 480 pounds.⁵ To convert shillings and pence to cents, 1871 to 1888, 1 penny equals 2.026 cents. 1889 to 1925, yearly average exchange rates used.⁶ Years ending June 30. Domestic exports plus reexports minus imports equals net exports. 1871 to 1924, wheat flour converted to wheat on the basis of 4.5 bushels equals 1 barrel. 1925 converted on the basis of 4.7 bushels equals 1 barrel.⁷ Net exports.

TABLE 41.—Wheat, including wheat flour: Trade of France and the United States and prices of wheat in France, Great Britain, and the United States, 1871-1925, contrasted with world production, 1890-1925—Continued

Year	France			Great Britain		United States		Reported world production	Remarks
	Net imports	Price per quintal	Price per bushel	Price per quarter	Price per bushel	Price per bushel	Net exports		
	1,000 bushels	France	Cents	s. d.	Cents	Cents	1,000 bushels	1,000 bushels	
1913	56,553	27.73	146	31 8	96	95	141,681	4,011,754	Large supply and demand.
1914	62,389	27.81	147	35 1	108	101	143,959	3,588,988	Big American crop. Dardanelles closed.
1915	71,594	31.74	155	53 0	157	131	331,938	4,144,659	Big Canadian crop. Big Australian crop.
1916	105,555	33.80	157	58 3	173	138	236,551	2,515,591	Big Canadian export. Big Australian crop.
1917	87,057	50.00	237	76 8	228	230	178,713	2,426,838	Big Argentine crop and small export.
1918	71,757	64.39	312	72 10	216	223	102,775	2,774,877	Big Indian crop and export.
1919	85,435	74.17	276	72 12	202	253	276,615	2,068,701	Big Indian and British crops.
1920	86,598	82.00	157	80 7	184	257	214,521	2,892,988	Big United States and Argentine crops. Big Australian exports.
1921	32,520	89.40	181	72 8	175	148	309,664	3,303,749	Big Canadian and Indian crops. Big Argentine and United States exports.
1922	22,112	78.03	176	47 11	133	123	262,538	3,397,648	Big North American and Australian exports.
1923	49,739	91.94	152	42 0	120	117	202,186	3,486,381	Large crops in exporting countries. World supplies exceed requirements.
1924	51,096	111.84	169	49 0	135	128	128,473	3,056,212	Big Indian and British crops. Russia resumes exports.
1925	44,441	131.85	171	54 1	163	178	254,694	3,317,682	World wheat crop 430,000,000 bushels less than 1923. Russian exports suspended.

France: Net imports, 1871-1918 (49); 1919-1923 (35); 1924-1925 (57). Prices, 1871-1910 (49); 1911-1918 and 1925 (59); 1919-1924 (54, p. 7).
 Great Britain: Prices, 1871-1918 (4); 1919-1924, same as France. 1925 averaged by weeks (9).
 United States: Net exports compiled from Foreign Commerce and Navigation of the United States (108), and June issues of the Summary of Foreign Commerce of the United States (109). Prices (6, 81).
 World production as reported, 1890 to 1923 (106, p. 669); 1924 and 1925 (106).

From 1779 until 1788 (with the exception of the year 1782 when a small importation of grain was required) harvests were sufficient, prices were not abnormally high and small amounts of grain were shipped to surrounding countries. (Table 39.) Then came two hard years attended by high prices for bread and consequently great distress in Paris. The scarcity of food and the severe winter of 1789 were certainly contributing causes of the French Revolution that was precipitated in 1790, resulting in the Bill of Rights and the Constitution that was formulated September 3 to 14, 1791.

During the next nine years no data regarding grain movements are available, but the police records of Paris show that from 1797 to 1800 wheat prices were not abnormal. Then came two years of high prices, and in 1802 at harvest time a change in government and constitution was effected August 2.

The next eight years were attended with sufficient harvests. Prices were relatively low, grain was exported, and the populace of Paris was content. Napoleon was elected to the imperial throne in 1804 and established his almost absolute authority. Beginning with 1811 came three years of want. In 1812, wheat prices were double those of 1809 and bread in Paris rose to the unprecedented figure of 20.4 centimes per pound, attended by great distress. On June 4, 1814, the Napoleonic constitution was overthrown. Legislative chambers of members elected by the people were reestablished.

Louis XVIII became king, and although there was a period of scarcity, high prices, and distress during the three years 1816, 1817, and 1818, his régime survived.

Then followed several years of plenty, with varying political vicissitudes, until 1828, when wheat became scarce and there was great distress throughout France. In 1830 bread in Paris cost 23.8 centimes per pound. In this year the constitutionalists gained control and Louis-Philippe ascended to the throne. The hereditary peerage was suppressed at harvest time on August 14 of that year.

From 1833 to 1838 prices were low and bread plentiful, followed by somewhat higher prices during 1839 and 1840, the importation of wheat in the latter year amounting to 60,000,000 francs in value. But political conditions were becoming less and less affected by the cry for food. Two years of sufficiency followed and then came five years of want, culminating in the severe season of 1847, with a wheat import amounting to 321,000,000 francs in value. A war of barricades had been in progress in Paris for some time and terrible outrages had been committed during an outbreak of workers. Louis Napoleon Bonaparte was elected President of the second republic, established by the constitution of November 4, 1848.

Then followed five years of plenty and the exportation of wheat from France. The people were content and Napoleon succeeded in establishing himself Emperor by the constitution of January 14, 1852. The years of Napoleon's reign were more of insufficiency than of plenty and, beginning with 1867, there were eight years of want with high prices from 1867 to 1871. During the fourth of these years, in 1870, the third and present republic was established.

About this time the possible influence of bread shortage upon the political destinies of France was much lessened by the influx of larger wheat supplies from the western world. The high prices of 1871 were not again attained until the third year of the World War in 1917. From the French Revolution until the establishment of the third republic, it is probable that there is more or less truth in the statement of the British statist, Danson (22), whose outline of the relation of political events to the price of wheat in France has been followed in the preceding paragraphs. Mr. Danson writes:

The world is much ruled by the belly; * * * the history of prices (especially as regards the food of the people) may, in the order of practical importance to mankind, take precedence of the history of politics.

From 1871 until the end of the century, the influence of large shipments of wheat, chiefly from the United States, depressed prices in Europe (fig. 6) and reduced the profitableness of wheat growing generally. The immediate effect in France was a decrease in wheat acreage. The acreage of wheat decreased at first largely in response to this decline in prices but production actually increased somewhat because of higher yields per acre through the use of better methods of cultivation, better seed, and the use of fertilizers. Greater yields and larger importations of cheap food tended toward the establishment of a higher standard of living among the masses of the people marked by an annual consumption of nearly a bushel of wheat more per inhabitant at the close of the century than in the early seventies.

Between 1900 and the outbreak of the World War, although the price of wheat increased, the area sown to wheat continued steadily to decrease, falling off about 700,000 acres. (Fig. 7.)

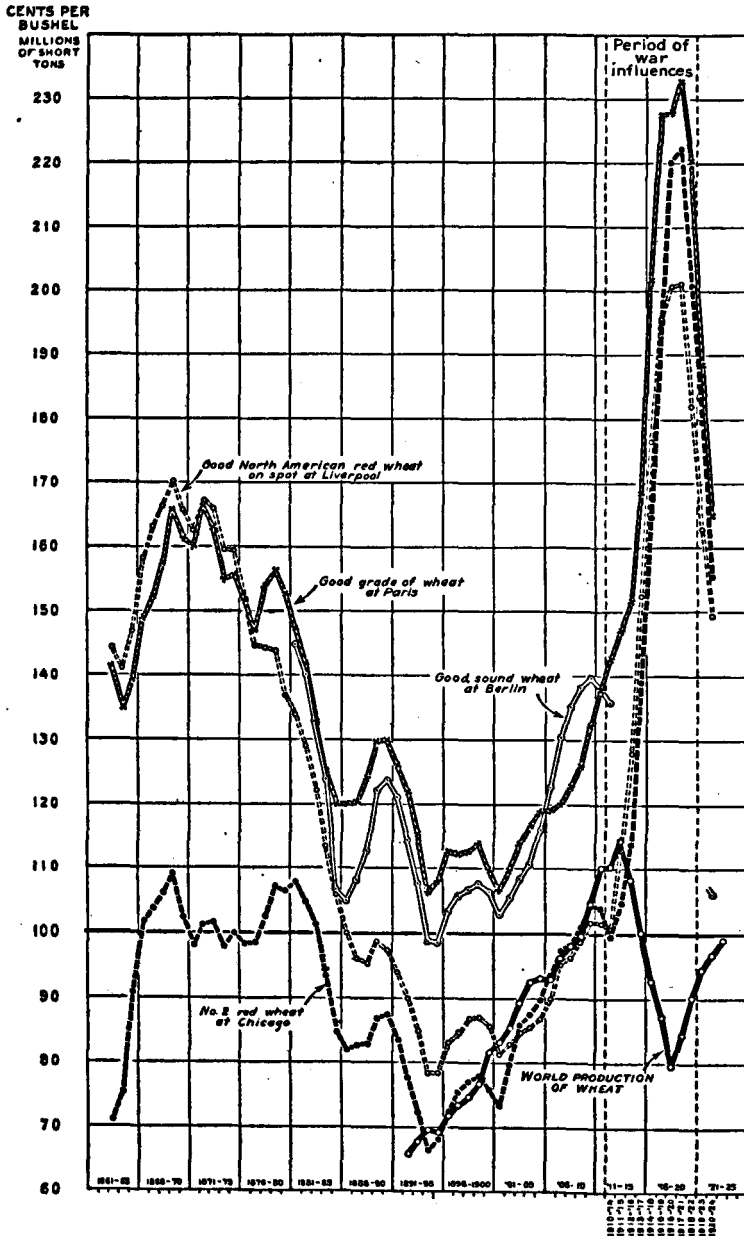


FIG. 6.—PRICE AND WORLD PRODUCTION OF WHEAT EXPRESSED IN FIVE-YEAR MOVING AVERAGES

The depressing influences of the influx of cheap wheat from overseas were offset somewhat by tariffs protecting the French and German farmer, whereas in Great Britain and the United States the world price of wheat obtained. During the last decade of the nineteenth century, world consumption had overtaken world production so that, although production increased rapidly, the price of wheat increased at about the same rate until the outbreak of the World War.

Net production, however, continued to increase, averaging yearly 14,000,000 bushels during 1911-1913 above the average of the decade 1891-1900. During this period world consumption tended to overtake world supply and prices steadily rose. (See fig. 6.) Importations of wheat fell off during 1901 to 1910 and then sharply increased so that, in spite of high prices, average per capita disappearance reached 8.6 bushels during the three years ended 1913.

A better appreciation of the relative importance of wheat imports to France can be obtained by contrasting the daily average wheat disappearance over a series of periods with the average number of days' supply imported during the corresponding period. During the period, 1815-1820, the daily disappearance of wheat averaged 301,000 bushels; the average of the period 1911-1913 reached 936,000 bushels daily, an increase of about 211 per cent. (Table 38.)

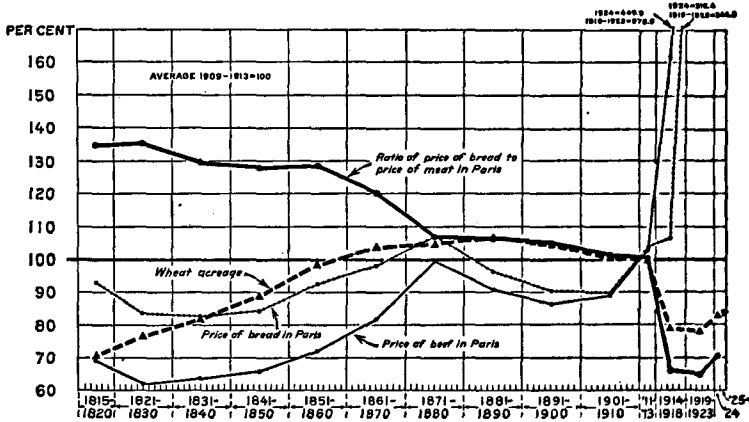


FIG. 7.—RELATIONSHIP OF WHEAT ACREAGE IN FRANCE TO THE PRICE RATIO OF BREAD TO BEEF IN PARIS, 1815-1925

During the period of general expansion of agriculture in France, following the revolution of 1790, there was little relation between the prices of commodities and their acreages. During the 10-year period ended 1835 the competition of wheat from overseas was keenly felt, and from then the acreage of wheat has fluctuated in keeping with the fluctuations in the ratio between the price of bread and the price of beef in Paris.

During the four decades from 1821 to 1860 the average yearly net importation of wheat ranged from one to a little more than five days' supply. The importation of a supply for 10 or more days in any one year marked great distress in urban centers. This was for the most part because transportation was poor and distribution was badly organized. It was difficult to cart grain from the interior to the large consuming centers even when supplies were obtainable because wagon transportation added so enormously to the cost. In seasons of poor harvest the peasants were loath to allow their home supplies to get low, for, in case another short harvest occurred the succeeding year, experience had taught them that there would be great difficulty in obtaining supplies from outside localities.

With the development of steam transportation all this was changed. From 1861 to the beginning of the World War, the transportation and distribution facilities were highly perfected in regard to both railways and interior waterways. Rail and canal systems now reach every part of the country and transfer of goods from interior to the coast or contrariwise is rapidly effected.

During the latter half of the nineteenth century the economic status and the standard of living of the peasant had steadily improved. Not only had total daily consumption rapidly increased (60 per cent between 1851 and 1913), but the dependence upon outside sources of supply had developed astoundingly. During 1851-1860 France imported a yearly average of only 1 day's supply; during the next decade 14 days' supply; and during 1911-1913, more than 57 days' supply.

Relation of the decline in wheat acreage to meat production

It has been noted that the acreage of wheat decreased during the period of the general decline in world prices from the early seventies to the close of the last century and that when the price of wheat began to ascend at the beginning of the present century the area sown to wheat did not respond by proportionate increases, but continued to decrease.

This continued decrease in wheat acreage has not come about because wheat production has been unprofitable, but rather because there has been greater profit in producing horses, cattle, and animal products generally, and consequently as year by year the areas planted to oats, barley, forage plants, and permanent grass tended to increase, the wheat acreage shrank, more particularly in the regions of better soils where the benefits from diversified farming were most readily obtained.

The French farmer has more and more come to depend upon the sale of animals and animal products as the source of his farm income and to depend less and less on the marketing of grain; that is, the agriculture of France, like the agriculture of most other European countries, is becoming intensive, leaving the production of cereals that require extensive methods, if any considerable profit is to accrue, to the broad acres of new lands where it is possible through power and machine farming to reduce the requirement of man power per acre to a minimum.

In French statistics there are no long series of prices of animals at the farm and for that reason the relative farm income obtained from the sale of meat animals as contrasted with the sale of wheat can not be compared over any extended period. There is a series of prices of beef in Paris, however, extending back to 1815, and this can be compared with a similar series of the prices of bread in the French capital also extending back to the early years of the last century. By assuming that these prices reflect the approximate relative income at the farm obtainable from each of the commodities (cattle and wheat) their relationship to the acreage of wheat sown by French farmers throughout this 109-year period can be examined. (Fig. 7 and Table 42.)

TABLE 42.—*Relationship of wheat acreage in France¹ to the price ratio of bread to beef in Paris, 1815-1925*

Year	Price per pound				Wheat area of France		Index price ratio, bread + beef
	Bread		Beef ²		1,000 acres	Index number	
	Francs	Index number	Francs	Index number			
Pre-war period: ¹							
1815-1820.....	0.170	92.0	0.551	69.0	11,405	69.1	134.6
1821-1830.....	.153	83.6	.494	61.9	12,337	74.8	135.1
1831-1840.....	.151	82.5	.508	63.7	13,152	79.7	129.5
1841-1850.....	.154	84.2	.526	65.9	14,340	86.9	127.8
1851-1860.....	.169	92.3	.574	71.9	15,876	96.2	128.4
1861-1870.....	.170	97.3	.650	81.5	17,108	103.7	120.0
1871-1880.....	.195	106.6	.798	99.7	16,929	104.8	106.9
1881-1890.....	.176	96.2	.722	80.5	17,216	106.5	106.3
1891-1900.....	.165	90.2	.687	86.1	16,810	104.0	104.8
1901-1910.....	.164	89.6	.703	88.7	16,231	100.4	101.0
1911-1913.....	.190	103.8	.823	103.5	16,100	99.6	100.3
Base for pre-war period from 1871-1913 (see footnote 1):							
1909-1913.....	.183	100.0	.798	100.0	16,159	100.0	100.0
War period—							
1914.....	.161	98.9	.833	106.9	13,594	98.8	92.5
1915.....	.193	105.5	1.025	128.4	12,945	90.1	82.2
1916.....	.193	105.5	1.180	147.9	11,309	82.6	71.3
1917.....	.200	109.3	1.470	184.2	9,452	69.0	59.3
1918.....	.207	113.1	1.910	239.3	8,105	73.8	47.3
Average, 1914-1918.....	.195	106.6	1.288	161.4	11,349	82.9	66.0
Base for war period:							
1909-1913.....	.183	100.0	.798	100.0	13,697	100.0	100.0
Postwar period: ¹							
1919.....	.227	124.0	2.610	327.1	11,633	70.5	37.9
1920.....	.459	230.3	3.830	479.9	12,586	76.3	32.3
1921.....	.553	302.2	2.910	364.7	13,300	80.6	32.9
1922.....	.472	257.9	2.700	338.3	13,072	79.2	76.2
1923.....	.523	285.8	2.990	374.7	13,672	82.9	76.3
Average, 1919-1923.....	.447	244.3	3.008	376.9	12,853	77.9	64.8
1924.....	.579	316.4	3.590	449.9	13,620	82.5	70.3
1925.....	.715	390.7	3.874	485.5	13,872	84.1	80.5
Base for postwar period and prior to 1871: ¹							
1909-1913.....	.183	100.0	.798	100.0	16,500	100.0	100.0

¹ Includes Alsace-Lorraine prior to 1871 and after 1918.

² First-quality beef.

³ Reported figure minus the areas that were reported for the 10 Departments occupied during the war. These were subtracted in order to make a comparison since it is considered that reports from the war territory were incomplete.

⁴ 1909-1913 average less 2,462,000 acres, the pre-war average area in the 10 Departments that were occupied during the war.

⁵ 1909-1913 average plus 341,000 acres, the area sown to wheat in Alsace-Lorraine.

Prices, pre-war (49); war and postwar (29, t. 5-15). Wheat acreage (31, 42, 49).

From 1815 to 1830 bread and beef prices declined somewhat because of the general expansion of agricultural production. From 1830 until 1840 the price of bread in Paris was almost stationary and then increased steadily until the early seventies. Beef prices began to ascend somewhat earlier, increasing at about the same rate as bread at first, and then from 1860 increasing somewhat more rapidly so that the ratio obtained by dividing the price of bread by the price of beef decreased. Even as far back as 1850-1860 beef was beginning to become a more profitable production commodity than wheat, although the French farmer did not respond to this fact until after the Franco-German War.

Just about that time (1871-1880) large quantities of wheat were thrown upon the European market by the Western Hemisphere and by Russia. The French farmer was forced to figure with care his

sources of profit as wheat prices fell. Beef prices also fell off during the next score of years but not so rapidly as did the price of wheat and consequently the price of bread. About 1880 the ratio between the price of bread and the price of beef in Paris (reflecting the relative profitableness of wheat and cattle production at the farm) began steadily to decline and during the next 30 years, the acreage of wheat decreased coincident with this declining price ratio, as agriculture entered upon a period of change from extensive to intensive farming.

The effect of the World War was to accentuate this trend of change. Between 1914 and 1918 the price of bread was more narrowly controlled by governmental price fixing than the price of meat, and the price ratio between bread and beef fell to 66 per cent of the 1909-1913 normal. During this period wheat acreage fell to 82.9 per cent of normal in the 77 Departments outside of the 10 Departments involved in war operations, because of many combinations of factors and in spite of the governmentally-fixed price at which wheat was requisitioned. It was considerably more profitable and less difficult to produce meat than wheat during the war period and the general tendency was to allow many acres that could not be conveniently cultivated to go to grass for pasturage and hay.

Domestic production fell off sharply, covering only 70 per cent of the total requirement. The inhabitants consumed all of the wheat produced at home and in addition about 2.2 bushels each imported from other countries (the pre-war normal importation being 0.937 bushel per capita). In the meantime, prices (in francs) soared to 1.6 times the normal and day wages in Paris rose to 1.7 times normal in 1917 and 2.3 times normal in 1918.

Immediately following the war, prices and wages continued to mount. During the 1919-1923 period wheat prices (in francs) averaged 3.18 times the 1909-1913 normal, being twice as high as during the World War period. Throughout France wages in 1921 were 4.1 times as high as before the war (1911). During 1919-1923 per capita consumption remained practically the same as during the war period, averaging about 7.15 bushels as against 7.32 bushels per capita during the war. Acreage also remained about the same, being 0.344 acre per capita during 1914-1918 and 0.328 acre during 1919-1923. Net production, however, because of fair yields, increased 0.6 bushel per capita, whereas importations fell off 0.75 bushel per inhabitant.

The demand for meat during this period is reported to have increased so that after the temporary price decline in August, 1921, when unrestricted trade in wheat was reestablished, bread prices rose rapidly to 244.3 per cent of normal during 1919-1923; nevertheless, beef prices rose with greater rapidity to 376.9 per cent of normal. During this period the bread-to-beef price ratio declined on the average to 64.8 per cent of normal, a falling off of 1.2 per cent less than the war period. Wheat acreage during 1919-1923 averaged 77.9 per cent of the 1909-1919 average.

An increase in price in 1924 brought the bread-to-beef price ratio up to 70.3 per cent of normal, an increase of 5.5 per cent over the 1919-1923 average, and the wheat acreage increased 4.6 per cent, rising to 82.5 per cent of the pre-war normal. In 1925 there was an increase in wheat acreage, and a favorable season increased production higher than the 1909-1913 average. But there was an increase in the price of both bread and beef during the year, bringing the ratio 10.2 per

cent higher than in 1924. Preliminary reports indicate that the 1926 acreage has not responded to this somewhat better status of wheat prices, but has decreased to 13,499,000 acres.

During and immediately after the World War the price of wheat as well as its purchase and distribution were controlled by the French Government. During 1921 wheat disappearance exceeded the pre-war 1909-1913 average. In August the Government reestablished free trade in wheat and prices fell to the world level. Although prices were low in 1922 and production had fallen off, importations also decreased and apparent consumption was low. It is probable that stocks were carried over from 1921 into 1922 rather than that a sharp change in the dietary of the nation took place. During the next two years disappearance returned rapidly toward normal. In 1924 this return toward normal disappearance was stimulated somewhat by a reduction from 10 to 8 per cent in the substitutes required by law to be admixed in bread; in 1925, indicated disappearance reached the unprecedented height of 8.5 bushels per capita.

It seems probable that the nation will resume its former rate of consuming wheat at about 8 bushels or better per capita.

The present tendency in French agriculture is for the farmer to watch closely all sources of income and to adjust his operations so as to obtain the greatest possible profit out of his few acres. Wheat consumption will return to normal, but whether or not wheat acreage will return to normal depends upon the amount of relative profit that the farmers can obtain from this cereal in comparison with that obtainable from other products, more particularly meat; and, in this connection, another factor is beginning to bear with influence upon agriculture. This factor is the growing use of cheap frozen meats—beef from Argentina, mutton from Australia and New Zealand, and perhaps pork from the United States. The use of cheap meat may increase to a point at which the price of native meat will decline and at which a higher ratio may be established between the income from wheat and beef in favor of the former. But unless some such influence either increases the price obtainable from wheat or decreases the price of meat it is probable that submarginal lands formerly planted to wheat will continue to remain in grass and the new low levels of wheat acreage will maintain.

The statistical wheat balance

Under normal conditions the effect of the accession of Alsace-Lorraine would have been to increase the normal wheat deficit of France by about 6,453,000 bushels, as indicated in the average approximate wheat balance during 1909-1913 given in Table 43. Alsace-Lorraine under German jurisdiction cultivated only about half the wheat acreage per capita, but obtained somewhat more than half the per capita production as was the case in France. According to data furnished by the German statistical office in Berlin it is estimated that the average annual consumption of wheat in Alsace-Lorraine was approximately 7.57 bushels per capita of civil population, resulting in an annual average deficit of about 6,453,000 bushels. The inclusion of the population of the acquired territories with that of France proper reduced the statistical per capita consumption only 0.2 per cent or from 8.02 to 8 bushels per annum.

TABLE 43.—Wheat: Average approximate balance in France and Alsace-Lorraine, average 1909-1913

Item	Area	
	Total	Per 100 inhabitants
1. Area sown:	<i>1,000 acres</i>	<i>Acres</i>
France.....	16,159	40.8
Alsace-Lorraine.....	341	19.0
Total.....	16,500	39.8
2. Production:	<i>1,000 bushels</i>	<i>Bushels per capita</i>
(a) France.....	317,636	8.02
(b) Seed ¹	37,166	
(c) Net.....	280,470	
(d) Alsace-Lorraine.....	8,008	4.47
(e) Seed ¹	887	
(f) Net.....	7,121	
Total net production.....	287,591	
3. Disappearance:		
(a) France (2c plus 4a).....	317,608	² 8.02
(b) Alsace-Lorraine (2f plus 4b).....	13,574	7.57
Total.....	331,182	8.00
4. Deficit:		
(a) France (net imports).....	37,138	
(b) Alsace-Lorraine (estimated).....	6,453	
Total.....	43,591	

¹ 200 liters of seed per hectare (1909-1913 average weight per liter was 0.7725 kilogram); equivalent to 2.3 bushels per acre. In calculating liters to kilograms the institute employs 0.75 kilogram per liter (82, p. 716).

² 2.3 bushels per acre (average amount of seed employed in the territories now comprising the Republic of Germany).

³ Net consumption—production plus imports less seed and exports for calendar year. The weighted gross average (1909-1913) consumption reported by the French Government is 3.166 hectoliters per capita, equivalent to 8.98 bushels (58, p. 107). Gross disappearance based on the above data is $\frac{317,636 + 37,138}{39,615} = 8.96$

Population—	
France 1909-1913.....	39,615,000
Alsace-Lorraine (excluding military population).....	1,793,000
Total.....	41,408,000

It is considered that the military population in Alsace-Lorraine subsisted on the normal German rye ration.

Area and production: For France, (49); for Alsace-Lorraine, (70).

Assuming that the average normal consumption of wheat in France (present boundaries) to be 8 bushels per capita annually, the statistical wheat balances in Table 44 for the fiscal years 1921-22 to 1925-26 have been prepared to indicate the probable degree to which the rationing of the French Nation has approached the pre-war normal. This table indicates that during the four-year period ended June 30, 1925, the decreased wheat production in France had not been entirely supplemented by increased imports. On the basis of a normal pre-war disappearance of 8 bushels of wheat per capita, the first year since the war in which French wheat requirements were apparently met was in 1921-22, following the good wheat crop of 1921. In that year the theoretical deficit of 20,378,000 bushels, as shown in Table 44, was met by the importation of 19,115,000 bushels. In the following year, however, a poor harvest left France with a theoretical deficit of over 100,000,000 bushels but only 41,354,000

bushels were imported. These figures suggest that the actual wheat consumption in 1921-22 may have been below pre-war figures, leaving a carry-over which made up for a part of the deficit in the following year. In 1923-24 and 1924-25 the apparent per capita wheat consumption was only a fraction of a bushel below the average of the years just preceding the war. This decrease in consumption is no more than would be expected with the economies in the use of wheat which are known to have been practiced during and since the war. The theoretical shortage of supply as compared with the pre-war average requirement ranged between 21,000,000 and 28,000,000 bushels.

TABLE 44.—Wheat: Statistical balance of France, 1922-1926

[In thousand acres—i. e., 000 omitted]

Item	Years ended June 30—				
	1922	1923	1924	1925	1926
Area.....	<i>Acres</i> 13,300	<i>Acres</i> 13,072	<i>Acres</i> 13,672	<i>Acres</i> 13,620	<i>Acres</i> 13,872
Production.....	<i>Bushels</i> 323,467	<i>Bushels</i> 243,315	<i>Bushels</i> 275,599	<i>Bushels</i> 281,179	<i>Bushels</i> 330,338
Seed ¹	29,925	30,327	31,309	31,598	32,183
Net production.....	293,542	212,988	244,290	249,581	298,155
Theoretical domestic requirement based upon pre-war disappearance ²	313,920	314,880	316,960	318,960	320,960
Deficit to be covered by imports.....	20,378	101,892	72,700	69,379	22,805
Actual net imports.....	19,115	41,354	51,416	41,173	34,012
Shortage of supply as compared with pre-war requirement.....	-1,263	-60,538	-21,284	-28,206	³ +11,207

¹ 200 liters per hectare. 1921, 1 liter=0.756 kilogram=2.25 bushels per acre; 1922, 1 liter=0.7786 kilogram=2.32 bushels per acre; 1923, 1 liter=0.771 kilogram=2.29 bushels per acre; 1924 and 1925, 1 liter=0.78 kilogram=2.32 bushels per acre.

² 8 bushels per capita for total population of France and civil population of Alsace-Lorraine (1909-1913)=41,408,000. See Table 6 for populations.

³ Surplus. Probably accumulated stocks.

On September 15, 1925, the French Ministry of Agriculture estimated that production during the current year would reach 329,077,000 bushels. This indicated (on the basis of pre-war normal requirements) a theoretical deficit to be covered by imports of only 23,217,000 bushels, or about the amount that had been left uncovered by imports during the crop years 1923-24 and 1924-25. Nevertheless during the six months ended December 31, 1925, France imported 34,261,000 bushels of wheat as grain and flour. This would indicate an accumulation of surplus stocks within the country of around 10,000,000 to 11,000,000 bushels.

The actual harvest in 1925 exceeded the forecast and has been placed at 330,338,000 bushels. Beginning with January, 1926, trade in wheat dwindled, and during the last six months of the fiscal year ended June 30, 1926, only 853,000 bushels were imported as wheat and flour.

The theoretical deficit to be covered by imports was approximately 22,805,000 bushels. With net imports at about 34,012,000 bushels, there were probably several million bushels of reserve wheat in France at the opening of the crop year 1926-27. The statistical balance was 11,207,000 bushels on hand.

TABLE 45.—Wheat and wheat flour: Imports into France, by months, July, 1921, to June, 1926 (35)

[In thousand bushels—i. e., 000 omitted]

Month	1921-22		1922-23		1923-24		1924-25		1925-26	
	Wheat	Wheat flour †	Wheat	Wheat flour †	Wheat	Wheat flour †	Wheat	Wheat flour †	Wheat	Wheat flour †
July.....	3, 125	3	1, 331	3	5, 569	21	7, 549	59	7, 571	23
August.....	5, 040	17	2, 899	7	6, 852	31	6, 401	27	12, 368	16
September.....	4, 326	29	2, 651	8	4, 518	41	4, 525	8	6, 438	72
October.....	2, 665	41	6, 092	13	4, 785	47	4, 536	14	4, 998	122
November.....	1, 854	24	4, 487	11	3, 749	65	4, 328	2	1, 413	28
December.....	1, 365	36	4, 172	18	4, 307	97	3, 412	(²)	1, 186	26
January.....	407	5	3, 750	5	1, 965	27	837	5	223	9
February.....	291	23	3, 871	4	1, 999	122	1, 507	6	223	19
March.....	623	10	2, 881	5	2, 243	472	1, 461	1	58	15
April.....	531	29	2, 532	11	2, 900	301	1, 975	9	64	5
May.....	531	4	5, 379	5	5, 810	79	1, 561	9	132	2
June.....	677	2	3, 864	18	5, 127	87	5, 640	20	79	24
Total.....	21, 435	223	43, 909	108	52, 824	1, 390	43, 732	¹ 160	34, 753	361

† In terms of wheat.

² Not available.

³ Excluding December, 1924.

The degree to which wheat acreage approaches the pre-war level will depend largely upon economic factors of world agriculture. French agriculture has adjusted itself to new acreage levels, and it is probable that, unless world conditions change materially, the tendency will be for French wheat acreage to decrease rather than increase during the next few years.

About 3,000,000 acres of the wheatlands had not been reclaimed by 1925. These unreclaimed lands were naturally those submarginal in character whose soils were too poor to give remunerative returns, and consequently average yields per acre since the World War show some increase, except in Alsace-Lorraine. Comparing the average yields per acre in 1909-1913 with 1921-1925, we have 26 against 27.1 in the 10 occupied Departments, 18.5 against 20.6 in the unoccupied Departments, and 23.5 against 21.3 in Alsace-Lorraine.

It is not probable that increased yields per acre can continuously compensate for the loss of 3,000,000 acres of wheatlands. The return to normal of the statistical wheat balance for the season 1925-26 was a seasonal fluctuation. It is probable, however, that production, consumption, and the foreign trade in wheat will fluctuate during the next few years in much the same manner as it has ranged up and down during the last five seasons.

TABLE 46.—Wheat, including wheat flour: Foreign trade of France, average 1909–1913 and 1921 to 1925 (33, 35)

[In thousand bushels—i. e., 000 omitted]

Countries from which imported	Average 1909–1913	1921	1922	1923	1924	1925
Australia.....	5, 285	11, 324	4, 381	2, 176	4, 046	11, 687
Germany.....	4, 003	272	16	(¹)	20	(¹)
Rumania.....	5, 725	639	168	(¹)	10	(¹)
Russia.....	4, 931	11	(¹)	57	2, 364	10
United States.....	2, 519	16, 490	6, 799	10, 592	2, 174	9, 095
Canada.....	143	1, 234	2, 858	9, 578	11, 978	5, 571
Argentina.....	5, 719	3, 235	6, 735	18, 216	27, 079	9, 149
Algeria.....	5, 217	5, 268	1, 944	6, 917	4, 294	4, 728
Tunis.....	902	1, 153	356	2, 236	1, 305	1, 735
British India.....	2, 191	733	(¹)	990	292	599
Other countries.....	2, 066	794	1, 694	1, 731	1, 386	2, 015
Total imports.....	38, 698	41, 153	24, 941	52, 492	54, 918	44, 898
Exports.....	1, 529	1, 633	2, 829	2, 753	3, 822	447
Net imports.....	² 37, 169	39, 520	22, 112	49, 739	51, 096	44, 441
Estimated deficit of Alsace-Lorraine.....	³ 6, 453	(¹)	(¹)	(¹)	(¹)	(¹)
Total for France.....	43, 622	39, 520	22, 112	49, 739	51, 096	44, 441

¹ If any, included in other countries.² This figure for net imports of wheat will not agree with that in other tables and text, since the average of the totals given in *Statistique Agricole*, 1919 (49), is 37,138,000 bushels, a difference of 31,000 bushels.³ Based on an estimate made by the "Preussisches Landesamt."⁴ Included in "Total for France."

TABLE 47.—Wheat and wheat flour in terms of grain: Exports from the United States to France, by months, July, 1921, to June, 1926

Months	1921-22		1922-23		1923-24		1924-25		1925-26	
	Wheat	Wheat flour in terms of wheat	Wheat	Wheat flour in terms of wheat	Wheat	Wheat flour in terms of wheat	Wheat	Wheat flour in terms of wheat	Wheat	Wheat flour in terms of wheat
July.....	Bushels 512, 000	Bushels 20, 610	Bushels 557, 052	Bushels 500	Bushels 442, 335	Bushels 40, 140	Bushels 4	Bushels 236, 153	Bushels	Bushels
August.....	1, 170, 257	1, 264	2, 624, 650	2, 974	546, 000	814	366, 889	1, 350	70, 402	9
September.....	935, 691	4	3, 491, 664	5, 526	775, 936	1, 872	1, 109, 818	4	139, 166	
October.....	812, 546	18	2, 445, 902	2, 956	282, 618	1, 526	2, 214, 918	1, 130	59, 432	
November.....	540, 154	2, 570	1, 425, 235	10, 282	143, 395	4, 788	1, 575, 904		24, 737	1, 125
December.....	333, 162	513	1, 087, 070		129, 480		1, 641, 118		74, 069	45
January.....	314, 856	4	583, 564			1, 350	1, 127, 372	1, 125	9, 135	1, 175
February.....	101, 292		435, 090	3, 488			533, 290			
March.....	48, 000		742, 418	12, 825		4, 712	645, 132	45		2, 496
April.....	175, 924	12, 892	604, 927	5, 954		2, 520	2, 204, 435	1, 125		215
May.....	494, 946	1, 462	323, 672	6, 026	60, 080		2, 110, 304	1, 292		1, 198
June.....	255, 510	6, 444	429, 426	1, 354	81, 021	2, 250	721, 209	1, 125		470
Total.....	5, 694, 338	45, 781	14, 750, 870	51, 885	2, 460, 865	19, 832	14, 290, 429	7, 190	613, 094	6, 753

Monthly summaries of foreign commerce of the United States (110), and official records of the Bureau of Foreign and Domestic Commerce (unpublished data).

Wheat import duties

[The following notes on the French customs policy regarding wheat imports since 1880, were supplied by C. A. LeNeven, French commercial attaché]

The law of May 7, 1881, established a duty of 0.6 franc per 100 kilos on foreign entering wheats. Later on, this protection having been considered insufficient, the law of March 28, 1885, imposed a duty of 3 francs per 100 kilos of grain and 6 francs per 100 kilos of flour.

This duty was increased to 5 francs for grain and to 8 francs for flour, by the law of March 29, 1887.

To meet exceptional conditions, the law of July 2, 1891, reduced, from July 10, 1891, until June 1, 1892, the duty to 3 francs for grain and to 6 francs for flour.

This duty was once more increased by the law of January 12, 1892, which fixed the duty at 5 francs for grain and at 10 francs for flour, the latter rate of extraction being comprised between 70 and 60 per cent.

The law of February 27, 1894, increased the duty again, carrying it to 7 francs for grain and 13.5 francs for flour as specified above.

The decree of June 28, 1921, established the coefficient of over-valuation 2 on wheat and flour.

The decree of January 6, 1924, suspended this coefficient of over-valuation from January 7 to July 31, 1924.

At last, establishing a kind of temporary interior admission, the law of December 24, 1924, allowed the Government to reimburse the duty collected at the importation of soft wheats, before July 31, 1925, which flour has been used for bread making before August 31, 1925.

TABLE 48.—Wheat: Acreage, production, and yield per acre in France, 1815-1875¹
(42, 52)

Year	Acreage	Production	Yield per acre	Year	Acreage	Production	Yield per acre
	1,000 acres	1,000 bushels	Acres		1,000 acres	1,000 bushels	Acres
Average:							
1816-1820.....	11,417	136,788	12.0	1834.....	13,103	170,805	13.0
1821-1825.....	11,932	160,152	13.4	1835.....	13,190	197,580	15.0
1826-1830.....	12,248	161,106	13.2	1836.....	13,059	175,221	13.4
1831-1835.....	12,926	185,335	14.3	1837.....	13,363	187,158	14.0
1836-1840.....	13,378	182,830	13.7	1838.....	13,494	186,684	13.8
1841-1845.....	13,949	204,362	14.7	1839.....	13,305	142,203	10.7
1846-1850.....	14,731	234,267	15.9	1840.....	13,669	222,886	16.3
1851-1855.....	15,383	223,707	14.5	1841.....	13,745	196,936	14.3
1856-1860.....	16,309	272,734	16.7	1842.....	13,779	156,524	14.3
1861-1865.....	16,971	274,507	16.2	1843.....	13,996	202,962	14.5
1866-1870.....	17,246	271,085	15.7	1844.....	14,034	227,225	16.2
1871-1875.....	16,807	278,370	16.5	1845.....	14,191	198,313	14.0
1876-1880.....	17,050	259,790	15.2	1846.....	14,670	167,266	11.4
1881-1885.....	17,134	309,993	18.1	1847.....	14,775	268,992	18.2
1886-1890.....	17,298	306,724	17.7	1848.....	14,760	242,491	16.4
1891-1895.....	16,708	297,447	17.8	1849.....	14,742	250,117	17.0
1896-1900.....	16,913	327,678	19.4	1850.....	14,706	242,470	16.5
1901-1905.....	16,247	327,251	20.1	1851.....	14,824	238,957	16.0
1906-1910.....	16,214	327,748	20.2	1852.....	15,049	237,175	15.8
1911-1913.....	16,100	325,347	20.2	1853.....	15,346	175,566	11.4
1909-1912.....	16,159	317,636	19.7	1854.....	15,835	267,843	16.9
1914-1918 ²	12,464	214,136	17.2	1855.....	15,862	200,995	12.7
1919-1923.....	12,853	253,274	19.7	1856.....	15,983	235,090	14.7
1815.....	11,346	108,744	9.6	1857.....	16,293	304,308	18.7
1816.....	11,051	119,370	10.8	1858.....	16,407	303,104	18.5
1817.....	11,546	132,252	11.5	1859.....	16,579	241,255	14.6
1818.....	11,424	145,222	12.7	1860.....	16,584	279,912	16.9
1819.....	11,490	164,907	14.4	1861.....	16,690	207,075	12.4
1820.....	11,574	122,211	10.6	1862.....	17,004	273,625	16.1
1821.....	11,745	160,438	13.7	1863.....	17,096	321,822	18.8
1822.....	11,855	140,148	11.8	1864.....	17,001	306,643	18.0
1823.....	11,996	161,699	13.5	1865.....	17,062	263,371	15.4
1824.....	12,069	170,275	14.1	1866.....	17,088	234,601	13.7
1825.....	11,995	168,198	14.0	1867.....	17,199	228,743	13.3
1826.....	12,096	164,331	13.6	1868.....	17,452	321,625	18.4
1827.....	12,115	156,488	12.9	1869.....	17,381	297,460	17.1
1828.....	12,227	162,108	13.3	1870.....	17,108	272,796	15.9
1829.....	12,416	177,155	14.3	1871.....	15,871	190,908	12.0
1830.....	12,384	145,454	11.7	1872.....	17,144	332,904	19.4
1831.....	12,630	155,506	12.3	1873.....	16,867	225,676	13.4
1832.....	12,750	220,705	17.3	1874.....	16,986	365,036	21.5
1833.....	12,955	182,081	14.1	1875.....	17,166	277,325	16.2

¹ Includes Alsace-Lorraine prior to 1871 and after 1918.

² See footnote 2 to Table 49.

TABLE 49.—Wheat: Acreage, production, and yield per acre in France and Alsace-Lorraine 1876-1925 (51, 42, 49)

Year	France			Alsace-Lorraine		
	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre
	1,000 acres	1,000 bushels	Bushels	1,000 acres	1,000 bushels	Bushels
1876	16,950	263,008	15.5	(1)	(1)	.....
1877	17,240	275,976	16.0	(1)	(1)	.....
1878	16,909	262,542	15.5	474	7,304	15.6
1879	17,153	219,996	12.8	(1)	6,754	.....
1880	17,000	277,430	16.3	(1)	8,406	.....
1881	17,174	278,060	16.2	(1)	7,520	.....
1882	17,069	343,487	20.1	(1)	9,545	.....
1883	16,812	291,234	17.3	450	8,145	18.1
1884	17,426	324,201	18.6	(1)	7,809	.....
1885	17,190	312,984	18.2	(1)	8,035	.....
1886	17,189	302,609	17.6	(1)	8,120	.....
1887	17,217	320,015	18.6	(1)	8,886	.....
1888	17,243	275,464	16.0	(1)	7,304	.....
1889	17,393	305,817	17.6	(1)	6,812	.....
1890	17,450	329,713	18.9	(1)	9,497	.....
1891	14,220	214,981	15.1	(1)	8,339	.....
1892	17,264	310,728	18.0	(1)	10,022	.....
1893	17,478	277,751	15.9	430	6,761	15.7
1894	17,276	344,180	19.9	422	8,431	20.0
1895	17,301	339,595	19.6	414	7,302	17.6
1896	16,977	340,268	20.0	403	7,182	17.8
1897	16,269	242,227	14.9	380	4,600	11.9
1898	17,207	364,906	21.2	390	7,519	19.0
1899	17,149	365,449	21.3	398	9,150	23.0
1900	16,961	325,542	19.2	396	8,397	21.8
1901	16,787	310,913	18.5	383	8,458	22.1
1902	16,219	327,898	20.2	379	9,498	25.0
1903	16,009	362,968	22.7	370	9,159	24.8
1904	16,133	299,639	18.6	368	7,614	20.7
1905	16,085	334,899	20.8	366	7,991	21.6
1906	16,103	328,697	20.4	361	8,390	23.2
1907	16,253	381,223	23.5	356	9,566	26.9
1908	16,221	316,684	19.5	355	7,553	21.3
1909	16,299	359,174	22.0	344	8,501	24.7
1910	16,196	252,963	15.6	344	6,693	19.5
1911	15,897	322,339	20.3	340	7,657	22.5
1912	16,238	334,333	20.6	339	8,445	24.9
1913	16,166	319,370	19.8	339	8,747	25.8
War period: ²						
1914	14,975	282,689	18.9	333	6,700	20.1
1915	13,564	222,778	16.4	299	5,568	18.4
1916	12,429	204,908	16.5	269	3,186	15.2
1917	10,357	134,575	13.0	177	2,521	14.2
1918	10,993	225,736	20.5	187	2,952	15.8
Postwar period:						
1919	11,376	182,444	16.1	257	4,647	18.1
1920	12,586	236,929	18.8	288	5,907	20.5
1921	13,300	323,467	24.3	304	7,250	23.8
1922	13,072	243,315	18.6	268	4,169	14.0
1923	13,672	275,569	20.2	304	7,044	23.2
1924	13,620	281,179	20.6	297	6,230	21.0
1925	13,872	330,338	23.8	293	7,076	24.2

¹ Not reported.² These are figures as reported in official sources and include reports from the Departments wholly or in part involved in war operations. Data from these Departments were incomplete and for that reason reported area and production during the war period are not comparable with other years.³ Includes Alsace-Lorraine.

RYE

There has been a gradual but steady decrease in the area sown to rye since the beginning of the nineteenth century. During the period 1815-1820 the area under rye averaged 6,410,000²⁰ acres which was 56.2 per cent as great an area as was then sown to wheat. During 1909-1913 the rye area had decreased to 3,095,000²⁰ acres which was only 18.8 per cent as great an area as was sown to wheat. Rye

²⁰ Includes Alsace-Lorraine.

is not an important crop except upon the poor soils of the uplands in the south-central and "massif central" regions of the country (fig. 8), and in a few regions where the soils are too light to produce wheat or oats profitably.

The use of rye as a bread cereal in France (former boundaries) had decreased rapidly since 1882 up to the outbreak of the World War. During the four-year period, 1882-1885, the average yearly gross disappearance amounted to 70,735,000 bushels and during 1909-1913 gross disappearance averaged 52,044,000 bushels. This includes 5,979,000 bushels of seed, leaving the net disappearance 46,065,000 bushels or 1.16 bushels per capita, as indicated in Table 50.

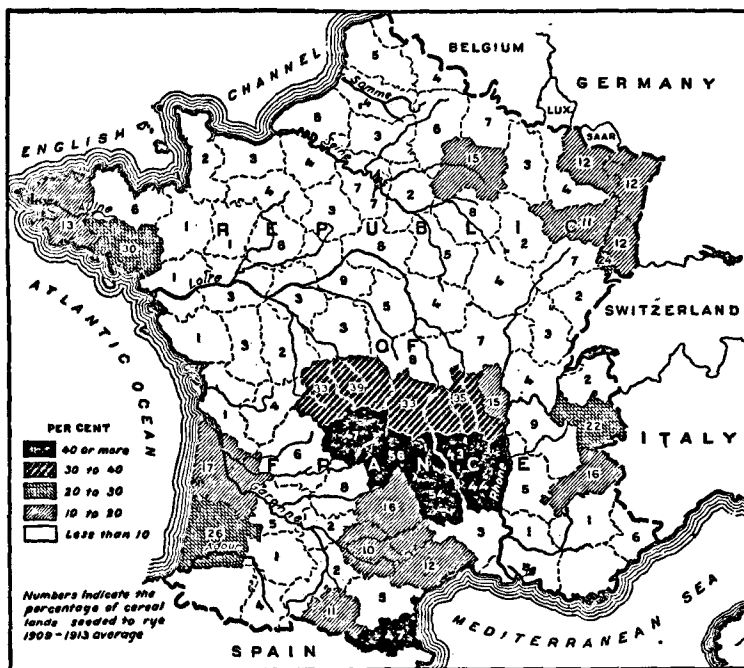


FIG. 8.—CEREAL LANDS IN FRANCE SEEDD TO RYE DURING THE PERIOD 1909-1913

Rye is an important cereal crop only in the highlands of the central southern part of the country and in a few other districts where the poorer soils are not well adapted to wheat or oats.

In Alsace-Lorraine the area under rye had steadily expanded since the early eighties from 89,000 acres to 137,000 acres in 1913. Production had increased at an even more rapid rate because of the great progress made in cultural methods and use of fertilizers resulting in yields per acre that increased from 18.1 bushels in 1883 to 26.7 bushels in 1913.

Whereas in France (former boundaries) during 1909-1913, only 18.3 per cent as great an area was sown to rye as to wheat, in Alsace-Lorraine the area under rye amounted to 39.6 per cent of that under wheat.

TABLE 50.—*Rye: Average approximate balance in France and Alsace-Lorraine, average 1909-1913*

Item	Area	
	1,000 acres	Acres per 100 inhabitants
1. Area sown:		
France.....	2,960	7.47
Alsace-Lorraine.....	135	7.20
Total.....	3,095	
	Production and distribution	
2. Production:	Bushels	Bushels per capita
(a) France.....	49,025	1.24
(b) Seed ¹	5,979	
(c) Net.....	43,046	
(d) Alsace-Lorraine.....	3,476	1.85
(e) Seed ²	331	
(f) Net.....	3,145	
Total net production.....	46,191	
3. Disappearance:		
(a) France (2c+4a).....	46,065	³ 1.16
(b) Alsace-Lorraine ⁴	2,529	⁵ 1.41
Total.....	48,594	1.17
4. Deficit:		
(a) France (net imports).....	3,019	
Surplus:		
(b) Alsace-Lorraine.....	6,151	
Total deficit.....	2,868	

¹ 175 liters per hectare (1909-1913 average weight per liter, 0.7244 kilogram) equivalent to 2.02 bushels per acre (32, p. 716).

² 2.45 bushels per acre (average for the German Empire).

³ The weighted average per capita consumption from Aug. 1, 1909, to July 31, 1914, is placed at 1.13 bushels (32, p. 539-540).

⁴ 82,276 military population are estimated to have subsisted on the German rye norm of 5.65 bushels per capita, equivalent to 465,000 bushels, annually. Net production, 3,145,000 bushels less 465,000 bushels, less 151,000 bushels surplus, leaves the civil consumption at about 2,529,000 bushels.

⁵ Civil population only.

⁶ Estimated by the German statistical office, Berlin.

Production and acreage for France (45); for Alsace-Lorraine (70).

Population:	
France (1909-1913).....	39,615,000
Alsace-Lorraine (1909-1913) (civil).....	1,793,000
Alsace-Lorraine (1910) (military).....	82,000
Total.....	41,490,000

As indicated in Table 50 France (former boundaries), with an average per capita consumption of 1.16 bushels, imported 3,019,000 bushels of rye annually during 1909-1913, whereas Alsace-Lorraine, although consuming 1.41 bushels per capita, produced an annual exportable surplus of about 151,000 bushels.

The use of rye as a bread cereal is somewhat greater in Alsace-Lorraine than in the rest of France, but the inclusion of data for these three Departments for 1909-1913 does not materially affect the general statistical average per capita disappearance of the Republic. The change is only from 1.16 to 1.17 bushels, an increase of only 0.01 bushel.

The total bread rations in France and in Alsace-Lorraine are nearly identical, although in the latter region somewhat larger amounts of coarser grains are employed as indicated in Table 51.

TABLE 51.—Average per capita disappearance of bread cereals in France and Alsace-Lorraine, average 1909-1913

Cereal	Per capita disappearance ¹	
	France	Alsace-Lorraine
Wheat.....	8.02	7.57
Rye.....	1.16	1.41
Maslin.....	0.13	² 0.28
Total.....	9.31	9.26

¹ Net disappearance exclusive of seed.

² Includes spelt.

Effect of World War upon rye production

In all parts of France, rye acreage has fallen to a lower relative level as compared with the pre-war normal than has wheat. The returns for 1919 indicate that in the 10 occupied Departments, rye acreage was less than half of that seeded in 1909-1913. In the 77 unoccupied Departments about 66.5 per cent of the normal acreage was seeded; in Alsace-Lorraine, where rye has ever been a more popular bread cereal than in other parts of France, the acreage reached 76.3 per cent of that reported during 1909-1913.

TABLE 52.—Rye: Areas seeded in occupied and unoccupied Departments of France, and in Alsace-Lorraine, average 1909-1913, 1918, 1919, and 1925 (42, 45, 47)

Region	Average, 1909-1913	1918		1919		1925 ¹	
		Total area	Percentage of 1909-1913	Total area	Percentage of 1909-1913	Total area	Percentage of 1909-1913
9 Departments.....	1,000 acres 302	1,000 acres 119	Per cent 39.4	1,000 acres 146	Per cent 48.3	1,000 acres 232	Per cent 76.8
Ardennes.....	24	(?)		9	37.5	27	112.5
10 Departments.....	326			155	47.5	259	79.4
77 Departments.....	2,634	1,627	61.8	1,752	66.5	1,794	68.1
Alsace-Lorraine (3 Departments).....	135	68	50.4	103	76.3	94	69.6
Total France.....	3,095			2,010	64.9	2,147	69.4

¹ Preliminary.

² Not available.

See Table 36 for notes on occupied and unoccupied Departments.

In the 10 occupied Departments the general fertility of the lands actually devastated has been reduced because the subsoil has been brought to the surface. In several localities soils that formerly produced wheat are now fit only for rye production. On August 9, 1920, the French Government authorized the payment of a bounty of 32 francs for each acre that grew rye in the devastated area. A like bounty of 81 francs for each acre under wheat was authorized at the same time. It is probable that when these bounties are removed a considerable marginal acreage now under wheat will be seeded to rye.

In Ardennes, the area under rye was actually greater by 12.5 per cent in 1925 than before the war; the acreage of rye in all 10 of the occupied Departments was only 20.6 per cent below that of 1909-1913 as compared with 30.8 per cent below normal in the 77 unoccupied Departments and 30.4 per cent in Alsace-Lorraine.

It is probable that in Alsace-Lorraine and in the 77 unoccupied Departments rye will not return to its pre-war levels but will pursue the downward trend taken before the war. In the 10 occupied Departments it is probable that reduced fertility of the soil may render even greater areas than before the war better suited to rye than to wheat. But the general trend of rye production, considered as a whole, will probably continue downward.

The pre-war disappearance of rye was a little more than 1 bushel per capita. This has been reduced by 15 to 25 per cent since the war because decreased production has not been compensated for by increased importation as indicated in Table 53.

TABLE 53.—*Rye: Approximate statistical balance of France, 1922 to 1926*

[In thousands—i. e., 000 omitted]

Item	Years ending June 30—				
	1922	1923	1924	1925	1926
Area.....	<i>Acres</i> 2,227	<i>Acres</i> 2,195	<i>Acres</i> 2,215	<i>Acres</i> 2,198	<i>Acres</i> 2,147
Production.....	<i>Bushels</i> 44,392	<i>Bushels</i> 38,412	<i>Bushels</i> 38,517	<i>Bushels</i> 40,241	<i>Bushels</i> 43,683
Seed ¹	4,441	4,495	4,503	4,464	4,365
Net production.....	39,951	33,917	32,014	35,777	39,298
Theoretical domestic requirement based upon pre-war disappearance ²	45,911	46,051	46,355	46,648	46,940
Deficit to be covered by imports.....	5,960	12,134	14,341	10,871	7,642
Actual net imports.....	³ 1,226	15	1,711	827	770
Shortage of supply as compared with pre-war requirements.....	7,186	12,119	12,630	10,044	6,872

¹ 175 liters per hectare: 1921, 1 liter=0.7152 kilogram=1.994 bushels per acre.

1922, 1 liter=0.7346 kilogram=2.048 bushels per acre.

1923, 1 liter=0.729 kilogram=2.033 bushels per acre.

1924 and 1925, not available, so 2.033 for 1923 used.

² Pre-war disappearance was 1.17 bushels per capita for total population of France and civil population of Alsace-Lorraine, 1909-1913. (See Table 50.) For populations see Table 6.³ Net exports.

The rye trade

During 1920 France imported from the United States 14,699,000 bushels of rye (Table 54), but this trade has in recent years dwindled to comparative insignificance, amounting to only 80,000 bushels in 1925. It is probable that the future rye importations directly from the United States will not assume important proportions.

TABLE 54.—Rye, including rye flour: Foreign trade of France, average 1909–1913 and 1920–1925 (33, 35)

[In thousand bushels—i. e., 000 omitted]

Country from which imported	Average, 1909–1913	1920	1921	1922	1923	1924	1925
Germany.....	2,172	(?)	26	(?)	(?)	10	(?)
Russia.....	2,369	(?)	(?)	(?)	191	1,047	27
United States.....	(?)	14,699	1,355	1	579	1,073	80
Other countries.....	509	1,652	303	9	882	781	815
Total imports.....	3,050	16,351	1,664	10	1,652	2,911	922
Total exports.....	31	14	540	1,025	924	905	11
Net imports.....	3,019	16,337	1,124	1,015	728	2,006	911
Estimated surplus of Alsace-Lorraine.....	151	(?)	(?)	(?)	(?)	(?)	(?)
Total of France.....	2,868	16,337	1,124	1,015	728	2,006	911

1 If any, included in other countries.
 2 Rye flour only.
 3 4-year average.
 4 234,000 bushels exported to Saar, 196,000 to Russia, 160,000 to Belgium, 153,000 to Finland, and 282,000 to other countries.
 5 Net exports.
 6 Based on an estimate made by the "Preussisches Landesamt."
 7 Included in "Total of France."

Imports of rye and rye flour are shown by months from July, 1921, to June, 1926, in Table 55.

TABLE 55.—Rye and rye flour: Imports into France, by months, July, 1921, to June, 1926 (35)

[In thousand bushels—i. e., 000 omitted]

Month	1921-22		1922-23		1923-24		1924-25		1925-26	
	Rye	Rye flour ¹	Rye	Rye flour ¹	Rye	Rye flour ¹	Rye	Rye flour ¹	Rye	Rye flour ¹
July.....	1	(?)	0	0	19	1	180	17	30	(?)
August.....	11	(?)	(?)	0	83	46	235	13	18	0
September.....	2	0	(?)	0	135	29	271	1	47	(?)
October.....	12	(?)	1	0	158	15	181	7	189	10
November.....	2	(?)	9	(?)	202	33	162	7	237	8
December.....	(?)	0	5	(?)	278	51	100	1	246	4
January.....	0	0	55	(?)	338	36	48	0	47	5
February.....	1	(?)	113	(?)	212	9	44	0	19	1
March.....	(?)	0	152	0	172	23	27	0	15	0
April.....	(?)	(?)	115	5	214	12	(?)	0	17	0
May.....	(?)	0	106	1	354	20	4	0	(?)	(?)
June.....	(?)	0	51	7	330	19	7	0	1	(?)
Total.....	29	(?)	607	13	2,495	294	1,259	46	866	28

¹ In terms of rye.

² Less than 500.

TABLE 56.—*Rye: Acreage and production in France, 1815-1875*¹ (44, 52, 53)

Year	Acreage	Production	Yield per acre	Year	Acreage	Production	Yield per acre
	<i>1,000 acres</i>	<i>1,000 bushels</i>	<i>Bushels</i>		<i>1,000 acres</i>	<i>1,000 bushels</i>	<i>Bushels</i>
1815-1820.....	6, 410	64, 234	10. 0	1834.....	6, 423	63, 482	13. 0
1821-1825.....	6, 845	81, 676	11. 9	1835.....	6, 521	93, 635	14. 4
1826-1830.....	6, 750	83, 351	12. 3	1836.....	6, 496	81, 005	12. 5
1831-1835.....	6, 559	92, 084	14. 0	1837.....	6, 521	82, 951	12. 7
1836-1840.....	6, 561	86, 031	13. 1	1838.....	6, 538	89, 637	13. 7
1841-1845.....	6, 700	89, 501	13. 4	1839.....	6, 527	86, 033	13. 2
1846-1850.....	6, 354	88, 512	13. 9	1840.....	6, 733	90, 530	13. 4
1851-1855.....	5, 678	75, 314	13. 3	1841.....	6, 755	92, 721	13. 7
1856-1860.....	5, 125	76, 566	14. 9	1842.....	6, 624	90, 644	13. 7
1861-1865.....	5, 041	76, 251	15. 1	1843.....	6, 689	84, 433	12. 6
1866-1869.....	4, 840	72, 481	15. 0	1844.....	6, 696	97, 075	14. 5
1871-1875.....	4, 684	74, 881	16. 0	1845.....	6, 738	82, 030	12. 3
1876-1880.....	4, 501	68, 064	15. 1	1846.....	6, 592	59, 464	9. 0
1881-1885.....	4, 333	72, 436	16. 7	1847.....	6, 463	96, 956	15. 5
1886-1890.....	3, 991	65, 257	16. 4	1848.....	6, 262	102, 122	16. 3
1891-1895.....	3, 785	67, 761	17. 9	1849.....	6, 283	93, 319	14. 9
1896-1900.....	3, 625	62, 209	17. 2	1850.....	6, 171	87, 698	14. 2
1901-1905.....	3, 253	54, 686	16. 8	1851.....	6, 062	92, 606	15. 2
1906-1910.....	3, 052	51, 723	16. 9	1852.....	6, 063	81, 513	13. 4
1911-1913.....	2, 925	48, 517	16. 6	1853.....	5, 372	59, 980	11. 2
1909-1913.....	2, 960	49, 025	16. 6	1854.....	5, 481	80, 284	14. 6
1914-1918 ²	2, 130	32, 794	15. 4	1855.....	5, 382	62, 267	11. 6
1919-1923.....	2, 159	36, 878	17. 1	1856.....	5, 248	65, 762	12. 5
1815.....	6, 360	55, 842	8. 8	1857.....	5, 122	81, 965	16. 0
1816.....	6, 278	59, 432	9. 5	1858.....	5, 216	86, 612	16. 4
1817.....	6, 387	63, 628	10. 0	1859.....	5, 023	72, 328	14. 4
1818.....	6, 363	70, 188	11. 0	1860.....	5, 016	77, 161	15. 4
1819.....	(³)	(³)	—	1861.....	5, 065	68, 131	13. 4
1820.....	6, 863	72, 079	10. 5	1862.....	5, 087	75, 125	14. 8
1821.....	6, 900	85, 940	12. 5	1863.....	5, 045	83, 868	16. 6
1822.....	6, 892	76, 787	11. 1	1864.....	5, 015	80, 694	16. 1
1823.....	6, 894	84, 885	12. 3	1865.....	4, 971	73, 435	14. 6
1824.....	6, 799	84, 938	12. 5	1866.....	4, 907	69, 166	14. 1
1825.....	6, 738	75, 829	11. 3	1867.....	4, 890	62, 275	12. 7
1826.....	6, 727	84, 661	12. 6	1868.....	4, 781	82, 079	17. 2
1827.....	6, 758	78, 222	11. 6	1869.....	4, 784	76, 406	16. 0
1828.....	6, 662	84, 948	12. 5	1870.....	(³)	(³)	—
1829.....	6, 833	92, 657	13. 6	1871.....	4, 694	75, 093	16. 0
1830.....	6, 662	76, 266	11. 4	1872.....	4, 732	84, 758	17. 9
1831.....	6, 675	78, 169	11. 7	1873.....	4, 689	57, 662	12. 3
1832.....	6, 595	107, 823	16. 3	1874.....	4, 628	80, 505	17. 4
1833.....	6, 581	97, 309	14. 8	1875.....	4, 680	76, 368	16. 3

¹ Includes Alsace-Lorraine prior to 1871 and after 1918.² See footnote 2, Table 57.³ Not available.

TABLE 57.—*Rye: Acreage and production in France and Alsace-Lorraine, 1876-1925 (31, 42, 44, 52)*

Year	France			Alsace-Lorraine		
	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre
	1,000 acres	1,000 bushels	Bushels	1,000 acres	1,000 bushels	Bushels
1876	4,541	75,161	16.6	(1)	(1)	.....
1877	4,563	70,934	15.5	(1)	(1)	.....
1878	4,460	68,640	15.4	100	1,479	14.8
1879	4,375	51,996	11.9	(1)	1,400	.....
1880	4,567	73,590	16.1	(1)	1,810	.....
1881	4,392	66,845	15.2	(1)	1,712	.....
1882	4,623	83,127	18.0	(1)	1,698	.....
1883	4,249	69,827	16.4	(1)	1,613	18.1
1884	4,264	73,924	17.3	(1)	1,247	.....
1885	4,136	68,457	16.6	(1)	1,557	.....
1886	4,038	63,881	15.8	(1)	1,522	.....
1887	4,014	66,693	16.6	(1)	1,638	.....
1888	4,025	62,193	15.5	(1)	1,412	.....
1889	3,952	65,287	16.5	(1)	1,469	.....
1890	3,926	68,232	17.4	(1)	1,861	.....
1891	3,703	60,617	16.4	(1)	1,471	.....
1892	3,810	67,080	17.6	(1)	1,961	.....
1893	3,781	64,349	17.0	123	2,333	19.0
1894	3,844	74,926	19.5	138	2,920	21.2
1895	3,789	71,833	19.0	127	2,466	19.4
1896	3,707	69,766	18.8	119	2,183	18.3
1897	3,587	47,737	13.3	118	1,731	14.7
1898	3,645	66,921	18.4	121	2,358	19.5
1899	3,679	67,223	18.3	115	2,749	23.9
1900	3,508	59,397	16.9	116	2,704	23.3
1901	3,489	58,386	16.7	124	3,066	24.7
1902	3,291	45,600	13.9	129	2,933	22.9
1903	3,205	58,127	18.1	125	3,234	25.9
1904	3,144	62,669	19.9	127	3,127	24.6
1905	3,137	58,586	18.7	131	3,158	24.1
1906	3,095	50,888	16.4	131	3,217	24.6
1907	3,064	56,462	18.4	131	3,623	27.7
1908	3,075	51,691	16.8	135	3,115	23.1
1909	3,032	55,689	18.4	133	3,821	28.7
1910	2,994	43,883	14.7	135	3,210	23.8
1911	2,902	46,749	16.1	132	3,267	24.8
1912	2,969	48,746	16.4	137	3,426	25.0
1913	2,905	50,055	17.2	137	3,667	26.7
War period: ¹						
1914	2,614	43,884	16.8	139	3,040	21.9
1915	2,309	33,148	14.4	116	2,286	19.7
1916	2,149	33,351	15.5	86	1,340	15.6
1917	1,834	24,650	13.4	65	1,019	15.7
1918	1,746	28,935	16.6	68	1,166	17.1
Postwar period:						
1919	1,907	28,736	15.1	103	1,841	17.9
1920	2,148	34,492	16.1	108	2,258	20.9
1921	2,227	44,392	19.9	108	2,484	23.0
1922	2,195	38,412	17.5	108	2,222	20.6
1923	2,215	36,517	16.5	108	2,372	22.0
1924	2,198	40,241	18.3	103	2,243	21.8
1925	2,147	43,663	20.3	94	2,251	23.9

¹ Not reported.

² These are figures as reported in official sources and include reports from the Departments wholly or in part involved in war operations. Data from these Departments were incomplete and for that reason reported area and production during the war period are not comparable with other years.

³ French statistical records include Alsace-Lorraine beginning 1920.

BARLEY

Barley is grown generally throughout France, but it is a relatively unimportant crop except in certain districts where soil and climatic conditions are particularly adapted to its production. In no region is it more than a secondary crop. (Fig. 9.)

In the early eighties France (including Alsace-Lorraine) seeded about 2,668,000 acres to barley (Table 35), but during the following 30 years acreage decreased so that the average for 1909-1913 had fallen to 1,988,000 acres.

In the 77 Departments outside the war zone the 1918 returns indicated the barley acreage 23 per cent below normal; in 1919 it was 25 per cent below. By 1925 the crop had recovered to 85.7 per cent of the 1909-1913 average. In the occupied Departments the recovery of barley acreage has been rapid, reaching 90.2 per cent of normal in 1925; in Alsace-Lorraine the 1925 acreage was only 3.3 per cent below normal.

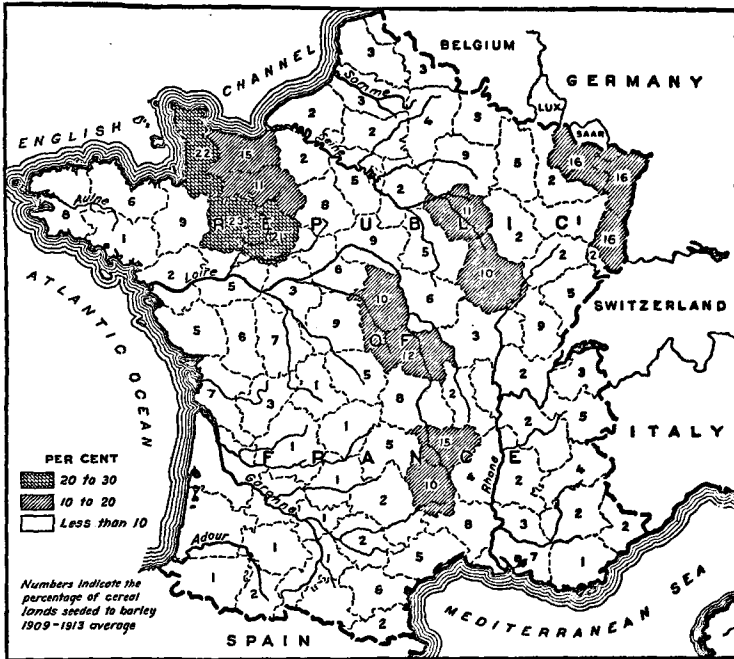


FIG. 9.—CEREAL LANDS IN FRANCE SEEDED TO BARLEY DURING THE PERIOD 1909-1913

Barley is relatively not an important crop, reaching a place secondary in importance in only a few scattered Departments.

TABLE 58.—Barley: Areas seeded in occupied and unoccupied Departments of France and in Alsace-Lorraine, average 1909-1913, 1918, 1919, and 1925 (42, 47, 49)

Region	Average 1909-1913	1918		1919		1925 ¹	
		Total area	Percentage of 1909-1913	Total area	Percentage of 1909-1913	Total area	Percentage of 1909-1913
9 Departments	1,000 acres	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent
Ardennes	187	91	48.7	132	70.6	174	93.0
	18	(?)		8	44.4	11	61.1
10 Departments	205			140	68.3	185	90.2
77 Departments	1,661	1,280	77.1	1,247	75.1	1,424	85.7
Alsace-Lorraine (3 Departments)	122	83	68.0	115	94.3	118	96.7
Total France	1,938			1,502	75.6	1,727	88.9

¹ Preliminary.

² Not available.

See Table 36 for notes on occupied and unoccupied Departments.

Since the war there has been a tendency throughout all France to seed a somewhat larger proportion of cereal lands to barley than was formerly the case, and this cereal has tended to recover toward its pre-war acreage somewhat more rapidly than any other, the area in 1925 being 86.9 per cent of the 1909-1913 average as contrasted with oats 85.3 per cent, wheat 84.1 per cent, and rye 69.4 per cent.

Most of the barley is consumed locally, small amounts being imported chiefly from the French Dependencies, Algeria and Tunis, to meet the requirements of large centers. Very little barley from the United States is shipped direct to France, as indicated in Table 59.

TABLE 59.—*Barley, including barley flour: Foreign trade of France, average 1909-1913 and 1921-1925 (33, 35)*

[In thousand bushels—1. e., 000 omitted]

Countries from which imported	Average 1909-1913	1921	1922	1923	1924	1925
Russia.....	701	(¹)	(²)	(²)	34	(²)
Austria-Hungary.....	31	(²)	(²)	(²)	(²)	(²)
Rumania.....	486	27	386	323	57	58
Algeria.....	3,081	2,122	1,040	1,825	3,631	878
Tunis.....	1,719	512	281	809	483	421
United States.....	(³)	6	392	192	8	(¹)
Other countries.....	306	283	329	57	1,148	355
Total imports.....	6,324	2,950	2,428	3,206	5,361	1,712
Total exports.....	686	758	489	1,044	387	1,051
Net imports.....	5,638	2,192	1,939	2,162	4,974	661

¹ Less than 500.

² If any, included in other countries.

OATS

Next after wheat, oats constitutes the most important cereal crop of France. During 1909-1913 about 29 per cent of the cereal lands of France (former boundaries), or 9,800,000 acres, was under oats as compared with 48 per cent, or 16,159,000 acres, seeded to wheat, leaving 23 per cent of these lands to be devoted to other cereals.

During the early eighties of the last century about 24 per cent of the cereal lands, or 8,950,000 acres, was seeded to oats and 46 per cent, or 17,134,000 acres, was seeded to wheat. Up to the opening of the World War there had been an increase of some 850,000 acres of oats, about 9 per cent, against a decrease of about 975,000 acres of wheat, or 6 per cent, whereas during these 32 years total cereals other than oats had decreased 4,398,000 acres. Oats were the only cereal during this period to show an increase in acreage.

Production of oats had increased from 275,580,000 bushels to 355,278,000 bushels, or 28.9 per cent, between the five-year period ended in 1885, and the period just preceding the World War. During this interval net imports had increased almost five times, having risen from 5,487,000 bushels during 1883-1885 to 27,250,000 bushels average of 1909-1913, the disappearance of oats increasing 101,462,000 bushels.

This increase in the disappearance of oats is a consequence of the great improvement in feeding livestock, especially in the regions of the north and east where the acreage under oats often exceeded that seeded to wheat. (Fig. 10.) In most other parts of the country oats are a secondary crop.

Oats situation in Alsace-Lorraine

During the third of a century preceding the World War acreage of oats in Alsace-Lorraine increased 11 per cent, and production rose 55 per cent. Consumption data are not available, but local disappearance was probably more closely associated with local production in Alsace-Lorraine than was the case in the rest of France where large importations were required to supplement deficit production as indicated in Table 60.

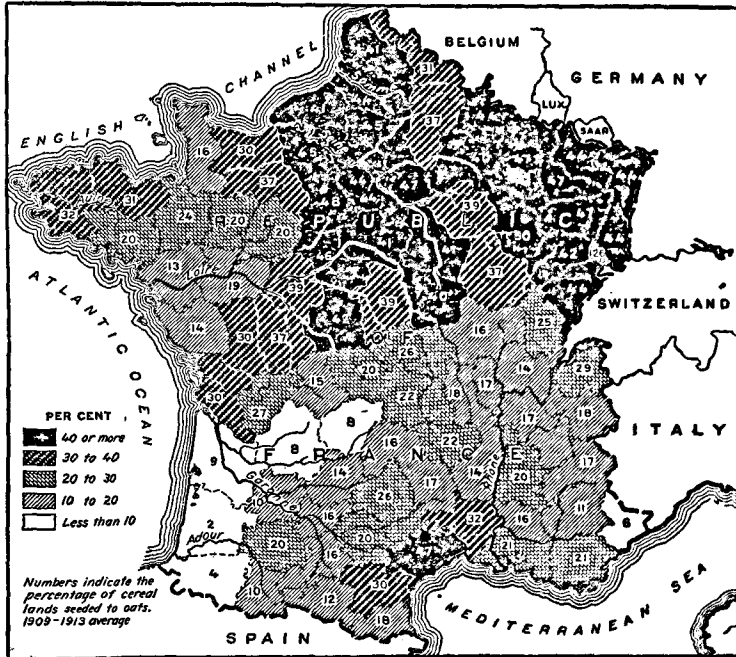


FIG. 10.—CEREAL LANDS IN FRANCE SEEDED TO OATS DURING 1909-1913

After wheat oats constitutes the most important cereal crop, even outranking wheat as the major cereal crop in certain districts.

In Alsace-Lorraine the 1909-1913 acreage per head of horses, mules and donkeys reckoned to a comparable consumption basis was some what less than in France proper—it was 2.41 in the former and 2.87 in the latter. Yields per acre were better in Alsace-Lorraine in which gross production per horse equaled 112.11 bushels as compared with 104.19 bushels in the rest of France. It is probable that the estimated oats deficit of Alsace-Lorraine as reported by the German statistical office in Berlin about met the requirements of the military horses quartered in these districts and that the oats ration of civilians' horses, as indicated in Table 60, averaged the same as the estimated requirement for the remainder of France—approximately 105.37 bushels per head.

TABLE 60.—Oats: Average approximate balance in France and Alsace-Lorraine, average 1909–1913

Item	Area	
	Total	Per head of horses ¹
1. Area sown:	1,000 acres	Acres
(a) France.....	9,800	2.87
(b) Alsace-Lorraine.....	264	2.41
Total.....	10,064	
2. Production:	1,000 bushels	Bushels per head of horses ¹
(a) France.....	355,278	104.19
(b) Seed ²	23,226	
Total.....	332,052	
(c) Net.....		
(d) Alsace-Lorraine.....	13,184	112.11
(e) Seed ²	792	
(f) Net.....	12,392	
Total net production.....	344,444	
3. Disappearance:		
(a) France (2c plus 4a).....	859,303	106.37
(b) Alsace-Lorraine (2f).....	12,392	105.37
Total.....	371,695	105.37
4. Deficit:		
(a) France (net imports).....	27,251	
(b) Alsace-Lorraine ⁴	(⁵)	
Total.....	27,251	

¹ France 1909–1913, horses, 3,223,000; mules, 193,000; donkeys, 360,000. Oats requirement of mules estimated at one-half and of donkeys one-quarter that of horses. Total, 3,410,000 in terms of horses. Alsace-Lorraine, 1912, horses, 117,145 (nonmilitary); mules, 90; donkeys, 1,521. Total, 117,600 in terms of horses.

² One hundred and eighty liters per hectare, equivalent to 2.37 bushels per acre. (Average weight per liter during 1909–1913 was 0.4719 kilograms) (32, p. 716).

³ Drilled seed ranged from 65 to 140 kilograms per hectare. Average rounded to 1 quintal per hectare—2.75 bushels per acre (114, p. 124).

⁴ The German statistical office at Berlin estimated the oats deficit of Alsace-Lorraine at 1,989,000 bushels, which is equivalent to 101 bushels per head for the 19,709 military horses maintained in the district.

⁵ Imports for military horses only.

Area and production, France (49); Alsace-Lorraine (70).

Effect of World War upon production of oats

The nine partially occupied Departments were among the heaviest oats-producing districts and the immediate effect of the war, according to the returns of 1918 and 1919, was a reduction of acreage between 42 and 59 per cent of the 1909–1913 average; in Ardennes the 1919 acreage was reported to be 19.2 per cent of normal. Recovery of acreage in these 10 Departments has been rapid so that in 1925 it reached 89.5 per cent of the 1909–1913 average.

In Alsace-Lorraine recovery has been still more remarkable, for the oats acreage in 1925 was only 5.6 per cent below normal.

In the 77 Departments outside the war zone oats acreage fell off less than that of any of the four major cereals, being 76.6 per cent of normal in 1919 as compared with wheat, 74.9 per cent; barley, 75.1 per cent; and rye, 66.5 per cent. Since then, oats acreage has recovered more rapidly than wheat or rye but less rapidly than barley, reaching 83.7 per cent of normal in 1925.

In 1925 the total acreage of oats in all France was 14.7 per cent below that of the 1909–1913 average.

TABLE 61.—Oats: Areas seeded in occupied and unoccupied Departments of France and in Alsace-Lorraine, average 1909-1913, 1918, 1919, and 1925 (42, 47, 49)

Region	Average 1909-1913	1918		1919		1925 ¹	
		Total area	Percentage of 1909-1913	Total area	Percentage of 1909-1913	Total area	Percentage of 1909-1913
9 Departments.....	1,000 acres	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent
Ardennes.....	2,013	849	42.2	1,182	58.7	1,811	90.0
	150	(?)		30	19.2	130	83.3
10 Departments.....	2,169			1,212	55.9	1,941	89.5
77 Departments.....	7,631	5,872	76.9	5,844	76.6	6,390	83.7
Alsace-Lorraine (3 Departments).....	284	176	62.0	240	84.5	268	94.4
Total, France.....	10,084			7,296	72.4	8,599	85.3

¹ Preliminary.

¹ Not available.

See Table 36 for notes on occupied and unoccupied Departments.

Postwar oats balance

Employing the approximate disappearance of 105.37 bushels of oats per head of horses as a normal ration, the theoretical domestic requirement for the years 1921-22 to 1925-26 is contrasted with production and imports in Table 62.

TABLE 62.—Oats: Approximate statistical balance of France, 1922-1926

[In thousands—i. e., 000 omitted]

Item	Year ended June 30—				
	1922	1923	1924	1925	1926
Area.....	Acres 8,421	Acres 8,491	Acres 8,457	Acres 8,636	Acres 8,599
Production.....	Bush. 244,455	Bush. 288,264	Bush. 336,944	Bush. 305,635	Bush. 327,649
Seed ¹	19,907	19,911	20,119	20,545	20,457
Net production.....	224,548	268,353	316,825	284,990	307,191
Theoretical domestic requirement based upon pre-war disappearance ²	302,794	310,195	317,695	318,826	320,562
Deficit to be covered by imports.....	78,246	41,842	870	33,836	13,371
Actual net imports.....	21,656	16,510	1,757	3,109	6,843
Shortage of supply as compared with pre-war requirements.....	-56,590	-25,332	* +887	-30,727	-6,528

¹ 180 liters per hectare. 1921, 1 liter=0.471 kilogram=2.364 bushels per acre; 1922, 1 liter=0.4672 kilogram=2.345 bushels per acre; 1923, 1 liter=0.474 kilogram=2.379 bushels per acre. 1924 and 1925, not available, so 2.379 for 1923 used.

² Pre-war disappearance was 105.37 bushels per head for horses, mules, and donkeys in terms of horses in France, 1909-1913, and Alsace-Lorraine 1912. (See Table 60.)

* Surplus.

Year	Horses	Mules	Donkeys	Total in terms of horses
1921.....	2,706,110	186,420	295,180	2,873,625
1922.....	2,778,270	185,640	291,110	2,943,668
1923.....	2,847,970	192,260	283,760	3,015,040
1924.....	2,859,400	192,930	279,640	3,025,775
1925.....	2,880,000	188,000	273,000	3,042,250

The postwar production of oats in France has not reached in any year the average of the five years just preceding the World War. The reduction in numbers of horses, mules, and donkeys, however,

has decreased the need for oats, so that the shortage of supply as compared with pre-war requirements has not been serious except in the poor crop year of 1921-22.

As indicated in Table 63, the oats trade of the United States with France is sporadic. It dropped from 6,288,000 bushels in 1922 to 39,000 in 1924 and increased to 3,744,000 in 1925.

TABLE 63.—Oats, including oat meal: Foreign trade of France, average 1909-1913 and 1921-1925 (33, 35)

[In thousand bushels—i. e., 000 omitted]

Countries from which imported	Average 1909-1913	1921	1922	1923	1924	1925
Germany.....	3,379	279	4	4	14	(¹)
Rumania.....	952	776	4,083	1,883	29	(²) 15
Russia.....	9,583	(³)	(³)	(³)	(³)	(³)
Sweden.....	1,557	518	1,898	78	4	(³)
Canada.....	(⁴)	622	1,439	152	38	1,089
United States.....	* 928	970	6,288	767	39	3,744
Argentina.....	3,648	803	4,043	2,871	1,108	2,471
Algeria.....	4,113	4,253	5,335	2,620	1,849	1,405
Tunis.....	3,002	1,629	1,021	267	329	491
Other countries.....	211	568	694	317	124	1,079
Total imports.....	27,373	10,318	24,806	8,959	3,532	10,294
Total exports.....	123	4,686	463	2,653	2,116	487
Net imports.....	27,250	5,632	24,342	6,306	1,416	9,807
Estimated deficit of Alsace-Lorraine.....	* 1,989	(⁵)	(⁵)	(⁵)	(⁵)	(⁵)
Total of France.....	29,239	5,632	24,342	6,306	1,416	9,807

¹ 5-year average for oatmeal and 4-year average for oats.

² If any, included in other countries.

³ 4-year average.

⁴ 2-year average.

⁵ Based on an estimate made by "Preussisches Landesamt."

* Included in "Total of France."

TABLE 64.—Oats: Net imports into France, calendar years 1883 to 1925

[In thousands of bushels—i. e., 000 omitted]

Year ending Dec. 31	Oats (grain)	Oatmeal and rolled oats in terms of grain	Total	Year ending Dec. 31	Oats (grain)	Oatmeal and rolled oats in terms of grain	Total
Average:				1899.....	7,897	¹ 12	7,885
1883-1885.....	5,479	8	5,487	1900.....	14,963	¹ 9	14,954
1886-1890.....	9,923	3	9,926	1901.....	28,651	5	28,656
1891-1895.....	15,856	¹ 3	15,853	1902.....	13,958	3	13,961
1896-1900.....	14,136	¹ 2	14,134	1903.....	6,769	4	6,773
1901-1905.....	14,758	4	14,762	1904.....	4,859	5	4,864
1906-1910.....	19,912	¹ 11	19,923	1905.....	19,553	4	19,557
1911-1913.....	30,623	¹ 3	30,620	1906.....	32,243	¹ 41	32,284
1909-1913.....	27,251	¹ 1	27,250	1907.....	15,289	2	15,291
1914-1918.....	47,914	5	47,919	1908.....	7,643	4	7,647
1919-1923.....	16,260	¹ 5	16,255	1909.....	18,208	4	18,212
1883.....	18,388	¹ 13	18,401	1910.....	26,175	2	26,177
1884.....	¹ 1,209	9	¹ 1,200	1911.....	37,219	¹ 10	37,209
1885.....	1,743	2	1,741	1912.....	14,845	¹ 1	14,844
1886.....	1,621	(²)	1,621	1913.....	39,806	1	39,807
1887.....	1,581	3	1,578	1914.....	34,516	¹ 3	34,513
1888.....	26,819	5	26,824	1915.....	55,218	¹ 18	55,200
1889.....	13,920	1	13,921	1916.....	72,192	¹ 1	72,191
1890.....	10,079	5	10,084	1917.....	42,713	¹ 2	42,711
1891.....	5,494	1	5,495	1918.....	34,929	10	34,979
1892.....	¹ 2,806	¹ 26	¹ 2,832	1919.....	31,671	¹ 53	31,684
1893.....	20,956	2	20,958	1920.....	13,268	¹ 11	13,257
1894.....	37,657	3	37,660	1921.....	5,640	¹ 3	5,632
1895.....	17,981	3	17,984	1922.....	24,345	¹ 3	24,342
1896.....	13,114	4	13,116	1923.....	6,520	¹ 14	6,306
1897.....	13,517	5	13,523	1924.....	1,424	¹ 3	1,416
1898.....	21,191	2	21,193	1925.....	9,808	¹ 1	9,807

¹ Net exports.

² Net export; less than 500 pounds.

1883-1905 oats (49), oatmeal (35); 1906-1925 (33, 35).

TABLE 65.—Oats: Acreage and production in France, 1815-1875¹ (44, 52, 53)

Year	Acreage	Production	Yield per acre	Year	Acreage	Production	Yield per acre
	1,000 acres	1,000 bush.	Bush.		1,000 acres	1,000 bush.	Bush.
Average:							
1815-1820	6,160	106,266	17.3	1834	6,731	129,208	19.2
1821-1825	6,388	114,411	17.9	1835	7,019	140,353	20.0
1826-1830	6,641	122,848	18.5	1836	7,004	130,527	18.6
1831-1835	6,863	135,013	19.7	1837	7,067	127,100	18.0
1836-1840	7,126	146,728	20.6	1838	7,189	163,312	22.7
1841-1845	7,307	166,723	22.8	1839	7,195	158,824	22.1
1846-1850	7,527	164,495	21.9	1840	7,164	154,077	21.5
1851-1855	7,521	193,096	25.7	1841	7,199	164,406	22.8
1856-1860	7,642	188,861	24.7	1842	7,202	128,503	17.8
1861-1865	8,034	214,934	26.8	1843	7,309	164,486	23.2
1866-1869	8,164	195,527	23.9	1844	7,422	186,094	25.1
1871-1875	7,998	216,591	27.1	1845	7,403	170,127	23.0
1876-1880	8,453	214,572	25.4	1846	7,479	133,602	17.9
1881-1885	8,950	275,580	30.8	1847	7,599	169,740	21.0
1886-1890	9,256	280,046	30.3	1848	7,536	174,652	23.2
1891-1895	9,760	281,435	28.8	1849	7,533	188,396	25.0
1896-1900	9,723	292,850	30.1	1850	7,490	166,086	22.2
1901-1905	9,493	303,112	31.9	1851	7,458	173,389	23.2
1906-1910	9,337	337,997	35.1	1852	7,518	189,868	25.3
1911-1913	9,845	353,795	35.9	1853	7,417	182,896	24.7
1909-1913	9,800	355,278	36.3	1854	7,536	209,773	27.8
1914-1918	7,748	244,953	31.6	1855	7,678	209,582	27.3
1919-1923	8,189	268,178	32.7	1856	7,618	193,241	26.0
1815	6,175	103,401	16.7	1857	7,513	195,043	26.0
1816	6,100	109,213	17.9	1858	7,559	169,467	21.6
1817	6,128	115,922	18.9	1859	7,707	182,968	23.7
1818	6,081	84,482	13.9	1860	7,814	204,564	26.2
1819	(²)			1861	7,852	199,404	25.4
1820	6,316	118,311	18.7	1862	7,968	235,099	29.5
1821	6,340	123,829	19.5	1863	8,094	217,023	26.8
1822	6,397	100,594	15.7	1864	8,116	225,851	27.8
1823	6,390	123,812	19.4	1865	8,139	197,201	24.2
1824	6,358	128,183	20.2	1866	8,164	189,861	23.3
1825	6,431	95,639	14.9	1867	8,144	169,015	20.8
1826	6,540	107,442	16.4	1868	8,157	206,715	25.3
1827	6,555	120,305	18.4	1869	8,192	216,517	26.4
1828	6,622	118,692	17.9	1870	(¹)		
1829	6,667	118,790	17.8	1871	8,396	243,739	29.0
1830	6,822	148,923	21.8	1872	7,929	230,214	29.0
1831	6,826	151,209	22.2	1873	7,985	217,856	27.3
1832	6,811	132,548	19.5	1874	7,805	183,921	24.8
1833	6,928	121,746	17.6	1875	7,875	197,224	25.0

¹ Includes Alsace-Lorraine prior to 1871 and after 1918.² See footnote 2 on Table 66.³ Not reported.

TABLE 68.—Oats: Acreage and production in France and Alsace-Lorraine, 1876-1925

Year	France			Alsace-Lorraine		
	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre
	1,000 acres	1,000 bush.	Bush.	1,000 acres	1,000 bush.	Bush.
1876.....	8,651	209,292	24.2	(1)	(1)	.....
1877.....	8,299	195,739	23.6	(1)	(1)	.....
1878.....	8,219	219,325	26.7	230	6,494	28.2
1879.....	8,511	210,732	24.8	(1)	6,602	.....
1880.....	8,584	237,772	27.7	(1)	8,378	.....
1881.....	8,587	219,207	25.5	(1)	7,334	.....
1882.....	8,692	291,193	33.5	(1)	8,794	.....
1883.....	9,216	303,207	32.9	255	8,763	34.4
1884.....	9,136	284,605	31.2	(1)	8,169	.....
1885.....	9,117	279,490	30.7	(1)	9,856	.....
1886.....	9,232	290,988	31.5	(1)	9,856	.....
1887.....	9,192	259,377	28.2	(1)	7,124	.....
1888.....	9,227	279,995	30.3	(1)	9,189	.....
1889.....	9,287	285,228	30.7	(1)	8,457	.....
1890.....	9,342	304,643	32.6	(1)	9,387	.....
1891.....	10,484	342,195	32.6	(1)	9,665	.....
1892.....	9,422	268,231	28.5	(1)	9,242	.....
1893.....	9,495	196,666	20.7	246	4,409	18.2
1894.....	9,591	294,344	30.7	247	8,110	32.8
1895.....	9,307	305,742	31.2	253	8,432	33.3
1896.....	9,677	296,205	30.6	261	8,411	32.2
1897.....	9,861	253,257	25.7	275	8,063	29.4
1898.....	9,606	321,562	33.5	269	9,278	34.5
1899.....	9,734	307,914	31.6	270	11,496	42.6
1900.....	9,739	285,313	29.3	.....	10,699	38.9
1901.....	9,602	254,900	26.5	272	9,266	34.1
1902.....	9,469	319,691	33.8	271	10,887	40.2
1903.....	9,498	344,329	36.3	279	12,286	44.0
1904.....	9,475	290,902	30.7	277	10,980	39.6
1905.....	9,420	305,736	32.5	275	10,920	39.7
1906.....	9,525	295,110	31.0	279	12,411	44.5
1907.....	9,565	352,712	36.9	279	12,630	45.3
1908.....	9,629	327,159	34.0	276	11,518	41.7
1909.....	9,702	383,139	39.5	284	14,539	51.2
1910.....	9,764	331,866	34.0	282	13,630	48.3
1911.....	9,363	349,247	35.4	286	12,115	42.1
1912.....	9,839	355,089	36.1	286	11,172	39.1
1913.....	9,833	357,049	36.3	279	14,466	51.8
<i>War period</i> ¹						
1914.....	8,873	318,333	35.9	278	13,172	47.4
1915.....	8,062	238,551	29.6	275	6,607	24.0
1916.....	7,777	277,117	35.6	176	6,691	38.0
1917.....	7,368	214,259	29.3	183	6,077	33.2
1918.....	6,721	176,504	26.3	176	4,049	23.0
<i>Postwar period</i>						
1919.....	7,056	171,792	24.3	240	8,030	33.5
1920.....	8,278	291,406	35.2	252	8,714	34.6
1921.....	8,421	244,455	29.0	251	7,488	29.8
1922.....	8,491	288,364	33.9	256	7,429	29.0
1923.....	8,457	339,944	39.6	254	11,175	44.0
1924.....	8,636	305,535	35.4	260	8,381	32.2
1925.....	8,599	327,648	38.1	268	10,718	40.0

¹ Not reported.

² These are figures as reported in official sources and include reports from the Departments wholly or in part involved in war operations. Data from these Departments were incomplete and for that reason reported area and production during the war period are not comparable with other years.

³ French statistical records include Alsace-Lorraine beginning 1920.

CORN

Corn is not an important crop either from the point of view of acreage or of yields except in the southwest of France. (Fig. 11.) Considerable amounts of corn are employed throughout France in excess of domestic production as a feeding stuff and for industrial purposes so that this cereal is to be reckoned with as an item of import trade.

During 1909–1913, France had 1,155,000 acres under corn, of which 1,008,000 acres were located in what may be called the southwestern corn belt occupying the watershed of the Garonne River and the country between the Garonne and the Pyrenees Mountains. Methods of cultivation of corn in this region are primitive and yields are low, amounting to 19.3 bushels per acre during 1909–1913. During this period the southwestern corn belt produced on 8.4 per cent of its plowland, about 87.1 per cent of the total corn crop of France, or 19,414,000 bushels.

A small amount of corn is produced in the valleys of the Rhone and its tributaries and in the upper Rhine Valley. This region,

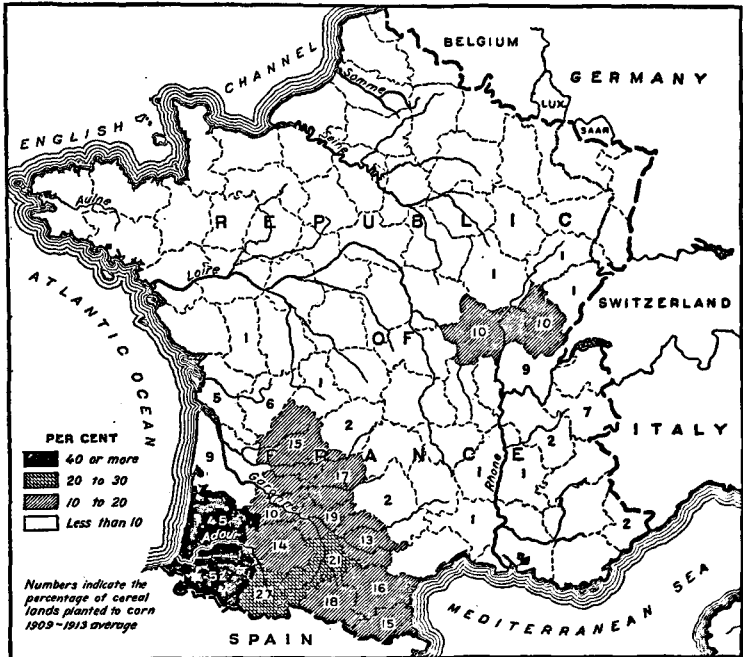


FIG. II.—CEREAL LANDS IN FRANCE PLANTED TO CORN DURING THE PERIOD 1909-1913

Corn is an important cereal crop only in southwestern France in the valley of the Garonne River and the foothills of the Pyrenees Mountains.

including the territory between these rivers and the Alps Mountains, may be called the east-central corn belt. Yields per acre during 1909–1913 averaged 19.7 bushels. About 1.7 per cent of the plowland of this region, or 139,000 acres, was under corn in 1909–1913—producing 2,742,000 bushels, or about 12.3 per cent of the total crop.

Outside of these two main belts corn is planted in about a dozen other scattered localities but yields are low (16.6 bushels per acre). During 1909–1913, 12 such localities had about 0.1 per cent of the plowland, or 8,000 acres, under corn, producing 133,000 bushels, or only 0.6 per cent of the total crop. An average of about 5,000 acres of corn were seeded in Alsace-Lorraine during 1909–1913 but German statistics give no data on production.

It will be noted from the data in Table 68 that corn production had been decreasing in the 87 Departments before the war and that the general effect of the shortage of man power has, in recent years, greatly accelerated the downward tendency of the acreage under this crop, which requires much hand labor.

In 1919 the area under corn in the southwestern belt had dropped to 646,000 acres and in the east-central belt to 83,000 and in the rest of France only 7,000 acres were under corn. There was a slight compensating influence on corn production in the increase from 5,000 to 8,000 acres in 1920 in Alsace-Lorraine as indicated in Table 67.

TABLE 67.—*Corn: Areas seeded in the occupied and unoccupied Departments of France and in Alsace-Lorraine, average 1909-1913, 1918, 1919, and 1925*

Region	Average, 1909-1913	1918		1919		1925	
		Total area	Percentage of 1909-1913	Total area	Percentage of 1909-1913	Total area	Percentage of 1909-1913
10 Departments.....	1,000 acres (¹)	1,000 acres	Per cent	1,000 acres (¹)	Per cent	1,000 acres (¹)	Per cent
77 Departments.....	1,155	754	65.3	736	63.7	847	73.3
Alsace-Lorraine (3 Depart- ments).....	5	9	180.0	8	160.0	7	140.0
Total France.....	1,160	763	65.8	744	64.1	854	73.6

¹ The acreage for the 10 occupied Departments was only 35 acres during 1909-1913, 124 in 1919, and 22 in 1925.

² Figure for 1920; not available for 1919.

See notes on Table 36 for occupied and unoccupied Departments.

France (48, 47, 49); Alsace-Lorraine, 1909-1912 (98), 1913 and 1918 (30, p. 48).

During the last few years there has been some recovery but in 1925 the area under corn was only 73.6 per cent of the 1909-1913 average.

International trade in corn

During the 28 years from 1896 to 1913 the disappearance of corn remained fairly constant ranging from 34,000,000 to 43,000,000 bushels annually. Throughout this period there had been a growing tendency to reduce corn acreage and to rely more and more upon importations, which during 1911-1913 amounted to 51.8 per cent of the total disappearance (Table 68).

During the five-year period 1909-1913 the average net importations of corn into France amounted to 18,626,000 bushels. Of this total import trade, 7,778,000 bushels originated in Argentina and almost half as many bushels came from Rumania. The corn trade of the United States with France amounted to only 3.4 per cent of the total. During the years 1922 to 1925, shipments of corn from the United States to France have been 18.3, 12.1, 1.6, and 0.1 per cent of that country's total imports, respectively. During these years France has obtained 50 to 60 per cent of her total corn imports from Argentina.²¹ It is probable that the future corn trade of the United States with France will be, as it has been in the past, relatively unimportant.

²¹ The export corns of Argentina and Rumania are hard flint varieties which arrive in western Europe in better condition than do the dent varieties of corn usually shipped from the United States. These latter have a tendency to absorb moisture and become heated en route. This damages their feeding quality and renders them fit for little besides alcohol manufacture or other similar purposes.

TABLE 68.—*Corn: Acreage, production, importation, and disappearance in France, 1882-1925*

Year ending Dec. 31—	Acreage	Production		Net imports	Gross disappearance ¹	Percentage of gross disappearance imported
		Total	Per acre			
	<i>1,000 acres</i>	<i>1,000 bush.</i>	<i>Bush.</i>	<i>1,000 bush.</i>	<i>Bush.</i>	<i>Per cent</i>
1882-1885.....	1,505	24,312	16.2	3,763	27,075	13.9
1886-1890.....	1,376	26,595	19.3	11,374	37,969	30.0
1891-1895.....	1,407	26,860	19.1	7,250	34,119	21.3
1896-1900.....	1,400	26,550	19.0	16,798	43,348	39.8
1901-1905.....	1,260	24,388	19.4	10,539	34,927	30.2
1906-1910.....	1,206	22,986	19.1	13,414	36,400	36.9
1911-1913.....	1,120	20,658	18.4	22,203	42,861	51.8
1909-1913 ²	1,155	22,289	19.3	³ 18,626	40,915	45.5
1914-1918 ⁴	909	16,186	17.8	⁵ 14,463	30,649	47.2
1920-1923 ⁶	820	12,752	15.6	⁷ 18,269	31,021	58.9
1924 ⁸	846	18,027	21.3	⁹ 22,083	40,110	55.1
1925 ⁴	854	20,003	23.4	⁹ 20,004	40,007	50.0

¹ Includes seed.² Pre-war base for France, former boundaries only.³ Includes corn meal.⁴ Does not include occupied territory.⁵ Includes Alsace-Lorraine. 1919, including Alsace-Lorraine, not available.

Statistique Agricole Annuelle (52), except net imports for 1909-1913 and 1920-1924, which were taken from Tableau General du Commerce (53) and Statistique Mensuelle du Commerce Extérieur de la France (36).

TABLE 69.—*Corn, including corn meal: Foreign trade of France, calendar years, average 1909-1913 and 1921-1925 (33, 35)*

[In thousands of bushels—i. e., 000 omitted]

Countries from which imported	Average, 1909-1913	1921	1922	1923	1924	1925
Rumania.....	3,651	2,198	1,180	806	2,730	2,865
Russia.....	2,366	(¹)	(¹)	432	1,202	642
United States.....	628	535	3,861	2,763	345	19
Argentina.....	7,778	9,018	12,628	13,999	12,377	11,590
Indo-China.....	3,245	704	2,028	1,730	945	1,358
Other countries.....	1,040	800	1,416	3,012	4,566	3,639
Total imports.....	18,708	13,355	21,113	22,742	22,165	20,103
Total exports.....	82	600	145	139	82	99
Net imports.....	18,626	12,755	20,968	22,603	22,083	20,004

¹ If any, included in other countries.

MASLIN

In France as in many other European countries a mixture of wheat and rye is sown together. This mixture of grains is known as maslin and is milled locally for home consumption. The use of maslin flour for breadmaking is being rapidly discontinued.

In 1840 the area of maslin in France was 2,226,000 acres, which steadily decreased until during 1909-1913 it was only 324,000 acres. In 1919, including Alsace-Lorraine, there were only 282,000 acres under maslin in all of France. Since that time, up to 1925, there has been a tendency for the acreage under this cereal to decrease, except in Alsace-Lorraine.

BUCKWHEAT

The area seeded to buckwheat had decreased from 1,686,000 acres in 1840 to 1,174,000 acres, in 1909-1913. In 1925, there were only 838,000 acres of buckwheat seeded. This cereal is not grown to any extent except upon the poorer soils of the "massif central" region.

MILLET

Millet is the least important cereal crop and its use has been rapidly decreasing. Before the war only 55,000 acres were under this crop. In 1924, the acreage had been reduced to only 37,000 acres, while a slight increase to 40,000 acres is reported for 1925.

ROOTS AND TUBERS

POTATOES

Before the war France ranked fourth among the potato-producing countries of Europe, coming next after Germany, Russia, and Austria-Hungary and taking precedence over Great Britain.

Production of potatoes (1909-1913 average)

Country:	1,000 bushels
Germany.....	1,681,959
Russia.....	1,252,378
Austria-Hungary.....	662,201
France.....	489,377
Great Britain.....	254,441

New potatoes appeared upon the Paris markets during the major part of the year, for they were imported from January to May from Algeria, during May and June from Spain, and later in the season new potatoes were received from Belgium and Germany. Nearly two-thirds of the potatoes exported by France went to Great Britain, including reexports of new potatoes from Africa and southern Europe.

The area under potatoes had gradually increased throughout the 87 Departments of France and Alsace-Lorraine from 3,665,000, the average acreage during 1882-1885, to 4,067,000 acres during 1909-1913. During the war acreage fell off only 17 to 19 per cent in the 77 Departments outside the war zone. In Alsace-Lorraine the 1919 acreage was 85.2 per cent of the 1909-1913 average, and the 10 occupied Departments showed a falling off of 36.7 per cent, as indicated in Table 70.

TABLE 70.—Potatoes: Areas seeded in occupied and unoccupied Departments of France and in Alsace-Lorraine, average 1909-1913, 1918, 1919, and 1925

Region	Average, 1909-1913	1918		1919		1925 ¹	
		Total area	Percentage of 1909-1913	Total area	Percentage of 1909-1913	Total area	Percentage of 1909-1913
9 Departments.....	1,000 acres	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent
Ardennes.....	374 29	151 (*)	40.4	246 9	65.8 31.0	294 19	78.6 65.5
10 Departments.....	403	-----	-----	255	63.3	313	77.7
77 Departments.....	3,435	2,739	81.2	2,849	82.9	3,091	90.0
Alsace-Lorraine (3 Departments).....	229	109	47.6	195	85.2	215	93.9
Total France.....	4,067	-----	-----	3,299	81.1	3,619	89.0

¹ Preliminary.

² Not available.

France (48, 47, 49); Alsace-Lorraine, 1909-1912 (86), and 1913 (50).
See notes on Table 36, for occupied and unoccupied Departments.

By 1924, potato acreage had recovered to 3,615,000 acres and production had reached 564,020,000 bushels. In 1925 acreage fluctuated to 3,619,000 and production dropped off to 558,313,000 bushels.

Potatoes are used chiefly as a vegetable. But whether as human food, a feeding stuff for livestock, or for use in industries, potatoes do not have the great significance in France that they have in central Europe. They are employed to only a relatively small extent as a bread substitute when the wheat crop is short. There is also no such close relationship between the production of potatoes and pork in France as in Germany and potatoes are employed almost not at all in alcohol manufacture.

The relatively small recovery of acreage since 1919 indicates that, in view of the shortage in labor, it is not probable that there will be any considerable expansion in potato acreage in the near future. Exports in 1924 and 1925 exceeded those before the war and imports were considerably less than exports, indicating that local production more than satisfied local demand. With Poland and the new Baltic States sharply competing for the trade of the countries in Europe that are deficient in potato production it is probable that greater profit can be obtained in France from the production of other roots and tubers—for example Jerusalem artichokes or forage beets.

TABLE 71.—Potatoes: Foreign trade of France, average 1909–1913 and 1921–1925 (33, 37)

[In thousand bushels—i. e., 000 omitted]

Country	Average 1909–1913		1921		1922		1923		1924		1925	
	Im-ports	Ex-ports	Im-ports	Ex-ports	Im-ports	Ex-ports	Im-ports	Ex-ports	Im-ports	Ex-ports	Im-ports	Ex-ports
Belgium.....	3, 536	564	312	(¹)	2, 418	54	3, 569	204	650	145	.....	324
Germany.....	1, 073	317	82	(¹)	310	(²)	52	(²)	110	14	.....	(³)
United Kingdom.....	342	3, 022	66	2, 499	3, 545	2, 281	458	3, 765	(³)	5, 054	.....	4, 665
Italy.....	114	79	1, 070	(¹)	1, 490	(¹)	1, 708	(¹)	1, 288	(¹)	.....	(¹)
Netherlands.....	218	(¹)	2, 783	(¹)	2, 279	(¹)	1, 002	(¹)	1, 180	(¹)	.....	(¹)
Spain.....	963	298	500	(¹)	630	(¹)	821	(¹)	453	359	.....	1, 149
Switzerland.....	7	284	44	(¹)	109	380	(¹)	308	(¹)	445	.....	425
Algeria.....	778	799	625	836	540	983	919	892	961	1, 227	.....	1, 211
Other countries.....	165	2, 838	388	5, 332	2, 314	1, 447	2, 351	2, 835	1, 199	3, 044	.....	2, 573
Total.....	7, 196	8, 201	5, 870	8, 667	13, 635	5, 145	10, 880	8, 004	5, 841	10, 289	6, 797	10, 347

¹ 1925 imports not yet available by countries.

² Less than 500 bushels.

³ If any, included in other countries.

⁴ 1,140,000 bushels were imported from Poland.

JERUSALEM ARTICHOKE

This tuber is grown in certain localities largely for local consumption. The area under artichokes in 1901–1905 was 232,000 acres; in 1909–1913 the area averaged 254,000 for France (former boundaries) and 1,000 acres for Alsace-Lorraine. The artichoke acreage continued to increase during and after the war until in 1924 it reached 315,000 acres. In 1925 there was a further increase of 9,000 acres. This tuber is consumed domestically and of itself has no relation to the foreign trade of France.

SUGAR BEETS AND BEET SUGAR

The beet-sugar industry is of peculiar significance to the French nation. Following the researches of the German scientist Margraff in 1747 a few experimental factories were put into operation in France. In 1806 Napoleon offered the first government bounty on beet sugar, and in 1811 issued a decree to put 79,000 acres of French land into beet cultivation. In 1852-53 the world's beet-sugar industry produced 202,000 tons of sugar against 1,260,000 tons of cane sugar. In 1889-1900 the proportions were 5,410,000 tons of beet sugar against 2,880,000 tons of cane. At the beginning of the World War the figures were 8,908,000 and 9,879,000 (96, p. 313), respectively.

The beet-sugar industry is concentrated for the most part in the northeastern region in the watersheds of the Seine and the Somme with minor areas of cultivation in the region of the Rhone and its tributaries. During the five-year period ended in 1885 the average area under sugar beets was 549,000 acres. The high point of cultivation was reached during 1896-1900 when the average acreage attained 697,000 acres. During 1909-1913 the average area under sugar beets was 609,000 acres in France (former boundaries) and 2,000 acres in Alsace-Lorraine.

Fully four-fifths of the sugar-beet area lay within the 10 Departments that were occupied by the forces of the Central Powers during 1914-1918. In 1919 the acreage reported from these occupied Departments was only 18.9 per cent of normal and outside the war zone returns from 77 Departments indicate a falling off of only 18.9 per cent. In Alsace-Lorraine more sugar beets were grown in 1920 than before the war and the acreage reached 122.7 per cent of normal.

TABLE 72.—*Sugar beets: Area seeded in the occupied and unoccupied Departments in France and in Alsace-Lorraine, average 1909-1913, 1918, 1919, and 1925*

Region	Average 1909- 1913	1918		1919		1925	
		Total area	Percent- age of 1909-1913	Total area	Percent- age of 1909-1913	Total area	Percent- age of 1909-1913
9 Departments.....	Acres 484,894	Acres 72,030	Per cent 14.9	Acres 91,773	Per cent 18.9	Acres 311,420	Per cent 64.2
Ardennes.....	9,602					3,707	38.6
10 Departments.....	494,496					315,127	63.7
77 Departments.....	114,215	91,007	79.7	92,613	81.1	162,517	142.3
Alsace Lorraine (3 Depart- ments).....	2,577	1,337	51.9	* 3,163	122.7	4,942	191.8
Total France.....	611,268	164,374	26.9	187,549	30.4	482,586	78.9

* Preliminary.

* Year 1920, since no Alsace-Lorraine data are available for 1919 sugar-beet acreage.

France (48, 47, 49); Alsace-Lorraine 1909 to 1912 (36); 1913 and 1918 (30).

See notes on Table 36, for occupied and unoccupied Departments.

Between 1919 and 1925 the recovery of the industry was slow in the occupied Departments. The large number of hand laborers and animals and the quantities of fertilizers and specialized implements

that are required in beet production requires capital which has not been readily available during a period when the nation has been concentrating on a campaign to grow more wheat. As indicated in Table 73, 168 sugar factories were located in five of the Departments that during 1914-1918 were partially occupied by the central powers. In 1923-24 only 55 of these factories were in operation. There has been little demand for sugar beets in those localities in which factories have been destroyed, and acreage has thus been automatically cut down. By 1925 sugar-beet acreage in the 10 occupied Departments, although nearly twice that of the rest of France, was still 36.3 per cent below normal. Forty-five factories in other parts of France outside the occupied areas reported sugar production in 1912-13. By 1923-24 there were 40 factories, including 1 in Alsace-Lorraine, operating in the Departments outside the war zone. Sugar prices have been good, and in those Departments unaffected by the devastations of war the sugar industry has prospered.

In Alsace-Lorraine the 1925 sugar-beet acreage was nearly twice that of 1909-1913 and in the 77 Departments outside the war zone acreage had increased to 142.3 per cent of normal.

TABLE 73.—Number, distribution, and production of sugar at beet-sugar factories in France, 1912-13 compared with 1921-22 and 1923-24¹ (65, p. 263)

Department	Factories in operation			Amount of sugar produced ²		
	1912-13	1921-22	1923-24	1912-13	1921-22	1923-24
	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>
Aisne ³	51	6	11	221,063	10,291	26,932
Nord ³	40	9	13	164,965	20,881	74,060
Oise ³	20	17	16	99,028	55,995	54,466
Pas de Calais ³	24	6	8	112,335	36,363	53,060
Seine et Marne ³	12	12	12	74,856	41,392	46,797
Seine et Oise.....	8	8	7	23,378	17,539	18,414
Somme ³	33	5	7	154,359	44,773	53,851
Other Departments.....	25	17	21	102,108	79,474	82,934
Total.....	213	80	95	952,092	306,708	410,564

¹ Years ended Aug. 31.

² Refined sugar.

³ Partially occupied during the war.

During the 30 years preceding the war great improvement had taken place in the sugar industry; 486 factories in 1881-82 had produced 371,572 short tons of refined sugar as contrasted with a production of 790,701 short tons at 206 factories in 1913-14.

Before the war France ranked fourth (after Germany, Austria-Hungary, and Russia) in beet-sugar production in Europe. Native beet-sugar production did not meet domestic demands and was supplemented by importations of cane sugar. The French colonies of Martinique, Guadeloupe, and Reunion supplied about 85 per cent of French imports of raw sugar in 1913, the remainder originating in Cuba and other countries. Raw sugar was admitted under temporary permit and refined in bond at some 35 sugar refineries on the outskirts of Paris, at Lyons, Marseilles, and Nantes. The greater portion of this refined sugar produced in bond was reexported to Morocco, Switzerland, Great Britain, Spain, Turkey, Algeria, and Tunis.

According to estimates based upon data for calendar years, French per capita consumption of sugar, in terms of refined sugar, increased

from an average of 21.4 pounds during 1881-1885 to an average of 38.6 pounds during 1911-1913 (56, p. 360). Since the war, disappearance has increased as indicated in Table 74, in which the supply and distribution of sugar during the "sugar-campaign" years, September 1 to August 31, contrasts postwar conditions with those during 1911-12 and 1912-13.

TABLE 74.—*Sugar, refined: Supply and distribution in France, 1911-12, 1912-13, and 1920-21 to 1924-25 (2, 45)*

Item	1911-12	1912-13	1920-21	1921-22	1922-23	1923-24	1924-25
Supply:							
Visible supply on Aug. 31 in factories and warehouses.....	Short tons 90,727	Short tons 85,993	Short tons 74,173	Short tons 27,931	Short tons 49,861	Short tons 66,035	Short tons 54,737
Production.....	513,005	967,440	336,248	306,740	490,929	492,478	827,034
Imports:							
General commerce.....	355,654	145,094	386,541	718,604	580,047	526,941	376,430
Entered for manufacture and reexport.....	26,754	25,487	9,961	39,155	44,419	46,459	20,674
Sugar not otherwise accounted for at the end of the preceding campaign.....	30,521	33,450	1,571	7,464	3,498	15,530	4,423
Total supply from all sources.....	1,025,661	1,257,464	808,494	1,099,894	1,168,754	1,137,443	1,283,298
Disappearance:							
Domestic disappearance after payment of excise.....	705,666	775,056	601,407	800,341	846,650	820,160	923,326
Beer manufacture.....	1,644	2,579	-----	229	7	141	513
Molasses manufacture.....	10,971	14,235	6,071	7,020	8,159	11,501	16,252
Fed to livestock.....	129	191	-----	12	4	-----	3
Waste, etc.....	71	73	15	1	29	53	28
Total disappearance.....	718,481	792,134	607,493	807,603	854,849	831,855	940,122
Otherwise distributed:							
Gross exports (general commerce).....	153,199	231,837	155,989	165,499	188,998	194,664	236,778
Reexports entered free of duty.....	29,630	42,354	8,832	38,314	46,026	45,615	22,866
Sugar contained in exported connections.....	4,948	5,729	5,968	4,242	5,429	10,622	10,307
Stocks in factories and warehouses.....	85,953	127,445	27,908	49,537	65,783	54,556	70,790
Sugar in transport or unclassified.....	33,450	57,915	2,244	34,699	7,669	131	2,429
Total otherwise distributed.....	307,180	465,330	201,001	292,291	313,905	305,588	343,176
Total distribution.....	1,025,661	1,257,464	808,494	1,099,894	1,168,754	1,137,443	1,283,298
Per capita disappearance ¹.....	Pounds 36.2	Pounds 39.8	Pounds 31.0	Pounds 41.0	Pounds 43.2	Pounds 41.7	Pounds 46.9

¹ Includes 406 short tons that were not accounted for in order to balance distribution and supply.

² Populations, 1912, 39,710,000; 1913, 39,790,000. For other years, see Table 6.

It will be noted that after 1920-21 per capita disappearance has materially exceeded the pre-war estimates. The higher standard of living instituted generally throughout France, after the war, accounts for some of this increase, but it is not improbable that private accumulation of stocks is being resorted to as a means of safeguarding savings against the fluctuations of a depreciating currency.

Production of sugar at factories fluctuates considerably from year to year but since the war the output of the factories has been less than normal until the favorable season of 1924-25. Imports, as indicated in Table 74, have been greater than normal, but exports have been only slightly less than in 1912-13.

It is probable that the demand for sugar will continue stronger than before the war and that acreage of sugar beets will tend to return to normal, although the rapidity of this return will depend upon the solution of the labor problem.

Table 75 gives the foreign trade of sugar for years ending December 31, pre-war, 1909-1913 and postwar, 1922-1925.

TABLE 75.—*Sugar, refined: Foreign trade of France, calendar years, average 1909–1913 and 1922–1925 (33, 37)*

Countries	Average, 1909–1913		1922		1923		1924		1925 ¹	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>
Reunion.....	37,950	(?)	35,178	(?)	33,264	(?)	42,768	(?)	4,280	(?)
Martinique.....	38,704	145	19,174	(?)	22,871	(?)	29,870	(?)	4,282	(?)
Guadeloupe.....	34,593	62	22,062	(?)	23,124	15	26,510	(?)	3,813	(?)
Algeria.....	(?)	44,083	(?)	34,561	(?)	32,104	(?)	36,234	(?)	4,055
Tunis.....	(?)	10,933	(?)	10,160	(?)	9,294	(?)	13,135	(?)	1,477
Senegal.....	(?)	7,186	(?)	4,914	(?)	6,822	(?)	10,572	(?)	1,260
Morocco.....	(?)	38,380	(?)	81,341	(?)	69,704	(?)	81,019	(?)	10,908
Dutch Indies.....	18,941	(?)	62,374	(?)	163,007	(?)	115,949	(?)	3,475	(?)
Belgium and Luxembourg.....	5,955	1,062	38,514	981	42,699	1	27,664	137	1,267	(?)
Cuba.....	11,424	(?)	174,341	(?)	56,173	(?)	87,083	(?)	10,376	(?)
United States.....	(?)	36	161,158	(?)	30,773	14	21,763	(?)	1,047	(?)
United Kingdom.....	49	44,043	2	6,523	647	136	13	6	(?)	57
Germany.....	751	192	1,386	304	23,413	507	25,293	672	56	1
Netherlands.....	7	261	19,629	(?)	64,218	(?)	12,561	(?)	37	(?)
Switzerland.....	1	14,067	(?)	3,835	(?)	393	14	1,388	(?)	110
Russia.....	11,545	50	(?)	823	(?)	363	(?)	1,601	(?)	(?)
Czechoslovakia.....		71,797	(?)	8,472	(?)	16,252	(?)	(?)	258	(?)
Canada.....	(?)	(?)	8,842	(?)	14,631	(?)	3,531	(?)	41	(?)
Poland.....		66	(?)	18,398	(?)	54,965	(?)	(?)	617	(?)
Other countries.....	10,984	38,990	10,532	26,991	24,343	16,385	27,396	16,610	3,049	1,589
Total.....	170,904	199,490	626,055	170,433	526,023	135,738	491,541	160,374	32,778	19,447

¹ Preliminary.² If any, included in other countries.³ Less than 1 ton.

Raw sugar converted to refined sugar on the basis that 1.1 pounds of raw sugar equals 1 pound of refined

DISTILLERY BEETS

Considerable quantities of beets are employed in the distillation of alcohol. This industry is localized for the most part in five northeastern Departments—Nord, Pas-de-Calais, Oise, Seine-et-Oise and Seine-et-Marne. At the end of the last century the industry suffered a setback because of the low price of alcohol. In 1903 the price of alcohol produced from beets was fixed at 42 francs per hectoliter (31 cents per gallon) and from that time up to the beginning of the World War the area had increased considerably—from 103,000 acres, the 1902–1905 average, to an average of 129,000 acres during the five years ended in 1913. During the war acreage fell off to an average of 78,000 and has further decreased in the last few years. Only 63,000 acres were planted to distillery beets in 1924 and 59,000 in 1925. This is a minor localized industry of little or no significance to international trade in agricultural products.

FORAGE BEETS

The growing importance of the animal and dairy industries since the early nineties has been reflected in the increased areas put into forage beets. During the five-year period ended 1895 there were, on the average, 1,030,000 acres planted to forage beets in France, including Alsace-Lorraine. Just before the war this area had been nearly doubled, for the 1909–1913 average was 1,796,000 acres. During the war there was a falling off in acreage as indicated in Table 76.

TABLE 76.—*Forage beets: Areas seeded in occupied and unoccupied Departments of France and in Alsace-Lorraine, average 1909-1913, 1918, 1919, and 1925*

Region	Average 1909-1913	1918		1919		1925 ¹	
		Total area	Percent- age of 1909-1913	Total area	Percent- age of 1909-1913	Total area	Percent- age of 1909-1913
	<i>1,000 acres</i>	<i>1,000 acres</i>	<i>Per cent</i>	<i>1,000 acres</i>	<i>Per cent</i>	<i>1,000 acres</i>	<i>Per cent</i>
9 Departments	289	111	38.4	173	59.9	269	93.1
Ardennes	18	(?)	—	2	11.1	13	88.9
10 Departments	307	—	—	175	57.0	285	92.8
77 Departments	1,381	1,154	83.6	1,130	81.8	2,507	181.5
Alsace-Lorraine (3 Depart- ments)	108	73	67.6	*105	97.2	113	104.6
Total France	1,790	—	—	1,410	78.5	2,905	161.7

¹ Preliminary. ² Not available. ³ Year 1920, since 1919 is not obtainable for Alsace-Lorraine.

See notes on Table 36, for occupied and unoccupied Departments.
France (42, 47, 49). Alsace-Lorraine, 1909 to 1912 (98); 1913 and 1918 (30).

The reduction of acreage was marked in the 9 partially occupied Departments, but in the 77 unoccupied Departments it amounted to only 16 to 18 per cent below normal. Since 1919 the increase of acreage under forage beets has been remarkable. In 1925 the acreage was only 7.2 per cent below the 1909-1913 average in the 10 occupied Departments and in Alsace-Lorraine it reached 4.6 and in the 77 unoccupied Departments 81.5 per cent above normal.

RUTABAGAS, TURNIPS, AND FORAGE CABBAGE

In 1925 the acreage of rutabagas and turnips was 2,000 acres above normal and forage cabbage was only 6 per cent below the 1909-1913 average.

INDUSTRIAL PLANTS

The relative and actual importance of the industrial plants, rape, colza, flax, hemp, and poppy, had been rapidly decreasing for more than 30 years before the war, whereas tobacco and hops had each exhibited a tendency more or less to maintain its acreage.

During 1883-1892 the average acreage under industrial plants was 0.8 per cent of the total plowland, whereas during 1909-1913 it was only 0.4 per cent. During 1881-1885 there were 599,000 acres under industrial plants not counting tobacco, while in 1909-1913 average acreage amounted to only 194,000, a falling off of 67.6 per cent. (Table 77.)

TABLE 77.—Industrial plants: Trends in acreage in France and Alsace-Lorraine, 1881-1925

[In thousand acres—i. e., 000 omitted]

Crop and boundary	1881-1885	1886-1890	1891-1895	1896-1900	1901-1905	1906-1910	1911-1913	1914-1918 ¹	1909-1913	1919-1923	1924	1925
Tobacco:												
France, former boundary	32	39	38	42	41	37	39	26	37			
Alsace-Lorraine	7	5	3	3	3	3	4	3	4			
Total France, present boundary	39	44	41	45	44	40	43	29	41	35	32	32
Hops:												
France, former boundary	9	8	7	7	7	7	7	5	7			
Alsace-Lorraine	12		10	10	10	11	10	8	10			
Total France, present boundary	21		17	17	17	18	17	13	17	10	10	10
Colza and rape seed:												
France, former boundary	276	186	161	143	100	91	77	55	83			
Alsace-Lorraine			79	7		3	2		104			
Total France, present boundary			170	150		94	79		87	74	55	55
Hemp ¹¹	159	139	106	75	54	40	35	24	35	16	11	13
Flax ¹¹	107	93	76	54	62	63	68	27	62	51	49	49
Poppy ¹¹	48	42	33	21	13	9	6		7	2	1	1
Total ¹¹	631	507	421	342	277	247	232	139	249	187	158	160

¹ These are figures as reported in official sources and include reports from the Departments wholly or in part involved in war operations. Data from these Departments were incomplete and for that reason reported acreage during the war period is not comparable with other years.

² Four-year average, 1914-1917.

³ Four-year average, 1920-1923, since 1919 for Alsace-Lorraine is not obtainable.

⁴ One year, 1883.

⁵ Three-year average, 1893-1895.

⁶ Two-year average for colza, 1884-85=246,526 acres; and one year only for rapeseed, 1885=29,602; total, 276,128 acres.

⁷ Includes "Awehl" and "Biewitz," three-year average, 1893-1895 (67).

⁸ Includes "Awehl" and "Biewitz," three-year average, 1896-1898 (67).

⁹ Two-year average, 1909-1910.

¹⁰ Literature cited, 30, 98.

¹¹ Averages from 1881-1885 to 1909-1913 for France, former boundary. Includes Alsace-Lorraine from 1909-1913 on.

¹² Two-year average, 1884-85.

¹³ Less than 500 acres for Alsace-Lorraine (30, 98).

¹⁴ One year only, 1885.

France, 1881 to 1921 from *Statistique Agricole Annuelle*, 1919, 1920, and 1921 (46); 1922 to 1925 from *Journal Officiel de la République de Française* (42), and Consular Report, July 23, 1926.

Alsace-Lorraine from *Office de Statistique d'Alsace et de Lorraine, Statistique Agricole 1920* (31), except where noted.

TOBACCO

The handling of tobacco, its manufacture and sale, is a Government monopoly. Between 40,000 and 50,000 farmers were engaged in producing tobacco under Government supervision before the war. The 1909-1913 average area under tobacco in France and Alsace-Lorraine was 40,551 acres. Consumption of tobacco had steadily increased before the war, although production after 1900 had fallen off considerably as indicated in Table 78.

TABLE 78.—Tobacco: Production (42, 52) and consumption (18) in France, 1881-1925

[In thousand pounds—i. e., 000 omitted]

Year	Production	Consumption
Former boundaries:		
1881-1885	38, 664	-----
1886-1890	48, 820	-----
1891-1895	50, 021	1 80, 113
1896-1900	52, 309	2 83, 942
1901-1905	51, 902	3 85, 164
1906-1910	41, 200	4 88, 982
1911-1913	49, 214	5 95, 505
1909-1913	45, 273	6 94, 121
1914-1918	6 34, 108	7 117, 679
1919	29, 271	-----
Including Alsace-Lorraine:		
1920	46, 031	(⁹)
1921	52, 578	(⁹)
1922	61, 495	(⁹)
1923	55, 464	(⁹)
1924	78, 829	(⁹)
1925	43, 185	(⁹)

1 1896 only.
 2 Two years, 1897 and 1899.
 3 Three years, 1901, 1903, and 1905.
 4 Two years, 1907 and 1909.
 5 Four years, 1909, 1911, 1912, and 1913.
 6 This is averaged from figures in official reports and includes reports from the Departments wholly or in part involved in war operations. Data from these Departments were incomplete and for that reason reported production during the war period is not comparable with other years.
 7 Three years, 1914 to 1916.
 8 Not available.

At the end of the war the total reported tobacco acreage in the 90 Departments ranged from 57 per cent normal in 1918 to 63 per cent in 1919. The greatest decrease was in the war zone which showed a falling off of 75 per cent in 1919 against 35 per cent decrease in the 77 unoccupied Departments and 20 per cent in Alsace-Lorraine. By 1925, tobacco acreage in the war zone had recovered to 51 per cent of normal and expansion in Alsace-Lorraine brought its acreage up to 188 per cent of the 1909-1913 average. In other parts of France there was little change. Total acreage in 1925 was 31,869 acres or 78.6 per cent of normal.

Since the war, tobacco acreage has been (1924) about 78 per cent of normal. Production during 1921 to 1924 ranged well above the 1909-1913 averages. It reached 79,000,000 pounds in 1924, but fell off to 43,000,000 in 1925. The United States is the chief source of tobacco imported into France, recent trade figures showing about the same fluctuation as before the war.

TABLE 79.—Tobacco: Areas seeded in occupied and unoccupied Departments of France and in Alsace-Lorraine, average 1909–1913, 1918, 1919, and 1925

Region	Average 1909–1913	1918		1919		1925 ¹	
		Total	Percent- age of 1909–1913	Total	Percent- age of 1909–1913	Total	Percent- age of 1909–1913
9 Departments.....	<i>Acres</i> 3,212	<i>Acres</i> 689	<i>Per cent</i> 21.5	<i>Acres</i> 810	<i>Per cent</i> 25.2	<i>Acres</i> 1,638	<i>Per cent</i> 51.0
Ardenne.....		(?)					
10 Departments.....	3,212	689	21.5	810	25.2	1,638	51.0
77 Departments.....	33,539	19,474	58.1	21,728	64.8	23,082	68.8
Alsace-Lorraine (3 Depart- ments).....	3,800	² 2,836	74.6	3,049	80.2	7,149	188.1
Total France.....	40,551	22,999	56.7	25,587	63.1	31,869	78.6

¹ Preliminary.² Not available, but since no tobacco is reported for other years it is assumed that none was produced in Ardenne.³ Four times the 1915–1918 average as given in *L'Agriculture et le Bétail en Alsace et en Lorraine de 1913 à 1918* (30, p. 19) less sum of 1915 to 1917 as given in *Statistique Agricole de l'Alsace et de la Lorraine pour l'année 1919* (31, p. 20).

France (42, 47, 49).

Alsace-Lorraine 1909 to 1918 and 1919 (30, p. 13, 20).

See notes on Table 36 for occupied and unoccupied Departments.

TABLE 80.—Tobacco: Imports by countries and total exports of France, average 1909–1913 and 1921–1925 (33, 35)

[In thousand pounds—i. e., 000 omitted]

Country	1909–1913	1921	1922	1923	1924	1925
United States.....	30,528	35,353	76,932	24,368	27,898	46,842
Germany.....	6,965	(¹)	579	12	(¹)	(¹)
Algeria.....	5,326	8,543	16,771	6,087	13,635	11,801
Russia.....	5,306	(¹)	(¹)	(¹)	(¹)	(¹)
Austria-Hungary.....	5,265	(¹)	(¹)	(¹)	(¹)	(¹)
Netherlands.....	3,488	11,781	622	197	4,266	(¹)
Argentina.....	1,216	1,082	3,793	1,811	22	(¹)
Brazil.....	42	21,668	3,625	7,776	4,421	3,142
Other countries.....	5,338	6,600	26,475	24,763	8,385	37,947
Total imports.....	63,914	85,027	128,797	65,019	58,537	99,732
Total exports.....	164	2,599	1,716	775	625	551
Net imports.....	63,750	82,428	127,081	64,244	57,912	99,181

¹ If any, included in other countries.

TABLE 81.—Tobacco: Imports into France, by months, July, 1922, to June, 1926 (35)

[In thousand pounds—i. e., 000 omitted]

Months	1922–23	1923–24	1924–25	1925–26
July.....	4,537	5,636	3,239	5,659
August.....	1,696	5,654	7,435	13,888
September.....	8,018	8,251	6,798	7,949
October.....	8,622	1,759	1,453	7,586
November.....	17,662	8,037	5,209	932
December.....	33,950	8,420	4,095	6,652
January.....	10	1,096	1,016	3,568
February.....	496	5,732	3,783	4,682
March.....	3,411	11,094	13,798	5,453
April.....	8,199	1,495	2,725	2,076
May.....	6,927	1,118	29,363	6,902
June.....	10,675	9,668	6,333	12,796
Total.....	104,193	68,160	85,227	78,190

TABLE 82.—*Tobacco leaf: Exports from the United States to France by months, July, 1921, to June, 1926 (110)*¹

[In thousand pounds—i. e., 000 omitted]

Month	1921-22	1922-23	1923-24	1924-25	1925-26
July.....	4,936	3,644	2,501	6,312	7,793
August.....	4,512	1,032	478	9,257	114
September.....	3,023	6,148	85	4,984	5,005
October.....	818	4,503	3,028	1	-----
November.....	2,837	1,504	2,210	2,802	1,175
December.....	3,312	1,575	2,636	10	725
January.....	1,775	-----	794	3	5,145
February.....	1,003	5	65	1,156	6,705
March.....	8,177	2,652	9	312	4,462
April.....	3,229	6,471	2,531	1,612	10,470
May.....	7,951	2,519	1,751	8	7,320
June.....	1,593	7,585	13,288	3,821	5,682
Total.....	43,166	37,638	29,376	30,277	54,496

¹ Does not include stems and trimmings.

OILSEEDS

Before the war the French vegetable-oil trade held the leading place in the markets of the world. This old established industry had undergone steady development for over 30 years before 1913 at the same time that the crushing of oilseeds was undergoing a marked development in Germany and Great Britain.

The chief center of the oilseed-crushing industry is the port of Marseille and vicinity with another large center in the northeast near the port of Dunkirk, which is followed in order of importance by Bordeaux and Nantes.

Before the war (1909-1913) France produced 78,381 short tons of rape, colza, hemp, flax, and poppy seed, as shown in Table 83. During this period 203,443 short tons of these seeds were imported and 4,087 short tons were exported. In addition there was a net import of 827,200 short tons of other oil-bearing seeds (shelled and unshelled), as indicated in Table 84. These data indicate that on the average nearly 1,104,937 short tons of oilseeds were annually crushed in France during 1909-1913, the amount used for seed being relatively small. All of the residual oil cake was fed to livestock in France except an annual average of 87,041 short tons that were exported.

TABLE 83.—*Oilseeds: Production in France, average 1909-1913 and 1921-1925 (42, 52)*

Seed	Average 1909-1913 ¹	1921	1922	1923	1924	1925
	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>
Rape.....	5,787	4,178	4,084	2,910	4,293	² 4,327
Colza.....	45,338	37,350	26,198	29,915	24,244	² 26,484
Hemp.....	7,725	2,996	2,345	1,474	1,424	2,047
Flax.....	14,924	8,099	8,099	8,055	11,664	8,676
Poppy.....	4,667	946	710	713	398	² 422
Total.....	78,381	53,509	41,439	43,070	42,023	41,956

¹ Old boundaries. Production of oilseeds for Alsace-Lorraine not available, but the acreage sown to oilseeds in Alsace-Lorraine is so small that the production would be insignificant.

² From report of Vice Consul Alfred D. Cameron, dated July 23, 1926 (unpublished).

TABLE 84.—Oilseeds and oil cake and meal: Total imports and exports of France, average 1909-1913 and 1921-1925 (33, 37)

Oil seeds and products	Average, 1909-1913		1921		1922		1923		1924		1925	
	Im-ports	Ex-ports	Im-ports	Ex-ports	Im-ports	Ex-ports	Im-ports	Ex-ports	Im-ports	Ex-ports	Im-ports	Ex-ports
	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>
Peanuts:												
Unshelled.....	254, 693	17, 210	257, 541	4, 723	264, 405	4, 435	266, 607	6, 419	323, 259	6, 866	367, 680	5, 582
Shelled.....	220, 369	7, 271	170, 771	760	239, 732	1, 167	292, 446	753	237, 530	1, 342	256, 189	1, 639
Flaxseed.....	171, 348	2, 318	119, 640	345	147, 900	1, 303	172, 685	915	181, 786	830	164, 834	562
Copra.....	160, 867	872	77, 769	49	123, 936	26	154, 126	67	159, 307	133	172, 196	12
Mustard seed.....	174, 862	346	16, 109	74	122, 099	136	134, 472	183	124, 673	290	115, 717	174
Sesame.....	65, 534	2, 537	7, 985	919	12, 445	926	9, 128	64.5	13, 595	775	14, 486	543
Cottonseed.....	30, 664	46	3, 627	512	100	425	39	68	81	16	8	12
Poppy seed.....	21, 036	267	4, 492	9	5, 287	409	4, 524	467	4, 733	13	4, 416	16
Hemp seed.....	10, 130	447	3, 093	126	42, 313	265	3, 862	474	6, 663	994	5, 369	763
Palm nut.....	3, 012	27	20, 486	236	23, 442	5	36, 754	2	35, 708	5	36, 910	1
Rape seed.....	608	2	121	3	22	3	31	4	46	-----	416	-----
Colza.....	321	1, 053	1	1, 085	3, 405	490	3647	1, 157	1, 033	186	510	368
Other oilseeds.....	46, 990	1, 482	26, 434	1, 899	42, 165	634	58, 379	785	62, 622	1, 976	69, 012	2, 432
Oil cake and meal.....	144, 484	231, 525	23, 595	101, 321	41, 233	106, 620	64, 118	164, 002	56, 740	149, 224	26, 02	126, 002

* Includes some colza.

† Colza from Europe only.

In 1925 production of oilseeds had fallen off to 41,956 short tons, but since net importations were increased to 1,095,638 short tons the total tonnage handled at the oilseed works reached 1,137,594 or 32,657 short tons above normal. Exportation of oil cake in 1925 exceeded importations by 99,500 short tons. This increase in the exportation of oil cake indicates somewhat less demand for this class of concentrated feeding stuffs by the French livestock industry than before the war.

RAPE AND COLZA

The area seeded to rape and colza in France (former boundaries) decreased from 186,000 acres (the average for the five-year period ended in 1890) to 83,000 acres during 1909-1913. There had been a similar reduction in Alsace-Lorraine so that the pre-war acreage for France (present boundaries) totaled 87,000. On account of the hand labor required and the probably greater profit derivable from the production of cereals or the animal industry, the area under rape and colza in 1925 was only 55,000 acres.

FLAX

The area under flax had decreased from 107,000 acres (the average for the two years ended in 1885) to an average of 62,000 acres during 1909-1913, in spite of a premium of \$3.92²² per acre instituted in 1892. This reduction in flax acreage was in no small way influenced by the extension of the use of cotton cloth among the French peasants accompanied by the discontinuance of homespun fabrics. The little plots of flax for home use have practically disappeared. Some flax was grown commercially before the World War, a portion of the product being retted and scutched at Lys, Belgium, for sale to the Irish mills. On the other hand, France imported considerable quantities of flax from Russia. Since the war, flax areas have been further reduced because of the large amount of hand labor required,

²² See Table 151, for exchange rate of the franc in 1892.

the 1924 and the 1925 acreages being only 49,000. Although these figures pertain to all 90 Departments of France, flax culture in Alsace-Lorraine is insignificant, only some 121 acres having been reported before the war.

TABLE 85.—Flax: Areas seeded in the occupied and unoccupied Departments of France and in Alsace-Lorraine, average 1909–1913, 1918, 1919, and 1925¹

Region	Average 1909-1913	1918		1919		1925 ¹	
		Total	Percent- age of 1909-1913	Total	Percent- age of 1909-1913	Total	Percent- age of 1909-1913
9 Departments.....	Acres 24,349	Acres 9,027	Per cent 37.1	Acres 23,623	Per cent 97.0	Acres 15,666	Per cent 64.3
Ardennes.....	42	(²)	-----	10	23.8	111	264.3
10 departments.....	24,391	-----	-----	23,633	96.9	15,777	64.7
77 Departments.....	37,149	18,973	51.1	28,678	77.2	33,282	89.6
Alsace-Lorraine (3 Depart- ments).....	121	(²)	-----	4 128	105.8	82	67.8
Total France.....	61,661	-----	-----	52,439	85.0	49,141	79.7

¹ Preliminary.
² Not available.
³ During 1918 flax and hemp were not separately stated; 316 acres were seeded to both fibers.
⁴ 1920 figure.

See notes on Table 86, for occupied and unoccupied Departments.
 France (4, 47, 49). Alsace-Lorraine 1909-1912 (98); 1913 (30).

TABLE 86.—Flax fiber: Foreign trade of France, average 1909–1913 and 1921–1925 (33, 37)

Country	Average 1909-1913		1921		1922		1923		1924		1925 ¹	
	Im- ports	Ex- ports	Im- ports	Ex- ports	Im- ports	Ex- ports	Im- ports	Ex- ports	Im- ports	Ex- ports	Im- ports	Ex- ports
Russia.....	Short tons 87,820	Short tons 9	Short tons 2,808	Short tons (²)	Short tons 15,218	Short tons (²)	Short tons 22,365	Short tons (²)	Short tons 22,477	Short tons (²)	Short tons (²)	Short tons (²)
Belgium.....	13,058	19,313	15,401	10,080	16,525	12,889	15,264	17,168	15,772	18,619	-----	-----
Netherlands.....	449	(²)	521	(²)	903	(²)	(²)	(²)	413	(²)	-----	-----
United King- dom.....	11	244	161	608	777	122	928	(²)	2,398	137	-----	-----
Estonia.....	-----	-----	1,655	(²)	887	(²)	2,491	(²)	2,996	(²)	-----	-----
Japan.....	(²)	(²)	225	(²)	417	(²)	997	(²)	532	(²)	-----	-----
Latvia.....	-----	-----	(²)	(²)	(²)	(²)	2,654	(²)	1,874	(²)	-----	-----
Other.....	927	246	170	153	1,077	225	2,679	426	2,765	406	-----	-----
Total.....	102,265	18,812	20,941	10,841	35,804	13,236	47,378	17,594	49,227	19,161	58,998	20,757

¹ Not available by countries. ² If any, included in other countries.

The crude fiber has been converted to retted fiber on the basis that the latter is 12 per cent of the original quantity.

TABLE 87.—Flax and hemp fiber: Production in France, 1884–1925 (42, 52)

Year	Flax	Hemp	Year	Flax	Hemp	Year	Flax	Hemp
Average:	Short tons	Short tons	Average--	Short tons	Short tons	1921 ¹	Short tons	Short tons
1884-1885	29,313	48,718	Contd.	23,252	14,619	1922 ²	11,667	6,495
1886-1890	28,035	44,390	1911-1913	20,811	14,671	1923 ²	10,384	5,084
1891-1895	22,975	31,950	1909-1913	6,894	10,214	1924 ²	11,586	4,285
1896-1900	17,854	23,863	1914-1918	17,649	7,349	1925 ²	16,835	5,164
1901-1905	23,585	18,956	1919	28,523	9,115	-----	19,603	6,140
1906-1910	20,980	16,025	1920	-----	-----	-----	-----	-----

¹ These are figures as reported and include reports from the Departments wholly or in part involved in war operations. Data from these Departments were incomplete and for that reason reported area and production during the war period are not comparable with other years.

² Includes Alsace-Lorraine, beginning 1920.

Before the war the French linen industry depended to a large extent upon outside sources of supply, chiefly upon Russia, for its raw materials. The principal center of the industry was at Lille, which for four years was a site of war operations, and between 1914 and 1918 the number of flax-spinning spindles was reduced to, roughly, 10 per cent of the pre-war normal. For this reason, although the acreage and production of flax have been greatly reduced as compared with the pre-war status, France exported in 1925 an amount of flax (including reexports) more than equivalent to that produced at home.

HEMP

The average area under hemp during the five-year period ended in 1890 was 139,000 acres. This acreage consisted largely of the small plots cultivated for home use in the manufacture of homespun materials. With the disappearance of this household industry, following the extension of the use of cotton goods, these hemp plots have practically passed out of existence. The average area under hemp during the pre-war period 1909-1913 had dwindled to 35,000 acres, and in 1924 was only 11,000 acres. Although hemp acreage in 1925 recovered to 13,192 acres, this is only 37.5 per cent of the pre-war average (Table 88).

TABLE 88.—Hemp: Areas seeded in the occupied and unoccupied Departments of France and in Alsace-Lorraine, average 1909-1913, 1918, 1919, and 1925¹

Region	Average 1909- 1913	1918		1919		1925 ¹	
		Total	Per- centage of 1909- 1913	Total	Per- centage of 1909- 1913	Total	Per- centage of 1909- 1913
9 Departments.....	Acres 104	Acres 109	Per cent 104.8	Acres 138	Per cent 132.7	Acres 12	Per cent 11.5
Ardennes.....		(²)					
10 Departments.....	104	109	104.8	138	132.7	12	11.5
77 Departments.....	34,910	22,506	64.5	19,165	54.9	13,148	37.7
Alsace-Lorraine.....	158	(³)		+ 52	32.9	32	20.8
Total, France.....	35,172			19,355	55.0	13,192	37.5

¹ Preliminary.

² Not available, but since no hemp is reported for other years it is assumed none was produced there.

³ During 1918 flax and hemp were not separately stated; 316 acres were seeded to both fibers.

⁴ 1920 figure.

France (46, 47, 49).

Alsace-Lorraine, 1909 to 1912 (88); and 1913 (89).

See notes on Table 36 for occupied and unoccupied Departments.

Before the war France depended upon Italy as the chief source of the hemp required for rope and cables by her industries. Imports of hemp during 1924 were slightly above the 1909-1913 average, whereas in 1925 they had fallen 3,521 short tons below normal. Italy remains the chief source of supply for the French hemp requirement as indicated in Table 89.

TABLE 89.—Hemp: Foreign trade of France, average 1909–1913 and 1921–1925 (33, 37)

Country	Average 1909–1913		1921		1922		1923		1924		1925 ¹	
	Im-ports	Ex-ports	Im-ports	Ex-ports	Im-ports	Ex-ports	Im-ports	Ex-ports	Im-ports	Ex-ports	Im-ports	Ex-ports
	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons
Italy.....	14,742	40	7,902	54	21,746	13	17,524	16	22,534	10	.....	.....
Russia.....	6,253	5	(?)	(?)	(?)	(?)	1,052	(?)	261	(?)	.....	.....
Great Britain.....	4,271	209	840	32	1,821	82	1,930	26	1,554	46	.....	.....
British India.....	2,355	(?)	1,099	(?)	3,326	(?)	1,800	(?)	3,820	(?)	.....	.....
Germany.....	1,217	9	(?)	236	14	74	(?)	(?)	(?)	107	.....	.....
Belgium and Luxemburg.....	579	439	638	170	1,208	253	2,783	418	3,182	536	.....	.....
Estonia.....	.....	.....	(?)	(?)	270	(?)	6,082	(?)	(?)	(?)	.....	.....
Latvia.....	.....	.....	(?)	(?)	(?)	(?)	4,098	(?)	201	(?)	.....	.....
Other.....	1,968	425	1,637	412	969	238	1,166	612	2,129	266	.....	.....
Total.....	31,386	1,127	12,416	898	29,484	660	33,475	1,272	33,751	965	27,865	926

¹ 1925 not available by countries.

² If any, included in other countries.

POPPY

The seeds of the poppy are employed for the manufacture of oil and as filling in certain sweetened breads or coffee cakes. The cultivation of poppies requires much hand labor and the acreage had been rapidly reduced from 42,000 during 1886–1890 to 7,000 during 1909–1913. Since the war the cultivation of the poppy has become unimportant; only 1,000 acres were under this crop in 1924. In Alsace-Lorraine poppy cultivation is insignificant, averaging around 30 acres before the war.

COTTON

Cotton is not produced on a commercial scale but data on the cotton trade are given in Tables 90, 91, and 92 as indicating the recovery of this branch of the textile industry in contradistinction to the decline in flax spinning.

TABLE 90.—Cotton: Imports by countries and total exports of France, average 1909–1913 and 1921–1925 (33, 37)

[In thousand bales—i. e., 000 omitted]

Countries from which imported	Average 1909–1913	1921	1922	1923	1924	1925
Belgium.....	15	17	16	18	20	26
Great Britain.....	31	10	15	15	27	34
United States.....	1,120	771	846	750	845	1,057
Egypt.....	112	82	135	198	223	190
British India.....	107	59	121	156	190	186
Other countries.....	50	37	84	69	88	123
Total imports.....	1,435	976	1,217	1,206	1,383	1,610
Total exports.....	328	105	121	121	91	105
Total net imports.....	1,107	871	1,106	1,085	1,302	1,505

Bales of 478 pounds.

TABLE 91.—Cotton: Imports into France by months, July, 1922, to December, 1925
(35)

[In thousand bales—i. e., 000 omitted]

Month	1922-23	1923-24	1924-25	1925-26
July.....	121	60	72	78
August.....	75	58	52	57
September.....	80	51	60	86
October.....	129	149	139	106
November.....	94	153	161	147
December.....	168	194	218	297
January.....	153	147	202	-----
February.....	85	139	150	-----
March.....	92	105	155	-----
April.....	80	114	144	-----
May.....	79	111	103	-----
June.....	63	74	85	-----
Total.....	1,219	1,345	1,541	-----

Bales of 478 pounds.

TABLE 92.—Cotton, including linters: Exports from the United States to France
by months, July, 1921, to December, 1925 (109)

[Bales of 500 pounds]

Month	1921-22	1922-23	1923-24	1924-25	1925-26
July.....	62,251	43,091	19,101	16,881	12,507
August.....	41,914	45,479	58,003	57,713	43,572
September.....	109,612	42,215	104,061	116,468	67,691
October.....	121,592	128,328	113,127	106,309	172,768
November.....	76,762	157,258	115,731	109,321	153,636
December.....	49,985	97,546	67,924	105,527	132,792
January.....	49,182	52,978	56,624	123,087	-----
February.....	41,426	21,825	49,927	86,939	-----
March.....	66,690	27,947	42,931	70,444	-----
April.....	88,355	33,771	37,371	42,087	-----
May.....	54,410	18,220	41,131	35,078	-----
June.....	57,871	35,541	25,442	18,619	-----
Total.....	820,050	704,197	751,423	951,473	-----

HOPS

The cultivation of hops was restricted to three localities in north-eastern France, where the acreage was comparatively small, ranging from 9,000 acres in 1881-1885 to 7,000 acres, which was the average for 1909-1913. Hop production before the war did not meet the requirements of the French breweries and an average of about 2,400 short tons (18) were imported yearly from Germany and Belgium. Alsace-Lorraine cultivated an average of 10,000 acres of hops before the war. Since the war, there has been a reduction in the acreage of hops, the cultivation of which ties up considerable capital and is attended with more or less risk. In 1925 there were only 10,000 acres under this crop in all of France. With the acquisition of the Alsace-Lorraine acreage it is probable that France will in future be independent of outside sources of supply.

TABLE 93.—Hops: Areas seeded in the occupied and unoccupied Departments of France and in Alsace-Lorraine, average 1909–1913, 1918, 1919, and 1925¹

Region	Average 1909– 1913	1918		1919		1925 ¹	
		Total	Per cent- age of 1909– 1913	Total	Per cent- age of 1909– 1913	Total	Per cent- age of 1909– 1913
9 Departments Ardennes.....	Acres 4,344	Acres 1,112 (²)	Per cent 25.6	Acres 1,260	Per cent 29.0	Acres 1,641	Per cent 37.8
10 Departments.....	4,344	1,112	25.6	1,260	29.0	1,641	37.8
77 Departments Alsace-Lorraine (3 Departments)	2,893 10,035	1,964 5,434	72.9 54.2	2,273 6,341	84.4 63.2	1,782 6,150	66.2 61.3
Total France.....	17,072	8,510	49.8	9,874	57.8	9,573	56.1

¹ Preliminary.

² Not available, but since no hops are reported for other years, it is assumed that none were produced there.

France (42, 47, 49). Alsace-Lorraine, 1909 to 1912 (28); 1913 (30).

See notes on Table 36, for occupied and unoccupied Departments.

HAY, FORAGE, AND GRAZING

The most striking feature of the changes in the utilization of land between the close of the eighteenth century and the opening of the twentieth is the contrast between the acreages seeded to cereals and those under permanent grass. In 1789 there were according to Grandeaun, only 9,884,000 acres designated as grasslands (78, p. 172),²³ while the official estimates for the period 1901–1905 show an average of 31,496,000 acres (Table 102), an increase of, roughly, 22,000,000 acres. On the other hand, the acreage of cereals increased from something less than 33,358,000 in 1879 (78, p. 172)²³ to 33,851,000 the average for 1901–1905—a plus difference of approximately 493,000 acres.

The changes in land utilization during the first 13 years of the twentieth century are even more significant. The average acreage of grasslands during the three-year period, 1911–1913, was 34,941,000, indicating an increase of 3,445,000 acres over the 1901–1905 average; while cereal acreage had decreased to 33,373,000, indicating a drop of 478,000 acres.

During this 13-year period hay production increased from 36,595,000 short tons to 44,141,000 short tons (Table 94), whereas total livestock decreased from 45,236,000 to 43,072,000, indicating a considerable increase in the available hay supplies per head of livestock.

A comparison of the supply of hay per head of total livestock at the beginning of the twentieth century with that just preceding the World War is not the best basis for formulating an opinion of the changes that have taken place in the relation of feed supplies to the animal industry of France, because of the different consumption capacity of sheep as compared with cattle or horses and because colts and calves consume less hay than do mature animals. The relative numbers of cattle and calves, horses and colts, sheep and lambs, hogs

²³ It is probable that there were considerable areas of grassland in addition to those reported as belonging to private individuals or the church. On the other hand, land suited to cereal production was limited and most of the present cereal areas have probably been occupied for centuries.

and pigs vary considerably from year to year. One class of livestock may have increased (horses) and another decreased (sheep). For these reasons the comparison between the per head supply of hay can better be made on the basis of the hay-consuming "animal unit" devised by the United States Department of Agriculture, which is as follows:

It is roughly estimated that the amount of forage required to maintain 1 adult cow for one year would be sufficient to maintain for the same period 1 horse, mule, or steer, 5 hogs, 7 sheep or goats, or 100 poultry. Colts, calves, pigs, and lambs require one-half as much feed as the adult animal. These ratios have been used in farm-management surveys for many years and have proved fairly satisfactory (92, p. 321).

TABLE 94.—Hay; Production in France, 1901-1924 (42, 52)

[In thousand short tons—i. e., 000 omitted]

Crop	1901-1905 ¹	1911-1913 ¹	1923 ²	1924 ³
Clover.....	4,219	4,862	4,679	4,700
Alfalfa.....	5,168	5,860	5,509	5,855
Sanfoin.....	2,905	2,992	2,377	2,563
Temporary meadows.....	616	1,134	1,325	1,253
Pastures (herbages).....	3,760	5,643	7,257	7,298
Pasturage.....	¹ 3,115	4,248	5,084	5,373
Meadows.....	16,812	19,402	18,353	19,040
Total.....	36,595	44,141	44,584	46,182

¹ 87 Departments of France, excluding Alsace-Lorraine. The average hay production in Alsace-Lorraine, excluding sanfoin and pastures, for 1901-1905 was 1,265,727 short tons, and 1911-1913 average was 1,483,449 short tons.

² 90 Departments, including Alsace-Lorraine.

³ 4-year average, 1902-1905.

The numbers of animals in the different categories into which the livestock of France were segregated in 1913 and 1924, converted into the number of animal units represented by each category, are given in Table 95.

TABLE 95.—Livestock, in terms of animal units, in France, 1913 (45) and 1924 (51)

Classification	Livestock		Animal-unit factors	Animal units	
	1913 ¹	1924 ²		1913	1924
Horses:	<i>Number</i>	<i>Number</i>		<i>Number</i>	<i>Number</i>
Less than 3 years.....	671,870	567,370	$\frac{1}{2}$	335,935	283,685
Over 3 years.....	2,550,210	2,292,030	1	2,550,210	2,292,030
Cattle:					
Bulls.....	284,190	250,080	1	284,190	250,080
Steers.....	1,843,160	1,401,770	1	1,843,160	1,401,770
Cows.....	7,794,270	7,431,400	1	7,794,270	7,431,400
Young stock.....	2,853,650	2,927,840	1	2,853,650	2,927,840
Calves under 1 year.....	2,012,440	2,013,870	$\frac{1}{2}$	1,006,220	1,006,935
Sheep:					
Rams.....	293,640	204,080	$\frac{1}{2}$	146,820	102,040
Ewes.....	9,288,460	6,256,350	$\frac{1}{2}$	4,644,230	3,128,175
Wethers.....	2,580,810	1,285,050	$\frac{1}{2}$	1,290,405	642,525
Lambs.....	3,968,480	2,425,440	$\frac{1}{2}$	1,984,240	1,212,720
Goats.....	1,434,970	1,376,510	1	1,434,970	1,376,510
Mules.....	188,280	192,930	1	188,280	192,930
Asses.....	356,310	279,640	$\frac{1}{2}$	178,155	139,820
Swine:					
Hogs.....	3,746,110	2,938,600	$\frac{1}{5}$	749,222	587,720
Pigs.....	3,289,740	2,863,230	$\frac{1}{5}$	657,948	572,646
Total.....	43,156,590	34,706,790		20,278,899	18,230,398

¹ Excluding Alsace-Lorraine.

² Including Alsace-Lorraine.

In 1913 the 43,157,000 animals of France represented 20,279,000 hay-eating animal units. Employing the average hay production for the period 1911-1913 indicates that the pre-war hay supply was approximately 2.2 short tons per animal unit. The classification of French livestock in 1901 was not exactly comparable in all categories with that of 1913, but such an estimate as is possible to make indicates that 46,063,000 head of livestock in 1901 represented 20,567,341 animal units. Employing the average hay production of the period 1901-1905, indicates that the hay supply of France at the beginning of the twentieth century was roughly 1.8 short tons per animal unit. The hay supply available for each animal unit was increased about 0.4 ton, which if consumed would indicate relatively greater weight per animal and consequently greater meat, wool, and milk production per animal.

In Alsace-Lorraine the number of livestock in 1901 was 1,230,000, against 1,209,000 in 1912, indicating a decrease of 21,000, or 1.7 per cent, as compared with a decrease of 4.8 per cent between 1901-1905 and 1911-1913 in the 87 Departments of France. The classification of grasslands by the German statistical office was not comparable in all respects with that in France, but conditions appear to have been similar. The area of clover, alfalfa, and meadows in Alsace-Lorraine is reported at 611,000 acres in 1901-1905, against 639,000 in 1909-1913, indicating an increase of 4.6 per cent, as compared with a 14.5 per cent increase in France.

Complete statistics are not available for Alsace-Lorraine in 1913, but comparing 1900 with 1912 (Table 96) it appears that although there was a decrease in numbers of livestock there was an increase of 5,350 animal units in the three Departments acquired by France from Germany at the close of the war. This is an increase of 0.8 per cent in hay-consuming units, as compared with 4.6 per cent increases in hay-producing areas, indicating an increased per-unit supply.

TABLE 96.—*Livestock in terms of animal units in Alsace-Lorraine, 1900 and 1912*
(63, p. 42; 74, p. 34)

Classification	Livestock		Animal-unit factors	Animal units	
	1900	1912		1900	1912
Horses:	<i>Number</i>	<i>Number</i>		<i>Number</i>	<i>Number</i>
Less than 3 years.....	26, 758	22, 603	1/2	13, 379	11, 302
Over 3 years.....	116, 029	114, 281	1	116, 029	114, 281
Cattle:					
Bulls.....	4, 465	3, 329	1	4, 465	3, 329
Steers.....	26, 434	24, 958	1	26, 434	24, 958
Cows.....	289, 736	297, 414	1	289, 736	297, 414
Young stock.....	74, 348	78, 699	1	74, 348	78, 699
Calves under 1 year.....	106, 950	118, 515	1/2	53, 475	59, 258
Sheep:					
Rams.....	2, 025	1, 109	1/7	289	158
Ewes.....	40, 109	22, 589	1/7	5, 730	3, 227
Wethers.....	18, 015	9, 514	1/7	2, 574	1, 359
Lambs.....	22, 812	12, 442	1/7	1, 629	859
Goats.....	60, 808	72, 368	1/7	8, 687	10, 338
Pigs:					
Hogs.....	185, 053	164, 484	1/6	37, 011	32, 897
Pigs.....	256, 008	266, 281	1/6	26, 601	26, 628
Total.....	1, 229, 550	1, 209, 586		659, 387	664, 737

The general result of the World War was to intensify the effect of all the factors that had influenced the trend of French agriculture before the war toward an increase in grasslands. The crises of the war and postwar years affected in a general way the various regions of France similarly, but in the 10 occupied Departments the devastating influences of actual war operations were added to the depressing economic conditions, so that within the war zone all agricultural areas were diminished and the areas of grasslands reported in 1918 and 1919 show a marked falling off when compared with the pre-war normal acreage.

The 1918 returns from the nine partially occupied Departments (Table 97) indicate a difference of 42 per cent below the areas reported in 1909-1913. This difference is greater than the actual war damage, since complete returns were probably not received from these Departments. The 1919 reported acreage in all 10 of the occupied Departments was 22 per cent less than that reported in 1909-1913. Some reparation of the devastated regions had taken place in 1919 so that the war damage to grasslands was somewhat greater than 22 per cent, but probably considerably less than 42 per cent of the pre-war average.

TABLE 97.—Hay, forage, and grazing lands: Acreage in the occupied and unoccupied Departments of France and in Alsace-Lorraine, average 1909-1913, 1918, 1919, and 1923-1925 (42, 46, 98)

[In thousand acres—i. e., 000 omitted]

Crop	1909-1913	1918	1919	1923	1924	1925
9 Departments:						
Forage and fodder plants.....	1,111	561	633	908	941	863
Temporary meadows.....	72	36	43	65	100	90
Permanent meadows.....	833	544	786	883	884	1,130
Pastures.....	978	581	904	1,087	(¹)	(²)
Ardennes:						
Forage and fodder plants.....	97	(³)	11	40	67	67
Temporary meadows.....	9	(³)	3	5	7	7
Permanent meadows.....	128	(³)	113	132	132	131
Pastures.....	135	(³)	117	148	(¹)	(²)
Total.....	3,363	-----	2,610	3,268	-----	-----
77 Departments:						
Forage and fodder plants.....	8,203	7,392	7,424	7,730	7,911	7,609
Temporary meadows.....	599	795	802	858	847	859
Permanent meadows.....	11,115	10,827	10,946	11,070	11,178	11,187
Pastures.....	11,713	13,340	13,215	13,048	(¹)	(²)
Total.....	31,630	32,354	32,387	32,704	-----	-----
3 Departments of Alsace-Lorraine:						
Forage and fodder plants.....	217	(³)	(³)	202	186	186
Temporary meadows.....	18	(³)	(³)	19	16	16
Permanent meadows.....	471	505	513	528	529	529
Pastures.....	84	(³)	(³)	117	(³)	(¹)
Total.....	790	(³)	-----	866	-----	-----
France, 90 Departments, grand total.....	35,783	-----	-----	36,838	37,314	⁴ 37,279

¹ Total pastures of France in 1924 estimated at 14,518,000 acres. Detailed acreage of individual Departments not available.

² Unavailable.

³ Approximation, assuming the 1925 acreage of pastures same as 1924.

Outside the war zone, in the 77 unoccupied Departments, the areas of forage and fodder plants and meadows reported in 1918 and 1919 had decreased between 4 and 5 per cent below the 1909-1913 acreage, but pastures had increased 13 to 14 per cent, so that total grasslands showed an increase of between 2 and 3 per cent over pre-war.

Lack of data renders it impossible to estimate the changes brought about by the war in the three Departments of Alsace-Lorraine.

The hay supplies in the 87 Departments of France during 1911–1913 averaged 44,141,000 short tons. The hay supplies of the three Departments of Alsace-Lorraine during 1911–1913 were estimated at 1,483,000 short tons, placing the pre-war supply for France (present boundaries) at roughly 45,624,000 tons.

In the 87 Departments there were about 20,279,000 animal units in 1913 and about 659,000 animal units in Alsace-Lorraine in 1912. For purposes of comparison it may be assumed that there were approximately 20,938,000 animal units in all of France (90 Departments) before the war. This would place the pre-war hay supply per animal unit at roughly 2.2 tons.

The hay supplies in the 90 Departments of France in 1924 as indicated in Table 94 totaled 46,182,000 short tons and the number of animal units was about 18,230,000 (Table 95), giving a hay supply of 2.53 short tons per unit.

As indicated in Table 98, there was before the war a small border trade in hay between France and neighboring countries. This trade has continued since the war and in 1924 it amounted to a net export of 410,000 short tons. This relatively small export did not reduce the hay supply per animal unit more than 0.02 ton.

TABLE 98.—Hay: Foreign trade of France, average 1909–1913 and 1922–1925 (33, 36, 37)

Country	Average 1909-1913		1922		1923		1924		1925 ¹	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons
Switzerland.....	130	81,735	207	69,460	163	161,022	570	208,522		
Belgium and Luxembourg.....	2,831	39,508	400	185,201	634	66,321	1,221	108,403		
Germany.....	909	35,300	228	1,226	38	10,044	49	49,943		
Spain.....	1,147	11,902	202	4,629	163	10,335	52	19,677		
Italy.....	2,674	10,686	4,239	107	4,395	2,416	15,627	2,329		
Turkey.....	(?)	4,403	(?)	2,732	(?)	(?)	(?)	(?)		
Great Britain.....	36	3,844	(?)	742	75	(?)	106	(?)		
Bulgaria.....	(?)	2,261	(?)	(?)	(?)	(?)	(?)	(?)		
Netherlands.....	949	92	3,595	(?)	146	(?)	179	(?)		
Algeria.....	1,868	67	2,130	213	452	8	111	1,940		
Saar.....			(?)	7,000	(?)	35,129	(?)	24,374		
Other countries.....	873	9,493	2,126	2,006	989	4,548	242	13,302		
Total.....	11,417	199,291	13,127	273,316	7,055	269,823	18,157	428,490	4,932	601,186

¹ Not available by countries.

² If any, included in other countries.

Straw is employed as a feeding stuff in France to a greater extent than in the United States. During the interval between the five-year period ended 1905 and the pre-war period 1911–1913 average straw supplies had increased 2,740,000 short tons so that before the war the rough-fodder supply of French herds per animal unit comprised 1.6 short tons of straw in addition to 2.2 short tons of hay. The 1924 production of straw was not available at the time of closing this report but, as indicated in Table 99 the straw supplies in 1923 were 6,564,000 short tons below normal or showed a decrease of about 0.4 short ton per animal unit. This would indicate that the postwar gains in hay supplies per animal have been offset more or less by losses in straw.

TABLE 99.—*Straw: Production in France, 1901-1923 (45, 52)*

Kind of straw	1901-1905 ¹	1911-1913 ¹	1923 ²
	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>
Wheat.....	17,867,501	18,626,624	14,915,239
Maslin.....	449,906	353,902	305,497
Rye.....	3,470,947	3,249,133	2,422,033
Barley.....	1,294,480	1,538,426	1,394,041
Oats.....	7,632,709	9,642,688	7,852,826
Total.....	30,715,543	33,455,773	26,891,636

¹ 87 Departments of France, excluding Alsace-Lorraine.

² 90 Departments, including Alsace-Lorraine.

Winter feed for livestock as relates to hay and straw up to 1923 had been about normal,²⁴ but summer-feeding conditions had shown some improvement. By 1923 pastures in the 10 occupied Departments were 11 per cent greater than during 1909-1913 and by 1925 meadows had increased to 30 per cent above the pre-war average.

In the 77 Departments of France outside the war zone forage and fodder plants were in 1923 still about 6 per cent below the 1909-1913 acreage and permanent meadows had practically recovered their pre-war status. On the other hand, grasses in rotation (temporary meadows) had increased 43 per cent and pastures 11 per cent above pre-war, so that total grasslands were 103 per cent of normal.

The postwar data pertaining to Alsace-Lorraine are not in all respects comparable with the pre-war German statistics, but Table 97 indicates that in 1923 the areas of grasslands in these three Departments were probably greater than before the war.

The detailed data relative to pastures for 1924 and 1925 were not available at the time of closing this report, so that conditions in the occupied and unoccupied regions can not be contrasted, but, as indicated in Table 97 total grasslands for all of France were respectively 104.3 and 104.2, per cent of normal (1909-1913 average).

The pastures are employed largely for grazing, although some hay is cut. More hay is cut on the meadowlands than on the pastures, but these lands also are used chiefly for grazing. Instead of using the total numbers of animals in determining the relation of grazing lands to livestock, a "grazing unit," devised by the United States Department of Agriculture, is employed. The numbers of grazing units equivalent to the number of animals in each of the different categories into which French livestock were classified in 1913 and 1924 are given in Table 100.

The grazing requirements of livestock are somewhat different from the hay requirements, and it is assumed that the grazing units in Table 100 apply to permanent meadows and pastures.

There were, on the average, 24,902,000 acres of permanent meadows and pastures in the 87 Departments during 1909-1913; the number of grazing units was, roughly, 20,514,000 during 1913, resulting in about 1.21 acres per animal unit. The number of grazing units in Alsace-Lorraine in 1912 were 659,000 (calculated from Table 96). For purpose of comparison this may be added to the number in France during 1913, totaling, roughly, 21,173,000. During 1909-1913

²⁴ 1911-1913. Hay 2.2 and straw 1.6 short tons per animal unit. 1924, hay 2.5 short tons and in 1923 straw 1.5 short tons per animal unit.

there were 555,000 acres of permanent meadows and pastures in Alsace-Lorraine (Table 97), averaging 25,457,000 acres for France and Alsace-Lorraine, resulting in 1.2 acres per grazing unit. In 1924 there were in the 90 Departments of France, 27,239,000 acres of permanent meadows and pastures, and the number of grazing units was, roughly, 18,515,000. This results in approximately 1.47 acres per grazing unit, an increase of 0.27 acre per unit over the pre-war average.

TABLE 100.—*Livestock in terms of grazing units on permanent meadows and pastures in France, 1913 and 1924*

Classification	Grazing-unit factor ¹	Number of grazing units	
		1913	1924
Horses:			
Less than 3 years.....	1.06	712,182	601,412
Over 3 years.....	1.25	3,187,762	2,865,038
Cattle:			
Bulls.....	1.25	355,238	312,600
Steers.....	1.06	1,953,750	1,485,876
Cows.....	1.00	7,794,270	7,431,400
Young stock.....	² .9825	2,803,711	2,876,608
Calves under 1 year.....	.68	1,167,215	1,168,045
Sheep:			
Rams.....	.17	49,919	34,694
Ewes.....	.15	1,393,269	938,453
Wethers.....	.11	283,889	141,422
Lambs.....	.08	317,478	194,035
Goats.....	.17	243,945	234,007
Mules.....	.75	141,210	144,698
Asses.....	.31	110,456	86,688
Total.....		20,514,294	18,514,971

¹ The "grazing unit" is the acreage of pasture and meadow lands required to maintain one adult cow. The unit is a rough estimate employed by the Animal Husbandry Division and the Forest Service of the United States Department of Agriculture. Other classes of livestock are estimated to require more or less acreage as indicated by the various grazing-unit factors. When applied to French conditions this is even a rougher approximation than when American conditions are considered. This approximate grazing unit is, however, a better means of comparison than is total livestock unweighted as to feeding requirements.

² This is an average of the following grazing factors: Yearling heifers, 0.87; yearling steers, 0.96; 2-year-old heifers, 1.04; 2-year-old steers, 1.06.

Calculated from number of livestock given in Table 95.

Swine are herded to some extent on grass, but it is assumed that herding of swine, geese, and ducks is confined to alfalfa, clover, annual grass in rotation, and green-fodder crops. For that reason swine were not included in the grazing units.

Table 101 gives the number of "foraging units" in 1913 and 1924.

TABLE 101.—*Livestock in terms of forage units with reference to grasses and other forage crops in rotation in France, 1913 and 1924*

Classification	Forage unit	Number of forage units	
		1913	1924
Horses, cattle, sheep, goats, mules, and asses.....		¹ 20,514,294	¹ 18,514,971
Hogs.....	⁽²⁾	³ 536,942	³ 421,199
Pigs.....	⁴ 0.08	³ 263,179	³ 229,058
Total.....		21,314,415	19,165,228

¹ Totals from Table 100.

² This factor, estimated by taking the average of the grazing units for rams, ewes, and wethers in Table 100, is 0.1433333.

³ Calculated from number of livestock given in Table 95.

⁴ Estimated to be one-half of hog unit.

In the 87 Departments during 1909-1913 there were, on an average, 10,092,000 acres of alfalfa, clover, annual grasses, green fodder, and other forage crops. It is estimated that in Alsace-Lorraine during this period 234,000 acres were devoted to green fodder, alfalfa, clover, and annual grass, making, roughly, 10,326,000 acres for all 90 Departments. To the 21,314,000 foraging units in the 87 Departments, as indicated in Table 101, may be added 704,000 (estimated from Table 96) for Alsace-Lorraine, placing the total pre-war number of foraging units at 22,018,000. There was thus an average of, roughly, 0.47 acre of forage available per foraging unit before the war in the 90 Departments. In 1924, 10,075,000 acres in the 90 Departments (present boundaries) supplied green forage to 19,165,000 foraging units, or approximately 0.53 acre per unit. The increase of 0.06 acre per unit indicates that green-forage crops are being maintained in the rotation at about the rate to meet the requirements of French flocks and herds.

In view of the undoubted shortage in straw supplies, it is probable that there could be no material increase in the numbers of livestock without materially increasing the acreage of fodder beets and still further expanding the acreage of grasslands. This accounts for the attempts of farmers to increase the areas under fodder and forage plants.

TABLE 102.—Hay and fodder crops: Trends in acreage in France and Alsace-Lorraine, 1881-1926

[In thousand acres—i. e., 000 omitted]

Crop and boundary	1881-1885	1886-1890	1891-1895	1896-1900	1901-1905	1906-1910
Clover:						
France, former boundary.....	2,661	2,385	2,667	2,708	2,574	2,723
Alsace-Lorraine.....	122		252	90	94	165
Total France, present boundary.....	2,783		2,919	2,798	2,668	2,828
Alfalfa:						
France, former boundary.....	2,112	1,971	1,936	1,978	2,543	2,751
Alsace-Lorraine.....	142		45	48	54	64
Total France, present boundary.....	2,154		1,981	2,026	2,597	2,815
Sanfoin ¹	1,466	1,572	1,599	1,699	1,914	1,961
Other fodder plants:						
France, former boundary.....				1,249	1,554	1,811
Alsace-Lorraine.....			17	15		33
Total France, present boundary.....						1,844
Temporary meadows ².....				339	436	662
Total cultivated grasslands ³				7,973	9,021	9,908
Pastures (herbages) ⁴.....			2,783	2,874	3,391	3,765
Pasturage ⁴					7,753	8,859
Natural meadows:						
France, former boundary.....	11,152	12,036	11,988	10,934	11,331	11,885
Alsace-Lorraine.....			452	457	463	467
Total France, present boundary.....			12,440	11,391	11,794	12,352
Total grasslands ⁵					31,496	34,417

¹ 1 year only, 1883.

² 3-year average, 1893-1895.

³ Averages 1881-1885 to 1909-1913 for France, former boundary. Includes Alsace-Lorraine from 1909-1913 on.

⁴ 1 year only, 1900.

⁵ 3-year average, 1893-1895 (67). Includes serradella, corn fodder, and some other grasses, but not complete enough to be compared with 1909-1913.

⁶ 3-year average, 1896-1898 (67). Includes serradella, corn fodder, and some other grasses, but not complete enough to be compared with 1909-1913.

⁷ 2-year average, 1909-1910.

⁸ 2-year average, 1894-1895.

⁹ 4-year average, 1902-1905.

TABLE 102.—Hay and fodder crops: Trends in acreage in France and Alsace-Lorraine, 1881-1925—Continued

Crop and boundary	1911-1913	1914-1918 ¹⁰	1909-1913	1919-1923	1924	1925
Clover:						
France, former boundary.....	2,843	2,695	2,805			
Alsace-Lorraine.....	97	109	100			
Total France, present boundary.....	2,940	2,804	2,905	2,749	2,783	
Alfalfa:						
France, former boundary.....	2,821	2,430	2,801			
Alsace-Lorraine.....	69	66	68			
Total France, present boundary.....	2,890	2,496	2,869	2,582	2,794	
Sanfoin ¹¹	1,894	1,632	¹² 1,932	¹³ 1,522	1,598	
Other fodder plants:						
France, former boundary.....	1,831	1,634	1,888			
Alsace-Lorraine.....	¹⁴ 35		34			
Total France, present boundary.....	1,866		1,922	¹⁵ 1,725	1,930	1,766
Temporary meadows ¹⁶	874	805	¹² 698	¹³ 906	970	972
Total cultivated grasslands ¹⁷	10,063	9,196	¹² 10,326	9,484	10,075	9,784
Pastures (herbages) ¹⁸	3,781	3,634	¹⁸ 3,907	¹⁹ 4,345	4,408	¹⁶ 4,408
Pasturage ¹⁹	9,044	9,654	9,003	¹⁹ 10,077	10,110	¹⁶ 10,110
Natural meadows:						
France, former boundary.....	12,053	11,467	¹⁷ 12,076			
Alsace-Lorraine.....	473	463	471			
Total France, present boundary.....	12,526	11,930	12,547	12,494	12,721	12,977
Total grasslands ¹⁸	34,941	33,951	34,994	36,400	37,314	37,279

¹ Averages 1881-1885 to 1909-1913 for France, former boundary. Includes Alsace-Lorraine from 1909-1913 on.

¹⁰ These are figures as reported in official sources and include reports from the Departments wholly or in part involved in war operations. Data from these Departments were incomplete and for that reason reported acreage during the war period is not comparable with other years.

¹¹ Includes clover, alfalfa, and sanfoin, not available separately in 1925.

¹² Alsace-Lorraine (50, 88), 14,000 acres sanfoin and 18,000 temporary meadows.

¹³ 4-year average, 1920-1923; 1919 for Alsace-Lorraine not available.

¹⁴ 2-year average, 1911-1912.

¹⁵ Includes 84,000 acres pastures and pasturage not separately stated for Alsace-Lorraine (50, 88).

¹⁶ Approximated to be the same as 1924; 1925 not available.

¹⁷ From Statistique Agricole Annuelle 1909 to 1913 (45).

France, 1881 to 1921, from Statistique Agricole Annuelle 1919, 1920, and 1921 (46, 49); 1922 to 1924, from Journal Officiel de la République Française (42).

Alsace-Lorraine from Office de Statistique d'Alsace et de Lorraine-Statistique Agricole 1920 (59), except as noted.

LIVESTOCK

One of the impressive phenomena attending the breaking up of the large estates into small peasant holdings in southeastern Europe since the World War has been an increase in the numbers of livestock per unit of cultivated land and the relegation of cereal production, which is characteristic of broad acres and extensive agriculture, to a place of less importance than it had formerly occupied in the business of farming. No such phenomenon is observable in France, because the subdivision of French agricultural lands into small peasant holdings was accomplished early in the nineteenth century following the great political and economic changes ushered in by the French Revolution. In 1882 only 2.5 per cent of the landowners operated farms of 99 acres (40 hectares) or more, and in 1892 the number had been reduced to 2.4 per cent.

The outstanding characteristic of the whole livestock industry from producer to consumer is that it is composed of a large number

of very small units. The great majority of farms maintain at least two or three, though seldom more than a dozen, head of cattle. There are universally several sheep and a few hogs. In only a few Departments in central and southeastern France are there more swine than cattle on the farms, and horses are found only on the larger holdings. (Fig. 12.)

It should also be observed that the livestock-raising industry is not specialized to any considerable degree, the animals in practically all cases being but one item in a general scheme of diversified farming. Moreover, the animals themselves have not been developed primarily for meat production—cattle are raised chiefly for work and milk, sheep supply wool and milk as well as meat, and hogs are largely incidental to farm operations in general. Animals are sold a few at a time as a convenient marketing opportunity presents itself, usually at a local fair or on some periodic market day. The greater portion of all livestock is consumed in close proximity to the farm where it is produced.

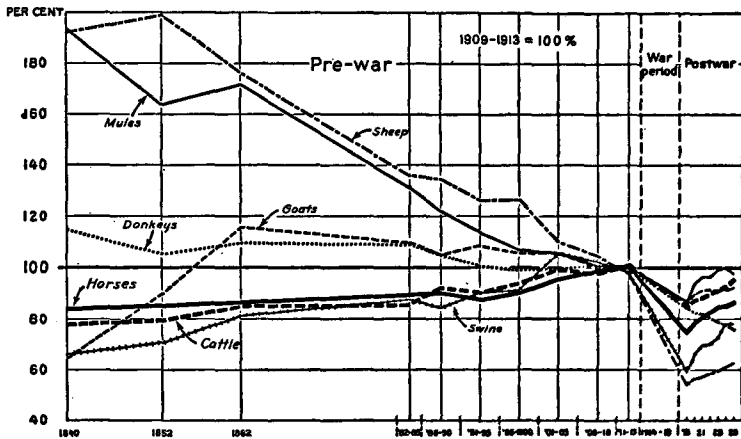


FIG. 12.—CHANGES IN LIVESTOCK IN FRANCE, INCLUDING ALSACE-LORRAINE, 1840-1925

Before the war the production of mules and sheep showed a tendency toward a decline, as did goats and donkeys, though to a less degree. Horses, cattle, and swine had steadily tended to increase. The greatest ravages of war occurred among sheep, swine, and horses. Since the war, mules, cattle, and goats have shown the strongest tendencies to recover their former status.

The system of marketing consists of thousands of small local buyers and shippers, some handling even as low as two or three head of cattle per week. At the central markets there is a large number of commission men and dealers of rather small business. In the largest of the two abattoirs supplying Paris over 250 butchers operate independently. There are no firms comparable to the American packers. The delivery of meats in refrigerator cars to towns that are located at a distance from packing centers was until recently practically unknown. The retail stores are almost all very small and are thickly scattered throughout the cities, very few being conducted on the chain-store plan. Those handling beef and mutton do not sell pork, and both of these types of stores leave to yet another type the sale of edible offals. The tendency of the French Government to market regulations is to favor increasing the numbers of these small intermediaries.

For about 60 years following the French Revolution all classes of livestock increased in keeping with the splitting up of the large estates and the general expansion of agriculture as forest and other uncultivated lands were put under the plow to a greater and greater extent.

Sheep production was the first branch of the industry to suffer a check. During the sixth decade of the nineteenth century and from then until the outbreak of the World War the number of sheep on farms declined rapidly. There were no outstanding changes in horse production, which fluctuated a few thousand head from decade to decade with a general upward trend after 1892. Swine production gradually increased until 1892 and then exhibited only seasonal fluctuations until 1913. The general trend of cattle production was upward until the beginning of the twentieth century, after which numbers remained fairly constant until the outbreak of the war, as indicated in Table 103.

TABLE 103.—*Livestock: Number in France in stated years, 1789–1913 (50, 1920)*

[In thousands—i. e., 000 omitted]

Year	Horses	Cattle	Sheep	Swine
1789 (78, p. 17A).....	2,400	7,655	27,034	(¹)
1840.....	2,818	11,762	32,151	4,911
1852.....	2,866	11,971	33,282	5,246
1862.....	2,914	12,812	29,530	6,038
1882.....	2,838	12,997	23,809	7,147
1892.....	2,795	13,709	21,116	7,421
1902.....	3,028	14,929	18,477	7,209
1912.....	3,223	14,706	16,468	6,904
1913.....	3,223	14,788	16,131	7,036

¹ No estimate given for swine.

The numbers of cattle had increased less than a fourth, swine less than a third, and sheep had declined seriously during the half century before the war, but the total meat production is reported to have doubled, as indicated in Table 104.

TABLE 104.—*Meats: Estimated production and consumption in France in stated years, 1789 to 1909–1913*

Year	Meat produced at home and imported	Annual per capita consumption	Year	Meat produced at home and imported	Annual per capita consumption
	<i>Million pounds</i>	<i>Pounds</i>		<i>Million pounds</i>	<i>Pounds</i>
1789.....	992	37.5	1862.....	2,063	(28) 57.1
1812.....	1,109	37.8	1882.....	2,623	66.9
1840.....	1,477	44.0	1892.....	2,996	(28) 91.0
1852.....	1,836	51.1	1909–1913 ¹	4,364	105.4

¹ Including Alsace-Lorraine.

² Includes 15,673,000 pounds net importations of fresh, frozen, and cured meat and net importations of live animals, equivalent to approximately 72,507,000 pounds of meat.

1789–1892 (78, p. 175).

1909–1913, as calculated in Tables 117, 131, and 141.

Improvement in cattle breeding and feeding, resulting in greater gross weight and higher percentage yield of meat per animal, as well

as progressively earlier marketing, were the contributing factors associated with this increased meat production. The general marketing age of cattle, for instance, was formerly 6 to 8 years, whereas, just before the war, cattle were marketed at from 3 to 5 years.

The great improvement in the slaughter weights of French livestock between 1862 and 1913 is indicated in Table 105.

TABLE 105.—*Livestock: Dressed weight in France, 1862, 1882, 1892, and 1909-1913*

Year	Cattle	Calves	Sheep	Hogs
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
1862 ¹	496	86	40	194
1882 ²	582	108	46	214
1892 ²	584	116	44	207
1909-1913 ¹	687.8	176.4	40.6	244.6

¹ France, including Alsace-Lorraine.

² France, excluding Alsace-Lorraine.

1862-1892 average slaughterings throughout France (59, p. 178).
1909-1913 from Tables 116, 131, and 141.

Between 1862 and the five-year period ended 1913 the average dressed weights of cattle increased 192 pounds per head, calves 90 pounds, and swine 51 pounds. Very little change occurred in the average weight of meat produced by sheep.

This increase in weights of animals, particularly during the last decade of the nineteenth and the first 13 years of the twentieth century, was the result of the extension of areas under grass and forage plants and improvements introduced in breeding and feeding livestock.

French dairy statistics are fragmentary, but such data as are available indicate that there was marked improvement in milk production between the time of the last general census in 1892 and the outbreak of the World War. Butter and cheese production and export increasingly prospered during the beginning of the twentieth century. But, with respect to numbers of people employed, the value of the capital invested, and annual production, the business of supplying the nation with meats is the most important branch of the animal industry and one of the largest single industries of the country.

There are no recent estimates of the value of the various classes of livestock at the farm, but a general idea as to the relative capital value of each class of animals can be obtained from the numbers and values given in Table 106, compiled from the most recent general census taken in 1892.

TABLE 106.—*Livestock: Number and value in France, 1892 (24)*

[In thousands—i. e., 000 omitted]

Kind	Number	Value ¹	Kind	Number	Value ¹
Horses.....	2,795	\$226,226	Sheep.....	21,116	\$90,381
Mules.....	217	15,358	Swine.....	7,421	97,074
Donkeys.....	369	6,536	Goats.....	1,845	5,506
Cattle.....	13,709	568,182			

¹ See Table 151 for yearly average value of a franc in 1892.

Since 1892 there has been a general upward trend in prices of agricultural products and breeds of livestock have been greatly improved, so that the average value of individual animals as well as the total value of all classes of livestock has increased.

In 1924 French flocks and herds were estimated to be worth about \$1,500,000,000. The value of the product handled annually was estimated at about \$840,000,000 at the point of production and at between \$1,000,000,000 and \$1,330,000,000 at retail.

HORSES

For many centuries, even before the dawn of the historical period, the trade routes from the western Mediterranean Basin, in general, and from Spain and Italy, in particular, to northwestern and north-central Europe traversed the regions now comprising France. Merchandise was borne along these routes by horses, mules, and donkeys through a country inhabited by bands of peoples of a variety of origins, giving rise to opportunities for the interchange of livestock as well as goods and the introduction of improved breeds into the territories that later became France. Invasions from land and sea were followed by settlements of the invaders along the coasts or in localities readily defended. Whether coming by land (Saracens, Huns, and Franks) or by sea (Celts, Norsemen, and British), these invaders brought with them the horses indigenous to the regions from which they had come.

Until comparatively recent times communication was difficult and larger or smaller allied communities held aloof even from neighbors, so that throughout hundreds of years these communities developed their distinctly local breeds of horses that trace rather well-defined characteristics back to origins often ancient. In more recent centuries improved races of horses have been imported from other countries to be bred pure or to be crossed on native stock.

There are thus a large number of different local breeds of horses. As a matter of historic interest a few of the more characteristic of these local breeds, with their probable origin and the localities in which they have been developed, are listed in Table 107.

The remount requirements of the army (about 12,000 saddle horses annually) and the lure of the race course and sport have stimulated the breeding of thoroughbreds, half-bloods, hunters, and trotters to a high degree. Persians, Arabians, English race horses, Nubians, Barbies, and practically all breeds of race horses noted for endurance and speed have been imported to build up the prestige of French breeding stables. These are located chiefly on the estates of sportsmen, but horse breeding is also fostered by Government establishments which have built up standard strains of half-bloods in every part of France.

The growth of industries has required an active draft horse and the breeding of Percherons, Boulonnais, Bretons, and Ardennais has been stimulated by the demands of commerce and the manufacturers of the cities as well as by the needs of the army for heavy and light artillery horses, the latter requirement being about 6,000 annually.

TABLE 107.—Horses: Some of the more important of the locally developed breeds in France (26)

Breed	Probable origin	Locality in which breed was developed
<i>Asiatic races</i> ¹		
Bretagne.....	Originally of Celtic origin.....	Finistere, Morbihan, Loire-Inférieure.
Limousine.....	Cavalry horses of the Saracens.....	Limousine, Creuse, Haute-Vienne, Corrèze.
Gascogne.....	do.....	Landes.
Navarre.....	From Spain by the Moors.....	Basses-Pyrenees, Hautes-Pyrenees, Ariège,
		Haute Garonne, Gers.
Camargue.....	Moorish and Phœnician.....	Bouches-du-Rhône, Aude.
Morvan.....		Nievre, Saône-et-Loire.
Alsace-Lorraine.....	Ancient origin.....	Alsace-Lorraine.
Breton ²	Ancient Celtic.....	Cotes-du-Nord, Ille-et-Vilaine, Finistere.
<i>British races</i> ³		
Boulonnais.....	British origin.....	Pas-de-Calais, Oise, Aisne.
Cauchoise.....	do.....	Seine-et-Marne, Eure-et-Loir.
		Seine-Inférieure, Somme.
<i>German races</i> ⁴		
Normand.....	Ancient Norse.....	Northeastern France.
<i>Friesian races</i> ⁵		
Flamand.....	Friesland.....	Do.
Picarde.....	do.....	Do.
Poitevine.....	do.....	Vendée, Sevrés (Deux).
Pinzgau.....	Bavaria.....	Rhine (Haut).
<i>Belgian races</i> ⁶		
Ardennaise.....	Belgian.....	Ardennes, Haute-Marne, Marne, Meurthe-et-Moselle.
Hainaut.....	do.....	Moselle.
<i>Sequan race</i> ⁷		
Percheron.....	Ancient Perche.....	Eure-et-Loir, Sarthe, Loir-et-Cher, Orne, Eure.

¹ *Equus caballus asiaticus.*² *Equus caballus hibernicus.*³ *Equus caballus britannicus.*⁴ *Equus caballus germanicus.*⁵ *Equus caballus frisius.*⁶ *Equus caballus belgius.*⁷ *Equus caballus sequanius.*

As early as 1872, attention of other countries turned to France as a source of high-bred horses to the extent that exports far outnumbered imports. For 40 years, 1831 to 1871, imports of horses had exceeded exports. For the next 43 years, France exported large numbers of horses. Although several thousand horses were imported each year, still, until the outbreak of the World War, exports usually exceeded imports by a substantial margin.

Table 108 gives the numbers of horses within the former and present boundaries of France, together with imports and exports by five-year periods from 1881 to 1923 and for the years 1924 and 1925.

TABLE 108.—Horses: Number in France within former and present boundaries, imports and exports, five-year averages 1881–1923, annual 1924 and 1925

Years	France (former boundary)	Alsace-Lorraine	France (present boundary) ¹	Index numbers	
				Former boundary	Present boundary ¹
Average:	<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>		
1881-1885.....	² 2,872	³ 139	3,011	89.1	-----
1886-1890.....	2,896	⁴ 138	3,034	89.9	-----
1891-1895.....	2,813	⁵ 137	2,950	87.3	-----
1896-1900.....	2,893	⁶ 141	3,034	89.8	-----
1901-1905.....	3,069	⁷ 142	3,211	95.2	-----
1906-1910.....	3,182	⁸ 138	3,320	98.7	-----
1909-1913.....	3,223	⁹ 137	3,360	100.0	100.0
1911-1913.....	3,227	⁹ 137	3,364	100.1	-----
1914-1918.....	¹⁰ 2,239	70	2,309	-----	-----
1919-1923.....	-----	-----	2,694	-----	80.2
1924.....	-----	-----	2,859	-----	85.1
1925.....	-----	-----	2,880	-----	85.7

Years	Former boundary		
	Imports	Exports	Net ¹¹
Average:	<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>
1881-1885.....	18	17	+1
1886-1890.....	12	33	-21
1891-1895.....	21	23	-2
1896-1900.....	28	21	+7
1901-1905.....	18	21	-3
1906-1910.....	12	28	-16
1909-1913.....	11	32	-21
1911-1913.....	10	34	-24
1914-1918.....	108	5	+103
	Present boundary ¹		
1920-1923 ¹²	29	11	+18
1924.....	20	13	+7
1925.....	31	9	+22

¹ Including Alsace-Lorraine.
² 4-year average, 1882-1885.
³ 1 year only, 1883.
⁴ Estimated by taking the average of numbers given for 1883 and 1892.
⁵ 1 year, 1892.
⁶ 2-year average, 1897 and 1900; 138,689 for 1897 and 142,787 for 1900.
⁷ 1 year, 1904.
⁸ 1 year, 1907.
⁹ 1 year only, 1912, including 20,000 military horses.
¹⁰ Averaged from figures reported in official source and includes reports from the Departments wholly or in part involved in war operations. Data from these Departments were incomplete, and for that reason average for the war period is not comparable with other years.
¹¹ Net exports are indicated by (-) and net imports by (+).
¹² 1919 not available, including Alsace-Lorraine.
 Number of horses: France, 1881-1923 (62, p. 262); 1924 (8); 1925 (45). Alsace-Lorraine, 1883-1918 (66); 1919 (11).
 Imports and exports: (33, 34, 37, 47, 1919, p. 324.)

French agriculture has depended very largely upon cattle for draft animals, and for that reason the development of the horse industry before the war was along the lines of improvement in qualities of speed and power rather than increases in number.

France lost about 1,500,000 horses during the war. The heaviest losses of horses during 1914-1918 fell upon the Departments whose territories were actually involved in war operations. In 1918 the number of horses reported to be in the nine partially occupied Departments showed a falling off to 60.4 per cent below normal. In 1919 the number reported by the 10 Departments in the war zone was still 41.3 per cent below the 1909-1913 average.

In the 77 Departments outside the war zone the records for 1918 and 1919 indicate a reduction of 21.3 to 23 per cent below the normal number of horses. An average of more than 100,000 horses each year had been imported to replace war losses, but there were 600,000 less horses in the unoccupied Departments of France in 1918 than on the average before the war.

The numbers of horses reported in the three Departments of Alsace-Lorraine ranged from 67,000 in 1918 to 89,000 in 1919. These numbers are, respectively, 42.7 and 23.9 per cent less than the numbers of nonmilitary horses in this region during 1909-1913.

For all of France the number of horses reported in 1919 was, roughly, 25 per cent below normal.

TABLE 109.—Horses: Number in the occupied and unoccupied Departments of France and in Alsace-Lorraine, average 1909-1913, 1918, 1919, 1924, and 1925

Region	Average, 1909-1913	1918		1919		1924		1925	
		Total	Per cent of 1909-1913	Total	Per cent of 1909-1913	Total	Per cent of 1909-1913	Total	Per cent of 1909-1913
9 Departments.....	1,000	1,000	Per cent	1,000	Per cent	1,000	Per cent	1,000	Per cent
Ardennes.....	561	222	39.6	341	60.8	474	84.5	488	87.0
	51	(¹)	-----	18	35.3	43	84.2	42	82.4
10 Departments.....	612			359	58.7	517	84.5	530	86.6
77 Departments.....	2,611	2,011	77.0	2,055	78.7	2,240	85.8	2,246	86.0
Alsace-Lorraine (3 Departments).....	* 117	67	57.3	89	76.1	102	87.2	104	88.9
Total France.....	3,340	-----	-----	2,503	74.9	2,859	85.6	2,880	86.2

¹ Not available.

* Year 1912 does not include 20,000 military horses.

See Table 36 for notes on occupied and unoccupied Departments. *Statistique Agricole Annuelle* (48) and *Journal Officiel de la République Française* (45, 51) except Alsace-Lorraine for 1912 (74); 1918 (66) and 1919 (11, p. 2).

Since the war, although importations have continued to exceed exports, France had succeeded by 1925 in increasing her depleted numbers of horses to only 86.2 per cent of the pre-war normal.

In connection with recent imports it is interesting that up to 1925 France shipped in from England, Spain, and Luxemburg considerable numbers of horses to be slaughtered for meat.²⁵

Since horse breeding is one of the best-established industries, it is probable that the exportation of both draft and racing stock will

²⁵ Weight of live horses imported in 1923 was 2,878,000 pounds; in 1924 it was 6,044,000 pounds (7, 1925, p. 70).

soon become again an effective factor in the international trade balance of the nation.

It is improbable that the introduction of power farming or the extended use of the automobile in France itself will for many years affect the horse-breeding industry of the country in any way comparable with the manner in which horse breeding has been affected by the displacement of the horse by the gas motor in the United States. The horse-breeding industry will probably continue to stimulate the production of oats and will continue to require large importations of this cereal to supplement local production.

As indicated in Table 63, the oats trade between France and the United States has fluctuated between very wide margins during recent years so that it is not possible to forecast the future trend of this trade with any degree of accuracy. The United States will probably look less to France than formerly for draft horses because of the extension of the use of trucks in cities and tractors on the farms of this country.

CATTLE

France is a country of small farms of the peasant type and a self-sufficient home is of first importance to the French peasant. Marketable surpluses are incidental and relatively small in amount, consisting of a few bushels of grain or a few head of livestock, or a small amount of butter and eggs sold in neighboring towns on certain market days. The French farmer is attached to the soil he cultivates and to the individual animals that have grown up under his care. He is conservative in his methods and follows the practices of local farming traditions in field culture, breeding, and feeding that have been developed to meet the local conditions of soil and climate and crops prevailing in the region in which he lives. Agricultural traditions and practices are of ancient and varied origins and it is not surprising that the number of breeds and subbreeds of cattle are varied and numerous. There were 87 Departments (counties) in France (former boundaries), yet in 1894 Corblin and Gouin described in "Les Races Bovines" (21), 182 distinct breeds and subbreeds of cattle found upon French farms, or, on the average, more than two breeds per county. Many of the differences between these allied categories of cattle may be slight, but they are still sufficient for descriptive differentiation.

These local breeds, like the local breeds of horses, often trace their lineage to aboriginal or ancient ancestry. A few of the native cattle breeds have developed characteristics of such outstanding utility that they have supplanted the less-valued local stock among progressive farmers over more or less extensive areas.

Thus Normand cattle have come to occupy most of the valley of the Seine and its tributaries. The Flamand (Flemish) breeds were popular in the northeastern Departments before the war. The Limousine breed is found in an extended area of the "massif central" regions. In the southeast and south, brown races similar to the Brown Swiss are popular. Shorthorns introduced from Great Britain are found in the northwest.

A few of the more important breeds of French cattle with their probable origin, the purpose for which they are bred, their relative market value as meat producers, and the chief localities in which they are being developed are given in Table 110.

TABLE 110.—*Cattle: Some of the more important of the locally developed breeds in France (23, 93)*

Breed	Market price ¹ (francs per pound, live weight)	Origin	Utility	Localities in which breed is developed
Flemand (Flemish and Hainaut).	(²)	Low-land cattle ²	Dairy.....	Nord, Pas-de-Calais, Somme, Oise, Aisne.
Normand.....	2.01	Primitive ⁴	Dairy and beef.....	Manche, Calvados, Orne, Seine-Inférieure, Eure.
Breton.....	1.91	Ancient Irish ⁵	Dairy.....	Finistère, Cotes-du-Nord.
Montbéliard.....	1.85	Spotted Swiss (?).....	do.....	Morbihan, Ille-et-Vilaine, Doubs, Jura, Haute-Saône, Belfort, and Vosges.
Vendéen.....	1.72	Primitive ⁴	Work, beef, dairy.....	Deux-Sèvres, Vienne, Vendée, Loire-Inférieure, Charente, Charente-Inférieure.
Limousine.....	2.00	Blond cattle of central Europe.....	do.....	Dordogne, Corréze, Haute-Vienne, Charente, Indre, Creuse.
Salers.....	1.54	Ancient Celtic cattle ⁶	Work, beef, cheese.....	Cantal.
Charolaise.....	2.13	Norse (?) ⁷	Work, beef.....	Saône-et-Loire, Cote-d'Or, Nièvre, Allier, Cher.
Femeline (Vosgien).....	1.64	Blond cattle.....	Work, beef, dairy.....	Haute-Saône, Saône-et-Loire, Doubs.
Tarentaise.....	(⁸)	Brown race ⁹	do.....	Savoie, Haute-Savoie, Hautes-Alpes, Valley of the Rhone River.
Garonnaise.....	(⁸)	Blond cattle of central Europe.....	do.....	Lot-et-Garonne, Tarn-et-Garonne, Gironde, Dordogne, Lot, Haute-Garonne.
Gascon.....	(⁸)	Brown race ⁹	do.....	Haute-Garonne, Gers, Hautes-Pyrénées, Ariège, Aude, Pyrénées-Orientales.
Pyrenees.....	(⁸)	Diverse origin ¹⁰	do.....	Uplands and foothills of the Pyrenees Mountains.

¹ Quotation for steers January–February, 1925 (89, p. 177). Other market types quoted: Indre (mixed) 1.68 francs, Nant. (mixed) 1.81 francs, Maine-Anjou 2 francs, Villard-de-Lans 1.85 francs per pound.

² These cattle are seldom marketed for slaughter except at an advanced age and are therefore not quoted on the market.

³ *Bos taurus balanicus*, Samson (similar to Holland cattle).

⁴ *Bos Primigenius* (similar to "White cattle of the forests" and "West Highlands of Scotland").

⁵ *Bos taurus hibernicus* (similar to Kerry in Ireland and Ayr in Scotland).

⁶ *Bos taurus arvernensis* (longhorn cattle of central Europe).

⁷ *Bos frontosus* (similar to Hereford and Simmenthal).

⁸ Not quoted.

⁹ *Bos brachyceros* (similar to Brown Swiss).

¹⁰ Spanish admixtures.

Practically no cattle are raised for their meat production alone; in most cases milk or work are the primary considerations. It is only in comparatively recent years that the yield of meat has received close attention. In the latter part of the last century English cattle, especially Durhams, were introduced to modify the local breeds with a view to increasing meat yields, but no truly beef breed has as yet been developed.

The interest in meat production, as distinct from milk and power production, centers in the raising of calves. The proportions of this branch of the industry can be gauged from the fact that before the war there were slaughtered annually almost two calves for every adult animal brought to the block, the cattle-meat production running by weight almost one-third veal. The calves are entirely milk fed and the slightest red tinge makes the meat unsalable as veal.

Fattening of cattle is carried on as business distinct from breeding in a few regions, especially in the northwest. Generally, in this section, thin or light cattle are bought in the spring, fattened during the summer and sold in the fall, the waste of the farm being utilized as much as possible in the feeding.

With regard to feedstuffs, the most noteworthy item is the large quantity of root crops fed. Not including potatoes and sugar-beet pulp, the amount of root crops utilized as cattle feed in 1922 was over 25,500,000 short tons or about 30 per cent of the estimated total forage production of 83,000,000 short tons in that year. Potatoes, a great variety of oil cake, skim milk from the dairy industry, and hay are used in the sections where they are most abundant.

Since certain breeds of cattle are found in rather well-defined territories and since these breeds differ considerably in size, in the quality of meat yielded, and the dressing percentage per animal, the custom has been to quote the purchase price of cattle according to breed and, except in the case of animals of outstanding merit, this forms the basis of negotiations of every sale.

Of the breeds which give the best returns in meat the Charolaise, the large white animal of central France, generally brings the best prices on the market. Some of these animals are used for work in the sugar-beet fields during the summer and finished off on the pulp in the fall, the result being listed on the market as a "sugarer" and subject to a discount because of the mediocre quality of its flesh. The Normand, in the northwest, is essentially a dairy animal, but because of its large numbers, and because of crossing with the Durham, this breed accounts for a very considerable part of the meat supply. The Salers is a chocolate-brown animal from the region about the Auvergne Mountains, in the south-central part of the country. The cows, which are fairly good milkers, are driven up into the mountains for the summer. This is the only locality where this practice with cattle is followed on a large scale. This breed is the poorest of those listed in Table 110 and brings the lowest market price per pound. The Vendéen, a work animal from the southwest, produces many variations according to locality, yielding beef better than the Salers but lacking the quality of the Charolaise or the Limousine. But, whatever the breed, usually only a very short period is allowed for fattening, and from the American point of view a very ordinary quality and yield of meat is the rule.

In 1840 there were 11,762,000 head of cattle. There was little change during the next 12 years for the enumeration of 1852 placed the number at 11,971,000. The next 10 years marked an expansion of the livestock industry, the 1862 census showing 12,812,000, an increase of 841,000 over the number on farms a decade before. Then followed 20²⁶ quiescent years. The average number of cattle during the four-year period ended 1885 was 12,478,000, which after deducting 433,000 as the number of cattle in Alsace-Lorraine in 1862, is barely 100,000 more than the number recorded in the enumeration of that year. Since 1885, meat and dairy production have been among the most lucrative branches of French agriculture and for 20 years the number of cattle maintained upon farms had steadily increased, reaching their maximum, 14,929,000, in 1902. From that time until the outbreak of the war numbers of cattle tended to remain well above 14,000,000.

From 1831 to 1888 imports of cattle exceeded exports in increasing proportion. From then on, although the five-year averages during the periods ended 1890, 1895, and 1900 show net importations,

²⁶ French herds were depleted during the Franco-Prussian War, the 1873 estimate being 11,721,459. It required more than a decade for the industry to recover its normal status.

in certain years exports exceeded imports. From the beginning of the twentieth century until the World War, France was a cattle-exporting nation and shipments were made to surrounding countries in steadily increasing numbers.

TABLE 111.—Cattle: Number in France within former and present boundaries, imports and exports, five-year averages 1881–1923, annual 1924 and 1925

Years	France, former boundary	Alsace- Lorraine	France, present boundary ¹	Index	
				Former boundary	Present boundary ¹
Average:	<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>		
1881–1885.....	² 12, 478	³ 429	12, 907	85. 7	-----
1886–1890.....	13, 446	⁴ 458	13, 904	92. 4	-----
1891–1895.....	13, 128	⁴ 487	13, 615	90. 2	-----
1896–1900.....	13, 552	⁵ 507	14, 169	83. 9	-----
1901–1905.....	14, 432	⁷ 529	14, 961	96. 2	-----
1906–1910.....	14, 197	⁸ 545	14, 742	97. 6	-----
1909–1913.....	14, 552	⁹ 537	15, 089	100. 0	100. 0
1911–1913.....	14, 643	⁹ 537	15, 180	100. 6	-----
1914–1918 ¹⁰	12, 405	474	12, 879	-----	-----
1919–1923.....	-----	-----	13, 335	-----	83. 4
1924.....	-----	-----	14, 025	-----	92. 9
1925.....	-----	-----	14, 373	-----	95. 3

Years	Former boundary		
	Imports	Exports	Net ¹¹
Average:	<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>
1881–1885.....	178	70	+108
1886–1890.....	102	79	+23
1891–1895.....	98	39	+59
1896–1900.....	60	28	+22
1901–1905.....	35	40	-5
1906–1910.....	42	77	-35
1909–1913.....	30	112	-82
1911–1913.....	21	118	-97
1914–1918.....	40	14	+26
	Present boundary ¹		
1920–1923 ¹²	71	35	+36
1924.....	12	23	-11
1925.....	22	3	+19

¹ Including Alsace-Lorraine.

² 4-year average, 1882–1885.

³ 1 year only, 1883.

⁴ Estimated by taking the average of the numbers for 1883 and 1892.

⁵ 1 year, 1892.

⁶ 2-year average, 1897 and 1900; 512,329 for 1897 and 501,804 for 1900.

⁷ 1 year, 1904.

⁸ 1 year, 1907.

⁹ 2-year average, 1912–13.

¹⁰ Averaged from figures reported in official sources and includes reports from the Departments wholly or in part involved in war operations. Data from these Departments were incomplete and for that reason average for the war period is not comparable with other years.

¹¹ Net imports are indicated by (+) and net exports by (-).

¹² 1919 not available, including Alsace-Lorraine.

Number of cattle: France, 1882 to 1923 (*52*, p. 267); 1924 (*5*); 1925 (*45*); Alsace-Lorraine, 1883–1918 (*67*); 1919 (*71*).

Imports and exports: (*33*, *34*, *37*, *47*; *1919*, p. 324).

During the early years of the World War large numbers of cattle were requisitioned under the stress of immediate meat requirements without regard to the motive power left on the farms or breeding

potentialities. Later, these needs were taken into consideration and large quantities of meat were shipped in from abroad, allowing native herds a more nearly even chance for recuperation so that by 1918 and 1919 herds outside the war zone were only 10.5 to 11.2 per cent below normal.

In regard to the war zone, probably half of the cattle were destroyed or driven into the interior of France. By 1919 the number of cattle reported in the 10 occupied Departments was only 53.5 per cent of the 1909-1913 average and in Alsace-Lorraine 77.3 per cent of normal numbers was reported.

For all of France, 90 Departments, the 1919 reported number of cattle was roughly 15.2 per cent below normal as indicated in Table 112.

TABLE 112.—Cattle: Number in occupied and unoccupied Departments in France and in Alsace-Lorraine, average 1909-1913, 1918, 1919, 1924, and 1925

Region	Average 1909- 1913	1918		1919		1924		1925	
		Total	Per- centage of 1909- 1913	Total	Per- centage of 1909- 1913	Total	Per- centage of 1909- 1913	Total	Per- centage of 1909- 1913
Cattle:									
9 Departments.....	1,456	638	43.8	808	55.5	1,233	84.7	1,291	88.7
Ardennes.....	115	(?)		33	28.7	101	87.8	109	94.8
10 Departments.....	1,571			841	53.5	1,334	84.9	1,400	89.1
77 Departments.....	12,981	11,613	89.5	11,533	88.8	12,204	94.0	12,452	95.9
Alsace-Lorraine (3 De- partments).....	† 537	445	82.9	415	77.3	487	90.7	521	97.0
Total France.....	15,069			12,789	84.8	14,025	92.9	14,373	95.3
Cows:									
9 Departments.....	862	346	40.1	468	54.3	717	83.2	741	86.0
Ardennes.....	59	(?)		21	35.6	54	91.5	56	94.9
10 Departments.....	921			489	53.1	771	83.7	797	86.5
77 Departments.....	6,735	5,891	87.5	5,839	86.7	6,363	94.5	6,486	96.3
Alsace-Lorraine (3 De- partments).....	† 301	(?)		(?)		297	98.7	307	102.0
Total France.....	7,957					7,431	93.4	7,590	95.4

† Includes cows.

‡ Not available.

§ 2-year average, 1912-1913.

¶ 1 year only, 1913.

Statistique Agricole Annuelle (38) and Journal Officiel de la République Française (45), except Alsace-Lorraine 1912, 1913, and 1918 (86), and 1919 (11, p. 2).
See Table 36 for notes on occupied and unoccupied Departments.

Since the war the recovery of cattle in the war zone has been rapid, so that by 1925 numbers reached 89.1 per cent of normal as contrasted with 97 per cent in Alsace-Lorraine, and 95.9 per cent in the 77 unoccupied Departments outside the war zone.

In all of France total numbers of cattle had recovered to 95.3 per cent of normal by 1925, cows in this year were 95.4 per cent and other classes of cattle were 95.1 per cent of the 1909-1913 average. This indicates an increase in breeding stock with probably an increased trend toward dairy production.

During the year 1924 the recovery of herds had reached 92.9 per cent of normal and in 1925 they had reached 95.3 per cent of normal, an increase of 2.4 per cent over 1924. At this rate of increase the numbers of cattle should reach their pre-war normal within a year or at most two years, but the rate of replacement of cattle depends upon the rate of disappearance, animals slaughtered for meat, exportations, etc.

The statistical disappearance of cattle

(Slaughterings, deaths from other causes, and exportations)

Under the present system of meat production about two-thirds of the calves are slaughtered for veal at less than 1 year of age. There is little or no demand for "baby beef," so that animals that are not vealed are normally carried in French statistics for 1½ years under the heading "1 year and older." At 2½ years young animals are considered normally to mature as bulls, steers, or cows.

Bulls and steers are slaughtered at the average age of 5 years, the steers having been employed two or more years as work animals. If the numbers of bulls and steers remained constant from year to year the numbers normally slaughtered in any one year would average two-fifths of the numbers carried in the records as of December 31 of the preceding year. But at the end of any such current year the carry-over is never the same as that on December 31 of the preceding year. If the carry-over is less than the preceding year the mathematical probability is that on the average one-half of the difference may be accounted for by greater than normal disappearance and one-half by less than normal replacements. Conversely, if the carry-over at the end of the current year is greater than that of December 31 of the preceding year the probability is that one-half of the difference results from less than normal disappearance and one-half from greater than normal replacements.

The statistical disappearance of steers and bulls in any one year may thus be considered to be approximated by two-fifths of the reported carry-over on December 31 of the preceding year, plus or minus one-half of the difference between the reported carry-over on December 31 of the current and preceding years.

Bulls: On December 31, 1910 and 1911, the reported numbers of bulls were 269,270 and 274,040, respectively, resulting in a difference of +4,770. The statistical disappearance during 1911 is thus approximated at two-fifths of 269,270 minus one-half of 4,770, or 105,323. Replacements may be approximated as the converse of disappearance—that is, two-fifths of 269,270 plus one-half of 4,770, or 110,093.

Steers: On December 31, 1910 and 1911, the reported numbers of steers were 1,889,660 and 1,821,560, respectively, resulting in a difference of -68,100. The statistical disappearance during 1911 is thus approximated at two-fifths of 1,889,660 plus one-half of 68,100, or 789,914, while replacement is two-fifths of 1,889,660 minus one-half of 68,110, or 721,814.

Cows: Cows are slaughtered at the average age of 9½ years, normal disappearance in any one year averaging one-seventh of the reported carry-over on December 31 of the preceding year plus or minus one-half of the difference between the reported carry-over on December 31 of the current and the preceding years.

On December 31, 1910 and 1911, the reported numbers of cows were 7,596,250 and 7,606,670, respectively; resulting in a difference

of +10,420. The statistical disappearance during 1911 is thus approximated at one-seventh of 7,596,250 minus one-half of 10,420, or 1,079,969; while replacement is approximated at one-seventh of 7,596,250 plus one-half of 10,420, or 1,090,389.

The total replacements of bulls, steers, and cows maturing from the young stock class between December 31, 1910, and December 31, 1911, are thus estimated to be approximately 1,922,296.

Young stock: On December 31, 1910, the number of young stock was reported at 2,804,180. Of this number 1,922,296 matured into bulls, steers, and cows, leaving 881,884 to be carried over. On December 31, 1911, the number of young stock was reported at 2,778,760. Assuming that no animals disappeared from this class except by maturing into the next higher classification, the number of calves that matured into the young stock class during the year 1911 would be approximately 2,778,760 minus 881,884, or 1,896,876.

Calves: The number of calves carried over on December 31, 1910, was 1,972,670. Of this number approximately 1,896,876 matured into the young-stock class and 75,794 disappeared in some other manner.

In 1892 there were 6,673,460 cows, of which number 5,407,126, or 81 per cent produced milk. It is estimated that 5,750,000 of the 7,169,670 cows in 1922, or 80 per cent produced milk. This indicates that about 80 per cent of the cows produced calves during the two statistical years concerned. According to Massé²⁷ about 72 per cent of cows produced calves in 1911. Although probably low, 75 per cent is employed as the average proportion of cows producing calves.

The numbers of cows recorded on December 31, 1910 and 1911, were 7,596,250 and 7,606,670, respectively. The numbers of calves produced between these two dates can be approximated at 75 per cent of 7,601,460—the average of the carry-over at the beginning and the end of the year—or 5,701,095.

The number of calves on hand December 31, 1911, was 1,954,500; which, subtracted from the number of calves produced, results in 3,746,595 as the probable disappearance of calves born during the year 1911. The total statistical disappearance of calves during 1911 can be considered to be 3,746,595 plus 75,794, or 3,822,399.

The cumulative errors of method fall upon the figures representing calves. Although probably several sources of error are involved, these errors probably average about the same from year to year, so that the statement of the disappearance obtained by this method offers a fairly satisfactory means of comparing conditions during different periods of years. Such a comparison is contained in Table 113.

The net disappearance of cattle and calves may be considered to be the statistical disappearance plus importations less exportations as indicated in Tables 114 and 115. It is probable that during the first years of the war a larger-than-usual number of mature cattle were slaughtered. The Interallied Scientific Food Commission (20) reported a larger-than-normal slaughter for the years 1916-1918, but an analysis of the published statistics indicates that during 1914 to 1918 the annual disappearance of mature cattle averaged 88,000 and calves 267,000 below normal.

²⁷ Lucas (86) states: "The Statistique Agricole contains (1911) 7,600,000 cows; admitting that 5,000,000 of these cows produce calves, and if we deduct 1,900,000 destined for replacement we obtain about 3,000,000 at the disposition of meat consumers." Massé (87, p. 20-21), commenting on Lucas's method, states, "If we admit that 5,500,000 cows (in 1911) produced milk the number of calves slaughtered should be augmented by 500,000." 5,500,000 is approximately 72 per cent of 7,600,000.

TABLE 113.—Cattle: Approximate statistical disappearance of native animals in France, 1909-1925

Authority and boundary	Year	Bulls	Steers	Cows	Mature cattle	Calves	Total cattle
France, excluding Alsace-Lorraine:							
Estimate by—							
Lucas (86, p. 248-244)	1911	90,000	750,000	1,060,000	1,900,000	3,000,000	4,900,000
Martel ¹	1911	100,000	700,000	1,100,000	1,900,000	3,000,000	4,900,000
U. S. D. A. ²	1911	105,323	789,914	1,079,969	1,975,206	3,822,349	5,797,605
Do.	1909-1913	108,765	729,772	1,058,595	1,897,132	3,715,037	5,612,169
Do.	1914-1918	95,329	616,898	1,035,306	1,747,533	3,401,983	5,149,516
Do.	1919	86,858	505,490	846,047	1,438,395	3,150,633	4,589,028
Do.	1920	87,832	475,933	779,800	1,343,565	2,086,715	4,430,280
France, including Alsace-Lorraine:							
Estimate by—							
U. S. D. A.	1909-1913	110,760	740,642	1,102,151	1,979,175	3,862,273	5,841,448
Do.	1921	99,251	515,966	904,488	1,519,735	3,530,276	5,050,011
Do.	1922	95,780	547,691	897,737	1,541,208	3,568,652	5,109,690
Do.	1923	99,547	547,719	957,104	1,604,370	3,549,794	5,154,164
Do.	1924	98,556	550,943	979,690	1,629,189	3,620,893	5,250,062
Do.	1925	96,827	547,168	982,144	1,626,139	3,686,085	5,312,224
Average	1921-1925	97,992	541,903	944,233	1,584,128	3,591,140	5,175,268

¹ This estimate for calves is at least 500,000 too low according to Massé (87, p. 18-19).

² Quoted by Massé in *Le Troupeau Français et la Guerre* (87, p. 18-19).

³ Method described in text.

⁴ 1913 data employed in calculating this average were estimated for the territory outside of war zone similar to that from which returns were reported during 1914-1917. These estimates for 1913 were: Bulls, 262,899; steers, 1,774,450; cows, 7,254,202; young stock, 2,674,764; and calves, 1,904,934.

⁵ Includes four-year average for Alsace-Lorraine, 1909-1912. The numbers of cattle for 1907 and 1912 are reported in *Vierteljahrshefte* (69, 74), other years being estimated.

⁶ Includes 25,622 young animals between the ages of 1 and 2 years slaughtered in Alsace-Lorraine.

The disappearance of mature cattle since the war has been considerably below the pre-war average, ranging 7 to 9 head less per 1,000 inhabitants. An analysis of the statistics indicates that in urban centers the number of beef animals slaughtered during 1921-1925 has averaged approximately 94.5 per cent of normal, although in rural districts disappearance has dropped to 51.6 per cent of the 1909-1913 average.

The rural districts outside the war zone have been selling their larger cattle to the farmers of the devastated regions rather than for slaughter for beef. But as the demand for breeding stock to rehabilitate the northeastern devastated regions has diminished and normalcy is being reestablished rural disappearance has sharply increased, reaching 75.6 per cent in 1925 of the 1909-1913 average. Slightly fewer calves per capita were slaughtered during 1914-1918 than before the war; but since 1921 disappearance per 1,000 inhabitants has ranged within one or two head of normal each year.

If municipal slaughtering is believed to indicate consumption in urban centers there was a higher rate of veal disappearance in the cities between 1921-22 than before the war; but during 1923, 1924, and 1925 veal disappearance fell off, ranging between 99 and 91 per cent of the 1909-1913 average and then decreasing to 86 per cent of normal. (See Table 116.) On the other hand, during 1924 and 1925 the consumption of veal in rural districts has recovered if not exceeded its pre-war proportion.

TABLE 114.—*Mature cattle: Recorded slaughtering at municipal slaughterhouses and unrecorded disappearance, 1909 to 1925*

Year and boundary	Approximate disappearance of native animals	Imports ¹	Exports ¹	Net approximate disappearance		Slaughtering								Unrecorded disappearance, including home slaughtering ⁴	Index number
				Total	Per 1,000 inhabitants ¹	Paris ²	Index number	12 provincial cities ³	Index number	13 cities ⁴	Index number	Total at municipal slaughterhouses ⁵	Index number		
France, excluding Alsace-Lorraine:	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>No.</i>	<i>Number</i>		<i>Number</i>		<i>Number</i>		<i>Number</i>		<i>Number</i>	
1909-1913.....	1,837, 132	24, 825	64, 943	1, 837, 017	47	263, 529	100. 0	117, 223	100. 0	380, 732	100. 0	1, 207, 810	100. 0	649, 207	100. 0
1914-1918.....	1, 747, 333	30, 741	9, 484	1, 768, 790	46	225, 501	85. 6					1, 033, 885	85. 6	734, 905	113. 3
1919.....	1, 438, 395	31, 903	7, 662	1, 462, 636	(⁶)	210, 634	79. 9	142, 372	121. 5	353, 006	92. 7	1, 119, 640	92. 7	342, 956	52. 5
1920.....	1, 343, 565	24, 451	9, 200	1, 358, 846	(⁶)	225, 450	85. 6	118, 561	101. 1	344, 011	90. 4	1, 091, 860	90. 4	266, 986	41. 1
France, including Alsace-Lorraine:								13 cities ¹⁰		14 cities ¹⁰					
1909-1913.....	1, 979, 175	11 69, 076	64, 943	1, 983, 308	48	263, 529	100. 0	138, 246	100. 0	401, 775	100. 0	1, 333, 813	100. 0	649, 495	100. 0
1921.....	1, 519, 735	41, 122	9, 103	1, 551, 754	40	241, 604	91. 7	123, 524	89. 4	365, 128	90. 9	1, 212, 436	90. 9	339, 318	52. 2
1922.....	1, 541, 208	94, 397	30, 176	1, 605, 429	41	269, 377	102. 2	145, 269	105. 1	414, 646	103. 2	1, 376, 495	103. 2	228, 934	35. 2
1923.....	1, 604, 370	24, 740	71, 009	1, 558, 101	39	271, 916	103. 2	141, 966	102. 7	413, 882	103. 0	1, 373, 827	103. 0	184, 274	28. 4
1924.....	1, 629, 189	12, 069	19, 300	1, 621, 978	41	237, 683	90. 2	121, 183	87. 7	358, 866	89. 3	1, 191, 095	89. 3	430, 863	66. 3
1925.....	1, 626, 139	18, 790	2, 637	1, 642, 292	41	233, 188	88. 5	113, 742	82. 3	346, 930	86. 3	1, 151, 081	86. 3	491, 211	75. 6
Average, 1921-1925.....	1, 584, 128	38, 228	26, 445	1, 595, 911	40	250, 754	95. 2	129, 137	93. 4	379, 891	94. 6	1, 260, 987	94. 5	334, 924	51. 6

¹ From Tableau Général du Commerce et de la Navigation de France (35) and Statistique Mensuelle de Commerce Extérieur de la France (37).

² For populations, see Table 6.

³ 1909 to 1920 (81); 1921 and 1924 from Revue General du Froid February-March, 1923, and December-January, 1925-26 (7); 1922 and 1923 from Statistique Agricole 1923 (59); 1925 (29).

⁴ As reported quarterly (29).

⁵ Average 1909-1913 as reported in Journal Officiel de la République Française (41); 1914-1918 estimated from 1909-1913 average proportional to the average slaughtering in Paris; 1919 and 1920 estimated to be proportional to the slaughtering in 13 selected cities (see footnote 7); 1921 to 1925 estimated to be proportional to 13 selected cities and Strassburg.

⁶ Net approximate disappearance minus slaughtering at municipal slaughterhouses. Includes deaths from disease and other causes and probably includes military slaughtering during 1914-1918.

⁷ 1910-1913 average for 7 cities—Havre, Rouen, Montceau des Mines, Pau, Saint Etienne, Grenoble, and Nantes; 1911-1913 average for 4 cities—Orleans, Troyes, Saint Die, and Rennes; 1912 only for Lyon.

⁸ Includes military slaughtering.

⁹ Population of France excluding Alsace-Lorraine for 1919 and 1920 not available.

¹⁰ Includes slaughtering of Strassburg; 1909-1913 estimated from 1909 to 1912 slaughtering reported in Statistisches Jahrbuch für Elsass Lothringen (98).

¹¹ Includes probable deficit of Alsace-Lorraine, 44, 248 large animals (see p. 131).

¹² Sum of municipal and unrecorded disappearance including home slaughtering.

¹³ Includes 126,003 municipal slaughtering in Alsace-Lorraine as reported in Vierteljahrshefte (77, p. 11).

¹⁴ Includes 288 home slaughtering for 1912 in Alsace-Lorraine as reported in Vierteljahrshefte (73).

TABLE 115.—*Calves: Recorded slaughterings at municipal slaughterhouses and unrecorded disappearance, 1909-1925*

Year and boundary	Approximate disappearance of native animals	Imports ¹	Exports ¹	Net approximate disappearance		Slaughterings							Unrecorded disappearance, including home slaughterings ⁶	Index number	
				Total	Per 1,000 inhabitants ¹	Paris ²	Index number	12 provincial cities ³	Index number	13 cities ⁴	Index number	Total at municipal slaughterhouses ⁵			Index number
France, excluding Alsace-Lorraine:	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>No.</i>	<i>Number</i>		<i>Number</i>		<i>Number</i>		<i>Number</i>		<i>Number</i>	
1909-1913.....	3,715,037	5,344	46,884	3,673,497	93	292,580	100.0	219,022	100.0	511,602	100.0	1,957,101	100.0	1,716,396	100.0
1914-1918.....	3,401,983	8,792	4,241	3,406,534	89	211,043	72.1	231,740	105.8	446,453	87.3	1,411,070	72.1	1,995,464	116.3
1919.....	3,150,633	18,500	2,075	3,167,058	(⁹)	214,713	73.4	218,399	99.7	457,392	89.4	1,708,549	87.3	1,458,509	85.0
1920.....	3,086,715	11,792	2,087	3,096,420	(⁹)	238,993	81.7					1,749,648	89.4	1,346,772	78.5
France, including Alsace-Lorraine:								<i>13 cities ⁹</i>		<i>14 cities ⁹</i>					
1909-1913.....	3,862,273	¹⁰ 14,387	46,884	¹¹ 3,829,776	92	292,580	100.0	249,919	100.0	542,499	100.0	¹² 2,111,468	100.0	¹³ 1,718,308	100.0
1921.....	3,530,276	12,851	2,521	3,540,606	90	288,028	98.4	270,900	108.4	558,928	103.0	2,174,812	103.0	1,368,794	79.5
1922.....	3,568,652	63,270	3,836	3,628,088	92	296,867	101.5	296,617	118.7	593,484	109.4	2,309,946	109.4	1,318,140	76.7
1923.....	3,549,794	10,354	12,681	3,547,467	90	262,599	89.8	279,901	112.0	542,500	100.0	2,111,468	100.0	1,435,999	83.6
1924.....	3,620,893	262	3,858	3,617,297	91	237,111	81.0	254,464	101.8	491,575	90.6	1,912,990	90.6	1,704,307	99.3
1925.....	3,686,085	2,953	120	3,688,918	92	220,740	75.4	241,900	96.8	462,640	85.3	1,801,082	85.3	1,387,836	100.0
Average, 1921-1925.....	3,591,140	17,938	4,603	3,604,475	91	261,069	89.2	268,756	107.5	529,825	97.7	2,062,060	97.7	1,542,415	89.8

¹ to ⁵ See similar footnotes on Table 114.⁶ Same as footnote 9, Table 114.⁷ Same as footnote 10, Table 114.⁸ Includes probable deficit of Alsace-Lorraine: 9,043 calves (see p. 131).⁹ Sum of municipal and unrecorded slaughterings including home slaughterings.¹⁰ Includes 164,367 municipal slaughterings in Alsace-Lorraine during 1909-1913, reported in Vierteljahrshette (77, p. 11).¹¹ Includes 1,912 home slaughterings for Alsace-Lorraine during 1912, as reported in Vierteljahrshette (75).

Disappearance and slaughter of cattle in Alsace-Lorraine

The statistical disappearance of native bulls, steers, cows, and calves in Alsace-Lorraine is based upon a four-year average, 1909-1912, estimated from data given for 1907 and 1912 appearing in *Vierteljahrshefte zur Statistik des Deutschen Reichs* (69, 72), which are not in all respects comparable with the data carried in French agricultural statistics.²⁸ But it has been estimated that the disappearance of bulls was approximately 1,995; steers, 10,870; and cows, 43,556, to which is added 25,456 young stock actually slaughtered at municipal slaughterhouses and 166 home slaughterings, resulting in a total calculated disappearance of native mature stock amounting to 82,043 animals. The calculated disappearance of calves under 1 year is 147,236 (estimated, taking into consideration the 25,622 young stock slaughtered and probably replaced by calves).

The slaughterhouses in 23 communities or districts record the 1909-1913 average annual slaughter of 6,021 bulls, 19,675 steers, 74,851 cows, and 25,456 young stock, or 126,003 large animals each year, and municipal slaughtering of calves averaged 154,367 for this period.

Municipal slaughterings are reported annually but there is no yearly estimate of the home slaughterings in Alsace-Lorraine, but at the time of the 1912 enumeration the German statistical office approximated unrecorded home slaughterings in Alsace-Lorraine at 4 bulls, 5 steers, 113 cows, and 166 young animals between the ages of 1 and 2 years or 288 animals other than calves "under 1 year" of age. Home slaughterings of calves were estimated at 1,912.

This indicates that before the war Alsace-Lorraine did not produce sufficient cattle to meet the beef and veal requirements of its cities and industrial districts for the deficit amounted to approximately 44,248 large animals and 9,043 calves.

In calculating the pre-war slaughter and disappearance of the 90 Departments of France for mature cattle in Table 114 and calves in Table 115 it is assumed that these deficits were balanced by imports.

²⁸ German statistics carry a young-stock class 1 to 2 years, whereas the French classification is 1 to 1½ years. In France young cattle between these ages are seldom if ever slaughtered, while in Alsace-Lorraine an average of 25,456 animals from 1 to 2 years old were slaughtered annually during 1909-1913.

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TABLE 116.—Beef and veal: Statistical disappearance of meat equivalent to the numbers of animals slaughtered domestically, 1909-1925

Year and boundary	Beef			Veal			Total statistical disappearance of domestically slaughtered beef and veal
	Mature cattle slaughtered ¹	Weight of dressed meat		Calves slaughtered ¹	Weight of dressed meat		
		Per head	Total		Per head	Total	
France, excluding Alsace-Lorraine:							
1909-1913—							
Paris.....	263,529	788.7	207,853,145	292,580	149.9	43,872,182	251,725,327
Other cities.....	944,281	753.7	711,699,223	1,664,521	192.5	320,412,430	1,032,111,653
Unrecorded.....	649,207	538.4	349,533,049	1,716,396	165.3	283,720,259	633,253,308
Total.....	1,857,017	683.4	1,269,085,417	3,673,497	176.4	648,004,871	1,917,090,298
1914-1918—							
Paris.....	225,501	731.4	164,941,607	211,043	135.0	28,481,924	193,423,531
Other cities.....	808,384	715.0	577,955,664	1,200,027	202.1	242,580,475	820,536,139
Unrecorded.....	734,905	538.4	395,672,852	1,995,464	165.3	329,850,199	725,523,051
Total.....	1,768,790	643.7	1,138,570,123	3,406,534	176.4	600,912,598	1,739,482,721
1919—							
Paris.....	210,634	721.0	151,866,902	214,713	122.1	26,211,001	178,077,903
Other cities.....	809,006	715.0	649,939,290	1,493,836	195.0	291,366,492	941,305,782
Unrecorded.....	342,996	538.4	184,669,046	1,458,509	165.3	241,091,538	425,760,584
Total.....	1,462,636	674.5	986,475,238	3,167,058	176.4	558,669,031	1,545,144,269
1920—							
Paris.....	225,450	739.3	166,668,309	238,992	124.8	29,832,678	196,500,987
Other cities.....	866,410	715.0	619,483,150	1,510,655	202.1	293,754,398	913,237,546
Unrecorded.....	266,986	538.4	143,745,262	1,346,772	165.3	222,621,412	366,366,674
Total.....	1,358,846	684.3	929,896,721	3,096,420	176.4	546,208,488	1,476,105,209
France, including Alsace-Lorraine:							
1909-1913—							
Paris.....	263,529	788.7	207,853,145	292,580	149.9	43,872,182	251,725,327
Other cities.....	1,070,284	753.7	806,673,051	1,818,898	191.1	347,663,962	1,164,337,043
Unrecorded.....	649,495	538.4	349,688,108	1,718,308	165.3	284,036,312	633,724,420
Total.....	1,983,308	687.8	1,364,214,304	3,829,776	176.4	675,572,486	2,039,786,790
1921—							
Paris.....	241,604	722.1	174,455,351	288,028	133.0	38,320,714	212,776,065
Other cities.....	970,832	753.7	731,716,078	1,886,784	191.1	360,476,436	1,092,192,514
Unrecorded.....	339,318	538.4	182,688,811	1,365,794	165.3	225,765,748	408,454,569
Total.....	1,551,754	701.7	1,088,860,240	3,540,606	176.4	624,562,898	1,713,423,138
1922—							
Paris.....	269,377	729.6	196,549,706	296,867	133.2	39,529,589	236,079,296
Other cities.....	1,107,118	753.7	834,434,837	2,013,079	190.0	352,576,248	1,217,011,085
Unrecorded.....	223,934	538.4	123,253,066	1,318,140	165.3	217,858,542	341,146,608
Total.....	1,600,429	719.0	1,154,242,609	3,628,086	176.4	639,964,379	1,794,236,979
1923—							
Paris.....	271,916	761.5	207,073,455	262,599	135.9	35,685,590	242,759,015
Other cities.....	1,101,911	753.7	830,510,321	1,848,869	190.8	352,716,984	1,183,227,305
Unrecorded.....	184,274	538.4	99,213,122	1,435,999	165.3	237,370,635	336,583,757
Total.....	1,558,101	729.6	1,136,796,898	3,547,467	176.4	625,773,179	1,762,570,077
1924—							
Paris.....	237,683	788.0	187,282,631	237,111	151.9	36,016,254	223,299,185
Other cities.....	953,412	753.7	718,586,624	1,675,879	191.2	320,352,860	1,038,939,514
Unrecorded.....	430,883	538.4	231,987,407	1,704,307	165.3	281,721,947	513,709,354
Total.....	1,621,978	701.5	1,137,856,662	3,617,297	176.4	638,091,191	1,775,948,053

See footnotes at end of table.

TABLE 116.—Beef and veal: Statistical disappearance of meat equivalent to the numbers of animals slaughtered domestically, 1909–1925—Continued

Year and boundary	Beef			Veal			Total statistical disappearance of domestically slaughtered beef and veal
	Mature cattle slaughtered ¹	Weight of dressed meat		Calves slaughtered ¹	Weight of dressed meat		
		Per head	Total		Per head	Total	
France, including Alsace-Lorraine—Continued.							
1925—							
Paris.....	Number 233, 188	Pounds ² 788. 7	Pounds 163, 915, 376	Number 220, 740	Pounds ² 149. 9	Pounds 33, 088, 926	Pounds 217, 004, 302
Other cities...	917, 893	753. 7	691, 815, 964	1, 580, 342	193. 4	305, 576, 918	997, 392, 872
Unrecorded...	491, 211	638. 4	264, 468, 002	1, 887, 836	165. 3	312, 059, 291	576, 527, 293
Total.....	1, 642, 292	694. 3	1, 140, 199, 332	3, 688, 918	176. 4	650, 725, 135	1, 790, 924, 467

¹ See Table 114 for source of cattle and Table 115 for calves.
² See footnote 3, Table 114, for sources.
³ Estimated. The total weight in other cities was obtained by subtraction and the weight per head by dividing number slaughtered into total weight.
⁴ Decree of July 18, 1913 (40). Weighted average. It is assumed that in the rural districts of France the slaughtering weight of cattle has not changed to any material extent and the dressed weight indicated in 1909–1913 is used throughout the war and postwar years.
⁵ Decree of July 18, 1913 (40). Live weight 125 kilograms. Estimated dressed weight 60 per cent of live weight.
⁶ 310 kilograms for mature cattle and 80 kilograms for calves, based on Martel's weighted averages (20, p. 46).
⁷ The slaughtering weight of calves in Paris varied considerably during and after the war. It is probable that this variation was compensated for in other cities and that in the rural district as well as in France as a whole there was no material variation from the pre-war average.
⁸ Weighted average, 222 kilograms, based on Martel's estimate.
⁹ The dressed weight of meat produced per animal varied considerably at Paris, but it is assumed that in provincial cities and rural districts at least the pre-war average was maintained. It is reported that in recent years the quality of beef in the provinces has been higher than pre-war but there are no data. In any case a general improvement in weight of slaughtered cattle is to be expected following the increased pasturage per animal since the war.
¹⁰ Pre-war normal used since total weight of meat in Paris is not available for 1925.

Before the war, France, including Alsace-Lorraine, slaughtered approximately 140 cattle per 1,000 inhabitants annually. In 1925 the number was 133. During 1925 fresh, frozen, and cured beef equivalent to the carcasses of 267,767 mature cattle, or 6.7 animals per 1,000 inhabitants, was imported from abroad, bringing beef and veal supplies up to normal.²⁹

An analysis of the statistics during the three years 1923–1925 indicates a well-defined trend toward a higher consumption of native slaughtered beef and veal in the rural districts, whereas the demand for native beef in the cities has fallen off, as shown in Table 117.

²⁹ This does not take into consideration beef and veal, of which there is no record that may have been imported as dressed meat into Alsace-Lorraine before the war.

TABLE 117.—Beef and veal: Disappearance in municipalities and rural districts 1909-1925

Year and boundary	Disappearance of domestically slaughtered meat ¹	Net imports ²			Disappearance			
		Fresh	Frozen ³	Salted	Total	Index number	Per capita ⁴	Index number
France, excluding Alsace-Lorraine:								
1909-1913—	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds		Pounds	
Municipalities.....	1,283,837	-3,493	(⁵)	-101	1,280,243	100.0	73.1	.....
Rural.....	633,253				633,253	100.0	28.6	.....
Total.....	1,917,090				1,913,496	100.0	48.3	100.0
1914-1918—								
Municipalities.....	1,013,960	-2,154	352,716	-82	1,364,440	106.6	(⁶)	.....
Rural.....	725,523				725,523	114.6	(⁶)	.....
Total.....	1,739,483				2,089,963	109.2	54.6	113.0
1919—								
Municipalities.....	1,119,384	-2,863	503,973	4,705	1,625,199	126.9	(⁶)	.....
Rural.....	425,760				425,760	67.2	(⁶)	.....
Total.....	1,545,144				2,050,959	107.2	(⁶)	.....
1920—								
Municipalities.....	1,109,739	-6,711	292,729	-349	1,395,408	109.0	(⁶)	.....
Rural.....	366,366				366,366	57.9	(⁶)	.....
Total.....	1,476,105				1,761,774	92.1	(⁶)	.....
France, including Alsace-Lorraine:								
1909-1913—								
Municipalities.....	1,406,062	-3,493	(⁵)	-101	1,402,468	100.0	75.8	100.0
Rural.....	633,725				633,725	100.0	27.7	100.0
Total.....	2,039,787				2,036,193	100.0	49.2	100.0
1921—								
Municipalities.....	1,304,969	-3,591	111,355	259	1,412,992	100.8	77.6	102.4
Rural.....	408,454				408,454	64.5	19.4	70.0
Total.....	1,713,423				1,821,446	89.5	46.4	94.3
1922—								
Municipalities.....	1,453,090	2,136	67,364	807	1,523,397	108.6	83.4	110.0
Rural.....	341,147				341,147	53.8	16.2	58.5
Total.....	1,794,237				1,864,544	91.6	47.4	96.3
1923—								
Municipalities.....	1,425,986	-12,924	112,370	105	1,525,537	108.8	83.0	109.5
Rural.....	336,584				336,584	53.1	15.8	57.0
Total.....	1,762,570				1,862,121	91.5	47.0	95.5
1924—								
Municipalities.....	1,262,239	6,471	189,698	1,279	1,450,687	103.4	78.4	103.4
Rural.....	513,709				513,709	81.1	24.0	86.6
Total.....	1,775,948				1,964,396	96.5	49.3	100.2
1925—								
Municipalities.....	1,214,397	13,324	189,521	872	1,418,114	101.1	76.2	100.5
Rural.....	576,527				576,527	91.0	26.8	96.8
Total.....	1,790,924				1,994,641	98.0	49.7	101.0

¹ From Table 116.² Tableau General du Commerce et de la Navigation de France (35) and Statistique Mensuelle de Commerce Extérieur de la France (35). Net exports are indicated by minus sign (-).³ Frozen meats are not separately stated in exports, but it is assumed that none are exported.⁴ See Table 6 for total populations and footnote 6, Table 141, for urban and rural populations.⁵ Frozen meat not separately stated prior to 1912. France imported an average of 3,342,000 pounds of frozen beef during 1912 and 1913. Considering fresh and frozen beef and veal together during 1909-1913 resulted in a net export of 3,493,000 pounds.⁶ Population of France, excluding Alsace-Lorraine, during 1919 and 1920 not available and urban and rural populations not available separately during 1914-1918.

Whereas the disappearance of total beef and veal (native as well as imported) in urban centers during 1925 was 101.1 per cent of normal as compared with 91 per cent in the rural districts, the urban disappearance of native beef and veal alone was only 86.4 per cent of the 1909-1913 average.

Little or no veal is imported into France but during 1925 net importations of fresh beef amounted to 13,324,000 pounds. Frozen beef reached 189,521,000 pounds, which was 9,000,000 pounds higher than during 1924 and 77,000,000 pounds greater than the 1923 importation. The 1925 consumption of frozen beef (and veal, if any) in France represented 13.4 per cent of the total disappearance of beef and veal in cities.

A large number of cooperative organizations in Paris were circularized regarding the amounts and the sales price of various products handled. The quantities of these commodities handled in 1922 and 1925 are recorded in Table 118.

TABLE 118.—*Bread and meat: Average amount sold by cooperative organizations in Paris, 1922 and 1925 (29)*¹

Commodity	Amount sold			Retail price ²	
	1922	1925	Percentage 1925 is of 1922	1922	1925
Bread.....	Pounds 123, 679	Pounds 190, 371	Per cent 153. 8	Francs per pound 0. 45	Francs per pound 0. 72
Beef:					
Fresh.....	20, 312	16, 171	79. 6	3. 04	4. 38
Frozen.....	2, 693	3, 550	131. 8	1. 61	3. 29
Total beef.....	23, 005	19, 721	85. 7		

¹ Data in this table were obtained by circularizing every three months a number of cooperative organizations ranging from 62 to 69 each quarter.

² See Table 151 for average yearly values of the franc.

As indicated in Table 118, the average amount of beef sold by each of the cooperative organizations in Paris fell off during 1925 to about 85.7 per cent of the 1922 sales. Fresh beef decreased 20.4 per cent, whereas frozen beef increased 31.8 per cent, and bread sales increased 53.8 per cent.

In Paris, as the price of meat increased, the people ate more bread and bought the cheapest meat possible. Similar conditions prevailed in other cities. Cheap frozen beef enabled these cities to increase their 1925 beef supply above the pre-war average.

During the next year or two, should prevailing conditions continue, the available supply of domestic beef should return to normal. This should enable the rural districts to resume their pre-war rate of consumption and make available to the cities a larger than normal per capita supply of relatively cheaper beef. Frozen beef can be sold in France at a relative price considerably below that at which it is at present being marketed, and this, other factors remaining equal, should have a tendency to narrow the margin between the price of beef and the price of bread.

THE DAIRY INDUSTRY

The proportion of cows to total cattle had varied considerably during the last 60 years of the nineteenth and the first quarter of the twentieth centuries as indicated in Table 119.

TABLE 119.—Cows: Number in France in stated years, 1840 to 1924 (43, 52)

Year and boundary	Number	Percentage of cows as compared with total cattle	Year and boundary	Number	Percentage of cows as compared with total cattle
France, excluding Alsace-Lorraine:	<i>Thousands</i>	<i>Per cent</i>	France, including Alsace-Lorraine:	<i>Thousands</i>	<i>Per cent</i>
1840.....	5,502	46.8	1909-1913.....	¹ 7,957	52.7
1852.....	5,781	48.3	1920.....	6,630	51.7
1862.....	6,409	50.0	1921.....	6,973	52.3
1882.....	6,588	50.7	1922.....	² 7,170	52.8
1892.....	6,673	48.7	1923.....	7,304	53.1
1902.....	8,318	55.7	1924.....	7,431	53.0
1909-1913.....	7,656	52.6	1925.....	7,690	52.8

¹ Includes Alsace-Lorraine for one year only, 1913.

² The number of milk cows in 1922 is estimated at 5,750,000 (83).

According to the census returns of 1882 there were 5,019,670 milk cows in France producing 1,800,320,000 gallons of milk.

In 1892, it was estimated that 5,407,126 milk cows produced 2,034,462,000 gallons of commercial milk, valued at 1,223,025,000 francs, or \$237,254,620. These figures do not include the milk consumed at home. In addition, goats produced milk valued at approximately 24,119,657 francs, or \$4,678,972 in 1892 and sheep's milk was valued at 3,549,160 francs, or \$688,502.³⁰ In 1892, France produced 291,057,000 pounds of commercial butter, which does not include butter made and consumed at home. During this year the cheese manufactured amounted to 301,267,000 pounds.

In 1902 an inquiry was made relative to milk production, which was estimated to be 2,229,148,000 gallons. This inquiry did not extend to the whole of France and it is not clear whether or not this figure represents the total milk production or only commercial milk. In 1913, 3,383,304,000 gallons of milk were produced, 765,723,000 gallons were fed to calves, 1,116,990,000 gallons were used for butter making, and 414,086,000 gallons were manufactured into cheese, as shown in Table 120.

TABLE 120.—Milk: Production and utilization in France, 1913, 1921, 1922, and 1923 (14, p. 236)

[In thousand gallons—i. e., 000 omitted]

Year	Production	Fed to calves	Used for butter making	Used for cheese
1913.....	3,383,304	765,723	1,116,990	414,086
1921.....	2,813,516	.....	.....	.....
1922.....	2,992,439	.....	.....	.....
1923.....	3,091,793	674,611	1,003,291	418,868

³⁰ For the exchange rate of the franc in 1892 see Table 151.

These data are fragmentary but they indicate that although there were 7,794,000 cows in 1913 as compared with 8,318,000 in 1902 milk production had been materially increased. This increase in milk production during the first 13 years of the twentieth century is in line with the increased meat production during this period as already noted and is the result of better methods of feeding and improvement in the quality of the dairy stock maintained upon farms.

The butter consumption of the city of Paris, taken as an index to conditions in other cities throughout France, had also increased,³¹ as indicated in Table 121.

TABLE 121.—Butter: Consumption in Paris, 1881 to 1922

Year ended Dec. 31	Consumption in Paris			Population
	Total	Index number ¹	Per capita	
Average:	<i>Short tons</i>		<i>Pounds</i>	<i>Thousands</i>
1881-1885.....	19,187	64.4	15.9	2,269
1886-1890.....	20,872	70.0	17.8	2,345
1891-1895.....	21,955	73.6	17.9	2,448
1896-1900.....	24,178	81.1	19.1	2,537
1901-1905.....	25,741	86.3	19.0	2,714
1906-1910.....	27,282	91.5	19.7	2,763
1911-1913.....	30,706	103.0	21.3	2,888
1909-1913.....	29,811	100.0	20.6	2,888
1914-1918.....	27,055	90.8	29.8	1,816
Annual:				
1919.....	31,368	105.2		
1920.....	39,070	131.1		
1921.....	* 42,375	* 122.8	* 25.2	2,906
1922.....	* 47,291	* 111.1		

¹ Average 1909-1913=100 per cent.

² Census by request of military authorities, September, 1914.

³ The figures include amounts sent out of city—June-December, 1921, at 5,757 short tons and for the calendar year 1922 at 14,174 short tons.

⁴ Does not include the amounts sent out of city as given in footnote 3.

Information furnished by the Octroi d. Paris.

As indicated in Table 122 before the war France was independent of outside sources of supply as concerned milk and butter but although 26,880,000 pounds of Roquefort, Camembert, Brie, Pont-l'Eveque, and other hard and soft cheeses were exported, 49,055,000 pounds of the characteristic cheeses of Great Britain, Holland, Germany, Switzerland, and Italy were imported.

³¹ Butter production in France has increased in consequence of the improvement of local supplies of fodder, the more extended use of concentrated feeding stuffs, careful selection of herds, and the application of modern methods of manufacture. If French exports of butter are not more considerable it is attributable to the fact that fresh butter is now used on a much larger scale than formerly in certain districts of the south, where, until quite recently, fats and oils were almost entirely used in the preparation of food (*ib.*, p. 30).

TABLE 122.—*Dairy products: Foreign trade of France, average 1909-1913, 1915, 1918, and 1922 to 1925 (33, 35)*

[In thousand pounds—i. e., 000 omitted]

Commodity	Average 1909-1913	1915	1918	1922	1923	1924	1925
Imports:							
Milk—							
Fresh.....	496	546	255	3,846	2,468	1,000	1,194
Condensed, pure.....	496	876	15,456	14,864	15,079	10,287	9,769
Condensed, sweetened.....	1,972	8,737	11,937	12,810	10,045	9,881	10,221
Cheese.....	49,053	46,744	11,185	60,289	54,393	32,792	40,559
Butter—							
Fresh.....	13,265	1,704	958	62,343	23,119	6,167	7,138
Salted.....	448	7	109	3,021	81	9	267
Exports:							
Milk—							
Fresh.....	11,948	1,476	581	8,604	24,230	44,747	23,145
Condensed, pure.....	1,042	1,052	452	3,269	2,065	819	1,278
Condensed, sweetened.....	3,097	4,903	99	2,810	5,418	4,097	4,723
Cheese.....	26,880	13,643	4,428	22,019	33,224	28,891	35,689
Butter—							
Fresh.....	20,993	23,987	1,550	5,101	15,178	6,110	6,379
Salted.....	19,776	20,578	810	1,697	4,188	1,868	2,812

During the war there was a great falling off in milk production outside the war zone as here indicated:

Production of cows' milk exclusive of quantity fed to calves.³²

	Gallons
Average 1909-1913.....	1,357,877,000
1914.....	1,312,421,000
1916.....	1,008,958,000
1918.....	737,346,000

In the war zone it is stated that the Hainaut dairy breed has entirely disappeared and that the Flemish breed has been reduced by half (18, p. 693). Table 112 indicates that in the 9 partially occupied Departments cows had been reduced to 54.3 per cent of normal by 1919 and to 35.6 per cent in Ardennes as compared with 86.7 per cent in the 77 Departments outside the war zone. No comparable data are available from Alsace-Lorraine.

The recovery of the number of cattle in France since the war has been rapid. In 1925, as indicated in Table 112, total cattle in the 10 occupied Departments had reached 89.1 per cent of normal, with cows 86.5 per cent of the 1909-1913 average. In the 77 unoccupied Departments the number of cows reached 96.3 per cent of normal as compared with total cattle 95.9 per cent and in Alsace-Lorraine cows had reached 2 per cent above normal as compared with total cattle 3 per cent below.

The 1925 data for total France indicate that the number of cows was 95.4 per cent of normal as compared with 95.3 per cent for total cattle. It is probable that breeding stock was being conserved but these data may be construed as indicating a tendency toward increased dairy production.

As indicated in Table 121, butter consumption in Paris fell off on the average to 90.8 per cent of normal during 1914-1918, but in 1919 it rose to 105.2 per cent of normal, and during the next three

³² Estimate approved by the Interallied Science Commission on Food Supply, October, 1918, quoted by International Institute of Agriculture (39). The annual average production of milk for human consumption was estimated at 264 gallons per cow in 1914, and at 185 gallons in 1918. Milk converted from pounds to gallons on the basis of 8.6 pounds = 1 gallon.

years was 131, 123, and 111 per cent, respectively. These figures indicate that, in France as in Germany and other north European countries, the establishment of a higher standard of living is manifested by an increased consumption of butter.

During 1923, 1924, and 1925 France exported large quantities of liquid milk and very appreciable amounts of salted butter in excess of imports. Exports of cheese have exceeded pre-war volume but in 1925 still lacked 5,000,000 pounds of balancing imports.

Before the war France exported more than 1,500,000 pounds of condensed milk in excess of importations, the 1909-1913 average trade being 2,458,000 pounds imports and 4,139,000 pounds exports. During the war condensed milk was used extensively in urban centers to make up for the shortage in the supply of fresh milk so that by 1918 France was importing 27,000,000 pounds with negligible exports. In 1922, importations rose to 28,000,000 pounds with an export of 6,000,000 pounds, which is somewhat higher than the pre-war normal export.

In 1925 imports fell further to 20,000,000 pounds whereas exports remained about the same as in 1922. Until 1924, the United States had been the chief source of supply for French importations of condensed milk followed by Switzerland and the Netherlands as indicated in Table 123.

TABLE 123.—Condensed milk, sweetened and unsweetened: Imports into France by countries and total exports, average 1909-1913, 1921-1925 (33, 35)

[In thousands—1. e., 000 omitted]

Countries from which imported	Average 1909-1913	1921	1922	1923	1924	1925 ¹
United Kingdom.....	164	642	252	.....	212	.....
Netherlands.....	119	5,077	2,723	3,270	3,306	.....
Switzerland.....	2,116	7,721	8,729	8,494	7,296	.....
United States.....	(²)	14,044	14,652	11,144	6,487	.....
Canada.....	(²)	2,273	548	702	107	.....
Other countries.....	59	576	770	1,514	2,760	.....
Total imports.....	2,458	30,633	27,674	25,124	20,163	19,990
Total exports.....	4,139	11,723	6,079	7,483	4,916	6,001
Net imports.....	⁴ 1,681	18,910	21,595	17,641	15,252	13,989

¹ Not available by countries.

² Four-year average.

³ If any, included in other countries.

⁴ Net exports.

Before the war the United States exported almost no condensed milk to France. In 1916 exports jumped to 4,000,000 pounds and then by rapid increases to 113,000,000 pounds in 1919. In 1921 exports dropped to 8,000,000 pounds and although there was an increase in 1922, trade in condensed milk has fallen off as French urban centers have been able increasingly to obtain fresh milk to meet their own requirements from the rehabilitated native herds. In 1925 condensed milk exports to France from the United States had dropped to 4,000,000 pounds (Table 124). It is possible that the United States may maintain a small trade in condensed milk with France, but with the present trend toward increased dairy production within the nation itself, and an actual increase in the exports of condensed milk, it is more than probable that France will in the near future reach the stage of net exportation of milk both fresh and prepared.

TABLE 124.—*Milk, condensed, evaporated, and powdered: Exports from the United States to France, 1910-1925*

[In thousand pounds—1. e., '000 omitted]

Year ended June 30	Quantity	Year ended June 30	Quantity	Year ended June 30	Quantity	Year ended June 30	Quantity
1910.....	0	1914.....	0	1918.....	74, 860	1922.....	18, 856
1911.....	2	1915.....	2	1919.....	113, 117	1923.....	7, 393
1912.....	0	1916.....	4, 353	1920.....	81, 434	1924.....	9, 004
1913.....	0	1917.....	30, 263	1921.....	8, 123	1925.....	4, 178

Commerce and Navigation of the United States (108) and Official Records of the United States Department of Commerce. [Unpublished data.]

SHEEP

In a country of such diverse origins as France it is probable that many of those characteristics that later determined local breeds, subbreeds, and varieties of sheep were fairly well developed, even during the prehistoric period, in response to local conditions and traditions. Throughout the centuries of the early historic period allied communities held to these local breeds to which they had so long been accustomed so that to-day the flocks throughout whole regions such as the Pyrenees including the valley of the Garonne, the central plateau and the basin of the Loire retain their ancient characteristics that can be traced back to the primitive races of the Gauls and the Basques.

In recent years importations of improved breeds from other lands have been made in order to build up these original breeds. In some districts descendants of these foreign importations have supplanted local flocks and are being bred as more or less pure strains. Earliest among such introductions, was the universally popular breed of merinos, introduced from Spain in 1750, from which has been developed the important strain known as Rambouillet. British breeds, particularly the Southdowns and Leicesters (Dishleys), have also gained a popular footing.

Sheep breeds are, however, so mixed that marketmen claim not without justification, that there are no distinct French breeds. Table 125 gives the more important breeds of native and introduced sheep with their probable origin and the centers where they are bred.

TABLE 125.—*Sheep: Important native and introduced breeds in France (25)*

Breed and locality	Probable origin	Purpose for which race is bred	Locality in which race is bred
Pyrenees region: Lacha, Churra Basque, Bearnaise, Landaise, Gascon, Lauraguaise, Lot Causses, Albigeoise, Aveyron, Larzac, etc.	Ancient Iberian ¹	Meat, with wool	Hautes-et Basses-Pyrenees, Ariège, Landes, Gers, Haute-Garonne, Aude, Tarn, Aveyron, Tarn-et Garonne, Lozere, Lot, and Lot-et Garonne.
Central plateau: Auvergnate, Marchoise, Limousine, and Saintongeoise.	Ancient Gaulic ²	Meat, wool, and milk.	Auvergne, Puy-de-Dome, Cantal, Correze, Creuse, Haute-Vienne, Charente, Charente-Inférieure, Vienne, and Deux-Sevres.
Valley of the Loire: Solognote, Comtoise, Ardennaise, Percheron, Angevine, Cotentine, Breton, and Charmois.	Ancient Gaulic ²	Meat, wool, and milk.	Indre-Cher, Indre-et Loire, Loire-et-Cher, Loiret, Allier, Nièvre, Saone-et-Loire, Jura, Morbihan, Ille-et-Vilaine and scattered flocks throughout northern and northeastern France.
Midi: Merinos-de-Roussillon, Naz, and Provençe.	Spanish through Germany. ⁴	Wool and meat.	Pyrenees-Orientales, Herault, Aude, Gard, Vaucluse, Bouches-du-Rhone, Basses-Alpes, Var, Alpes, and Ain.
Northern France: Merino types, Chatillon, Champagne, Soissonais, Brie, Beauce, Precoce, Mauchamp.	Spanish ³	Wool and meat.	Cote-d'Or, Yonne, Aube, Marne, Haute-Marne, Ardennes, Oise, Aisne, Eure-et-Loire, Eure, Seine-et-Oise, and Seine-et-Marne.
Rambouillet	Introduced into France, 1750.		
Leicester (Dishley)	Germanic ⁵	Meat and wool.	Throughout France, introduced in 1825.
Southdowns	Ancient Irish ⁶	Meat and wool.	Throughout France, introduced in 1856.
Flemish	Ancient Danish ⁷	Meat and wool.	Northeastern France.

¹ *Ovis aries iberica*.
² *Ovis aries auvergnensis*.
³ *Ovis aries liguriensis*.
⁴ *Ovis aries africana*. These sheep are sent in the spring from the Rhone Valley some 50 miles to the highland pastures of the Alps and are brought back in the fall. They are known by a special name, "Mutons transhumants."
⁵ *Ovis aries africana*.
⁶ *Ovis aries germanicus*.
⁷ *Ovis aries hibernica*.
⁸ *Ovis aries ingevonicus*.

The most striking fact of the sheep industry of France is its steady decline since the middle of the last century. It is estimated that there were 27,000,000 sheep in France just before the revolution of 1790. During the general expansion in agriculture, numbers of sheep increased to 33,000,000 in 1852. According to the last general census in 1892, numbers had decreased to 21,000,000, and the average during 1909-1913 indicates a further reduction to 16,699,000. A similar, though more rapid rate of decline, is noted in Alsace-Lorraine as indicated in Table 126.

TABLE 126.—*Sheep; Number in France within former and present boundaries, imports and exports, five-year average 1881–1923, annual 1924 and 1925*

Years	France former boundary	Alsace-Lorraine	France present boundary ¹	Index numbers	
				Former boundary	Present boundary
Average:	<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>		
1881–1885.....	22,598	129	22,727	135.8	
1886–1890.....	22,371	113	22,484	134.0	
1891–1895.....	21,014	97	21,111	125.8	
1896–1900.....	21,090	98	21,178	126.3	
1901–1905.....	18,337	61	18,368	109.8	
1906–1910.....	17,369	68	17,437	104.0	
1909–1913.....	16,699	45	16,744	100.0	100.0
1911–1913.....	16,341	45	16,386	97.9	
1914–1918 ¹⁰	11,218	35	11,253		
1920–1923 ¹¹			9,547		57.0
1924.....			10,172		60.8
1925.....			10,537		62.9

Years	Former boundary		
	Imports	Exports	Net imports
Average:	<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>
1881–1885.....	2,049	30	2,019
1886–1890.....	1,379	32	1,347
1891–1895.....	1,510	10	1,500
1896–1900.....	1,281	12	1,269
1901–1905.....	1,322	18	1,304
1906–1910.....	1,217	36	1,181
1909–1913.....	1,112	44	1,068
1911–1913.....	1,025	48	977
1914–1918.....	761	9	752

Years	Present boundary ¹		
	Imports	Exports	Net imports
1920–1923 ¹¹	1,055	7	1,048
1924.....	1,038	1	1,037
1925.....	734	1	733

¹ Including Alsace-Lorraine.

² 4-year average, 1882–1885.

³ 1 year only, 1883.

⁴ Estimated by taking the average of the figures given for 1883 and 1892.

⁵ 1 year, 1892.

⁶ 2-year average, 1897 and 1900; 93,204 for 1897, and 83,085 for 1900.

⁷ 1 year, 1904.

⁸ 1 year, 1907.

⁹ 2-year average, 1912–1913.

¹⁰ Averaged from figures reported in official sources and includes reports from the Departments wholly or in part involved in war operations. Data from these Departments were incomplete and for that reason average for the war period is not comparable with other years.

¹¹ 1919 not available for Alsace-Lorraine.

Number of sheep: France, 1882–1923 (52, p. 265); 1924 (5); 1925 (45). Alsace-Lorraine, 1883–1918 (66); 1919 (11).

Imports and exports (53, 54, 57, 47, 1919, p. 324).

Although other causes have been operative, the competition of foreign wools from Australia, Argentina, South Africa, and the French colonies constitutes the outstanding factor associated with the decimation of French flocks. Beginning in the seventies of the last century, cheap wool from these countries flooded the French and other European markets in increasing amounts and a general depression in world wool prices followed. In France, certain grades in wool, the price of which had averaged 2.86 francs per pound in 1840–1849

and which reached 2.89 francs during 1850-1859, decreased to 2.60 during 1860-1869 and to 1.69 francs per pound during 1870-1879.³³

This rapid decline in wool prices with its discouraging effect upon sheep production was accelerated by the rapid extension of the use of cotton goods instead of woolens among the increasing urban populations of Europe. As in the case of wheat, world production, exceeded the demand to such an extent that prices could not be maintained at a point that would make the industry profitable enough to the French farmer to stimulate his interest in increasing the number of his sheep, so the industry declined.

The increased production of wool in the Southern Hemisphere and the substitution of cotton goods for woolens produced similar results in other European countries in which there was an even greater reduction of sheep per capita than in France as indicated in the following tabulation showing diminution per 100 inhabitants in numbers of sheep, between 1870 and 1902, by countries (25, p. 2):

	Diminution per 100 inhabitants
England.....	56
Belgium.....	61
Denmark.....	42
Germany.....	62
Holland.....	17
Norway.....	42
Austria.....	48
Sweden.....	18
France.....	15

Other factors contributing to the decline of the sheep industry have been the greater use of pastures for cattle grazing and losses due to the ravages of diseases in the last half of the nineteenth century. The peasants would not observe the rules and laws laid down to help them and soon practically no section of the country was free from disease. Among the latter-day causes are the extreme difficulty of procuring good shepherds as the older generation dies, and, in part, the recent change of the best sheep region, Provence, in the south, to a playground region.

The decline of the sheep industry during the war was profound. In Ardennes the 1919 estimates indicate only 1.2 per cent of the pre-war average number; in the nine partially occupied Departments the estimates for 1918 and 1919 show that the reduction amounted from 72.3 to 73.6 per cent below normal numbers. In the 77 Departments outside the war zone there was a falling off of 42.2 to 42.9 per cent. Alsace-Lorraine maintained its stocks at a higher level than other parts of France, but even here the 1919 returns indicate a reduction of 31.1 per cent below normal.

As indicated in Table 127, the numbers of sheep in all France in 1919 were only 53.9 per cent of the 1909-1913 average.

³³ Similar price conditions existed in the United States because of the expansion of the sheep industry on the western ranges and later because of the rapid growth of the wool industry in Australia and Argentina. "The annual exports of wool from Australasia, increased from an average of 148,000,000 pounds in the 10 years ended in 1870 to 647,000,000 pounds for the five years ended 1899. The production and exportation of wool from Argentina also increased very rapidly. The price of wool and the price of sheep fell steadily [in the United States] from 1870 to 1896." (97, p. 232.)

TABLE 127.—*Sheep: Number in France and Alsace-Lorraine, average 1909-1913, 1918, 1919, 1924, and 1925*

Region	Average 1909- 1913	1918		1919		1924		1925	
		Total	Per- centage of 1909- 1913	Total	Per- centage of 1909- 1913	Total	Per- centage of 1909- 1913	Total	Per- centage of 1909- 1913
9 Departments.....	Thousands 1,568	Thousands 414	Per cent 26.4	Thousands 435	Per cent 27.7	Thousands 774	Per cent 49.4	Thousands 833	Per cent 53.1
Ardennes.....	163	(¹)		2	1.2	47	28.8	59	36.2
10 Departments.....	1,731			437	25.2	821	47.4	892	51.5
77 Departments.....	14,968	8,647	57.8	8,554	57.1	9,351	62.5	9,586	64.0
Alsace-Lorraine (3 Depart- ments).....	² 45	35	77.8	31	68.9	49	108.7	59	131.1
Total, France.....	16,744			9,022	53.9	10,220	61.0	10,537	62.9

¹ Not available.² Two-year average, 1912-13.

Statistique Agricole Annuelle (55) and Journal Officiel de la République Française (45), except Alsace-Lorraine: 1912, 1913, and 1918 (66) and 1919 (11, p. 12).
See Table 36 for notes on occupied and unoccupied Departments.

The recovery of the sheep industry since 1919 has been slow. The price of wool and the urban demand for mutton have not been such as to stimulate sheep production sufficiently to overcome the obstacles offered by lack of capital and dearth of competent shepherds. By 1924 French flocks had recovered to 61 per cent of their pre-war normal and during 1925 this percentage rose to 62.9.

The use of mutton as an article of diet has fallen off and has been replaced, in the cities, by frozen beef and imported pork. Taking the number of sheep slaughtered at Paris as an indication of urban demand for mutton, and the 1909-1913 average as a base, there had been a decrease of 31.2 per cent in 1925. Before the war (1909-1913) the slaughterhouses of Paris handled an average of 1,956,426³⁴ head of sheep. In 1925 only 1,346,909³⁵ head were slaughtered. (Table 130.)

With the depletion of native flocks the yearly disappearance³⁵ of native sheep has decreased proportionately as indicated in Table 128.

³⁴ Includes a few hundred goats.³⁵ In calculating statistical disappearance of sheep, lambs are assumed to mature at 1 year. Rams are slaughtered at the average age of 3 years, wethers at 2½ years, and ewes at 5½ years. The number of ewes producing lambs is assumed to be 77 per cent of the mid-year average.

TABLE 128.—*Sheep and goats: Approximate disappearance of native animals in France, 1909-1925*

Boundary and authority	Year	Rams	Wethers	Ewes	Total mature animals	Lambs	Total sheep	Goats and kids
France, excluding Alsace-Lorraine:								
Estimate by—								
Lucas ^(88, p. 244-246)	1911	Number	Number	Number	Number	Number	Number	Number
Martel ¹	1911	150,000	1,870,000	2,200,000	4,230,000	4,300,000	8,520,000	-----
U. S. Department of Agriculture ²	1911	150,000	2,000,000	2,200,000	4,350,000	4,300,000	7,550,000	-----
Do.....	1911	151,405	1,949,637	2,326,289	4,427,331	3,646,172	8,073,503	852,567
Do.....	1909-1913	152,654	1,901,991	2,207,863	4,262,508	3,409,319	7,671,827	851,800
Do.....	1914-1918	125,391	1,180,541	2,027,050	3,332,982	3,461,310	6,794,292	743,191
Do.....	1919	86,295	674,696	1,244,689	2,095,680	2,324,509	4,330,189	711,705
Do.....	1920	83,495	709,084	996,376	1,788,955	1,953,071	3,742,028	754,725
France, including Alsace-Lorraine:								
Estimate by—								
U. S. Department of Agriculture.....	1909-1913	153,581	1,910,603	2,215,073	4,279,257	3,482,789	7,762,046	893,664
Do.....	1921	103,280	696,076	1,233,412	2,032,768	2,298,917	4,331,685	810,621
Do.....	1922	99,500	660,464	1,273,436	2,033,400	2,291,389	4,324,789	818,796
Do.....	1923	95,935	827,834	1,393,203	2,306,972	2,312,716	4,619,688	816,231
Do.....	1924	102,890	794,369	1,288,496	2,185,725	2,331,069	4,516,794	818,742
Do.....	1925	97,995	844,575	1,270,595	2,213,165	2,330,897	4,544,062	826,326
Average.....	1921-1925	99,920	764,664	1,289,822	2,154,406	2,312,998	4,467,404	818,143

¹ Quoted by Massé in *Le Troupeau Français et la Guerre* (87, p. 18-19).
² Explained in text. Numbers of sheep and goats on Dec. 31 each year are taken from *Statistique Agricole* and *Journal Officiel de la République Française*.
³ 1913 data employed in this average was estimated for similar territory outside of war zone from which returns were reported during 1914-1917. The estimates for 1913 were: Rams, 287,599; wethers, 2,176,961; ewes, 9,059,016; and lambs, 3,774,371.
⁴ Includes 4-year average for Alsace-Lorraine, 1909-1912. The numbers of sheep and goats for 1907 and 1912 are as reported in *Vierteljahrshefte*, other years being estimated.

The net disappearance of sheep has been considered to be the statistical disappearance plus imports less exports as indicated in Table 129.

TABLE 129.—*Sheep and goats: Net disappearance in France, 1909-1925*

Boundary and year	Sheep			
	Approximate disappearance of native sheep	Imports (35, 57)	Exports (35, 57)	Net disappearance
France, excluding Alsace-Lorraine:				
1909-1913.....	Number	Number	Number	Number
1914-1918.....	7,671,827	1,112,064	43,790	8,740,101
1919.....	6,794,292	760,977	8,806	7,546,463
1920.....	4,330,189	377,080	3,113	4,704,156
1925.....	3,742,026	831,954	5,692	4,104,288
France, including Alsace-Lorraine:				
1909-1913.....	7,762,046	1,112,064	89,281	8,784,829
1921.....	4,331,685	1,039,765	6,530	5,364,920
1922.....	4,324,789	1,108,951	6,351	5,427,389
1923.....	4,619,688	1,192,919	9,718	5,802,892
1924.....	4,516,794	1,039,171	1,487	5,553,478
1925.....	4,544,062	733,519	594	5,276,957
Average, 1921-1925.....	4,467,404	1,022,665	4,986	5,485,133

¹ Includes 45,491 sheep, estimated as surplus in Alsace-Lorraine during 1909-1912.

TABLE 129.—*Sheep and goats: Net disappearance in France, 1909-1925—Contd.*

Boundary and year	Goats				Net disappearance of sheep and goats		
	Approximate disappearance of native goats	Imports (35, 36)	Exports (35, 37)	Net disappearance	Total	Per 1,000 inhabitants ¹	Index number
France, excluding Alsace-Lorraine:	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	
1909-1913.....	851,800	1,908	2,666	851,042	9,591,143	242	100.0
1914-1918.....	743,191	3,247	1,076	745,362	8,291,825	217	89.7
1919.....	711,705	781	814	711,672	5,415,828	(²)	-----
1920.....	754,725	923	988	754,660	5,372,948	(³)	-----
France, including Alsace-Lorraine:							
1909-1913.....	⁴ 893,664	1,908	2,666	892,906	9,677,735	234	100.0
1921.....	810,621	1,074	787	810,908	6,175,828	157	67.1
1922.....	818,796	1,068	950	818,914	6,246,303	159	67.9
1923.....	816,231	692	924	815,999	6,618,991	167	71.4
1924.....	818,742	524	72	819,194	6,372,672	160	68.4
1925.....	826,326	114	251	826,189	6,103,176	152	65.0
Average, 1921-1925.....	818,143	695	597	818,241	6,303,374	159	67.9

¹ See Table 6 for populations.² Populations of France excluding Alsace-Lorraine for 1919 and 1920 not available.³ Includes 41,864 goats; disappearance estimated in Alsace-Lorraine which includes 6,723 municipal slaughterings reported in 1909-1913 and 14,434 home slaughterings reported in 1912, and 20,707 unrecorded slaughterings (probably kids).*Disappearance and slaughter of sheep and goats in Alsace-Lorraine*

Sheep.—The statistical disappearance of native sheep in Alsace-Lorraine is based upon a four-year average, 1909-1912.³⁶ The calculated disappearance averaged: Rams, 927; wethers, 8,612; ewes, 7,210; lambs, 73,470; total, 90,219.

The 1909-1913 average slaughter of sheep as recorded in 23 communities and districts in Alsace-Lorraine was 43,512 and the 1912 estimate for home slaughtering was 1,216, resulting in a total of 44,728. This would indicate a surplus of 45,491 head of sheep annually.

In calculating the pre-war slaughter and disappearance for the 90 Departments, in Table 129, it is assumed that the Alsace-Lorraine calculated surplus was shipped to the interior of the German Empire and the number of sheep equivalent to this surplus is thus carried as an export in addition to the normal export from France.

Goats.—The calculated statistical disappearance of goats in Alsace-Lorraine during 1909-1912 averaged 41,864 or roughly 60 per cent of the average annual carry-over. There are not sufficiently detailed data in French statistics to calculate the statistical disappearance, which therefore has been assumed to have been at a rate equivalent to that in Alsace-Lorraine or 60 per cent of the annual carryover.

There were 6,723 recorded municipal slaughterings of goats annually during 1909-1913 in Alsace-Lorraine and home slaughterings in 1912 were estimated at 14,434. It is assumed that these represent mature animals and that the difference between the sum of municipal and home slaughterings and total statistical disappearance represented the number of kids slaughtered each year.

The calculated statistical disappearance of sheep as given in Table 129 indicates that during the five years ended 1925 French

³⁶ Calculated from data for 1907 and 1912, reported in *Vierteiljahrshefte* (69, p. 275; 72, p. 294), which are fairly comparable with the classifications carried in French statistics.

farmers were shipping to urban markets between 2,000,000 and 3,000,000 sheep less than before the war. The urban demand for mutton was not great enough to attract any considerable additional number of sheep from abroad. From the early part of the last century to the outbreak of the war France had imported large numbers of sheep from abroad, chiefly from Algeria. The port of entry was Marseille, from which a considerable number of sheep penetrated as far north as Paris. These sheep were of the wool type and, coming as they did from a very warm country, yielded a low quantity and quality of mutton which suffered a discount in price below native mutton. Average importations of sheep during 1921-1924 were practically equal to the pre-war average but in 1925, because of somewhat heavier marketing of native animals, importations fell off to 734,000 head.

TABLE 130.—*Sheep and goats: Recorded slaughterings at municipal slaughter houses and unrecorded disappearance, 1909-1925*

Boundary and year	Net disappearance of sheep and goats	Slaughterings of sheep and goats			
		Paris ¹	Index number	12 provincial cities ²	Index number
France excluding Alsace-Lorraine:					
1909-1913.....	<i>Number</i> 9, 591, 143	<i>Number</i> 1, 956, 426	100.0	<i>Number</i> 507, 350	100.0
1914-1918.....	8, 291, 825	1, 256, 221	64.2		
1919.....	5, 415, 828	1, 022, 208	52.2	375, 469	74.0
1920.....	5, 372, 948	961, 858	49.2	303, 982	59.9
France, including Alsace-Lorraine:					
1909-1913.....	9, 677, 735	1, 956, 426	100.0	<i>13 cities</i> ³ 516, 385	100.0
1921.....	6, 175, 828	1, 341, 185	68.6	397, 061	76.9
1922.....	6, 246, 303	1, 285, 230	65.7	438, 436	84.9
1923.....	6, 618, 891	1, 314, 301	67.2	414, 634	80.3
1924.....	6, 372, 672	1, 252, 528	64.0	401, 059	77.7
1925.....	6, 103, 176	1, 346, 909	68.8	435, 670	84.4
Average, 1921-1925.....	6, 303, 374	1, 308, 031	66.9	417, 376	80.8

Boundary and year	Slaughtering of sheep and goats				Unrecorded disappearance including home slaughterings ⁵	Index number
	13 cities ²	Index number	Total of municipal slaughter houses ⁴	Index number		
France, excluding Alsace-Lorraine:						
1909-1913.....	<i>Number</i> 2, 463, 776	100.0	<i>Number</i> 5, 818, 700	100.0	<i>Number</i> 3, 772, 443	100.0
1914-1918.....			3, 735, 605	64.2	4, 556, 220	120.8
1919.....	1, 397, 677	58.7	3, 299, 203	56.7	2, 116, 625	56.1
1920.....	1, 265, 840	51.4	2, 990, 812	51.4	2, 382, 136	63.1
France, including Alsace-Lorraine:						
1909-1913.....	<i>14 cities</i> ⁶ 2, 472, 811	100.0	⁷ 5, 868, 935	100.0	⁸ 3, 806, 800	100.0
1921.....	1, 738, 266	70.3	4, 125, 861	70.3	2, 049, 967	53.8
1922.....	1, 723, 666	69.7	4, 090, 648	69.7	2, 155, 655	56.6
1923.....	1, 728, 935	69.9	4, 102, 386	69.9	2, 516, 505	66.1
1924.....	1, 653, 587	66.9	3, 926, 318	66.9	2, 446, 354	64.2
1925.....	1, 782, 579	72.1	4, 231, 502	72.1	1, 871, 674	49.1
Average, 1921-1925.....	1, 725, 407	69.8	4, 095, 343	69.8	2, 208, 031	58.0

¹ Same as footnote 3 on Table 114.
² Same as footnote 4 on Table 114.
³ Same as footnote 7 on Table 114.
⁴ Same as footnote 10 on Table 114.
⁵ Same as footnote 5 on Table 114.
⁶ Same as footnote 6 on Table 114.

⁷ Includes 43,512 sheep and 6,723 goats reported to be slaughtered in Alsace-Lorraine at municipal slaughter houses during 1909-1913 (77, p. 11).
⁸ Includes 1,216 sheep and 14,434 goats reported as home slaughterings in Alsace-Lorraine in 1912 from Vierteljahrshefte (73, p. 47) and a disappearance of 20,707 unrecorded slaughterings (probably kids).

As indicated in Table 130, provincial cities have maintained their slaughter of sheep and goats more nearly normal than has Paris or the rural districts, but the population of the rural districts during 1921-1925 averaged 1,651,000 inhabitants less than before the war, while on account of heavy migration from country to city, urban populations averaged only 105,000 less than during 1909-1913.

In the cities the disappearance of sheep and goats before the war was approximately 317 per 1,000 inhabitants as compared with 223, or 70.3 per cent of normal during 1921-1925. In the country pre-war disappearance approximated 166 per 1,000 inhabitants, whereas during 1921-1925 the average was 104, or 62.7 per cent of normal.

The production of mutton and goat meat throughout France during the five years 1921-1925 has been only about 64 per cent of pre-war. With a shortage in the numbers of domestic sheep offered at the local markets and no increase in the importations of live animals, France has had recourse to the importation of considerable quantities of fresh and frozen mutton from abroad. It is probable that no imported mutton was consumed on the farms of France, so that importations have brought the average per capita city supply of mutton during 1921-1925 up to 79 per cent of normal, while the lighter weights of animals as well as the diminished number slaughtered at home reduced rural supplies of mutton and goat meat during 1921-1925 to about 56.7 per cent of the 1909-1913 average indicated in Table 131.

TABLE 131.—Mutton and goat meat: Disappearance in municipalities and rural districts, 1909-1925

Boundary and year	Sheep and goats slaughtered ¹	Weight of dressed meat		Net imports ²		Disappearance				
		Per head	Total	Fresh	Frozen ³	Total	Index number	Per capita ⁴	Index number	
France, excluding Alsace-Lorraine:										
1909-1913—										
	<i>Number</i>	<i>Pounds</i>	<i>Pounds</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>				
Paris.....	1,956,426	42.3	82,736,841	7321	(7)	252,998	100.0	14.4	100.0	
Other cities.....	3,862,274	44.0	169,940,056							
Unrecorded.....	3,772,443	(11)	137,338,830							
Total.....	9,591,143	40.7	390,015,727			390,337	100.0	9.9	100.0	
1914-1918—										
Paris.....	1,256,221	38.7	48,602,892	156	24,201	181,741	71.8	-----	-----	-----
Other cities.....	2,479,384	44.0	109,062,896							
Unrecorded.....	4,556,220	(11)	170,778,723							
Total.....	8,291,825	39.6	328,474,511			352,520	90.3	9.2	92.9	
1919—										
Paris.....	1,022,208	41.3	42,232,303	256	61,744	204,420	80.8	-----	-----	-----
Other cities.....	2,276,995	44.0	100,187,780							
Unrecorded.....	2,116,625	(11)	70,438,725							
Total.....	5,415,828	39.3	212,858,808			274,859	70.4	(12)	-----	
1920—										
Paris.....	961,658	46.1	44,332,773	992	37,424	170,039	67.2	-----	-----	-----
Other cities.....	2,028,954	44.0	89,273,976							
Unrecorded.....	2,382,136	(11)	79,830,357							
Total.....	5,372,748	39.7	213,437,106			249,869	64.0	(12)	-----	

See footnotes at end of table.

TABLE 131.—Mutton and goat meat: Disappearance in municipalities and rural districts, 1909-1925—Continued

Boundary and year	Sheep and goats slaughtered ¹	• Weight of dressed meat		Net imports ²		Disappearance				
		Per head	Total	Fresh	Frozen ³	Total	Index number	Per capita ⁴	Index number	
France, including Alsace-Lorraine:										
1909-1913—										
	<i>Number</i>	<i>Pounds</i>	<i>Pounds</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>		<i>Pounds</i>		
Paris.....	1,956,426	42.3	82,736,841	321	(7)	255,208	100.0	13.8	100.0	
Other cities.....	3,912,509	* 44.0	172,150,396							
Unrecorded.....	10 3,808,800	(11)	138,015,327			138,015	100.0	6.0	100.0	
Total.....	9,677,735	40.6	392,902,564			393,223	100.0	9.5	100.0	
1921—										
Paris.....	10 1,341,185	41.4	55,508,076							
Other cities.....	2,784,876	* 44.0	122,525,744	-293	22,921	200,662	78.6	11.0	79.7	
Unrecorded.....	10 2,049,967	(11)	65,577,029			65,577	47.5	3.1	51.7	
Total.....	6,175,828	39.4	243,610,849			266,239	67.7	6.8	71.6	
1922—										
Paris.....	10 1,285,230	46.0	59,126,367							
Other cities.....	2,805,418	* 44.0	123,438,392	175	13,494	196,234	76.9	10.7	77.5	
Unrecorded.....	10 2,155,855	(11)	69,739,622			69,739	50.5	3.3	55.0	
Total.....	6,246,303	40.4	252,304,381			265,973	67.6	6.8	71.6	
1923—										
Paris.....	10 1,314,301	44.4	58,304,326							
Other cities.....	2,788,085	* 44.0	122,675,740	742	19,000	200,722	78.7	10.9	79.0	
Unrecorded.....	10 2,516,505	(11)	84,735,035			84,736	61.4	4.0	66.7	
Total.....	6,618,891	40.1	265,715,701			285,458	72.6	7.2	75.8	
1924—										
Paris.....	10 1,252,528	44.1	55,245,065							
Other cities.....	2,673,790	* 44.0	117,646,760	2,662	21,563	197,117	77.2	10.7	77.5	
Unrecorded.....	10 2,446,354	(11)	81,557,659			81,558	59.1	3.8	63.3	
Total.....	6,372,672	39.9	254,449,484			278,675	70.9	7.0	73.7	
1925—										
Paris.....	10 1,346,909	42.3	56,974,251							
Other cities.....	2,884,693	* 44.0	126,922,092	1,852	21,718	207,466	81.3	11.1	80.4	
Unrecorded.....	10 1,871,674	(11)	67,887,626			57,888	41.9	2.7	45.0	
Total.....	6,103,176	39.6	241,783,969			265,354	67.5	6.6	69.5	

¹ See Table 130 for sources.
² Tableau Général du Commerce et de la Navigation de France (53) and Statistique Mensuelle de Commerce Extérieur de la France (57). Net exports are indicated by a minus sign (—).
³ Frozen meats not separately stated in exports but it is assumed that none were exported.
⁴ See Table 6 for populations; also see footnote 6, Table 141, for populations urban and rural.
⁵ Includes 1,534 goats during 1909-1913; 1,403 during 1914-1918; 1,063 in 1919, and 2,269 in 1920.
⁶ See footnote 3, Table 114, for sources.
⁷ Frozen meats not separately stated prior to 1912. France imported an average of 930,000 pounds of frozen mutton during 1912 and 1913. Considering fresh and frozen mutton together during 1909-1913 resulted in a net import of 321,000 pounds.
⁸ Includes 202,917, or 5.3 per cent of goats (obtained by subtracting Paris (footnote 5) from total municipal slaughterings 204,451 (4)).
⁹ Assumed to be equal to the average slaughter weight of sheep (20, p. 26).
¹⁰ Includes an estimate of 646,591 goats obtained by subtracting total municipal slaughterings of goats from total disappearance. 597,431, or 92.4 per cent, of this number are estimated to be kids from a comparison of kids slaughtered in Alsace-Lorraine (70.2 per cent of total disappearance). It is assumed that no kids were sent to municipal slaughterhouses but were consumed at home.
¹¹ Weighted average for sheep, 41.4 pounds; goats, 37.4 pounds; kids, 11 pounds. Decree of July 18, 1913, providing for inspection of meat in communities not provided with municipal slaughterhouses (40).
¹² Includes an estimate of 46,554 goats and 565,998 kids during 1914-1918, 44,835 goats and 545,063 kids in 1919, and 49,009 goats and 566,847 kids in 1920. Estimated by subtracting total Paris (footnote 5) and other municipal slaughterings, 5.3 per cent of total (footnote 8) from total disappearance. Kids equal 92.4 per cent of total goats (see footnote 10).
¹³ Populations for France excluding Alsace-Lorraine during 1919 and 1920 not available.
¹⁴ Includes 1,216 sheep, 14,434 goats, and 20,707 (probably kids) slaughtered outside of municipalities in Alsace-Lorraine.
¹⁵ Includes 1,252 goats in 1921, 853 in 1922, 806 in 1923, 665 in 1924, and 1925 assumed to be 665, the same as 1924.
¹⁶ Includes an estimate of 50,317 goats and 611,751 kids in 1921; 50,873 goats and 618,502 kids in 1922; 50,724 goats and 616,700 kids in 1923; 51,438 goats and 625,380 kids in 1924; and 51,121 goats and 621,520 kids in 1925.
¹⁷ Pre-war normal slaughtering weight used since total weight of meat in Paris for 1925 is not available.

Between 1920 and 1922 the net importations of mutton decreased from 18,216 to 6,834 short tons, but in 1923 rose to 9,871 and in 1924 to 12,112 short tons; in 1925 there was a decrease to 11,785 short tons (Table 131).

During the war frozen mutton, chiefly from Australia, was introduced upon the markets. Frozen mutton sold in the Paris markets at prices considerably less than the fresh product, as indicated in Table 132.

TABLE 132.—*Mutton, leg, frozen and fresh: Average retail price per pound in Paris, 1916-1920 (1, p. 311; 3, p. 330)*

Year	Month	Frozen		Fresh	
		Francs	Cents ¹	Francs	Cents ¹
1916.....	April.....	1.27	21.4		
1917.....	do.....	1.36	23.9	2.04	35.9
1918.....	do.....	1.54	26.9	3.18	55.6
1919.....	March.....	2.04	36.1	3.90	70.6
1920.....	January.....	2.95	25.0	5.44	48.1
	June.....	3.36	27.1	5.81	46.9

¹ Exchange rates employed for 1916, 1917, and 1918 are the highest rate during the month, as given in Federal Reserve Bulletin (111); for 1919 and 1920 the average rates are used, as given in "Prices in the United States and Abroad, 1919-1923" (112).

Frozen mutton is much cheaper than the fresh mutton offered on the Paris markets, but the flavor, texture, and quality of fat are not identical with those of the home-grown product, and a positive conservatism on the part of the French consumer leads him to incline toward the product to which he is accustomed. In the long run, however, price is bound to make itself felt as a factor in overcoming prejudice in favor of a particular flavor which in itself is not sufficiently marked to offset this price differential. It is to be expected, as indicated by the growth of imports since 1922, that frozen mutton probably will be employed in increasing amounts by the French urban dwellers and that the price of native mutton will fall off as the competition of the imported product becomes stronger. This is certain to react upon sheep breeding in France and in all probability will act as one of the important deterrent factors against the recovery of the industry to its pre-war status.

If this proves to be the case and the flocks of the country remain in their present depleted state, France will probably import even larger quantities of wool than before the war. Net importations of all grades of wool into France increased from an average of 301,000,000 pounds for the five-year period ended 1890 to 438,000,000 pounds, the 1909-1913 average, as indicated in Table 133.

TABLE 133.—Wool: Trade of France, 1883 to 1925¹ (33, 37)

[In thousand pounds—l. e., 000 omitted]

Year ended Dec. 31	Imports	Exports	Net imports	Year ended Dec. 31	Imports	Exports	Net imports
Average:				Annual:			
1883-1885.....	370, 181	74, 338	295, 843	1919.....	365, 831	24, 066	341, 765
1886-1890.....	408, 552	105, 735	300, 817	1920.....	382, 307	99, 587	282, 720
1891-1895.....	478, 008	114, 616	363, 392	1921.....	344, 548	93, 458	251, 090
1896-1900.....	539, 595	151, 173	388, 422	1922.....	694, 773	133, 117	561, 656
1900-1905.....	529, 993	165, 717	364, 276	1923.....	593, 372	123, 482	469, 890
1906-1910.....	637, 543	180, 797	456, 746	1924.....	512, 648	114, 890	397, 758
1911-1913.....	627, 225	191, 950	435, 275	1925.....	558, 800	93, 652	465, 148
1909-1913.....	633, 731	195, 695	438, 036				
1914-1918.....	210, 995	36, 719	174, 276				

¹ These figures will not agree with those in Table 134, since this table includes all wool and Table 134 includes only raw wool.

THE WOOL INDUSTRY ³⁷

France ranks second to the United Kingdom as a wool importer and is exceeded only by the United States and by the United Kingdom as a wool manufacturer. The domestic production of wool averaged about 43,000,000 pounds annually during 1921-1925. This is only about 8 per cent of the actual annual requirements of the domestic wool-textile industry. The balance has to be imported, principally from Australia, Argentina, Uruguay, and Great Britain, as indicated in Table 134.

TABLE 134.—Wool, and hair of the Cashmere goat and other like animals: Foreign trade of France, average 1909-1913 and 1921-1925 (33, 37)

[In thousand pounds—l. e., 000 omitted]

Country	1909-1913	1921	1922	1923	1924	1925
Raw wool:						
Imports—						
Great Britain.....	82, 530	65, 204	83, 602	74, 682	55, 908	53, 728
Australia.....	188, 890	124, 167	269, 023	264, 430	208, 901	240, 011
Uruguay.....	46, 660	23, 265	27, 209	14, 558	22, 613	23, 613
Argentina.....	187, 434	78, 253	191, 120	116, 617	88, 450	97, 556
Algeria.....	20, 365	14, 240	12, 597	14, 999	16, 304	17, 848
Spain.....	22, 833	5, 008	14, 072	15, 931	14, 796	6, 768
Other countries.....	59, 638	25, 380	82, 950	76, 273	84, 964	97, 687
Total imports.....	608, 350	335, 517	680, 573	577, 490	491, 936	537, 211
Total exports.....	83, 960	33, 075	47, 112	45, 594	37, 491	33, 687
Net imports.....	524, 390	302, 442	633, 461	531, 896	454, 445	503, 524
Hair of the cashmere goat and like animals:						
Imports—						
Great Britain.....	69	55	85	229	60	-----
Algeria.....	170	151	316	354	370	-----
Greece.....	1	(e)	86	170	128	-----
Turkey.....	370	(e)	(e)	82	194	-----
British India.....	24	(e)	(e)	(e)	191	-----
Morocco.....	138	14	50	125	205	-----
Tunis.....	31	47	43	196	166	-----
Germany.....	73	11	185	25	50	-----
Other countries.....	339	104	177	609	458	-----
Total imports.....	1, 215	382	942	1, 790	1, 820	^b 2, 663
Total exports.....	1, 013	328	367	468	1, 140	1, 231
Net imports.....	202	54	575	1, 322	680	1, 462

^a In any, included in other countries.

^b Not available by countries.

^c Based on Foreign Crops and Markets (107, p. 801).

Imports of raw wool into France, including wooled sheepskins, averaged 524,545,000 pounds annually during the five years 1921-1925, and domestic production of wool averaged 42,527,000 pounds annually. The aggregate of exports of domestic wool and reexports of foreign wool during this period averaged 39,392,000 pounds annually. This left an average annual balance of 527,680,000 pounds of raw wool for manufacturing purposes.

Production of wool

The most generally accepted estimates for the domestic production of wool in France are those made by the "Office Français de l'Élevage" (bureau of French livestock breeding). This organization bases its estimates on the application of an average yield of wool to the number of each breed of sheep. By the use of this basis, the wool clip for 1922 was estimated at 41,800,000 pounds. The midyear average number of sheep that year, considering the number reported in December, 1921 and 1922, according to the French Ministry of Agriculture, was 9,690,990 head, which indicates that an average yield of 4.3 pounds³⁸ per sheep was used in estimating production. No estimates have been made since 1922, but since the proportional representation of rams, ewes, lambs, etc., has not changed materially, the average wool yield of 4.3 pounds per sheep can be considered as still applicable. The official census of sheep at the end of 1925, together with that at the end of 1924, gives a midyear average of 10,354,270 head, which, at 4.3 pounds per sheep, would represent a total domestic clip of approximately 44,523,000 pounds.

Wool retained for consumption

Recent postwar years show substantial increases in the quantities of wool retained for consumption. Although the figures are incomplete, it is felt that imports plus production minus exports and reexports give some indication of the rate of variation in the manufacture of wool products. Such figures for the five-year period, 1921-1925, indicate that variations in the quantities of wool retained for consumption are due more to import variations than to fluctuations in domestic production or exports.

The bulk of the raw wool imported comes from Australia, Argentina, Uruguay, and Great Britain. (Table 134.) Total imports during 1925 amounted to approximately 537,211,000 pounds as compared with 491,936,000 in 1924 and with the pre-war average for 1909-1913 of 608,350,000 pounds. Australia supplied about 31 per cent of the total import during 1909-1913, with Argentina, a close second, supplying 30.8 per cent, and Great Britain furnished about 13.6 per cent of the pre-war imports. Since the war Australia has maintained or exceeded her pre-war supply of wool to France, reaching 44.7 per cent of the total imports in 1925, while the supply from Argentina has gradually decreased, reaching only 18.2 per cent of the total in that year. Great Britain's supply had fallen to 10 per cent of the total in 1925.

³⁸ The actual figure used by this bureau was 1.936 kilograms, which is equal to 4.268 pounds per head.

France imports over 1,000,000 pounds of semimanufactured wool (combed and carded) annually. Most of this comes from Great Britain. Imports of wool waste in 1925 amounted to approximately 20,000,000 pounds, coming principally from the economic union of Belgium and Luxemburg, and from Germany, Great Britain, and Italy.

TABLE 135.—Raw wool: Consumption in France, average 1909-1913 and 1921-1925¹

[In thousand pounds—i. e., 000 omitted]

Item	Average 1909-1913	1921	1922	1923	1924	1925	Average 1921-1925
Imports.....	608,350	335,517	690,573	577,490	491,936	537,211	524,545
Production.....	72,374	40,862	41,671	42,371	43,208	44,523	42,527
Available supply.....	680,724	376,379	722,244	619,861	535,144	581,734	567,072
Exports including reexports.....	83,900	33,075	47,112	45,594	37,491	33,687	39,392
Consumption.....	596,784	343,304	675,132	574,267	497,653	548,047	527,680

¹ Does not include hair of the cashmere goat and other like animals.

Imports and exports (see Table 134).

Production based on an average yield of 4.3 pounds of wool per head of the midyear average number of sheep reported in *Statistique Agricole Annuelle* (52) and *Journal Officiel de la République Française* (42).

Colonial sources of supply to be developed

Although the number of sheep has decreased, the wool-manufacturing equipment of the country and the demand for wool textiles have been steadily increasing until to-day France is one of the most important wool-consuming nations of the world. The country, consequently, has been obliged to import a constantly increasing quantity of raw material in order to insure an adequate supply of raw wool for the increasing manufacturing capacity of the nation. Therefore, to guard against the possibility of restrictions on the access to foreign sources of supply, the French interests are encouraging the production of wool in the French colonies.

In recent years sheep raisers, up to the time of the World War at least, have been principally interested in the production of meat. Wool growing, in consequence, was somewhat neglected and little attention was paid to developing the production per animal. No important increase is expected in the future sheep population of France, but it is believed that the industry can be developed and greatly stimulated in Madagascar, in West Africa, and in Algeria, Tunis, and Morocco. The two large textile organizations, the Comité de la Laine and the Fédération de Roubaix-Tourcoing have definitely embarked upon a program of developing the colonial sheep industry, particularly in French West Africa and in Madagascar.

Because of the increasing demand for wool in the textile industry, the exports and reexports of raw wool and of semimanufactured wool and wool waste in recent years have been considerably below the pre-war average. Shipments abroad during 1925 were as follows: Raw wool, 34,000,000 pounds; combed and carded wool, 13,000,000 pounds; and wool waste, 25,000,000 pounds, as compared with an annual average of 84,000,000 pounds of raw wool, 58,000,000 pounds of combed and carded wool, and 53,000,000 pounds of wool waste during the five years 1909-1913.

SWINE

By far the greatest part of the pork consumed is produced by native breeds descended from two races of swine. In the north native breeds are descended from the ancient Celtic race (*Sus celticus*) indigenous to northwestern Europe. Throughout southern France are found the descendants of the ancient Mediterranean race *S. ibericus*. The modern strains of these two races of swine have been considerably modified to meet the requirements of local conditions. Modern breeds of British swine developed from crosses between native Celtic stock and *S. asiaticus* are also found generally throughout France. These British breeds are maintained as pure breeds and are also employed to improve native stock.

The leading breeds of swine in France, with their probable origins and the localities in which they are bred are given in Table 136.

TABLE 136.—*Swine: Some of the more important breeds in France (25)*

Breed	Probable origin	Locality in which breed is popular
Craonnaise, Normand, ¹ Breton, Lot, Lorraine, etc.	Ancient Celtic ² ...	Maine-et-Loire, Loire-Inférieure, Vendée, Charente-Inférieure, Vienne, Oise, Eure-et-Loir, Seine-et-Oise, Alsace-Lorraine, etc.
Limousin, Bresse, Dauphine, Bourgogne, Charolais, Lorraine, Gascogne, Roussillon, Bern, etc.	Ancient Iberian ³ ...	Central and southern France.
Yorkshire, Berkshire, etc.....	Crossbred ⁴	Northern and other parts of France.

² *Sus celticus*.¹ Principal native breed.³ *Sus ibericus*.⁴ Cross between *Sus asiaticus* and local British breeds.

Hogs are very well distributed throughout the agricultural regions. A few are kept on practically every farm. Native breeds are mostly of the lean bacon type and produce but little lard.

In practically all cases hogs are raised incidental to other farm production. They utilize the by-products of the farm and act in a measure as scavengers of table scraps and general farm waste, but additional feed is required in finishing animals for the market. In the northwest, where the dairy industry is most important, skim milk forms the basic feed, in the central region beet pulp and potatoes are used largely, and in the southeast considerable corn is fed. Farther west, to the north of Marseille, where a large amount of oil cake is produced, more of this is utilized, and cake is used very generally in all sections of the country.

A fairly recent development is the "industrial" fattening of hogs on the outskirts of the consuming centers, where the waste of the cities is contracted for by these fattening companies. It is not yet clear to what extent this movement will develop.

The numbers of swine carried in French statistics as on hand December 31 fluctuate considerably from year to year. The number increased from 4,911,000 in 1840 to 7,147,000 in 1882 and averaged around 6,000,000 up to the close of the nineteenth century. During the first 13 years of the twentieth century the swine carry-over at the end of the year ranged around 7,000,000 head.

Between 1891 and 1905, five-year averages show a net export, but during the eight years just preceding the World War, France imported on the average several thousand more swine than were exported, as indicated in Table 137.

TABLE 137.—Swine: Number in France within former and present boundaries, imports and exports, five-year averages 1881-1923, annual 1924 and 1925

Years	France, former boundary	Alsace-Lorraine	France, present boundary ¹	Index numbers	
				Former boundary	Present boundary
Average:	<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>		
1881-1885.....	6,189	322	6,511	88.8	
1886-1890.....	5,931	346	6,277	85.1	
1891-1895.....	6,344	370	6,714	91.0	
1896-1900.....	6,388	408	6,796	91.6	
1901-1905.....	7,322	487	7,809	105.0	
1906-1910.....	7,091	502	7,593	101.7	
1909-1913.....	6,973	462	7,435	100.0	100.0
1911-1913.....	6,886	462	7,348	98.8	
1914-1918 ¹⁰	4,669	318	4,987		
1919-1923.....			5,020		67.5
1924.....			5,802		78.0
1925.....			5,793		77.9

Years	Former boundary		
	Imports	Exports	Net ¹¹
Average:	<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>
1881-1885.....	159	89	+70
1886-1890.....	108	99	+9
1891-1895.....	42	91	-49
1896-1900.....	27	46	-19
1901-1905.....	9	52	-43
1906-1910.....	148	68	+80
1909-1913.....	143	68	+75
1911-1913.....	225	39	+186
1914-1918.....	33	39	-6
	Present boundary ¹		
1920-1923 ¹²	122	53	+69
1924.....	30	13	+17
1925.....	24	124	-100

¹ Including Alsace-Lorraine.

² 4-year average, 1882-1885.

³ 1 year, 1883.

⁴ Estimated by taking the average of the numbers given for 1883 and 1892.

⁵ 1 year, 1892.

⁶ 2-year average, 1897 and 1900; 375,635 for 1897 and 440,936 for 1900.

⁷ 1 year, 1904.

⁸ 1 year, 1907.

⁹ 2-year average, 1912-13.

¹⁰ Averaged from figures reported in official source and includes reports from the Departments wholly or in part involved in war operations. Data from these Departments were incomplete and for that reason average for the war period is not comparable with other years.

¹¹ Net imports are indicated by (+) and net exports by (-).

¹² 1919 not available for Alsace-Lorraine

Number of swine, France, 1882-1923 (52, p. 262); 1924 (3); 1925 (45). Alsace-Lorraine, 1883-1918 (66); 1919 (11).

Imports and exports (53, 54, 57, 47, 1919, p. 324).

During the war the numbers of swine in France decreased heavily, averaging 58.6 per cent below normal in the 10 occupied Departments in 1919 as compared with 39.5 per cent decrease in the 77 unoccupied Departments and 33.1 per cent in Alsace-Lorraine, as indicated in Table 138.

TABLE 138.—*Swine: Number in the occupied and unoccupied Departments of France and Alsace-Lorraine, average 1909-1913, 1918, 1919, 1924, and 1925*

Region	Average, 1909- 1913	1918		1919		1924		1925	
		Total	Per- centage of 1909- 1913	Total	Per- centage of 1909- 1913	Total	Per- centage of 1909- 1913	Total	Per- centage of 1909- 1913
9 Departments.....	Thousands 673	Thousands 251	Per cent 37.3	Thousands 289	Per cent 42.9	Thousands 486	Per cent 72.2	Thousands 487	Per cent 72.4
Ardennes.....	44	(¹)	-----	8	18.2	28	63.6	28	63.6
10 Departments.....	717	-----	-----	297	41.4	514	71.7	515	71.8
77 Departments.....	6,256	4,126	66.0	3,784	60.5	4,826	77.1	4,868	77.8
Alsace-Lorraine (3 De- partments).....	462	274	59.3	309	66.9	462	100.0	410	88.7
Total, France.....	7,435	-----	-----	4,390	59.0	5,802	78.0	5,793	77.9

¹ Not available.² 2-year average, 1912-1913.

France, *Statistique Agricole Annuelle* (45, 47) and *Journal Officiel de la République Française* (45).
 Alsace-Lorraine 1912, 1913, and 1918 (66); 1919 (11, p. 2).
 See Table 38 for notes on occupied and unoccupied Departments.

Since 1919 the recovery of the swine industry has been very rapid in Alsace-Lorraine. The reported carryover on December 31 reached normal in 1924 but fluctuated to 88.7 per cent of the 1909-1913 average in 1925. The rate of increase in numbers of swine in the 10 occupied Departments has also been relatively rapid, reaching 71.7 and 71.8 per cent of normal, respectively, in 1924 and 1925. In the 77 Departments of France outside the war zone the relative rate of increase in the reported numbers of swine has been slower because of heavy shipments to the liberated regions; the carryover on December 31, 1925, was 77.8 per cent of normal.

In 1925 throughout all of France the carryover reported as of December 31 was a few thousand less than in 1924 and still 22.1 per cent below the 1909-1913 average.

Pork forms the chief meat ration of the rural districts where slaughtering is seldom inspected and no record is kept of the number of animals killed for home use. Young pigs born in the early spring may be slaughtered for home use before the end of the year. An estimate based upon the carryover at the end of the year is thus only a very rough index of the actual numbers produced and slaughtered during the year.

A fairly accurate estimate of beef and veal consumption (disappearance) is possible, but an estimate based upon published statistics of the disappearance of pork in the rural districts may fall short of approximating the actual consumption. This fact must be kept in mind in considering the contrasts developed by an analysis of the statistical disappearance of swine calculated from the statistics published by the French Ministry of Agriculture.

Statistical disappearance of swine

Both Lucas (86) and Martel (87) base their estimates of the annual disappearance of swine upon the assumption that the swine population on the average is "turned over" once a year, employing as their base 7,200,000—the average for the 10-year period ended 1910.

To obtain a basis for making a year-to-year calculation of disappearance of swine it has been assumed that although boars may mature at 9 to 12 months and sows a few weeks earlier, the services of the animals in actual practice are not utilized under 1 year of age.

Boars and sows are generally retained until their offspring are of an age to reproduce and are thus probably slaughtered at an average age of about 3 years. It is therefore probably not far from the actual fact to assume that the disappearance of boars and sows in any one year is one-half the number reported on December 31 of the preceding year plus or minus one-half the difference between the reported carry-overs on December 31 of the preceding and the current years.

In France hogs are generally slaughtered at 6 to 8 months of age, ranging between 80 to 100 kilograms in weight (176 to 220 pounds), or at 10 to 12 months, ranging between 150 to 200 kilograms (331 to 441 pounds). The Interallied Scientific Food Commission (20, p. 25) places the pre-war average weight per dressed carcass at 110 kilograms (242.5 pounds) indicating that most hogs are slaughtered at the lighter weights.

Hogs older than 6 months and pigs younger than 6 months.—It is probable that all hogs carried in the classifications, hogs older than 6 months and pigs younger than 6 months, in French statistics, on December 31 of any year either mature into boars and sows or are slaughtered or disappear in some other manner during the following year, and that those carried over on December 31 were born during the current year.

All pigs born during the year, except those carried over as on December 31 under the classification "older than 6 months" and "younger than 6 months" are considered to have been slaughtered or to have disappeared in some other manner during the year.

The average number of pigs born per sow during the year is estimated to be 8.1.³⁹ This figure was obtained by dividing the 1901–1910 average number of swine, 7,206,183, by 887,548, the average mid-year number of sows between December 31, 1900, and December 31, 1910.

Applying these principles to the statistics of 1911 an approximate disappearance of 7,188,982⁴⁰ is obtained. The statistical disappearance for the years 1909–1925, obtained by this method, are indicated in Table 139.

³⁹ Compare this with 7.8, the average number of pigs per sow produced in the United States.

⁴⁰ Compare with Martel (87) and Lucas (86) estimate 7,200,000.

TABLE 139.—*Swine: Approximate disappearance of native animals in France, 1909-1925*

Authority and boundary	Year	Boars	Sows	Hogs over 6 months	Pigs under 6 months	Total
France, excluding Alsace-Lorraine:						
Estimate by—		<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Luceas ¹	1911					7,200,000
Martel ²	1911					7,200,000
United States Department of Agriculture ³	1911	19,340	425,600	5,548,500	1,195,392	7,188,982
Do.....	1909-1913	18,865	442,270	5,620,289	1,131,286	7,212,710
Do.....	1914-1918	16,441	389,792	4,095,692	1,697,370	6,089,295
Do.....	1919	11,965	287,155	3,433,720	1,479,915	5,212,755
Do.....	1920	12,090	276,875	3,081,245	1,390,907	4,761,117
France, including Alsace-Lorraine:						
Estimated by—						
United States Department of Agriculture.....	1909-1913 ⁴	20,191	466,988	6,023,967	1,179,656	7,690,802
Do.....	1921	12,655	354,470	3,833,125	1,312,820	5,513,070
Do.....	1922	18,415	361,710	4,062,785	1,200,751	5,643,661
Do.....	1923	14,550	324,250	4,088,200	1,153,266	5,680,266
Do.....	1924	15,185	347,435	4,230,980	1,150,494	5,744,094
Do.....	1925	16,580	395,630	4,589,560	1,268,540	6,270,310
Average.....	1921-1925	15,477	356,699	4,160,930	1,217,174	5,750,280

¹ (86, p. 242-244.)² Quoted by Massé (87, p. 18-19).³ Method described in text. Original numbers from Statistique Agricole and Journal Officiel de la République Française.⁴ Includes 4-year average for Alsace-Lorraine, 1908-1912. The numbers of swine for 1907 and 1912 are reported in Vierteljahrshefte (69, p. 276; 72, p. 294), other years being estimated. The number of pigs born per swine are estimated at 10 in Alsace-Lorraine, instead of 8.1 as in France.

There is the possibility that total disappearance as indicated in Table 139 may be low. Swine production is more elastic than that of cattle or sheep. The number of pigs produced varies with the number of times per year a sow farrows. Whether or not a sow produces more than one litter during the year depends upon available feed and the conditions of the market. These conditions fluctuate considerably from year to year and might cause the statistical disappearance to deviate more or less widely from the actual number slaughtered.

The net disappearance of swine as represented in Table 140 is the calculated statistical disappearance plus importations minus exportations.

The records of municipal slaughterings in 14 cities, including Strassbourg in Alsace-Lorraine, indicate that in Paris and, similarly, in provincial cities the slaughterings of swine during 1921-1924 were below the 1909-1913 average, but in 1925 heavy marketing resulted in municipal slaughterings 17.3 per cent above normal accompanied by a net export of almost 100,000 hogs.

On the other hand, the 1925 statistical disappearance in the rural districts—that is, unrecorded disappearance—is calculated to be 38.5 per cent below the 1909-1913 average.

TABLE 140.—Swine: Recorded slaughterings at municipal slaughterhouses and unrecorded disappearance, 1909—1925

Boundary and year	Approximate disappearance of native animals	Imports ¹	Exports ¹	Net approximate disappearance		Slaughterings						Unrecorded disappearance including home slaughterings ⁶	Index number		
				Total	Per 1,000 inhabitants ²	Paris ³	Index number	12 provincial cities ⁴	Index number	13 cities ⁵	Index number			Total at municipal slaughterhouses ⁵	Index number
France, excluding Alsace-Lorraine:	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>		<i>Number</i>		<i>Number</i>		<i>Number</i>		<i>Number</i>	
1909-1913.....	7, 212, 710	142, 571	68, 389	7, 286, 892	184	471, 279	100.0	165, 801	100.0	7 637, 080	100.0	2, 095, 000	100.0	5, 190, 892	100.0
1914-1918.....	6, 000, 295	38, 048	39, 213	6, 069, 130	159	383, 489	81.4					1, 706, 144	81.4	4, 386, 966	84.5
1919.....	5, 212, 755	170, 222	31, 716	5, 351, 261	(9)	260, 252	55.2	96, 732	58.3	356, 084	58.0	1, 173, 760	58.0	4, 177, 501	80.5
1920.....	4, 761, 117	96, 001	32, 408	4, 824, 620	(8)	278, 451	59.1	96, 348	58.1	374, 799	58.8	1, 232, 448	58.8	3, 592, 172	69.2
France, including Alsace-Lorraine:															
1909-1913.....	7, 690, 802	¹⁰ 209, 076	68, 389	¹¹ 7, 831, 459	189	471, 279	100.0	¹² 215, 842	100.0	¹³ 687, 121	100.0	¹⁴ 2, 430, 891	100.0	¹⁵ 5, 400, 598	100.0
1921.....	5, 513, 070	108, 356	79, 472	5, 541, 954	141	457, 529	97.1	195, 217	90.4	652, 748	95.0	2, 300, 246	95.0	3, 232, 608	63.9
1922.....	5, 643, 661	207, 065	46, 813	5, 803, 913	147	438, 979	93.1	118, 878	55.1	557, 857	81.2	1, 073, 883	81.2	3, 830, 030	70.9
1923.....	5, 590, 266	76, 141	52, 541	5, 603, 866	141	366, 570	77.8	165, 107	76.5	531, 683	77.4	1, 881, 510	77.4	3, 722, 356	68.9
1924.....	5, 744, 094	30, 062	12, 696	5, 761, 460	145	381, 440	80.9	183, 643	85.1	565, 083	82.2	1, 998, 192	82.2	3, 763, 268	69.7
1925.....	6, 270, 310	24, 185	123, 608	6, 170, 887	154	554, 973	117.8	250, 698	116.1	805, 670	117.3	2, 851, 435	117.3	3, 319, 452	61.5
Average 1921-1925.....	5, 750, 280	89, 162	63, 026	5, 776, 416	146	439, 900	93.3	182, 709	84.6	622, 609	90.6	2, 202, 873	90.6	3, 573, 543	66.2

¹⁻⁷ See similar footnotes on Table 114.

⁸ Same as footnote 9, Table 114.

⁹ Same as footnote 10, Table 114.

¹⁰ Includes probable deficit of Alsace-Lorraine, 66,505 swine (see p. 180).

¹¹ Sum of municipal and unrecorded slaughterings, including home slaughterings.

¹² Includes 334,861 municipal slaughterings in Alsace-Lorraine during 1909-1913 (77, p. 11).

¹³ Includes 209,706 home slaughterings in Alsace-Lorraine during 1912 as reported in Vierteljahrshette (75, p. 47).

Statistical disappearance of swine in Alsace-Lorraine

The statistical disappearance of swine in Alsace-Lorraine is based upon a four-year average, 1909-1912 (p. 158). The data published in German statistics are not in all respects comparable with those appearing in French records, but the approximate pre-war statistical disappearance of native swine in Alsace-Lorraine is estimated to be 1,326 boars, 24,718 sows, 403,678 hogs over six months, and 48,370 pigs under 6 months, totaling 478,092 swine.

The slaughterhouses in 23 communities or districts record the 1909-1913 average annual slaughterings at 334,891 swine of all classes, and the German Government estimated in 1912 that home slaughterings approximated 209,706.

This indicates a total annual slaughter of 544,597 swine of which approximately 478,092 were native animals, leaving a deficit of about 66,505. In estimating net disappearance in France, including Alsace-Lorraine, in Table 140, it is assumed that this deficit was covered by the importation of live animals.

Table 141 indicates the dressed-meat equivalents of swine slaughtered in Paris and provincial cities and statistical disappearance in the rural districts. In estimating total pork disappearance it is assumed that all imported meat was consumed in urban centers.

TABLE 141.—Pork: Disappearance in municipalities and rural districts, 1909-1925

Boundary and year	Animals slaughtered ¹	Weight of dressed meat		Net imports ²				Disappearance				
		Per head	Total	Fresh	Frozen ³	Cured	Sausage ⁴	Total ⁵	Index number	Per capita ⁶	Index number	
France, excluding Alsace-Lorraine:												
1909-1913—	<i>Number</i>	<i>Pounds</i>	<i>Pounds</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>			<i>Pounds</i>	
Paris.....	471,279	154.1	72,622,917	} 2,730	} (9)	} 10,654	} 4,562	85,563	100.0	29.6	100.0	
Other cities.....	1,624,721	211.2	343,221,499					349,227	100.0	23.9	100.0	
Unrecorded.....	5,190,892	264.6	1,373,510,023					1,373,510	100.0	62.1	100.0	
Total.....	7,286,892	245.6	1,789,354,439					1,808,300	100.0	45.6	100.0	
1914-1918—												
Paris.....	383,489	157.0	60,201,614	} 1,917	} 1,929	} 74,367	} 18,872	69,817	81.6	(11)	-----	
Other cities.....	1,322,655	176.6	233,590,873					321,051	91.9	(11)	-----	
Unrecorded.....	4,386,986	221.2	970,401,303					970,401	70.7	(11)	-----	
Total.....	6,093,130	207.5	1,264,193,790					1,361,269	75.3	35.6	73.1	
1919—												
Paris.....	260,252	162.7	42,347,359	} -133	} 6,582	} 306,476	} 11,683	78,906	92.2	-----	-----	
Other cities.....	913,508	153.5	140,223,478					428,273	122.6	-----	-----	
Unrecorded.....	4,177,501	192.4	803,751,192					803,751	58.5	-----	-----	
Total.....	5,351,261	184.3	986,322,029					1,310,930	72.5	(11)	-----	
1920—												
Paris.....	278,451	168.3	46,856,207	} -370	} 6,777	} 61,248	} 5,121	81,572	95.3	-----	-----	
Other cities.....	953,997	153.5	146,438,540					184,499	52.8	-----	-----	
Unrecorded.....	3,592,172	192.4	691,133,383					691,134	50.3	-----	-----	
Total.....	4,824,620	183.3	884,428,640					957,205	52.9	(11)	-----	
France including Alsace-Lorraine:												
1909-1913—												
Paris.....	471,279	154.1	72,622,917	} 2,730	} (9)	} 10,654	} 4,562	85,563	100.0	29.6	100.0	
Other cities.....	1,959,612	211.2	413,870,054					419,876	100.0	26.9	100.0	
Unrecorded.....	5,400,598	264.6	1,428,998,231					1,428,998	100.0	62.4	100.0	
Total.....	7,831,489	244.6	1,915,491,202					1,934,437	100.0	46.7	100.0	

See footnotes at end of table.

TABLE 141.—Pork: Disappearance in municipalities and rural districts, 1909-1925—Continued

Boundary and year	Animals slaugh- tered ¹	Weight of dressed meat		Net imports ²				Disappearance				
		Per head	Total	Fresh	Frozen ³	Cured	Sausage ⁴	Total ⁵	Index number	Per capita ⁶	Index number	
	Number	Pounds	Pounds	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds		Pounds		
France, including Alsace Lorraine—Continued.												
1921—												
Paris.....	457,529	153.2	70,115,830	546	4,155	16,462	966	77,911	91.1	26.8	90.5	
Other cities.....	1,851,817	211.2	391,193,750									
Unrecorded.....	3,232,608	264.6	855,348,077									
Total.....	5,541,954	237.6	1,316,567,657					1,338,697	69.2	34.1	73.0	
1922—												
Paris.....	438,979	156.7	68,799,682	23,187	2,693	7,523	3,223	74,166	86.7	25.4	85.8	
Other cities.....	1,534,904	211.2	324,171,725									
Unrecorded.....	3,830,030	264.6	1,013,425,938									
Total.....	5,803,913	242.3	1,406,397,345					1,013,426	70.9	48.0	76.9	
1923—												
Paris.....	366,576	164.5	60,316,300	43,041	2,403	33,126	183	82,556	96.5	28.1	94.9	
Other cities.....	1,514,934	211.2	319,954,061									
Unrecorded.....	3,722,358	264.6	984,935,398									
Total.....	5,603,866	243.6	1,365,205,849					376,468	89.7	24.4	90.7	
1924—												
Paris.....	381,440	158.9	60,618,107	72,928	3,742	32,845	-1,209	89,428	104.5	30.3	102.4	
Other cities.....	1,616,752	211.2	341,458,022									
Unrecorded.....	3,763,268	264.6	995,760,713									
Total.....	5,761,460	242.6	1,397,836,842					984,935	68.9	46.4	74.4	
1925—												
Paris.....	554,978	154.1	85,522,110	12,451	3,808	10,672	189	597,654	118.2	32.1	117.6	
Other cities.....	2,296,457	211.2	485,011,718									
Unrecorded.....	3,319,452	264.6	878,326,969									
Total.....	6,170,887	234.8	1,448,860,827					995,761	69.7	46.6	74.7	
1925—												
Paris.....	554,978	154.1	85,522,110	12,451	3,808	10,672	189	597,654	118.2	32.1	117.6	
Other cities.....	2,296,457	211.2	485,011,718									
Unrecorded.....	3,319,452	264.6	878,326,969									
Total.....	6,170,887	234.8	1,448,860,827					878,327	61.5	40.8	65.4	
Total.....	6,170,887	234.8	1,448,860,827					1,475,981	76.3	36.6	78.8	

¹ See Table 140 for sources.² (53, 37) Net exports are indicated by minus sign (-).³ Frozen meats not separately stated in exports, but it is assumed that none were exported.

⁴ Includes a small amount of beef noses during 1910-1921.

⁵ Disappearance in Paris 1909-1920, for total pork meat and 1909-1922 pork products furnished by service de l'Octroi and Direction de l'Approvisionnement Général de Paris; 1921-1924 total pork from reports Jan. 14, 1926, by David S. Green, Paris trade commissioner, United States Department of Commerce. Consumption of meat in France (unpublished data), pork products 1923 and 1924, estimated to be equal to 1922.

⁶ See Table 6 for population of total France. 1909-1913 urban population estimated to be proportional to 1911 census (see Table 11), 44.2 per cent or 17,510,000 excluding Alsace-Lorraine and 44.7 per cent, or 18,509,000 including Alsace-Lorraine. Paris assumed to average 2,888,000, same as census for 1911. 1921-1925: 1921, urban population proportional to census of that year, 18,206,000, or 46.4 per cent. 1922 to 1925, estimated to be 46.4 per cent of total population. 1922, 18,263,000; 1923, 18,394,000; 1924, 18,500,000; and 1925, 18,616,000. Paris population in 1921 according to census that year was 2,906,000. 1922 to 1925 assumed to increase each year at the same rate of increase as estimated for urban centers. 1922, 2,915,000; 1923, 2,935,000; 1924, 2,952,000; and 1925, 2,973,000. Rural population is the difference between total and urban.

⁷ See footnote 3, Table 114, for sources.

⁸ Frozen meat not separately stated prior to 1912. France imported an average of 482,000 pounds of frozen pork during 1912 and 1913. Considering fresh and frozen pork together during 1909-1913, resulted in a net import of 3,730,000 pounds.

⁹ 90 kilograms (198.4 pounds) Martel's estimate for cities (87, p. 18). The weight for other cities was obtained by subtracting the total weight in Paris from that in total cities.

¹⁰ 120 kilograms (264.6 pounds) estimated weight of slaughtering in communities not provided with public slaughterhouses (40).

¹¹ Compare this with 110 kilograms (242.5 pounds) (80, p. 26).

¹² Rural and urban population not available separately during 1914-1918, and total populations excluding Alsace-Lorraine during 1919 and 1920 are not available.

¹³ Weight is estimated at 83.6 per cent of pre-war since Ressources et les Besoins Alimentaires des Pays Alliés, second report (80) indicates that slaughtering weight during the war was 83.6 per cent of normal.

¹⁴ Estimated at 72.7 per cent of pre-war, since source in footnote 13 indicates that the slaughter weight in 1918 was 72.7 per cent of pre-war, and it is assumed that the weights in these districts did not change materially during 1919 and 1920.

¹⁵ Assumed to be back to pre-war normal from 1921 to 1925.

¹⁶ Pre-war normal slaughtering weight used since total weight of meat in Paris for 1925 is not available.

¹⁷ Consumption in Paris not available separately.

Before the war, urban centers in France, including those in Alsace-Lorraine, consumed about 27.3 pounds of pork per capita, as contrasted with about 62.4 pounds per capita in the rural districts.

Per capita consumption of pork in cities probably reached normal in 1924, and calculated disappearance in rural districts has, since the war, ranged considerably below the pre-war average.

The cities have depended largely upon importations of fresh and cured pork to supplement domestic shortage rather than importing frozen pork, although frozen pork has been sold on the Paris market at a price considerably below that of fresh meat.

TABLE 142.—Pork and pork products: Exports from the United States to France, 1910-1925

[In thousand pounds—l. e., 000 omitted]

Year	Canned	Fresh	Pickled	Bacon	Hams and shoulders	Sausage, canned	Sausage, other	Sausage casings	Lard	Neutral lard
Ended June 30:										
1910.....	120	0	66	23	8	(¹)	422	1,215	471	(²) 45
1911.....	51	0	224	1,711	26	(¹)	411	806	12,776	200
1912.....	104	0	375	9,418	258	(¹)	1,651	708	24,475	75
1913.....	33	0	593	2,097	316	(¹)	1,468	858	17,428	61
1914.....	28	0	259	197	122	14	357	830	6,308	40
1915.....	257	324	8,261	44,712	609	346	2,023	1,376	32,173	267
1916.....	645	2,270	1,551	52,501	7,898	1,990	4,640	1,159	42,283	251
1917.....	1,103	920	829	77,036	25,664	623	5,786	1,993	54,968	0
1918.....	2,423	642	461	73,532	18,436	108	6,644	504	33,427	
Ended Dec. 31:										
1919.....	1,011	2,019	605	178,431	103,202	1,410	7,745	1,504	96,297	657
1920.....	99	1,281	660	25,041	26,209	770	4,744	1,172	48,756	308
1921.....	0	6	145	12,155	1,398	392	2,544	1,568	40,102	306
1922.....	10	0	206	2,512	487	125	3,278	843	26,731	92
1923.....	6	1	637	14,773	3,878	105	1,678	756	35,622	126
1924.....	0	270	411	9,353	3,418	11	1,788	879	23,619	145
1925.....	1	23	62	546	497	(³)	1,368	1,160	4,447	191

¹ If any, included in "Other sausage."

² Not separately stated prior to 1911.

³ Less than 500 pounds.

Compiled from Foreign Commerce and Navigation of the United States, 1914 and 1918 to 1923 (108); Monthly Summary of Foreign Commerce of the United States, December, 1924, and December, 1925 (110)

TABLE 143.—Bacon, hams, lard, and fresh pork: Exports from the United States to France, July, 1921, to December, 1925 (110)

Month	Bacon ¹	Hams and shoulders ²	Lard	Fresh pork
	Pounds	Pounds	Pounds	Pounds
Total, July, 1921-June, 1921	9,363,454	894,348	37,069,312	
1922-23				
July.....	92,535	27,644	963,752	
August.....	132,094	73,068	3,662,569	
September.....	137,618	55,125	2,506,673	
October.....	222,835	44,116	1,634,081	
November.....	330,103	68,114	20,855,415	
December.....	547,006	56,458	4,389,793	
January.....	914,908	114,824	5,846,826	
February.....	1,055,001	156,786	4,181,253	
March.....	1,453,972	304,932	3,962,240	
April.....	966,838	494,194	2,908,521	
May.....	918,242	325,277	2,361,817	
June.....	987,284	361,597	2,118,512	1,000
Total	7,758,436	2,142,135	37,801,672	1,000
1923-24				
July.....	1,383,360	462,462	2,200,531	
August.....	877,705	361,088	948,582	
September.....	665,720	215,467	3,117,293	
October.....	1,660,658	265,810	5,023,924	
November.....	2,022,920	484,537	3,776,485	
December.....	1,866,136	330,250	2,235,736	
January.....	3,054,701	328,173	5,226,469	
February.....	1,380,639	649,400	2,520,508	
March.....	770,676	453,463	2,426,511	
April.....	482,364	321,580	2,169,211	
May.....	180,166	383,224	1,672,101	
June.....	596,253	390,913	1,298,709	79,168
Total	14,941,288	4,586,967	32,618,060	79,168
1924-25				
July.....	546,542	196,107	1,044,196	125,146
August.....	456,430	91,778	437,293	8,249
September.....	601,077	234,033	1,805,009	38,510
October.....	467,718	105,274	897,847	
November.....	248,034	91,402	1,201,502	7,567
December.....	568,274	173,465	2,819,161	11,281
January.....	180,621	47,426	1,558,271	11,466
February.....	121,357	84,255	1,000,682	
March.....	60,145	63,532	182,078	
April.....		13,406	55,000	
May.....			290,404	
June.....		12,622	71,698	11,784
Total	3,250,198	1,113,300	11,463,141	214,003
1925				
July.....		111,889	55,000	
August.....	1,727	6,250	200	
September.....	12,500	17,844	16,846	
October.....	50,075	88,948	217,828	
November.....	117,468	38,398	353,144	
December.....	2,116	12,670	646,084	

¹ Includes Cumberland sides prior to January, 1924.
² Includes Wiltshire sides prior to January, 1924.

MULES, DONKEYS, AND GOATS

Donkeys are found in all parts of France, but particularly in the "massif central" region and the southern and western Departments of the country. Between 1891 and 1913 the numbers of donkeys remained fairly constant. During the war there was a large reduction in the numbers of donkeys in the occupied Departments and Alsace-Lorraine, the 1919 returns for the former being 60.5 per cent and for the latter 42.1 per cent of normal. Outside the war zone donkeys had decreased 10.9 to 14.5 per cent by 1918 and 1919, and since then have continued to decrease, until, in 1925 they were 23.9 per cent below normal. There has been a continued falling off in numbers of donkeys in Alsace-Lorraine since the war, but in the occupied Departments numbers have increased reaching 68 per cent of normal in 1925.

The production of mules was a considerable though declining industry before the war, numbers having decreased from an average of 253,000 during the four-year period ended 1885 to 193,000 in 1909-1913. During the war, in the 77 Departments outside the war zone, numbers of mules had fallen to 72.7 per cent of normal by 1918, but by 1919 had recovered to 78.6 per cent and by 1925 to 88.4 per cent of the 1909-1913 average, as indicated in Table 144. In the war zone and in Alsace-Lorraine large numbers of mules have been shipped in from other Departments of France to supplement the diminished horse power.

TABLE 144.—Mules, donkeys, and goats: Number in France and Alsace-Lorraine, average 1909-1913, 1918, 1919, 1924, and 1925 (43, 46)

Livestock and region	Average 1909-1913	1918		1919		1924		1925	
		Total	Per cent of 1909-1913	Total	Per cent of 1909-1913	Total	Per cent of 1909-1913	Total	Per cent of 1909-1913
Mules:									
9 Departments.....	Number 5,830	Number 2,840	Per cent 48.7	Number 19,050	Per cent 328.8	Number 21,520	Per cent 369.1	Number 19,750	Per cent 338.3
Ardennes.....	36	(1)	-----	920	2,555.6	1,070	2,972.2	970	2,694.4
10 Departments.....	5,866			19,970	340.4	22,598	385.1	20,690	352.7
77 Departments.....	187,282	136,230	72.7	147,210	78.6	168,100	89.8	165,470	88.4
Alsace-Lorraine (3 Departments).....	180			1,130	2,662.5	2,240	2,800.0	2,190	2,700.0
Total France.....	193,228			199,310	87.6	192,936	99.8	198,320	97.5
Donkeys:									
9 Departments.....	15,870	6,510	41.0	9,560	60.2	11,110	70.0	10,700	67.4
Ardennes.....	758	(1)	-----	500	66.0	650	76.5	610	80.5
10 Departments.....	16,628			10,060	60.5	11,690	70.3	11,310	68.0
77 Departments.....	342,908	305,380	89.1	293,040	85.5	267,410	78.0	261,070	76.1
Alsace-Lorraine (3 Departments).....	1,521			640	42.1	540	35.5	500	33.8
Total France.....	361,057			303,740	84.1	279,640	77.5	272,970	75.0
Goats:									
9 Departments.....	81,236	31,410	38.7	41,500	51.1	74,760	92.0	71,580	88.1
Ardennes.....	6,274	(1)	-----	3,070	48.9	6,670	106.3	6,230	99.3
10 Departments.....	87,510			44,570	50.9	81,430	93.1	77,810	88.9
77 Departments.....	1,333,166	1,166,080	87.5	1,130,290	84.8	1,196,350	89.7	1,203,610	90.3
Alsace-Lorraine (3 Departments).....	172,792	104,717	143.0	114,206	156.9	98,730	135.6	96,490	132.6
Total France.....	1,493,468			1,289,066	86.3	1,376,510	92.2	1,377,910	92.3

¹ Not available.

² 1 year only, 1912.

³ 1920, first year reported after war for mules and donkeys.

⁴ 2-year average, 1912-13.

Alsace-Lorraine, 1912 (72).

Alsace-Lorraine, 1913 and 1918 (66).

Alsace-Lorraine, 1919 (11, p. 3).

See Table 36 for notes on occupied and unoccupied Departments.

In the period 1909–1913 there were 5,866 mules in the 10 occupied Departments and only 80 reported in Alsace-Lorraine; by 1919 in the former territory mules had increased to 19,970 and by 1924 and 1925 to 22,590 and 20,690, respectively. In Alsace-Lorraine the numbers were 2,130 in 1920, 2,240 in 1924, and 2,160 in 1925.

Before the war France exported several thousand mules each year, averaging 13,000 (net) during 1909–1913. In addition to supplying several thousand mules to Alsace-Lorraine and the occupied Departments, France averaged a net export of 7,000 during the four-year period ended 1923. Net exports have increased in recent years, reaching 8,000 in 1924 and 9,000 in 1925. It is probable that the mule industry of France will recover its pre-war proportions.

Since the war goats have increased greatly in numbers in Alsace-Lorraine and in the 10 occupied Departments they had reached 88.9 per cent of their pre-war numbers by 1925. In the 77 Departments outside the war zone numbers of goats had dropped off to 87.5 per cent of normal by 1918. Since then there has been little change, the 1925 status being 90.3 per cent of normal.

TABLE 145.—Mules: Number in France within former and present boundaries, imports and exports, five-year average, 1881–1923, annual, 1924 and 1925

Years	France, former boundary	Alsace-Lorraine	Index numbers	
			France ¹	Present boundary ¹
Average:	<i>Thousands</i>	(²)	<i>Thousands</i>	
1881–1885.....	253	(²)	131.1	
1886–1890.....	235	(²)	121.8	
1891–1895.....	219	(²)	219	113.5
1896–1900.....	206	(²)		106.7
1901–1905.....	203	(²)		105.2
1906–1910.....	194	(²)	194	100.5
1909–1913.....	193	(²)	193	100.0
1911–1913.....	193	(²)	193	100.0
1914–1918 ⁴	146	(²)		100.0
1920–1923.....			186	96.4
1924.....			193	100.0
1925.....			188	97.4

Years	Former boundary		
	Imports	Exports	Net ⁴
Average:	<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>
1881–1885.....	1	16	-15
1886–1890.....	(⁵)	19	-19
1891–1895.....	1	12	-11
1896–1900.....	2	7	-5
1901–1905.....	2	9	-7
1906–1910.....	2	14	-12
1909–1913.....	2	15	-13
1911–1913.....	1	16	-15
1914–1918.....	18	10	+8
	Present boundary ¹		
1920–1923.....	2	9	-7
1924.....	1	9	-8
1925.....	1	10	-9

¹ Including Alsace-Lorraine.

² 4-year average, 1882–1885.

³ Not available.

⁴ Numbers given only for 1892, 1907, and 1912; all less than 500.

⁵ Averaged from figures reported in official source and includes reports from the Departments wholly or in part involved in war operations. Data from these Departments were incomplete, and for that reason average for the war period is not comparable with other years.

⁶ Net exports indicated by (-) and net imports by (+).

⁷ Less than 500.

Number of mules: France (1882 to 1923) (58, p. 262); 1924 (8); 1925 (45). Alsace-Lorraine, 1892 to 1912 (66). Imports and exports (33; 34; 37; 47, 1919, p. 324).

TABLE 146.—Donkeys: Number in France within former and present boundaries, imports and exports, five-year averages, 1881-1923, annual, 1924 and 1925

Years	France, former boundary	Alsace-Lorraine	France ¹	Index numbers	
				Former boundary	Present boundary ¹
Average:	<i>Thousands</i>		<i>Thousands</i>		
1881-1885	393	(?)		109.2	
1886-1890	378	(?)		105.0	
1891-1895	362	(?) ¹	363	100.6	
1896-1900	360	(?)		100.0	
1901-1905	361	(?)		100.3	
1906-1910	362	(?) ¹	363	100.6	
1909-1913	360	(?) ²	362	100.0	100.0
1911-1913	359	(?) ²	361	99.7	
1914-1918 ⁷	323	(?)			
1920-1923			292		80.7
1924			280		77.3
1925			273		75.4

Years	Former boundary		
	Imports	Exports	Net Imports
Average:	<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>
1881-1885	3	1	2
1886-1890	2	1	1
1891-1895	3	(?)	3
1896-1900	5	(?)	6
1901-1905	4	(?)	4
1906-1910	4	1	3
1909-1913	4	(?)	4
1911-1913	4	(?)	4
1914-1918	2	(?)	2
	Present boundary ¹		
1920-1923	3	(?)	3
1924	2	1	1
1925	3	(?)	3

¹ Including Alsace-Lorraine.² 4-year average, 1882-1885.³ Not available.⁴ 1 year, 1892.⁵ 1 year, 1907.⁶ 1 year, 1912.⁷ Average from figures reported in official source and includes reports from the Departments wholly or in part involved in war operations. Data from these Departments were incomplete, and for that reason average for the war period is not comparable with other years.⁸ Less than 500.

Number of donkeys: France, 1882-1923 (52, p. 262); 1924 (5); 1925 (45). Alsace-Lorraine, 1892-1912 (60). Imports and exports (33; 34; 37; 47, 1919, p. 324.)

TABLE 147.—Goats: Number in France within former and present boundaries, imports and exports, five-year average, 1881-1923, annual, 1924 and 1925

Years	France, former boundary	Alsace-Lorraine	France ¹	Index numbers	
				Former boundary	Present boundary ¹
Average:	<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>		
1881-1885.....	1,587	54	1,641	111.7	
1886-1890.....	1,504	68	1,562	105.8	
1891-1895.....	1,557	62	1,619	109.6	
1896-1900.....	1,512	61	1,573	106.4	
1901-1905.....	1,512	63	1,575	106.4	
1906-1910.....	1,428	64	1,492	100.5	
1909-1913.....	1,421	73	1,494	100.0	100.0
1911-1913.....	1,423	73	1,496	100.1	
1914-1918 ²	1,215	88	1,303		
1919-1923.....			1,342		89.8
1924.....			1,377		92.2
1925.....			1,378		92.2

Years	Former boundary		
	Imports	Exports	Net ¹¹
Average:	<i>Thousands</i>	<i>Thousands</i>	<i>Thousands</i>
1881-1885.....	5	3	+2
1886-1890.....	3	4	-1
1891-1895.....	2	3	-1
1896-1900.....	1	3	-2
1901-1905.....	2	3	-1
1906-1910.....	2	3	-1
1909-1913.....	2	3	-1
1911-1913.....	1	3	-2
1914-1918.....	3	1	+2
	Present boundary ¹		
1920-1923 ¹²	1	1	
1924.....	(¹³) 1	(¹³)	+1
1925.....	(¹⁴)	(¹⁴)	

¹ Including Alsace-Lorraine.
² 4-year average, 1882-1885.
³ 1-year only, 1883.
⁴ Estimated by taking the average of the numbers given for 1883 and 1892.
⁵ 1 year, 1892.
⁶ 1 year, 1900.
⁷ 1 year, 1904.
⁸ 1 year, 1907.
⁹ 2-year average, 1912-13.
¹⁰ Averaged from figures reported in official source and includes reports from the Departments wholly or in part involved in war operations. Data from these Departments were incomplete, for that reason average for the war period is not comparable with other years.
¹¹ Net imports are indicated by (+) and net exports by (-).
¹² 1919 not available, including Alsace-Lorraine.
¹³ Less than 500.
 Number of goats: France, 1882-1923 (52, p. 267); 1924 (5); 1925 (45). Alsace-Lorraine, 1883-1918 (66); 1919 (11).
 Imports and exports (33, 34, 37, 47, 1919, p. 324).

THE MEAT SITUATION

The pre-war consumption of beef and veal, mutton, and pork has been variously stated. Lucas (86, p. 244-245) has estimated native production of meat at 4,514,756,000 pounds; but the averages he employs as slaughter weights are admittedly too high. Martel, as quoted by Massé (87, p. 18-19) makes an estimate of 3,534,635,000 pounds. This estimate, although obviously low, was adopted by the Interallied Scientific Food Commission (20, p. 25) as the basis for their series of reports during the last year of the war.

Taking into consideration importation and exportation of live animals as well as fresh, frozen, and prepared meats, an analysis of all of the available statistical data indicates that during 1909-1913 the annual disappearance of beef and veal, mutton (including goat meat), and pork in the 87 Departments constituting France, former boundaries, averaged approximately 4,112,133,000 pounds, or about 103.8 pounds per capita.

Applying the methods of Lucas and Martel to the livestock and slaughter statistics recorded by the German Government, it appears that the average disappearance of locally slaughtered cattle, sheep, swine, and goats in Alsace-Lorraine during 1909-1912 was equivalent to 251,720,000 pounds of meat. This does not take into consideration any fresh, frozen, or prepared meats that may have been shipped into these districts from other parts of the German Empire or from abroad.

As a basis for the discussion of the French meat situation in this bulletin it is therefore assumed that the pre-war statistical disappearance of meat (beef, veal, mutton, goat, and pork) in the 90 Departments of France, present boundaries, was at least 4,363,853,000 pounds, or 105.4 pounds per capita. This signifies an annual per capita disappearance of about 49.2 pounds of beef and veal, 9.5 pounds of mutton and goat meat, and 46.7 pounds of pork.

Basing an estimate upon the recorded slaughterings in municipal and industrial slaughterhouses and assuming that the meat thus produced as well as the equivalent of the net weight of all imported meats was consumed in cities, it is possible to compare the disappearance of meats in urban centers as contrasted with that in the rural districts (communities of 2,000 inhabitants or less).

It thus appears that the pre-war average statistical disappearance of meat in urban centers approximated at least 1,402,468,000 pounds of beef and veal, 255,208,000 pounds of mutton and goat meat, and 505,439,000 pounds of pork; totaling 2,163,115,000 pounds of meat as contrasted with a total rural disappearance of 2,200,738,000 pounds of which approximately 633,725,000 pounds were beef and veal, 138,015,000 pounds were mutton and goat meat and 1,428,998,000 pounds consisted of pork.

The cities consumed over twice as much beef and veal, nearly twice as much mutton and goat meat, and less than half the amount of pork that was consumed in the rural districts.

It was estimated in 1911 that 44.7 per cent of the population of France, including Alsace-Lorraine, lived in communities of more than 2,000 inhabitants. Applying this percentage to the 1909-1913 average population would indicate that before the war, in the 90

Departments of France approximately 18,509,000 ⁴¹ inhabited cities and 22,899,000 lived in rural districts. Based upon these estimates a per capita consumption of 116.9 pounds of meat for the cities and 96.1 pounds for rural districts is indicated as shown by Table 148.

TABLE 148.—Meats: Per capita disappearance in urban centers and rural ¹ districts of France and in the United States, United Kingdom, and Germany, pre-war and 1925

Country or district	Beef and veal		Mutton and goat		Pork		Total	
	Pre-war	1925	Pre-war	1925	Pre-war	1925	Pre-war	1925
France:	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Urban	75.8	76.2	13.8	11.1	27.3	32.1	116.9	119.4
Rural	27.7	28.8	6.0	2.7	62.4	40.8	96.1	70.3
Total ¹	49.2	49.7	9.5	6.6	46.7	36.8	105.4	93.1
United States ²	68.1	70.8	8.2	5.2	61.8	67.6	138.1	143.6
United Kingdom ³	62.7	57.2	30.4	26.9	38.0	36.0	131.1	120.1
Germany ⁴	39.9	34.2	3.0	2.2	71.6	48.4	114.5	84.8

¹ Communities of 2,000 inhabitants or less.

² Pre-war = 1909-1913 average, France, including Alsace-Lorraine.

³ Pre-war = 1912 (94).

⁴ Pre-war = 1912 and estimate for 1924 instead of 1925. Compiled from Ministry of Agriculture and Fisheries, Interim Report on Meat, Poultry, and Eggs, 1923 (79).

⁵ Pre-war = 1912 and 1924 instead of 1925 (86).

In former years the meat diet of the peasant families consisted almost exclusively of pork but during the closing years of the last century, beef, veal, and mutton were being consumed on the farms in perceptibly increasing amounts. In fact, the per capita consumption of meat in France had been changing over a long period of time at a more rapid rate than in the United States, Great Britain, or Germany. Official estimates place the per capita meat consumption at 57.1 pounds ⁴² in 1862 and 91 pounds ⁴³ in 1892. For the period just preceding the World War, estimates vary from 89.2 pounds ⁴³ (1909-1913) to 125.7 ⁴³ pounds (1909).

Assuming the estimate of 105.4 pounds per capita obtained from an analysis of pre-war statistics to be a fair though conservative approximation of actual conditions, it appears that the per capita meat consumption in France was not as great as in the United States, or the United Kingdom, and only 9.1 pounds below that of Germany. Aside from the quantity consumed in these countries there was a notable difference in the type of meat consumed per capita.

France consumes an unusually large proportion of veal. About one-third of the figure that is ascribed to beef and veal is estimated as veal. France is also a larger consumer of mutton than is the United States or Germany, but falls much below the United Kingdom in this respect. More pork was consumed, in pre-war years at least, than in the United Kingdom, but much less than in the United States or Germany.

The war introduced several factors that must inevitably affect the rate at which meat is consumed aside from the fluctuations in

⁴¹ Does not include the military population of Alsace-Lorraine, which was constituted largely of troops from other parts of the German Empire.

⁴² Bulletin des Haies, September 22, 1923 (28). These estimates are considered to be too high because of the large average weight of dressed meat employed in the calculation. Also see Alfred Masse, *Le Troupeau Français et la Guerre*, 1915 (87, p. 17).

⁴³ Martel's estimate, also 20, p. 25).

the economic situation that are shifting the ratios between the price paid for food and the amount received for labor and the products of labor.

During the war the consumption of beef was perceptibly increased. The French Army ration included 241.3 (87, p. 98) pounds of meat per year per man, when in barracks, and 402.2 pounds when on the front line of service. Thus during the years of the war more than 4,000,000 men, many of whom had never before had meat except as a luxury, were given a regular meat diet to which they were bound to become habituated, so that after the close of hostilities it was to be expected that ex-service men would demand more meat with their daily food.

On the other hand, 1,636,000 soldiers were killed or died during or following the World War, and 1,177,000 civilians in excess of births died between 1914 and 1919. This tended to increase the proportion of women and children in the total population. Since women and children do not eat as much meat as does a mature man, the actual decrease in total population and the increased proportion of women and children has tended to offset somewhat the increased demand for meat by ex-service men.

Taking into consideration the differing requirements of men, women, and children, the Interallied Scientific Food Commission employed a progressive scale of consumption factors varying according to age and sex, reducing the population to a certain number of "average human units" indicating adult consumers.

Before the war the number of human units in France was estimated to be 84.5 per cent of the population.⁴⁴ During the war the factor was 86 per cent. It is probable that since 1919 the factor may be expected to be somewhat below pre-war.

Since the war there has been an exodus of young men from the country to the city, so that in 1921 city populations were practically what they were in 1911 and rural populations had lost heavily. On March 6, 1921, the rural population was estimated to be 1,883,000 below that of 1911, with a heavy increase in the proportion of women and children. The demand for meat in the cities would thus be expected to be as great if not greater than before the war and that of the rural districts might logically be expected to be less.

The Interallied Scientific Food Commission has made an estimate of the beef, veal, mutton, and pork "consumption" for the years 1916, 1917, and 1918. The average of these estimates indicates an annual disappearance of 2,075,655,000 pounds of beef and veal, 267,378,000 pounds of mutton, and 955,538,000 pounds of pork, or a total of 3,298,571,000 pounds of meat. In these estimates beef is probably high while mutton and pork are undoubtedly low.

Subjecting the war-time statistics as reported in official sources to the same methods of analysis that were applied in obtaining the pre-war average indicates that during 1916-1918 the average annual statistical disappearance of meat in France (not including Alsace-Lorraine) approximated 1,988,361,000 pounds of beef and veal 331,531,000 pounds of mutton and goat meat, and 1,060,510,000 pounds of pork, totaling 3,380,402,000 pounds of meat. It is probable that during the last three years of the war annual disappearance

⁴⁴ Similar coefficients were: Great Britain, 83.5; Italy, 82.8; and the United States 84 (19, p. 11; *annexe 1*, p. 7).

of meat ranged between 3,298,571,000 and 3,380,402,000 pounds as compared with an average of 4,112,133,000 pounds during 1909–1913 and 3,803,752,000 pounds during 1914–1918.

This high average of meat supply during the war period was maintained by a ruthless depletion of flocks and herds and an increased importation from abroad. During the first years of the war great inroads were made in the numbers of steers and cows, cutting down farm power and replacement potentialities. Toward the close of the war the requisition of cattle was less drastic and greater dependence than formerly was placed upon imported meats, particularly chilled and frozen meat, so that during 1918 fully 625,795,000 pounds (includes the meat equivalent of imported animals) of foreign beef, mutton, and pork were consumed by the army and in the cities, as compared with an average of 15,673,000 pounds before the war.

In 1919 buyers from the devastated regions combed the markets of western, central, and southwestern France for breeding stock and draft animals to rehabilitate the disrupted agriculture as well as to fill the meat requirements of the peoples of the northeast. Hundreds of thousands of horses, cattle, sheep, and swine were shipped from those Departments that had not suffered the devastations of war to the regions that had just been liberated from the occupying armies of the central forces and the Allies. The numbers of animals available for slaughter fell off proportionately, and the quality of meat yielded was low.

The statistics for 1919 are naturally not as dependable as are those that were assembled under the well-organized system in vogue before the war, and this unsatisfactory situation continued during the next two and perhaps three years. The statistics for 1919 indicate a domestic disappearance (production) of approximately only 2,744,325,000 pounds of meat, but this was augmented by the enormous importation of 892,423,000 pounds, bringing meat supplies well up to the average of the preceding three years.

Assuming that all of this imported meat was consumed in the cities, the statistical disappearance of meat in urban centers reached 2,336,798,000 pounds, or 368,767,000 pounds above the 1909–1913 average, whereas rural statistical disappearance fell to 1,299,950,000, or 844,152,000 pounds below the 1909–1913 average. Although the drop in rural consumption has been very considerable since the war, it was probably not as great as is indicated by an analysis of the statistics. It is probable that there were more animals in the rural districts than were reported officially and that the rural consumption of meat was greater than is here indicated. It is also probable that this condition has continued to the date of the most recent available figures, which include December 31, 1925.

The statistics for 1920, although not dependable, indicate that the low ebb of meat supplies was reached in that year. The numbers contained in the livestock statistics for 1921 as reported by the French Ministry of Agriculture are considerably less than were actually on the farms (83, p. 313), since 7 of the 90 Departments failed to make reports and the numbers carried at the end of the preceding year were substituted.

There was drought and a shortage of feed toward the end of the summer of 1921 and a considerably greater number of young stock and sheep were marketed than during the preceding year.

Beginning with 1922, an improvement in the meat situation is noticeable. As has been noted elsewhere in this bulletin, pasture and hay lands had increased during the war period and the statistics of the years following the war indicate an increase in the cultivation of forage and fodder plants. The crushing of oilseeds has exhibited marked recuperation, which has released more oil cake for feeding livestock, and more Indian corn has been imported during recent years than before the war. All indications point toward increased amounts of feeding stuffs available for a decreased number of livestock, at least as far as cattle and sheep are concerned, and consequently toward an appreciably larger supply per animal than was the case before the war.

It is probable that the weight and quality of the animals produced had in general recovered their pre-war normal by 1921 or 1922; nevertheless buyers from the northeast continued to bid for the best animals to build up the herds and flocks of the liberated regions, so that as late as 1923 the cattle shipped to the Villette market in Paris have been old and "rangy" and lack their former quality.

Before the war the choicest animals were shipped from all parts of France to the Paris markets, which practically determined the price to be received. The price paid in provincial markets was almost without exception the Paris quotation less freight, handling costs, commissions, etc.

Since the war better prices for animals have often been paid in provincial markets⁴⁶ than at Villette, not only because there has been a demand for high-grade breeding animals for the devastated regions, but, furthermore, it is reported that municipal and other slaughterhouses outside of Paris have been handling a better grade of animal than formerly, the inhabitants of provincial cities competing with Parisians for the better cuts of meat. These provincial slaughterhouses have been much improved during and since the war, more particularly as regards the installation of refrigeration. This fact in connection with a somewhat better refrigerator-car equipment of the railroads renders it more profitable to slaughter animals in closer proximity to where they are produced and to ship the dressed meat than to adhere to the former unsatisfactory system of shipping live animals to Paris for slaughter or redistribution. The French railroads are very inadequately equipped for feeding and watering livestock, so that loss of weight in transit is high.

Whatever the cause, the statistics of 13 municipal slaughterhouses in the provinces indicate that during 1921-1924 they were slaughtering about 88.1 per cent of their pre-war numbers, and Paris was handling about 74.9 per cent as many animals as normally during 1909-1913. Paris has imported considerable quantities of domestically slaughtered meat from the provinces and fresh frozen and cured meats from foreign countries, but not in sufficient amounts to bring the supply up to normal. During 1921-1924 the meat supplies of Paris averaged 417,330,000 pounds as compared with 434,364,000 during 1909-1913,

⁴⁶ Markets other than those in Paris not necessarily rural. In this bulletin the term "rural" applies to communities of 2,000 inhabitants or less and "provincial" applies to cities other than Paris as well as the rural districts.

or 96.1 per cent of normal. The very considerable increase in population brings the per capita supply still further below normal. On the other hand, provincial cities, more particularly seaports and the industrial cities of the northeast, have imported such large quantities of foreign meat that their actual and per capita supply is well above pre-war.

Before the war, as indicated in Table 149, the meat supplies of cities outside of Paris averaged 1,728,751,000 pounds. During 1921-1924 the meat supply of provincial cities of more than 2,000 inhabitants was approximately 1,730,096,000, or 100.1 per cent of normal.

TABLE 149.—Meats, fresh, frozen and cured; Disappearance in Paris and provincial cities of more than 2,000 inhabitants, average, 1909-1913 and 1921-1925¹

Year	Urban centers ²		Paris ³		Provincial cities ⁴	
	Total	Per capita ⁵	Total	Per capita ⁵	Total	Per capita ⁶
	1,000 pounds	Pounds	1,000 pounds	Pounds	1,000 pounds	Pounds
1909-1913.....	2,163,115	116.9	434,364	150.4	1,728,751	110.7
1921.....	2,097,003	115.2	413,910	142.4	1,683,093	110.0
1922.....	2,149,228	117.7	435,051	149.2	1,714,177	111.7
1923.....	2,185,283	118.9	409,358	139.5	1,775,925	115.0
1924.....	2,158,186	116.7	410,999	139.2	1,747,187	112.4
1925.....	2,223,234	119.4				

¹ Includes beef, veal, mutton, goat meat, and pork.

² From Tables 117, 131, and 141.

³ Production at Villette and Vaugirard slaughterhouses plus receipts of fresh and frozen meats and pork products including sausage. Pork products 1923 and 1924 estimated to be 9,611,000 pounds, same as 1922. These amounts are somewhat high, as they include meat purchased in the city and consumed in the suburbs of Paris. 1909-1913 and pork products for 1909 to 1922 furnished by service de L'Octroi and Direction de l'Approvisionnement Général de Paris. 1921-1924 reports by David S. Green, Paris trade commissioner, United States Department Commerce. [Unpublished data.]

⁴ Cities of more than 2,000 inhabitants. Difference between urban centers and Paris.

⁵ See footnote 6, Table 141, for populations.

⁶ Includes the meat equivalent of officially recorded slaughterings in Alsace-Lorraine, but does not include fresh, frozen, or cured meats that may have been shipped from other parts of the German Empire or from abroad into Alsace-Lorraine.

This increased disappearance of meat in the provincial cities should not be construed as an indication that the meat consumption of France has increased. It must be borne in mind that there has been a large migration of young men from the rural districts to urban and industrial centers where the numbers of meat-eating units have been proportionately greatly increased. On the other hand, the proportion of women, children, and old men on the farms has been greatly increased and consequently the per-unit demand for meat in rural districts has been much reduced.

Since 1921 meat consumption of the cities has averaged higher than the pre-war normal of 116.9 pounds per capita and in 1925 reached 119.4 pounds. It is logical to infer that there has been an actual as well as per capita decrease in the consumption of meat in communities of 2,000 or less inhabitants, but it is very improbable that decreased rural consumption of meat has been as great as the statistical disappearance calculated for the various years given in Table 150 would indicate.

TABLE 150.—Meats, fresh, frozen and cured: Approximated disappearance in rural districts, average, 1909-1913 and 1921-1925¹

Year	Meat equivalent of un-recorded disappearance	Per capita ²		Year	Meat equivalent of un-recorded disappearance	Per capita ²	
		Total	Index number			Total	Index number
1909-1913	<i>1,000 pounds</i> 2,200,738	<i>Pounds</i> 96.1	100.0	1923	<i>1,000 pounds</i> 1,406,255	<i>Pounds</i> 66.2	68.9
1921	1,329,379	63.2	65.8	1924	1,591,028	74.5	77.5
1922	1,424,312	67.5	70.2	1925	1,512,742	70.3	73.2

¹ Rural districts are communities of less than 2,000 inhabitants.

² See footnote 6, Table 141, for populations.

³ Includes the home slaughtering estimated in 1912 in Alsace-Lorraine.

There have been known discrepancies in livestock statistics since the war. It is also probable that, just as in other countries of Europe where taxation was heavy so also in France, the peasant has been conservative in declaring the full amount of his wealth, more particularly that portion of it that he expected to consume at home.

The great reduction in rural meat disappearance appears to be in pork. Swine are the most mobile of any class of farm animals as regards marketing and slaughter for home use. When feed is abundant more pigs are maintained on the farms. When feed is scarce they are dumped upon the market or when prices are good they are produced and marketed as rapidly as possible. The marketing weights of swine fluctuate with all sorts of conditions associated with available feed, price, market preference, etc. Swine are a by-product of general agriculture, and there are no such customs surrounding their production, as there are in the case of sheep or veal calves. Hogs may be born, fattened, and consumed in less than 12 months without being statistically recorded. Much more pork than a statistical analysis could reveal is probably being consumed on the farms. Furthermore, any discrepancies in the statistics or errors in method of estimating disappearance are reflected most evidently in the un-recorded disappearance which is obtained by difference. It is also probable that there has been a greater migration to the cities than is indicated in Table 7. Taking all these factors into consideration, it is still probable that the meat consumption of rural France is far below the pre-war normal, and, considering the great decrease in rural population, some years will elapse before the disappearance of meat on farms reaches the 1909-1913 level. A large proportion of the meat-eating population of the rural districts has been killed and another large portion has migrated to the cities.

It is probable that little if any imported meat is consumed on farms. Conditions in the cities and industrial centers as modified by the amount of the marketable surplus that can be produced domestically determines the probable demand for imported meat.

During the five-year period, 1921-1925, the urban demand has been greater and the domestically produced marketable surplus of meat has been less than it was before the war. It is probable that the marketable surplus of beef and veal will reach the pre-war average by 1927, provided all factors remain similar to those operating during 1921-1925. There is a tendency toward increased beef and veal disappearance both in urban and rural districts. This is probably

stimulated by the shortage in the mutton supply and by the use of beef by the poorer classes who formerly ate meat only on rare occasions. It is improbable that the numbers of sheep will return to their pre-war status, so that the decrease in the domestic mutton supply may be considered to be more or less permanent.

The degree to which domestic pork supplies returns to normal depends upon the feed available from year to year. This is at present an uncertain factor.

Before the war France was practically self-sufficing with regard to meat supplies. It is estimated that foreign sources furnished but 2 per cent of the total consumption. There was a deficiency in pork and pork products and in mutton. The latter was largely made up by the importation of sheep from the French colony of Algeria. There was an exportable surplus of beef and cattle. During the war the import duties were removed and very large quantities of meat, especially beef, were imported by the Government for the army. After the war, as was to be expected, these large shipments declined. In 1922, however, the trend of imports took an upward turn and the quantities imported since have been steadily increasing. Through the necessity of eating imported frozen meat during the war, many people lost their prejudice against it and now continue to consume large quantities of this class of meat.

Workers are now so much better paid relatively that they can afford a much greater proportion of meat in their diet. The increased use of frozen meats is in common with an increased consumption of such meats in western European countries. Before the war England took more than four-fifths of the world's chilled and frozen meat exports. With the continental markets becoming more important, the proportion of this type of meat taken by England (1919-1923) was reduced to only two-thirds of the world's exports, the remainder being absorbed largely by continental European markets. France, since 1914, has usually been the most important continental importer of such meats.

TABLE 151.—Average yearly value of the franc, 1890 to 1925

Year	Cents	Year	Cents	Year	Cents	Year	Cents
1890.....	19.379	1899.....	19.369	1908.....	19.386	1917.....	17.426
1891.....	19.333	1900.....	19.400	1909.....	19.372	1918.....	17.817
1892.....	19.399	1901.....	19.412	1910.....	19.310	1919.....	13.682
1893.....	19.378	1902.....	19.426	1911.....	19.275	1920.....	7.040
1894.....	19.405	1903.....	19.399	1912.....	19.313	1921.....	7.455
1895.....	19.450	1904.....	19.378	1913.....	19.300	1922.....	8.201
1896.....	19.442	1905.....	19.377	1914.....	19.370	1923.....	6.081
1897.....	19.407	1906.....	19.323	1915.....	17.928	1924.....	5.237
1898.....	19.267	1907.....	19.342	1916.....	17.100	1925.....	4.767

1890-1918 from *Annuaire Statistique* 1922 (55, p. 519).
 1919-1925 from Federal Reserve Board.
 Par of exchange = 19.3 cents.

CONCLUSIONS

The tremendous losses of man power, the destruction of property, and the devastation of the soil itself have taxed the recuperative powers of France to the utmost. Yet during the interval of the few

years since the armistice France has, unaided, practically completed the restoration of the 10 devastated Departments. Hundreds of thousands of farms and dwellings have been reequipped, and since 1923 industrial and commercial activity have given steady employment to all available laborers and hundreds of thousands of workers have been recruited from neighboring countries.

Employment at good wages has rendered possible the establishment of a higher standard of living in urban and industrial centers than has ever been before enjoyed among the masses of the people. More wheat and more meat are in demand as well as better clothing and more luxuries. This fact is of cardinal interest to the farmers of the United States, as is also the fact that more cereals are being consumed on farms, thus keeping from the markets certain supplies of food that now must be imported from abroad.

The increased urban demands for food and clothing, for which the United States supplies wheat and cotton, are probably permanent developments associated with the progress made by industry and the steady growth of the industrial population, which has been at the expense of rural communities, thus rendering farm labor scarce and expensive. Women are replacing men as tillers of the soil, and the productivity of that soil is decreasing.

Before the World War agriculture was steadily losing its position of predominance in the national economic life. Field-crop production had been on the decline more than two decades and the country lands had been slowly going to grass. Livestock numbers had not increased proportionately to the greater available home-grown and imported forage and fodder supplies, but the live weights and quality of animals and the yield of milk had increased. The sale of livestock and animal products formed more than 70 per cent of the farmer's income. France was practically independent of outside sources of meat supply and had become an exporter of dairy products.

This situation was reached as the result of a series of adjustments to changes that had occurred in world agriculture. The world market had been flooded with American wheat, and French farmers took up animal industry, the world market became flooded with American cotton, and Australian wool and the French farmer abandoned flax, hemp, and wool production and turned his attention to meat. Now the world market is being flooded with frozen meat and the farmers are turning more and more to dairying.

The per capita consumption of meat, butter, milk, and wheat is increasing. France can not meet the demand for increased supplies of animal products without abandoning still further the area under bread cereals which, under the wasteful system of scattered land holdings, can not be economically produced in competition with the broad acres and power farming of the New World. There will be a future growing market for cereals and animal products, of which the United States can supply wheat and lard and other pork products. The improved industrial situation and the higher standard of living in the cities have created a growing demand for cotton and tobacco and in supplying these commodities the United States will take an important part.

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UNITED STATES DEPARTMENT OF AGRICULTURE



DEPARTMENT BULLETIN No. 1399



Washington, D. C.

May, 1926

AGRICULTURAL SURVEY OF EUROPE:

GERMANY

By LOUIS G. MICHAEL, *Senior Agricultural Economist, Bureau of Agricultural Economics*¹

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A SURVEY OF GERMAN AGRICULTURE

The development of German agriculture during the 40 years preceding the war presents one of the most striking illustrations in world history of what may be accomplished in a country whose farm area is sharply limited by natural conditions, and whose expansion in production has been possible only by intensive cultural methods, the scientific use of fertilizers, and the closest attention to breeding and feeding. The stupendous accomplishments of German agriculture are illustrated in Figure 1.

Before the war German agricultural production increased at a more rapid rate than the population, in pursuance of a national policy to render the German people as nearly as possible independent of outside sources of supply. In the late nineties the upper limit of agricultural land that could be tilled at a profit, even under a system of State encouragement, had been practically reached. Ten years previously cereal production as the major agricultural activity had been abandoned and pork production as an adjunct to the potato industry took its place. The steady expansion in production continued until the outbreak of the war, the high point in the production of cereals, potatoes, and swine being reached in 1913.

¹ With the collaboration of E. C. Squire, former Agricultural Commissioner, U. S. Department of Agriculture, Berlin, now Trade Commissioner, U. S. Department of Commerce; and G. B. L. Arner, Agricultural Statistician, L. Thompson, Assistant Economic Analyst, and P. A. McDonnell, Assistant Clerk, all of the Bureau of Agricultural Economics.

There was a falling off in 1914; and, then, during the war all factors involved in supplying the food requirements of the German people were depressed. Production in the territory now included within the present confines of the Republic of Germany fell off to about two-thirds of the pre-war normal, while the population continued to increase both relatively and actually. This resulted in an acute food shortage that was not sufficiently compensated by increased importation to allow the German people to enjoy their pre-war standard of living.

As was to be expected, potato and pork production were the first to rally from the depression of the war period, the low point having been reached in 1919. Since that time recovery has been rapid, so that in 1924 potato production was 97 per cent of the 1909-1913 average and swine 89 per cent of 1912 production.

TRENDS IN GERMAN AGRICULTURE

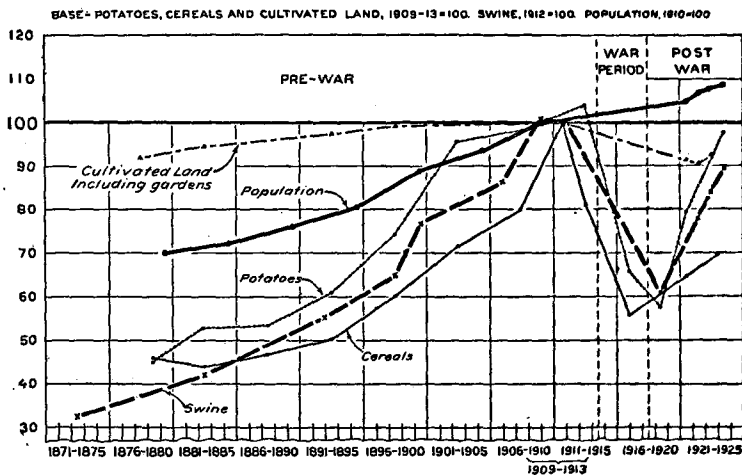


FIG. 1.—Trends in German agriculture

Lands available for profitable cultivation were exhausted about 10 years prior to the opening of the World War, while population continued to increase rapidly. Every effort was made to force production to the maximum limit with a success attained by few other nations at any time in the world's history. The outstanding feature of this attempt to make Germany as far as possible independent of outside sources of supply is characterized by the close parallel between potato and swine production not only before but also after the war. (See text.)

Index numbers of bushels of wheat and potatoes and acres of cultivated land are referred to the 1909-1913 average as 100, numbers of swine are referred to 1912, while population is referred to 1910 as a base. In each case the pre-war data are compared with the basic data for the whole of the German Empire, while post-war data are compared with data calculated on the basis of the areas within the boundaries of the German Republic as of 1923.

The low point in cereal production was reached in 1917-18, and in land under the plow in 1922. Since then the tendency has been upward, but recovery has been relatively slow because of the handicaps under which German agriculture has been laboring. It is the subject of much debate whether some of these handicaps are to be removed. As a result cereal production, particularly rye production, is nearly at low ebb, so that Germany, formerly a rye-exporting country, now imports this chief bread grain of her people.

Should German agriculture return to pre-war levels, domestic production would be still farther from satisfying German food requirements than was the case before the war. This is so because

population has continued to increase at nearly the pre-war rate, while food production has received a vital check. Strenuous efforts are being made toward recovery; but, in any case, a relatively greater importation of foods and feeds will be required in the future to maintain the German people at their pre-war standard of living than was required before the war. The future may witness any of three contingencies—(1) still greater efforts on the part of German farmers, particularly in meat and fat production; (2) a decline in the standards of living; (3) a greater dependence upon outside sources of supply for the necessities of existence. It is probable that in future readjustments there will be more or less shifting of the relative status of each of these fundamental factors in German economic life. But the whole trend of the German situation is toward an increased demand for foodstuffs.

Farmers of America are interested in German agriculture to the extent that our surplus wheat, pork and pork products, and to a lesser extent our rye, beef, and corn shipped to German markets must meet with competition from locally grown food and feedstuffs. During each of the seasons 1921-22 and 1922-23 the imports of wheat from the United States into the Republic of Germany far exceeded the total average pre-war wheat importations into the former Empire; and, though there was a falling off in 1923-24 (see Table 1) wheat importations for the 6 months July 1 to December 31, 1924, exceed by more than 50 per cent the importations of the preceding 12 months. Rye imports during these 6 months were more than twice those of the preceding 12 months and about eighty-eight times the pre-war average. Increases in our sales of bacon, fresh pork, and lard to Germany in recent years have been relatively enormous, as indicated in Table 1:

TABLE 1.—Trade of the United States with the German Republic in specified farm products, July 1, 1921, to December 31, 1924, compared with that of the United States and the German Empire, 1909-10 to 1913-14¹

[In thousands—000 omitted]

Item	German Empire	Republic of Germany			
	Average 1909-1913	1921-22	1922-23	1923-24	July 1-Dec. 31, 1924
Wheat ²	Bushels 16,595	Bushels 45,521	Bushels 25,204	Bushels 16,073	Bushels 24,410
Rye ³	178	4,761	35,930	7,201	15,759
Corn.....	5,081	33,282	19,337	1,192	1,036
Bacon.....	Pounds 1,557	Pounds 70,474	Pounds 63,771	Pounds 85,906	Pounds 19,982
Fresh and simply prepared pork.....	10,925	59,473	22,700	34,829	9,037
Lard.....	192,184	217,530	172,619	256,478	109,844
Beef, fresh, frozen, and prepared.....	2,267	20,270	14,008	14,039	8,096

¹ Net imports, except for 1923-24 and July 1-Dec. 31, 1924, when total imports are used.

² Including wheat flour.

³ Including rye flour.

The increased sales of foreign-grown agricultural products in German markets since the war are directly attributable to the present depressed state of German agriculture. Areas under cultivation to wheat, rye, oats, and sugar beets are far below their pre-war level; and, although there are more horses, sheep, and goats in the Republic of Germany to-day than were found within the same territories of the Empire before the war, the numbers of cattle and swine are far below their normal level.

Comparing the average areas sown in 1909-1913 to various crops in the territories now composing the Republic of Germany with those sown in 1924, wheat has fallen off 404,000 acres; rye, 2,188,000 acres; oats, 817,000 acres; sugar beets, 199,000 acres. On the other hand, barley acreage has increased 107,000 acres and potatoes 45,000 acres. A comparison of official estimates as of December 1, 1913, with the census of December 1, 1924, shows a decrease of 1,180,000 in the number of cattle and 5,689,000 in the number of swine.

This depressed state of German agriculture and, consequently, the lessened ability of German farmers to supply from their own home-grown products the food requirements of their own markets is the result of a series of complex influences which have affected in varying degrees the production of agricultural supplies in the Republic.

The changes of territory brought about by the terms of the Versailles treaty have produced certain permanent effects upon the basic relationships of Germany's agriculture to the economic welfare of the State. The events of the war and of the years immediately following have produced other effects, some of which are certainly only temporary, being associated with the general economic crisis through which all Europe is passing and which has affected Germany particularly, intensifying the depressing influences that have so greatly lowered the purchasing power of city dwellers and discouraged German farmers, not only on account of unsuitable markets but also on account of a series of handicaps that have tended to reduce the production of agricultural surpluses nearly to minimum.

During 1923-24 the general economic status of Germany was somewhat improved through the stabilization of the currency by means of the Renten-mark. At the end of 1924 came the hope of the permanent revival of industry through the adoption of the Dawes plan. It is probable, beginning with 1925, that German industry and German agriculture are entering upon a new era—an era of reconstruction. Therefore it is important at this time to strike a balance of the situation up to this date to give a background against which to appraise the influence that the revival of German industrial and commercial activities and the improvement of Germany's economic situation will have upon the agriculture of the nation.

The general demand within Germany for food will increase considerably over the present demand, in keeping with the return of German industry toward normal prosperity and a higher purchasing power of those engaged in industry and commerce. In an open market the German farmer will have somewhat the advantage of the farmers in foreign countries that are competing with him, because of his nearness to the demand centers of his own markets. But this advantage of nearness to markets alone is not sufficient to place German agriculture on a plane of prosperity comparable with the enviable position it occupied before the war, because the methods that the German farmer must employ to force production from his inferior soils are too expensive to admit of his successfully competing with the farmers of the Argentine or the Black Sea countries or perhaps even with North America, handicapped though the latter are by long ocean transportation. Before the war the German farmer was able to compete successfully with farmers of other lands, largely because German agriculture was protected by a tariff adopted as a means of national defense.

The farmers of America are vitally interested in the development of this whole situation, which will result in the return of Germany to a position of balanced agriculture that produced 89.7 per cent of the country's meat requirements, 64.2 per cent of the fat requirements, and 84.2 per cent of the cereal requirements; or which will continue, or even further depress, the present situation of a subordinated agriculture, producing in 1924 only 64.4 per cent of the country's meat requirement and in 1923-24 only 61.6 per cent of the requirements^a of wheat, rye, barley, and oats.

In discussing the present situation the basic relationships of German agriculture to the economic welfare of the Republic of Germany should be considered from two points: (1) The relationships of German agriculture to the State as affected by the territorial changes brought about by the treaty of Versailles; and (2) those relationships as affected by the series of crises through which German agriculture has passed during the World War and the postwar years.

The relationships of German agriculture to the economic welfare of the country were not directly affected to any considerable extent by the changes in territory brought about by the treaty of Versailles, except in the cases of rye, the beet-sugar industry, and, to a less extent, the meat industry. It is true that this whole subject of the effect of the territorial changes brought about by the treaty of Versailles upon the German agricultural situation is largely a matter of hypothesis and estimation, but at the same time such approximations as may be made are suggestive. In Table 2 the pre-war status of the Empire and the territories now comprising the Republic are contrasted on a basis of the percentage relationship that the difference between the production and disappearance of farm crops within the two areas bears to the production and disappearance within the former Empire:

TABLE 2.—Cereals and potatoes, average, 1909-1913; and sugar, 1912-13: Pre-war production and disappearance in the German Empire compared with that within the present boundaries of the Republic

Crop	Per 100 inhabitants ¹							
	Net production 1909-1913				Disappearance 1909-1913			
	Pre-war boundaries	Boundaries of 1923	Difference		Pre-war boundaries	Boundaries of 1923	Difference	
	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Per cent</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Per cent</i>
Wheat.....	215.0	209.0	-6.0	-2.8	321	315	-6	-1.9
Rye.....	627.6	583.6	-44.0	-7.0	588	565	-23	-3.9
Barley.....	226.3	214.7	-11.6	-5.1	444	459	+15	+3.4
Oats per head of horses ²	119.9	128.0	+8.1	+6.8	122	130.4	+8.4	+6.9
Potatoes.....	2,212.6	2,027.9	-184.7	-8.3	2,229	2,030	-199	-8.9
	Net production 1912-13				Disappearance 1912-13			
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Per cent</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Per cent</i>
Sugar, estimated, per capita.....	491.9	483.8	-8.1	-3.8	471.1	448.9	-22.2	-4.7

¹ Population: Pre-war boundaries (1910), 64,926,000; boundaries of 1923 (1910), 57,800,000.
² Net production plus total imports for the Empire. (See text.)
³ Number of horses: Pre-war boundaries (1913), 4,558,000; boundaries of 1923 (1913), 3,807,000.
⁴ Includes 81,620,000 short tons made from molasses. These figures are approximations based upon the data for the season 1912-13.
⁵ Deutsche Zuckerindustrie, vol. 48, No. 6, Feb. 9, 1923, p. 76.
⁶ It is probable that the rate of disappearance in the territories now composing the Republic was greater than is indicated here and in Table 47, p. 64.
⁷ Based on pre-war normal average per capita consumption (1909-1913) and population of 1924 for meats and of 1923 for cereals.

From Table 2 it is seen that the per capita rates of production of the farm crops itemized were considerably less during 1909-1913 in the territories now comprising the Republic than they were for the whole Empire, except in the case of oats, which were produced at a higher rate per horse in the territory of the Republic, but the following items must be considered:

Potatoes were imported into the Empire during the pre-war period 1909-1913 at the rate of 10,874,000 bushels annually. Of this quantity only about 1,400,000 bushels were required to cover the statistical deficit of the territories of the present Republic; over 9,000,000 bushels more potatoes were utilized (see Table 38, p. 56) than were produced in the segregated districts.

Wheat was imported at the rate of 68,700,000 bushels annually, of which about 7,300,000 bushels were shipped to the segregated districts—particularly Alsace-Lorraine—to balance local deficits (see Table 22, p. 34) and the per capita disappearance was less in the territories of the Republic than in the Empire as a whole.

Rye: The former German Empire was a rye-exporting country, shipping abroad each year (1909-1913) an average of about 25,600,000 bushels. Of this exportable surplus approximately 15,000,000 bushels were produced in the districts segregated by the Versailles treaty from the territories now composing the Republic. (See Table 26, p. 41.) This loss in rye is offset somewhat by the gain in wheat. It is probable that the net cereal loss resulting from the provisions of the Versailles treaty may be placed roughly at 8,000,000 to 10,000,000 bushels.

Barley was imported at the rate of 141,500,000 bushels annually. The segregated districts produced a small surplus (see barley situation, p. 47), which was shipped to the territories of the present Republic, where a quantity of barley was fed to livestock equivalent to the total imports of the Empire plus the small surplus from the segregated districts. This surplus, compared with the total imports, was not sufficient to affect German agriculture materially.

Oats were imported annually at the rate of 9,700,000 bushels net. (See Table 34, p. 51.) It is estimated that about 600,000 bushels more than the small surplus produced in the segregated districts were required to cover the statistical deficit of the Saar.

Sugar.—During the season 1912-13 Germany exported about 1,166,000 short tons of raw sugar, of which approximately 400,000 short tons originated in the segregated districts. (See Table 44, p. 61.) Probably about one-half of the average (1909-1913) exportable sugar surplus of 953,000³ short tons originated in the segregated districts, which meant a corresponding loss to Germany's international trade balance sheet.

Livestock.—Based upon the enumeration of animals on December 1, 1913, and the population of 1910, the percentage difference between livestock per 1,000 inhabitants in the territories within the boundaries of the Republic as compared with the Empire as shown below is even less than the difference in field crops. (See Table 2, p. 5.)

	Per cent difference
Horses.....	-5.7
Swine.....	-1.3
Cattle.....	-.9
Sheep.....	-1.2
Total foregoing livestock.....	-1.3
Fowls.....	-1.7

Approximating the hay consumption of sheep and goats at one-seventh that of mature horses or cattle, the hay supply of the livestock of the Empire during 1909-1913 was on the average 2,983 pounds per head, against 3,016 pounds per head in the territories now comprised within the Republic.

³ Average of sugar season Sept. 1, 1908, to Aug. 31, 1913.

The difference between the pre-war per capita relationship of livestock and the available quantity of forage per head of livestock in the Empire and in the territories now constituting the Republic was not great. However, meat was produced at a relatively lower rate in the Republic than in the Empire. At least 200,000,000 pounds of meats were shipped to the interior districts annually from the districts that were later segregated by the Versailles treaty. (See Table 59, p. 79.)

The conclusion seems to be that had other factors remained unchanged, the total effect of the territorial changes brought about by the Versailles treaty would have been to reduce Germany's net exportable cereal surplus by not more than 10,000,000 bushels and the exportable sugar surplus by not more than 500,000 short tons and to increase meat imports by about 100,000 short tons. The relative situation of other agricultural products in the Republic would have remained practically the same as it had been in the Empire.

THE PRESENT CRISIS IN GERMAN AGRICULTURE

The reversal of the preferential agricultural tariff and legislation unfavorable to agriculture, the chaotic economic conditions following the war, and the influx of cheap agricultural products from American and other overseas countries have tended to cause German farmers to reduce the production of marketable surpluses and to restrict their operations to a basis more nearly approaching self-sufficiency. The disproportion between the price that the farmer has received for his products and the price that he has had to pay for labor and the goods that he has required for the development of his business has been so great that he has not been able to obtain the cost of production on the poorer soils and, as a consequence, millions of acres of submarginal lands have gone out of cultivation.

The feeding of livestock in Germany has always been restricted to a great extent to the quantities of feeding stuffs that could be produced at home, in addition to which large quantities of feeding barley, fish meal, oil cake, and other concentrates and cereals have had to be imported. The degree to which such feeds could be used with profit was restricted by their cost and the market price of meat. Although in recent years the areas devoted to hay, fodder beets, and potatoes have been increased above pre-war levels, the increased quantities of feeding stuffs thus produced at home have not been sufficient to maintain cattle and swine on German farms up to their pre-war numbers, and meat and fat prices have not been high enough to enable the German farmers to import foreign concentrated feeding stuffs on a basis profitable to meat production.

Added to these handicaps affecting the profitable production of marketable surpluses, the German demand for agricultural products has fallen off sharply as a result of the inability of the masses of the German people to maintain themselves at their former high standard of living. As Professor Sering states:

Germany is exporting, expressed in terms of gold, only one-half of her pre-war volume. * * * Germany's ability to provide herself with the means of subsistence is correspondingly curtailed. The farmer of great exporting territories, therefore, is the victim of the central European collapse. The purchasing power of his wheat and of his cattle in exchange for industrial goods has been reduced approximately to from 50 to 70 per cent of its pre-war power because of the depreciated equivalent which Germany is able to offer. * * * The disparity

of prices, and with it the distress of the farmers, is almost everywhere being augmented by legislation and especially by high protective tariffs. (Max Sering, "The International Agrarian Crisis," *Journal of Farm Economics*, October, 1924, pp. 341, 342.)

SUPPLIES OF CEREALS AND POTATOES

From the data in Table 3 it is seen that since the war Germany has subsisted on supplies of cereals far below the pre-war average, which amounted to 1,270,709,000 bushels in 1909-1913, as against 835,080,000 bushels in 1921-22, 662,497,000 bushels in 1922-23, and 890,925,000 bushels in 1923-24.

TABLE 3.—*Potatoes and cereals: Supplies in Germany*

[In thousands of bushels—000 omitted]

Crop	Boundaries of 1923				
	Average, 1909-1913	1921-22	1922-23	1923-24	1924-25
Domestic production less seed: ¹					
Potatoes.....	1,172,135	766,358	1,294,182	996,700	1,132,740
Rye.....	337,345	241,606	180,742	236,396	199,573
Wheat.....	120,815	98,471	63,021	96,804	79,799
Barley.....	124,088	92,764	72,101	99,496	100,227
Oats.....	487,112	311,044	242,451	385,027	351,889
Imports less exports:					
Potatoes.....	² 1,363	1,376	2,936	8,478	.....
Rye.....	³ -10,701	4,736	42,114	24,577	.....
Wheat.....	⁴ 61,415	69,293	42,053	28,560	.....
Barley.....	⁴ 141,475	10,911	13,006	23,072	.....
Oats.....	⁵ 9,160	6,253	7,009	⁶ -4,377	.....
Total supply:					
Potatoes.....	1,173,498	767,734	1,297,118	1,005,178	.....
Rye.....	326,644	246,344	222,856	261,263	.....
Wheat.....	182,230	167,764	105,074	126,454	.....
Barley.....	265,563	103,675	85,107	122,558	.....
Oats.....	496,272	317,297	249,460	380,650	.....

¹ Probably the pre-war production was overestimated and post-war production underestimated

² Average statistical deficit.

³ Average statistical surplus.

⁴ Net imports for total German Empire; statistical deficit probably greater than imports for total empire.

⁵ Net exports.

Before the war the territories now composing the Republic of Germany produced 84.2 per cent and imported 15.8 per cent (net) of the total supply of rye, wheat, barley, and oats.

In 1923-24 there was a bumper crop. Production amounted to 91.8 per cent and net importations only 8.2 per cent of the total supplies of these four cereals.

Total supplies of cereals available for consumption in Germany during the pre-war period 1909-1913 averaged 1,270,709,000 bushels, against 890,925,000 bushels in 1923-24, a falling off of 29.9 per cent.

Germany's pre-war cereal supplies amounted to 22 bushels per capita. In 1923-24 the per capita allowance of the population of 62,275,000 amounted to only 14.3 bushels, or 65 per cent, of the pre-war normal.

The great reduction in the post-war supplies of potatoes and cereals as compared with the pre-war normal is indicated in Table 4.

TABLE 4.—Potatoes and cereals: Supplies in Germany, expressed as percentages of estimated requirements, based on normal pre-war disappearance

Crop and year	Boundaries of 1923			Crop and year	Boundaries of 1923		
	Domestic production less seed	Net imports	Total supply		Domestic production less seed	Net imports	Total supply
1909-1913:	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	1923-24:	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
Potatoes.....	99.9	¹ 0.1	100.0	Potatoes.....	78.8	.7	79.5
Rye.....	103.3	¹ -3.3	100.0	Rye.....	67.2	7.1	74.3
Wheat.....	66.3	¹ 33.7	100.0	Wheat.....	49.3	15.1	64.4
Barley.....	46.7	¹ 53.3	100.0	Barley.....	34.8	8.0	42.8
Oats.....	98.2	¹ 1.8	100.0	Oats.....	80.0	¹ -0.9	79.1
1921-22:				1924-25:			
Potatoes.....	61.8	0.1	61.9	Potatoes.....	88.8		
Rye.....	70.0	1.4	71.4	Rye.....	56.2		
Wheat.....	51.2	36.0	87.2	Wheat.....	40.3		
Barley.....	33.1	3.9	37.0	Barley.....	34.7		
Oats.....	65.1	1.3	66.4	Oats.....	73.1		
1922-23:							
Potatoes.....	103.2	0.2	103.4				
Rye.....	51.8	12.1	63.9				
Wheat.....	32.4	21.6	54.0				
Barley.....	25.4	4.6	30.0				
Oats.....	50.3	1.5	51.8				

NOTE:—Table 4 is derived from Table 3 by dividing the supplies of each commodity by a calculated normal requirement, based on pre-war per capita consumption multiplied by the estimated population in each year.

¹ Average statistical deficit.

² Average statistical surplus.

³ Net exports.

SUPPLIES OF MEATS, FATS, AND OILS

The data relative to the production of meats, fats, and oils in Germany are largely approximations, based upon estimates made from official and trade figures. The Fach-Ausschuss für Fleischversorgung estimates that the available supplies of beef, veal, pork, mutton, goat, horse, and dog flesh in 1923 were 46.4 per cent of the 1912 supply for the whole Empire. In Table 59, page 79, the estimates indicate that the supplies of all meats in 1923 were 53.5 per cent of the 1912 supply for the Empire and 60.1 per cent of the estimated supply for the territories now composing the Republic, which amounted to approximately 4,043,000 short tons in 1912, as compared with 2,980,000 short tons in 1921, 2,845,000 short tons in 1922, 2,429,000 short tons in 1923, and 3,360,000 short tons in 1924. (See Table 5, p. 10.)

TABLE 5.—Meats, fats, and oils: Approximate supplies in Germany, 1921-1924, compared with 1912

[In thousands—000 omitted]

Commodities	Boundaries of 1923				
	1912	1921	1922	1923	1924
Meats:					
German production—					
Beef and veal.....	Pounds 2,164,587	Pounds 1,729,498	Pounds 1,800,078	Pounds 1,159,900	Pounds 1,906,543
Pork.....	3,968,159	2,328,708	2,328,834	2,022,109	2,896,869
Other meats.....	948,407	907,688	1,022,636	837,365	857,137
Total.....	7,081,153	4,965,894	5,149,548	4,019,365	5,660,549
Imported supplies—					
Beef and veal.....	1,144,500	¹ 67,627	112,326	182,648	235,605
Pork.....	1,167,619	223,695	98,214	142,716	143,917
Other meats.....	¹ 693,598	702,131	329,840	513,348	680,792
Total.....	¹ 1,005,717	993,453	540,380	838,712	1,060,344
Total produced and imported—					
Beef and veal.....	2,309,087	1,797,125	1,912,404	1,342,548	2,142,148
Pork.....	4,135,778	2,552,403	2,425,048	2,164,816	3,040,816
Other meats.....	1,642,005	1,609,819	1,352,476	1,350,713	1,537,929
Total, all meats.....	8,086,870	5,959,347	5,689,928	4,858,077	6,720,893
Fats and oils:					
German production—					
Animal fats and oils.....	2,133,000	1,353,000	1,368,000	1,350,000	² 1,350,000
Vegetable fats and oils.....	59,000	88,000	88,000	88,000	² 88,000
Total.....	2,192,000	1,441,000	1,456,000	1,438,000	² 1,438,000
Imported supplies—					
Animal fats and oils.....	474,000	443,000	272,000	296,000	512,000
Fish fats and oils.....	75,000	64,000	137,000	97,000	73,000
Vegetable fats and oils.....	734,000	750,000	959,000	661,000	525,000
Total.....	1,283,000	1,257,000	1,368,000	1,154,000	1,110,000
Total produced and imported—					
Animal fats and oils.....	2,607,000	1,796,000	1,640,000	1,746,000	1,862,000
Fish fats and oils.....	75,000	64,000	137,000	97,000	73,000
Vegetable fats and oils.....	793,000	838,000	1,047,000	749,000	613,000
Total, all fats and oils.....	3,475,000	2,698,000	2,824,000	2,592,000	2,548,000

¹ Includes meats brought from other parts of the Empire.² Does not include corned beef.³ 1924 production figures are not available; assumed to equal that of 1923.

Before the war (1912) the territories now composing the Republic of Germany produced approximately 87.6 per cent and imported (net) 12.4 per cent of its total supply of all meats.

In 1924 production approximated 84.2 per cent and net importations 15.8 per cent of the total available supplies.

In 1924 production of meats had fallen to approximately 80 per cent of the 1912 estimates and importations had risen to approximately 105 per cent. The total supply was 83 per cent of the total supply of 1912, but because of increased population was only 76.5 per cent of the total requirement of the inhabitants based upon pre-war consumption rates.

There has been a considerable reduction in potential supplies of meats in Germany ever since the beginning of the war. No information is available to show how low supplies fell during and immediately after the war, but there have been some improvements since 1918. The best available data indicate that for the year 1921 the per capita supply of meats was 69.7 per cent of the supply in 1912, and for 1922

65.9 per cent of the pre-war figure. During 1923 supplies appear to have fallen still further, to only 55.7 per cent of those available in 1912. During the past year (1924) slaughtering of both cattle and swine have been greater than during the previous season, following the stabilization of the mark and the consequent heavier marketing of livestock by the German farmers. Because of better conditions of financing international trade during 1924, importations of beef have been almost one-third greater than during 1923. Although the total supplies of meats in Germany in 1924 were more than one and one-half billion pounds greater than in 1923, the per capita supply was still only 76.5 per cent of the pre-war per capita requirement.

The percentages of estimated normal requirements in Table 6 are only approximations, indicating the trend of production and supply in recent years as contrasted with the year 1912.

TABLE 6.—*Edible meats and fats: Supplies in Germany, expressed as percentages of estimated normal requirements, 1921-1924, as compared with 1912*

Commodity and year	Boundaries of 1923			Commodity and year	Boundaries of 1923		
	Domestic production	Net imports	Total supply		Domestic production	Net imports	Total supply
1912				1922—Continued			
Meats:	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>	Fats:	<i>Per cent</i>	<i>Per cent</i>	<i>Per cent</i>
Beef and veal.....	96.7	13.3	100.0	Animal.....	49.1	9.8	58.9
Pork.....	99.0	11.0	100.0	Fish.....		170.6	170.6
Other meats.....	56.3	143.7	100.0	Vegetable.....	10.4	113.4	123.8
Total meats.....	89.7	10.3	100.0	Total fats.....	39.2	36.9	76.1
Fats:				1923			
Animal.....	83.4	116.6	100.0	Meats:			
Fish.....		100.0	100.0	Beef and veal.....	46.7	7.3	54.0
Vegetable.....	7.3	92.7	100.0	Pork.....	45.3	3.2	48.5
Total fats.....	64.2	25.8	100.0	Other meats.....	47.3	29.0	76.3
1921				Total meats.....	46.1	9.6	55.7
Meats:				Fats:			
Beef and veal.....	71.0	2.8	73.8	Animal.....	48.1	14.1	62.2
Pork.....	53.3	5.1	48.4	Fish.....		119.8	119.8
Other meats.....	52.3	40.5	92.8	Vegetable.....	10.3	77.5	87.8
Total meats.....	58.1	11.6	69.7	Total fats.....	38.4	30.8	69.2
Fats:				1924			
Animal.....	49.1	16.1	65.2	Meats:			
Fish.....		80.6	80.6	Beef and veal.....	76.1	9.4	85.5
Vegetable.....	10.5	89.7	100.2	Pork.....	64.4	3.2	67.6
Total fats.....	39.3	34.3	73.6	Other meats.....	48.0	38.2	86.2
1922				Total meats.....	64.4	12.1	76.5
Meats:				Fats:			
Beef and veal.....	73.1	4.5	77.6	Animal.....	47.6	18.1	65.7
Pork.....	52.6	2.2	54.8	Fish.....		89.4	89.4
Other meats.....	58.3	18.8	74.1	Vegetable.....	10.2	61.0	71.2
Total meats.....	59.6	6.3	65.9	Total fats.....	38.1	29.4	67.5

¹ Deficit in domestic supply estimated from per capita consumption.

Germany's inability to regain more rapidly her pre-war status in meat production has been due very largely to the problem of feeding stuffs. It is significant that hay supplies have increased from 3,016 pounds per head, the average of 1909-1913, to 3,272 pounds in 1924, calculated on the basis of consumption of large mature animals (see

p. 67), while the area planted to fodder roots has expanded greatly in order to increase animal production through the feeding as far as possible of home-grown crops. But these home-grown feeding stuffs are insufficient, more particularly since the abandonment of cereal acreage has cut down straw supplies enormously.

Authorities estimate that before the war fully 40 per cent of Germany's milk and butter production was based upon the use of foreign barley, oil cake, and other concentrates, importations of which averaged about 8,000,000 short tons in 1912 and 1913. Since the war Germany has been unable to import more than 25 to 30 per cent of the quantities of these foreign feeding stuffs that had been imported before the war. Meat and animal-fat production have been correspondingly curtailed.

One of the factors with which German meat producers may have to reckon is the development of the meat industry in the Argentine. Before the war Germany imported an average of 1,764 pounds of frozen beef from Argentina; in 1921-22, 5,600,000 pounds; in 1922-23, 23,400,000 pounds; in 1923-24, 115,700,000 pounds. Although this importation of the last fiscal year is only about 6 to 7 per cent of the total beef and veal production of the calendar year 1924, the fact that the German people are eating greater quantities of cheap frozen beef than formerly is significant and may prove a factor to be taken into serious consideration.

The increased buying ability of the city dwellers during the past year in Germany is reflected in the increased importations of butter, which were 2,000,000 pounds in 1922, 3,000,000 pounds in 1923, and 118,000,000 pounds in 1924, of which Denmark supplied nearly 59,000,000 pounds, withdrawing this quantity from the offerings she would otherwise have made on the United States markets.

Domestically produced fats in Germany are chiefly of animal origin, although a relatively small quantity of vegetable oil is produced from domestic seed. A very large quantity of vegetable fats and oils is imported or produced from imported oil-bearing materials. The oil crushers and margarine manufacturing industries were both seriously disorganized in 1923, but recovered toward the end of the year and handled, including linseed, about 600,000 short tons of imported oil-seeds, while in 1924 they crushed fully 800,000 short tons of imported seeds, as compared with 1,900,000 short tons in 1913.

Before the war the territories now composing the Republic of Germany produced nearly two-thirds of the total requirements of fats and oils. Domestic supplies in 1912 were about 2,200,000,000 pounds, or 37.9 pounds per capita, of which 97.3 per cent were animal fats. Probably not more than 25 per cent of the animal fats were actually rendered, the remainder being sold with the meat. Of the supplies imported, practically 57 per cent were in the form of vegetable-oil materials. The remainder consisted of animal and fish fats, of which lard imported from the United States was an important item.

With the outbreak of the war there was a substantial reduction in available supplies of fats, and a shortage has prevailed ever since. The best available data indicate that for the year 1921, the total per capita supply of fats was 74 per cent of the supply in 1912 and that during 1922 it rose to 76 per cent but in 1923 declined to about 69 per cent. The decrease in 1923 is almost entirely due to smaller

importations of vegetable oils and oil materials which resulted from disorganization of the oil industries. The fat yield per hog is now equal to pre-war yield, and the fat content of beef carcasses is nearly back to normal. German production of hog fat was actually greater in 1923 than in 1922, and it seems probable that production of beef fat, including home slaughter, has fallen only very slightly, if at all.

In 1924 the supplies of animal fats rose to 29.6 pounds per capita, against 28 pounds in 1923; but total fats fell from 41.6 in 1923 to 40.6 in 1924, being 67.5 per cent of the fat and oil supplies that Germany would require if the population utilized the normal pre-war disappearance.

Summarizing in tabular form the situation of German agriculture in its relation to the food requirements of the nation, we have the following:

TABLE 7.—Production, import, and per capita supply of specified commodities in Germany, 1923 boundaries, 1924, as compared with pre-war

Commodity	Percentage of pre-war		
	Production	Importation	Per capita supply
Potatoes ¹	<i>Per cent</i> 85.0	<i>Per cent</i> 622.0	<i>Per cent</i> 79.3
Cereals ¹	76.5	36.3	65.0
Meats ¹	79.9	185.4	76.4
Fats ¹	65.6	89.5	67.6
Sugar ²	52.2	437.8	63.4

¹ Years ended June 30, 1924, compared with average, 1909-1913; 1923 population used in computing 1924 per capita supply.

² Compared with 1912.

³ Years ended Aug. 31; 1924 compared with season 1912-13

⁴ Export.

⁵ Disappearance.

From Table 7 it is seen that the production of potatoes and meats has tended to remain at higher levels than cereals, fats, or sugar. Imports of potatoes and meats have also remained relatively high, so that despite increased population the per capita allowance of the German people is but 20.7 per cent below pre-war per capita allowance in the case of potatoes and 23.6 per cent in the case of meat.

Lesser quantities of potatoes are being manufactured into alcohol and greater quantities are being consumed as food than formerly. Potatoes are used to a great extent to make up the shortage in cereals, the production of which in 1924 was 76.5 per cent, while importations fell to 36.3 per cent and the per capita allowance was only 65 per cent of pre-war normals. Importations of fats have been relatively greater than in the case of cereals, but production has been less and the per capita allowance was only 67.6 per cent of normal in 1924.

With the reorganization of German industry, the purchasing power of the German people will be greatly increased and there will be a stronger demand for the necessaries of life. As German agriculture is near to the demand centers, it should profit by the new prosperity of the cities and industrial centers with a consequent return toward the former relatively high production capacity of rural Germany.

But new factors have entered into the problem. New trade channels have been opened up, the people of the cities have accustomed themselves to new dietary standards, and new policies of State are being considered.

There is a possibility that the agriculture of Germany may not soon regain its former status but that, like Great Britain, an industrialized Germany may depend more and more upon surplus-producing countries overseas to supply its people with food and its industries with raw materials. In this case the demand for American agricultural products may remain as it now is or may somewhat increase.

GERMANY AS A MARKET FOR AMERICAN AGRICULTURAL PRODUCTS

If the analysis (see pp. 104 to 110) is correct, we may expect a market in Germany in the next few years of readjustment for at least 800,000 or 900,000 bales of cotton annually, valued at approximately \$100,000,000, and for double that quantity in years of heavy production and moderate prices. The German market for American grain for bread and for feed depends largely on competition from other sources of supply, with Russia as the most formidable potential competitor. Pork products and fats will be taken by Germany when prices are relatively low. Even in periods of higher prices there may easily be a market in Germany for as much lard as in pre-war years. This would mean an export value of perhaps \$30,000,000. However, the bacon and ham trade is not likely to be maintained at the high levels reached during the period of German currency inflation. Tobacco will continue to be exported from the United States to Germany to the value of from \$3,000,000 to \$4,000,000 annually. In favorable seasons, such as in 1924-25, the value of German imports of American agricultural products will exceed the pre-war average, but the apparent tendency is for the average of the next few years to be somewhat below the average of 1910-1914. However, if Germany continues its industrial development with continued increases in population, it will obviously be necessary before many years for the industrial population to draw to a greater extent than ever before upon foreign sources of supply for its foodstuffs and other agricultural products.

PHYSICAL CHARACTERISTICS OF THE REPUBLIC OF GERMANY⁴

The present German Republic consists of what remains of the former German Empire after segregating from the central districts Alsace-Lorraine, returned to France; a small area called the Eupen-Malmedy district, ceded to Belgium; northern Schleswig, ceded to Denmark; a small part of Pomerania, the greater part of West Prussia and Posen, parts of Upper and Lower Silesia and East Prussia, incorporated in the newly formed Republic of Poland; the Memel district of East Prussia and Danzig, placed in charge of the allies; and a small area in Upper Silesia, ceded to Czechoslovakia. In addition there is a plebiscite area in the Saar Basin whose fate is to be settled 15 years after the signing of the treaty of Versailles. In the following report all of these segregated districts are collectively designated as the "ceded territories." (Fig. 2.)

⁴ Summary based on statement by Doctor Opitz, of the Berlin Landwirtschaftliche Hochschule.

The Republic of Germany, as constituted by the treaty of Versailles, has a total area of 181,524 square miles, or is about the size of Colorado and Wyoming. It has a population (1924 estimate) of 62,825,000, or 346 per square mile.

Germany lies between the forty-seventh and the fifty-fifth degrees of north latitude, or about the same distance from the Equator as the Canadian Province of British Columbia.

Topographically the country may be considered as divided into two nearly equal parts, the highland region in the south and west and the lowland plain of the north and east. The mountainous region may be said, roughly, to include southern Silesia, southern Free State



Fig. 2.—Map of Germany, showing ceded areas

Germany ceded away 27,240 square miles of territory, while the Saar plebiscite includes 744 additional square miles, totaling 13.4 per cent of the former German Empire. The ceded territories of Posen and West Prussia include some of the richest surplus producing agricultural lands, while most of the other ceded territories were agricultural deficit regions. The net effect of the territorial changes brought about by the Versailles treaty was to increase the dependence of Germany upon foreign sources of agricultural supplies

Saxony, Thuringia, half of the Province of Saxony, Westphalia, and the Rhineland, and all the region to the south and west of these Provinces.

Practically all the northern portion of the country lies in the great European plain, across which the Rivers Oder, Elbe, and Rhine flow from the highlands of the south in a general northwest direction to the Baltic and German Seas. The German portion of the European plain is only slightly above sea level, with occasional minor variations, relics of ancient moraines. The soil is chiefly of medium or light sand, excellent for rye or potatoes. In some districts a good loam prevails and in the river valleys a medium to heavy alluvial soil predominates. The heavy clays and loams of the sea marshes are much more fertile than the other lighter soils. In

the north there are extensive moors, of little or no tillage value, but when drained provide excellent pasturage, so that this section of the country is characterized by its dairy industry.

The temperature of the western part of the German plain, near the North Sea, is markedly oceanic in character, with cool summers, mild winters, and a long growing season. In the neighborhood of the Baltic Sea the oceanic type of climate is much less noticeable. Farther east, in East Prussia and in Upper Silesia, the climate is colder and more inclement, approaching the continental climate of Russia. The seasonal variations and the daily ranges of temperature are also greater. In East Prussia and eastern Silesia late frosts must be expected until in May, and fall frosts begin as early as September. The annual rainfall of most of the plains region is about 22 inches (55 millimeters). In East Prussia, however, and in the coastal regions, particularly along the North Sea, precipitation is much heavier. Some of the valleys of east Germany are drier, receiving only 16 to 18 inches (40 to 45 millimeters). In western Germany there is likely to be a dry period in May and June, but in the east the seasonal lack of rain is more pronounced, sometimes very materially decreasing the grain yields in the eastern provinces. The heaviest precipitation usually occurs in July and August.

These natural conditions in the plains area lead to farming on an extensive scale, over 60 per cent of the total agricultural area being in farms over 45 acres in extent and about 30 per cent being in farms over 247 acres (100 hectares) in extent. In the sandy soil of the plains, rye is the principal grain crop and potatoes the chief hoed crop.

In the highland district of the south the greatest altitudes are found in the south Bavarian Lower Alps, where the mountains reach a height of 6,500 feet (2,000 meters) or more above sea level. The south Saxon ore-bearing mountain chains, which practically coincide with the southeastern political boundary of the country, can be classified as secondary mountains, with altitudes of from 3,250 to 5,200 feet (1,000 to 1,600 meters). The central German highlands, including the Hartz Mountains, are also considered as part of the general highland region.

The soil of the highlands is predominantly clay, although a great variety of soils is to be found. The temperature of the southern and eastern parts of the region is characterized by warm summers and long, cold winters, giving a comparatively short growing season. Rye can be grown in altitudes as high as 3,250 feet (1,000 meters) but wheat is a profitable crop scarcely beyond 1,600 feet (500 meters). There is considerable danger of frost in the spring until in May, and in the fall, frosts begin in September. Toward the northwestern part of the highland region the influence of the ocean is felt. The summers are cooler, the winters milder, and the growing season comparatively long. The rainfall in the mountains of the southeastern part of the region averages about 48 to 56 inches (1,200 to 1,400 millimeters) but in the lower region about 24 to 28 inches, with the exception of a drier area in Anhalt and part of the province of Saxony known as the region of the "rain shadows" of the Hartz Mountains. There the annual rainfall is in the neighborhood of 16 to 18 inches (400 to 450 millimeters) a year. The mountains in the west and south of the highland region have a rainfall of from 50 to 80 inches and more.

The valleys and lowlands are much drier, receiving between 24 to 40 inches. Some districts along the Rhine have a rainfall of only 16 to 24 inches.

The broken topography of the mountain regions naturally leads to the small-farm type of agriculture, over two-thirds of the agriculturally used area being in farms less than 45 acres in extent. The grazing areas of the hills furnish natural forage crops, rendering livestock production a profitable enterprise, not only for meat but for draft animals as well. On the small farms of Germany the use of oxen is still found to be fairly profitable. Although the fertile soil of the highlands is advantageous for wheat growing and wheat is one of the important crops of southern and western Germany, rye is grown extensively, especially where the soil for any reason is not well adapted to wheat or where the climate is too rigorous. Barley is much more important in this region than in the plains. Root fodder crops are important in supplementing the natural pastures. In the "rain-shadow" district of the Hartz Mountains around Magdeburg the dry climate combined with a fertile soil is very favorable to sugar-beet production, and the sugar industry is well developed in this region.

DEVELOPMENT OF GERMAN AGRICULTURE BEFORE THE WAR

Comparing the acreage and production of Germany in 1880 with the average acreage and production during the period 1909-1913 in the Empire of Germany, we find astonishing increases in production, as indicated in Table 8:

TABLE 8.—Cereals and potatoes: Production and acreage during 1880, as compared with the pre-war average, 1909-1913

[In thousands—000 omitted]

Crop	1880		Average 1909-1913	
	Acres	Bushels	Acres	Bushels
Wheat.....	4,485	86,461	4,768	152,119
Rye.....	14,630	195,709	15,387	445,222
Spelt.....	932	26,970	707	23,529
Total bread cereals.....	20,047	309,140	20,862	620,870
Oats.....	9,250	292,289	10,750	591,996
Barley.....	4,013	98,731	4,092	158,517
Total cereals.....	33,330	700,160	35,704	1,371,383
Potatoes.....	7,180	716,962	8,251	1,681,959

The great increase in production per unit of area was effected by improvement and intensification of methods and by the extended use of fertilizers. The average production of potatoes (1909-1913) was more than double that of 1880, whereas the increase in area planted was only 14.9 per cent. Cereal areas were increased but 7.1 per cent, whereas production nearly doubled, the increase being 95.9 per cent comparing the total production in 1880 with the average for 1909-1913.

Agricultural development during these 30 years was stimulated by Germany's great industrial growth, attended by an increasing demand for foodstuffs and agricultural raw materials. German agriculture was bound to reap a profit from this expansion of industry and the

growth of cities, if for no other reason, because of nearness to markets. In addition, still greater benefits were bestowed upon German agriculture by a friendly tariff.

The population grew from 45,222,113 in 1882 to 64,925,993 in 1910.

The increased buying power which was passed on to the farmer from the industrial sections by higher prices received at the farm made remunerative the expensive intensive methods that were employed.

The more immediate factors which contributed to German agricultural prosperity should include: (1) Greatly increased use of commercial fertilizers;⁵ (2) large livestock production built up to a great extent on imported feedstuffs, contributing to increase soil fertility; (3) application of scientific methods of seed selection, tillage, crop rotation, and farm management;⁶ and (4) a cheap supply of competent labor and the introduction of labor-saving machinery.⁷

AGRICULTURAL TARIFF

The German agricultural tariff which was first applied in 1879 and which was frequently increased gave great impetus to agricultural development. By a drawback system some products received what amounted to a bonus on export, as well as protection in home markets. This accounts, to a large extent, for the remarkable expansion in rye production, especially in northeastern Germany. It also accounts for the large export rye balance at a time when Germany was really a deficit grain-producing country. This rye-tariff policy was a happy one for the eastern farmer because the growing home demand was for wheat, whereas the land in the east was particularly suitable for rye.

This tariff also made possible a good margin of profit in the feeding of animals for slaughter on account of the relationship of the tariff

⁵ The extensive use of potash in Germany as contrasted with its use in the United States is given in the following:

Potash use per 100 acres, in pounds

Year	Germany	United States
1895	152.2	18.0
1900	298.3	34.6
1905	514.3	58.0
1910	914.6	130.3
1913	1,364.4	106.8

Source: Kricha, Paul, *Das Kali*, * * * Stuttgart, Verlag von Ferdinand Enke, 1923, Teil I.

The large importations of barley, oil cake, and other feeding stuffs meant, in a large sense, an importation of fertilizer. Several estimates that agree quite closely indicate that animal fertilizer was fully as important as the commercial.

⁶ Regarding the application of scientific methods of farming in Germany volumes might be written. By such methods as seed selection, crop rotation, etc., a great deal was undoubtedly accomplished which did not greatly increase production costs. The intensive cultivation for the most part, however, caused a direct increase in costs and was profitable only because of the remunerative prices received for commodities. For instance, rye and wheat were cultivated during the growing season as corn is cultivated in America. Fields were often plowed three or four times per year and green manure, sown after early crops, was plowed under.

⁷ The resident rural population decreased during this period of development, but a large seasonal labor supply was imported each year. This began with a small seasonal migration from the east to take care of Saxony's sugar-beet crop. The term "Saxon Ganger" is a very old one. This yearly migration so developed that, just before the war, about 400,000 Poles yearly migrated to Germany. They returned to Poland when the work was finished, and were consequently not included in the statistics of agricultural population. Such labor was not only imported into Saxony but into all central and northeastern territory. The introduction of agricultural machinery from abroad and the development of the farm implement manufacture within Germany itself did much to lower the cost of production.

on feedstuffs to those applying to meat. The farmer obtained his foreign-grown feeding barley under a low-tariff schedule, while at the same time he was able to protect home-grown brewing barley by a higher schedule. This was possible because German barley, being a brewing type, was heavier; and it was possible, consequently, to differentiate on the basis of weight per measured bushel between feeding and brewing barley.

SOME OF THE PRACTICAL EFFECTS OF SOIL, CLIMATE, AND TOPOGRAPHY UPON
AGRICULTURE

The southern regions of Germany which might have gained some agricultural advantage because of a more southern location lose this advantage of latitude because of the high altitude and mountainous character of the country. The northern and eastern sections of Germany are for the most part sandy plains. In the summer the sky is commonly cloudy and the temperature cool. Thus, in general throughout Germany, physical conditions do not favor a highly productive agriculture, but a highly productive agriculture has been developed in spite of inclement natural conditions by the application of intensive cultural methods and the extensive use of fertilizers.

The sandy soil of Prussia is better adapted to rye than to wheat. Farmers aim to select their best fields for wheat, and still they have not been able to increase profitable wheat production in any way proportional to the increasing demand for white bread. The main reason for extensive rye production is not primarily a preference for rye bread but the better adaptation of soil and climate to this crop. The increasing industrial population before the war demanded wheat bread almost exclusively. Even in such mid-eastern cities as Berlin the wheat ration constituted 70 per cent of bread grains consumed. Although in the districts southwest of Prussia physical conditions are somewhat more favorable to wheat production, still the mountainous districts of the south are more adaptable to rye production. As a result Germany before the war produced considerably more rye than the population consumed, while wheat had to be imported in increasing quantities.

On account of the humid climate, German bread grains do not produce a high-grade flour; for that reason it has been necessary that they be mixed with grain grown in drier countries. German cereals are so humid that the American system of elevators is unsuitable. Even in large warehouses grain must be spread out rather thinly on floors to avoid deterioration. Largely on account of the humid climate, German barley is of a type suitable for beer making. Consequently, during pre-war days, the larger part of the home-produced barley was used for beer, and the drier Russian barley, high in protein, was imported for animal feeds.

The climate of Germany is not warm enough for corn to ripen; on the other hand, the northern and eastern plains are excellently suited for potato production. The local uses of the potato crop in Germany in a way are similar to the uses to which the corn crop is put in the United States, for potatoes form the basis of pork production. When corn is very cheap it comes into competition with German potatoes, especially in the starch industry, in the production of ethyl alcohol, and feed for livestock.

GENERAL EFFECTS OF TERRITORIAL CHANGES BROUGHT ABOUT BY THE TREATY OF
VERSAILLES ON GERMAN AGRICULTURE

The total territorial change in continental Germany, including the Saar Basin, brought about by the treaty of Versailles, involves 13.1 per cent of the former German area; the population of these territories amounted to only 11 per cent of the total inhabitants of the Empire (1910 census). Therefore, in 1910, the territory included within the boundaries of the present-day Republic of Germany contained a somewhat denser population (318 per square mile) than the average for the entire Empire (311 per square mile), as shown in Table 9.

TABLE 9.—Total area and population of the former German Empire, 1910¹

District	Area	Population as of Dec. 1, 1910	Number per square mile
Germany, 1923 boundaries.....	<i>Square miles</i> 181,524	57,799,808	318
Saar district:			
Rhine Province.....	574	572,112	997
Bavaria.....	170	80,946	476
Total.....	182,268	58,452,866	321
Areas ceded:			
From East Prussia—			
To Memel.....	1,026	141,238	138
To Poland.....	194	24,787	128
From West Prussia—			
To Danzig Free State.....	739	330,630	447
To Poland.....	6,125	964,704	158
From Pomerania to Poland.....	4	224	56
From Brandenburg to Poland.....	(²)		
From Posen to Poland.....	10,055	1,946,461	194
From Upper Silesia—			
To Czechoslovakia.....	110	45,396	413
To Poland.....	1,242	893,074	719
From Lower Silesia to Poland.....	196	26,248	134
From Schleswig-Holstein to Denmark.....	1,542	166,348	109
From Rhine Province to Belgium.....	400	60,003	150
Total from Prussia.....	³ 21,633	4,569,113	213
Alsace-Lorraine to France.....	5,607	1,874,014	334
Total areas ceded:			
Including estuaries and inlets.....	27,240	6,473,127	238
Excluding estuaries and inlets.....	26,554		244
Total former German Empire.....	⁴ 208,822	64,925,993	311
Per cent in ceded territories and the Saar.....	13.1	11.0	

Prepared in the German Statistisches Reichsamt, Oct. 31, 1923, from material not yet published.

¹ The boundaries are not yet definitely settled. These figures are subject to change.

² Less than 1 square mile.

³ The area of the German Empire according to the census of 1910, as given above, is exclusive of estuaries and inlets, whereas the figures for the areas lost from Prussia include 686 square miles of estuaries and inlets.

⁴ According to a revision of the area of the Bavarian Bezirksamt "Neuburg a Donau" the area of Bavaria and the total area of Germany should be reduced by 4 square miles, which has not been deducted in the figures above.

Not only did the area of the present Republic contain a denser population than the average for the Empire, but the ceded territories and Saar contained 15.3 per cent of Germany's agricultural population as contrasted with 8.9 per cent of those engaged in mining and manufacturing and 8.2 per cent of those engaged in commerce. Over a third of these industrialists and about a fourth of the farmers in the ceded territories lived in Alsace-Lorraine, and nearly half of those engaged in commerce and about 70 per cent of the farmers lived in territories ceded to Poland. (Table 10.)

TABLE 10.—Population, by occupations, in the districts which composed the former German Empire, 1907

District	Agriculture and forestry			Mining and manufacturing	Commerce trade, and hospitality	Unskilled laborers, servants, etc.	Independent professions, public service, etc.	Population living on annuities, etc., and interest	Total
	General farming and stock raising	Forestry, hunting and fishing	Total						
Germany (1923 boundaries).....	14, 600, 762	372, 006	14, 972, 768	24, 035, 277	7, 596, 837	709, 827	2, 866, 682	4, 627, 124	54, 808, 515
Saar region:.....									
Rhine Province.....	59, 636	1, 116	60, 752	339, 035	54, 438	4, 125	22, 514	51, 635	532, 499
Bavaria.....	16, 953	431	17, 384	43, 529	5, 683	440	2, 657	6, 272	75, 965
Territories ceded:									
From East Prussia.....	91, 072	3, 579	94, 651	26, 186	14, 866	2, 061	5, 959	15, 488	159, 211
From West Prussia—									
To Danzig Free State.....	70, 564	5, 503	76, 067	113, 624	50, 041	11, 867	27, 108	37, 675	316, 382
To Poland.....	518, 965	13, 443	532, 408	174, 874	68, 729	12, 700	51, 691	73, 308	913, 740
From Posen to Poland.....	979, 420	13, 092	992, 512	430, 717	162, 064	22, 376	95, 689	137, 609	1, 840, 967
From Silesia i.....	249, 668	9, 658	259, 326	437, 777	77, 773	9, 385	31, 799	84, 236	900, 346
From Schles.-Holst. to Denmark.....	78, 734	2, 175	80, 909	34, 191	20, 139	2, 122	8, 258	14, 293	159, 912
From Rhine Province to Belgium.....	25, 475	737	26, 212	20, 375	6, 276	481	6, 065	4, 132	63, 571
Alsace-Lorraine to France.....	551, 658	16, 499	568, 157	730, 952	221, 393	17, 364	159, 502	122, 881	1, 820, 249
Total ceded ¹	2, 565, 584	64, 668	2, 630, 272	1, 968, 696	621, 261	78, 356	386, 101	489, 672	6, 174, 378
Total former German Empire.....	17, 242, 935	438, 241	17, 681, 176	26, 386, 537	8, 278, 239	792, 748	3, 277, 954	5, 174, 703	61, 591, 357
Per cent in ceded territories and Saar.....	15.3	15.1	15.3	8.9	8.2	10.5	12.5	10.6	11.0

Germany, Statistisches Reichsamt Statistisches Jahrbuch für das Deutsche Reich, 1921-22.

¹ Includes preliminary estimates of the population lost from Upper Silesia as a result of the conference of Oct. 20, 1921.

² Excludes population lost from Upper Silesia as a result of the conference of Oct. 20, 1921, according to preliminary figures.

The districts composing the Republic of Germany were in 1910 relatively more highly industrialized than was the former Empire as a whole and correspondingly less agricultural, for not only did the ceded territories maintain a high percentage of farmers but they included, especially the eastern districts, some of the best food-surplus producing areas of the Empire.

EFFECT OF THE VERSAILLES TREATY ON LAND UTILIZATION

Agricultural practices vary somewhat in different parts of Germany and the territories ceded on the southwest, northwest, northeast, and southeast represented all the various types of farming. Comparing the manner in which land was utilized in the territory of the whole Empire in 1913 with the relative numbers of acres under various crops, orchards, forests, etc., and the land put to nonagricultural uses during 1913 in the territories now comprised within the present frontiers of the Republic, in the Saar and the ceded districts there was a slightly higher percentage of the land devoted to root crops and to cereals and legumes than was the case in the territories now composing the Republic or in the Empire as a whole. A some-

what smaller proportion of the land was given over to forests, orchards, gardens, meadows, and nonagricultural uses in the ceded territories than in the Republic, as brought out in Table 11.

TABLE 11.—*Utilization of land in Germany, boundaries of 1923, the Saar, and ceded territories, as compared with the German Empire, 1913*

Classification	Former German Empire, 1913		Germany (boundaries, 1923), 1913		Ceded territories and Saar, 1913	
	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent
Cereals and legumes.....	40,156.0	63.7	34,021.2	64.0	6,134.8	61.8
Tubers, roots, etc.....	12,342.6	19.6	10,213.4	19.2	2,129.2	21.4
Vegetables grown in the fields.....	317.0	.5	298.9	.6	30.1	.3
Industrial plants ¹	277.5	.4	241.4	.5	36.1	.4
Fodder plants.....	6,561.5	10.4	5,533.8	10.4	1,027.7	10.3
Fallow.....	1,632.5	2.6	1,451.5	2.7	211.0	2.1
Temporary meadows.....	1,749.2	2.8	1,379.8	2.6	370.4	3.7
Total plow land.....	63,066.3	100.0	53,127.0	100.0	9,939.3	100.0
Plowland.....	63,066.3	47.2	53,127.0	45.8	9,939.3	55.8
Meadows.....	14,805.5	11.1	13,181.1	11.4	1,624.4	9.1
Pastures.....	6,406.1	4.8	5,650.4	4.9	755.7	4.2
Vineyards.....	293.1	.2	222.6	.2	70.5	.4
Gardens, orchards, and nonagricultural areas.....	49,134.3	36.7	43,700.6	37.7	5,433.7	30.5
Total area.....	133,705.3	100.0	115,881.7	100.0	17,823.6	100.0

1913 old boundaries: Germany, Kaiserliches Statistisches Amt. Vierteljahrshefte zur Statistik des Deutschen Reichs.

1913 new boundaries: Unpublished statistics of German Statistisches Reichsamt.

¹ Oleaginous, fiber, and other plants used in industry.

The striking feature of this table on land utilization is the percentage of land under plow in 1913 which was 55.8 per cent in the ceded districts and the Saar against 45.8 per cent in the territories of the Republic. This difference of 10 per cent emphasizes the higher agricultural character of the former districts.

EFFECT OF THE VERSAILLES TREATY ON LARGE ESTATES

Detailed studies in Germany as well as in other European countries have shown that, in general, large marketable surpluses of cereals and sugar beets are to be associated more closely with the extensive farming of large estates than with the small farms of the peasants. The region of large farms in the German Empire lay east of the River Elbe and, while detailed statistics are not available as to differences in yield on farms of different sizes, it is true that in these districts there was a large surplus production of grain, sugar, potatoes, alcohol, and starch. In these eastern districts farms over 247 acres (100 hectares) comprise about 40 per cent of the area, and those over 49 acres (20 hectares), 60 per cent. In some regions the average was much higher than this. Farm holdings become smaller as one travels from eastern Germany toward the central, western, and southern districts. In southern and western Germany holdings are for the most part of the small peasant type and in these sections there is a deficit of agricultural products.

A glance at Table 12 shows that whereas Germany ceded 14.5 per cent of her farm lands to surrounding countries, she ceded 20.8 per cent of her large farms (247 acres and over) that produced large marketable surpluses of cereals as compared with from 12 to 13 per cent of the smaller holdings that produced small marketable surpluses of cereals.

TABLE 12.—Agricultural land holdings: Area in Germany according to the size of holdings

District	Total area of holdings (acres)						Total
	Less than 1.24	1.24 to 4.94	4.94 to 12.4	12.4 to 49.4	49.4 to 247	247 and over	
Germany, 1923 boundaries.....	778, 785	2, 949, 405	7, 185, 157	22, 397, 848	20, 143, 365	13, 815, 237	67, 269, 797
Saar territory.....	10, 114	41, 421	63, 836	106, 448	17, 334	4, 967	244, 120
Areas ceded:							
From East Prussia.....	1, 819	8, 488	30, 299	118, 324	137, 736	90, 429	387, 095
From West Prussia.....	18, 854	61, 839	135, 604	729, 308	870, 753	987, 896	2, 804, 254
From Posen.....	36, 168	91, 012	191, 448	1, 261, 717	961, 629	2, 122, 441	4, 694, 415
From Silesia.....	6, 009	42, 346	80, 364	195, 337	62, 704	201, 055	593, 815
From Schleswig-Holstein.....	1, 137	5, 770	23, 225	161, 408	469, 490	88, 182	749, 212
From Rhine Province.....	259	3, 971	18, 757	47, 391	13, 284	1, 527	85, 189
Alsace-Lorraine.....	35, 311	185, 362	431, 664	733, 902	358, 621	121, 215	1, 866, 075
Total areas ceded.....	99, 557	398, 788	917, 361	3, 247, 387	2, 874, 217	3, 612, 745	11, 150, 055
Total former German Empire.....	888, 456	3, 389, 614	8, 169, 354	25, 751, 683	23, 034, 916	17, 432, 949	78, 663, 972
Per cent in ceded territories and Saar.....	12.3	13.0	12.0	13.0	12.6	20.8	14.5

Prepared in the German Statistisches Reichsamt, Sept. 20, 1923.

EFFECT OF TREATY OF VERSAILLES ON FARM CROPS IN GERMANY

As a result of the Versailles Treaty, Germany ceded to neighboring countries and segregated in the Saar territories that in 1910 contained 11 per cent of the population of the Empire and that during 1909-1913 embraced 15.5 per cent of the Empire's wheat-producing area, 17.4 per cent of the rye area, 11.4 per cent of the oats area, 15.3 per cent of the barley area, 17.9 per cent of the potato area, and 20.5 per cent of the sugar-beet area. (See Table 13.) The percentages of the crop areas ceded were greater than the percentage of the population; and consequently the potential food supplies of the population of the territories comprised within the boundaries of the Republic were relatively less than for the population of the Empire as a whole, as shown in Table 14. These supplies of crops, in terms of bushels per 100 inhabitants, were: Wheat, 234.3 in the Empire against 227.1 for the territory within the boundaries of the Republic; rye, 685.7 against 637.3; barley, 244.2 against 231.5; spelt, 36.2 against 40.6; oats, 911.8 against 912.1. Total cereals in the Empire averaged 2,112.2 against 2,048.6 in the territory now comprising the Republic. There were 2,591 bushels of potatoes produced per 100 inhabitants in the Empire against 2,377 bushels in the territory now comprising the Republic and sugar beets showed 28.3 short tons in the former and 25.4 short tons in the latter.

The differences of 63.6 bushels of cereals, 214.1 bushels of potatoes, and 2.9 short tons of sugar beets per 100 inhabitants placed the Republic at the outset in a potentially inferior economic position as compared with the Empire; cereals 3 per cent, potatoes 8.3 per cent, and sugar beets 10.2 per cent.

In addition to the initial lowered potentiality of the economic status of the country directly attributable to the Versailles treaty, other factors and influences operating during and since the war have further depressed Germany's agricultural situation. The primary effect of these factors and influences is seen in changes in the manner and the extent of the utilization of agricultural lands since the war, as indicated in Table 13.

TABLE 13.—Cereals, potatoes, and sugar beets: Areas in Germany, boundaries of 1923, the ceded territories, and the Saar, as compared with the German Empire, average 1909-1913

Item	Former German Empire, 1909-1913		Germany (boundaries of 1923), 1909-1913		Ceded territories and the Saar, 1909-1913	
				Per cent		Per cent
Total area (square miles).....	208,822	181,524	86.9		27,298	13.1
Population.....	64,926,000	57,800,000	89.0		7,126,000	11.0
Area:						
Cereals—	1,000 acres	1,000 acres		1,000 acres		
Wheat.....	4,768	4,028	84.5		740	15.5
Rye.....	15,387	12,713	82.6		2,674	17.4
Spelt.....	707	706	99.9		1	.1
Oats.....	10,750	9,529	88.6		1,221	11.4
Barley.....	4,092	3,464	84.7		628	15.3
Total cereals.....	35,704	30,440	85.3		5,264	14.7
Potatoes.....	8,251	6,775	82.1		1,476	17.9
Sugar beets.....	1,353	1,075	79.5		278	20.5

¹ One year only; sugar year 1912-13.

TABLE 14.—Cereals, potatoes, and sugar beets: Production in Germany, boundaries of 1923, the ceded territories, and the Saar, as compared with the German Empire, average 1909-1913

Crop	Former German Empire, 1909-1913		Germany (boundaries of 1923), 1909-1913		Ceded territories and the Saar, 1909-1913	
	Total production	Per 100 inhabitants	Total production	Per 100 inhabitants	Total production	Per 100 inhabitants
Cereals:	1,000 bus.	Bushels	1,000 bus.	Bushels	1,000 bus.	Bushels
Wheat.....	152,119	254.3	131,274	227.1	20,845	292.5
Rye.....	445,222	685.7	368,537	637.3	76,685	1,078.9
Spelt.....	23,529	36.2	23,497	40.6	32	.5
Oats.....	591,936	911.3	527,178	912.1	64,818	909.6
Barley.....	158,517	244.2	133,787	231.5	24,730	347.0
Total cereals.....	1,371,383	2,112.2	1,184,073	2,048.6	187,310	2,628.5
Potatoes.....	1,681,959	2,590.6	1,373,609	2,376.5	308,350	4,327.1
Sugar beets.....	1,000 short tons	Short tons	1,000 short tons	Short tons	1,000 short tons	Short tons
	18,345	28.3	14,679	25.4	3,666	51.4

¹ One year only; sugar year 1912-13.

POSTWAR GERMAN AGRICULTURAL SITUATION

The most striking feature of the depression in Germany's agriculture following the World War is the decrease in the areas under crops. This decrease amounted to 3,958,000 acres in 1921, 4,274,000 acres in 1922, and 3,632,000 acres in 1923. (See Table 15.)

Among the influences that have adversely affected German agriculture, three general sets of factors may be mentioned:

(1) There was a reversal of the Government policy from a protection of the farmer before the war, making the country as nearly self-sufficing as possible, to a policy of favoring the industrial interests at the expense of the producers. This has included a reversal of the tariff policy, the establishment of export prohibitions, and the enactment of innumerable laws regulating the farmer's business to his disadvantage in the interest of the consumer, such as grain requisitions at confiscatory prices.

(2) Chaotic economic conditions following the war characterized by the demoralization of the nation's currency have rendered it hazardous for the farmer to sell his products for cash unless he has some means immediately to transfer that cash into real property. It is reported that German farmers exchanged their products for all sorts of commodities—shoes, clothing, fertilizer, implements, and general wares—until they were stocked to repletion. The next step was to restrict their operations to a basis of self-sufficiency, increasing their flocks and herds rather than producing crops that could be sold only for money whose value vanished within an incredibly short time or that could only be exchanged for goods for which the farmer had no immediate use.

TABLE 15.—Utilization of land in Germany, 1921-1923, as compared with 1913

[Thousands of acres—000 omitted]

Classification	Boundaries of 1923			
	1913	1921 (estimated) ¹	1922 (estimated) ¹	1923 (estimated) ¹
Cereals, legumes.....	34,021.2	28,799.3	28,394.0	29,256.9
Tubers, roots, etc.....	10,213.4	10,080.9	10,472.8	10,299.6
Vegetables grown in the field.....	286.9	320.7	319.8	285.9
Industrial plants ²	241.4	461.6	350.4	351.4
Fodder plants.....	5,533.8	6,379.1	6,162.4	6,257.6
Fallow.....	1,451.5	1,570.1	1,650.1	1,497.7
Temporary meadows.....	1,378.8	1,674.1	1,701.8	1,592.0
Total plow land.....	53,127.0	49,287.8	49,051.3	49,541.1
Meadows.....	13,181.1	13,459.5	13,478.1	13,453.8
Pastures.....	5,650.4	6,159.7	6,098.6	6,168.6
Vineyards.....	222.6	205.1	206.6	206.3
Gardens, orchards, and nonagricultural areas.....	43,700.6	46,769.6	46,849.1	46,511.9
Total area of Germany.....	115,881.7	115,881.7	115,881.7	115,881.7
Decrease in total plow land from pre-war.....		3,839.2	4,075.7	3,585.9
Increase in fallow land.....		119.6	199.6	46.2
Decrease in land under crops.....		3,957.8	4,274.3	3,632.1

1913: Unpublished statistics of German Statistisches Reichsamt.

1921: Germany, Statistisches Reichsamt, Vierteljahrshefte zur Statistik des Deutschen Reichs, vol. 31, heft 3, 1922, p. 83.

1922 and 1923: Deutscher Reichsanzeiger und Preussischer Staatsanzeiger, Sept. 8, 1923. Material prepared in the German Statistisches Reichsamt, Sept. 17, 1923.

¹ Whereas the figures for 1913 were taken from an actual census, those for the postwar years are only estimates for the area seeded, so only an approximate comparison can be made.

² Oleaginous, fiber, and other plants used in industry.

(3) Depletion of labor and draft animals during the war, together with general depreciation of agricultural machinery, initiated a tendency to abandon cereal production more rapidly than livestock production, which was followed, as a natural sequence, by the production of a larger percentage of fodder and forage crops.

According to the 1924 statistics wheat has fallen off 400,000 acres and rye 2,200,000 acres, indicating that most of the abandonment of farm lands has been in the regions of light, sandy, low-yielding soils. Barley is now up to pre-war acreage and the areas under oats in 1924 showed a gain of 450,000 acres over the 1923 acreage, though still 800,000 acres below pre-war. Potatoes have held their own, whereas the sugar-beet industry, cut off from former sources of cheap labor from the districts ceded to Poland, has diminished the acreage under this crop. No pre-war estimates are available for fodder beets, except for Prussia, where the acreage has increased from 537,000 in 1909-1913

to 937,000 in 1921, or an increase of 75 per cent. It is probable that similar increases have taken place in other parts of the Republic. The livestock industry has gained about 800,000 acres in hay lands and pasture allowance in recent years as compared with pre-war, while the millions of acres of idle plow lands that are not officially classed as meadows or pastures and that have reverted to a wild state produce grasses of a fair forage quality in many districts, affording possibilities of increased pasturage. This has made possible the recent large increase in the numbers of sheep and the maintenance of horses at pre-war numbers, particularly on the large estates.

INACCURACIES IN GERMAN PRODUCTION STATISTICS

Production has varied more or less according to the season. In studying the figures in the tables on production and yields per acre that follow, and the statistics of the separate crops, allowance must be made for inaccuracies in the estimates. Many German economists feel that the official crop statistics overemphasize the actual decreases in crop production, although it is universally recognized that there has been a considerable actual reduction in crop yields. It is believed, particularly, that pre-war estimates were in general too high, for which various explanations are given.

It is impossible to gauge accurately the amount of the overestimate, and German economists are loath to state a percentage or other estimate of the amount of error. Professor Ballard is quoted as stating that the statistical indications of production were too high by about 10 per cent. Hermann Warmbold, formerly Minister of Agriculture for Prussia, in his bulletin "Futtermittel im Kriege,"⁸ written during the war, assumes an overestimate of 15 per cent. Many economists are of the opinion that official estimates of crop production since the war have been too pessimistic. Just as in other lands, in which agricultural products have been subject to requisition, so in Germany the farmer has been reluctant to return a full statement of his yields. In Germany the area of every field is a matter of record and it is impossible to dissimulate as to the area or the crop sown. However, it is impossible to check the harvesting of each field, and therefore most differences between the reported and the actual production are reflected in yields per acre. No definite statement has been made as to the amount of these underestimates, but general opinion seems to be that they are not so great as the pre-war overestimates.

The areas seeded to the leading agricultural products within the present boundaries of the Republic of Germany, contrasting the pre-war period (1909-1913) with the latest years for which statistics are available, are given in Table 16.

⁸ "Feeding stuffs in time of war."

TABLE 16.—Cereals, potatoes, and beets: Area seeded in Germany, 1921-1924, as compared with the pre-war average, 1909-1913

[Thousands of acres—000 omitted]

Crop	Boundaries of 1923									
	Pre-war average, 1909-1913		1921		1922		1923		1924 (preliminary)	
	Acres	Per cent	Acres	Per cent	Acres	Per cent	Acres	Per cent	Acres	Per cent
Wheat:										
Winter.....	3,522	11.6	3,149	12.4	2,931	11.7	3,123	11.9	3,143	11.8
Spring.....	506	1.6	412	1.6	464	1.9	530	2.0	481	1.8
Total wheat...	4,028	13.2	3,561	14.0	3,395	13.6	3,653	13.9	3,624	13.6
Rye:										
Winter.....	12,450	40.9	10,340	40.7	10,073	40.4	10,577	40.3	10,189	38.1
Spring.....	263	.9	199	.8	164	.7	212	.8	336	1.3
Total rye.....	12,713	41.8	10,539	41.5	10,237	41.1	10,789	41.1	10,525	39.4
Spelt.....	706	2.3	372	1.5	313	1.2	317	1.2	304	1.1
Total bread cereals.....	17,447	57.2	14,472	57.0	13,945	55.9	14,759	56.2	14,453	54.1
Barley:										
Winter.....	1,116	.4	1,306	1.2	1,257	1.0	267	1.0	265	1.0
Spring.....	3,348	11.0	2,808	11.0	2,846	11.4	2,949	11.3	3,306	12.3
Total barley.....	3,464	11.4	3,114	12.2	3,103	12.4	3,216	12.3	3,571	13.3
Oats.....	9,529	31.3	7,814	30.8	7,912	31.7	8,265	31.5	8,712	32.6
Total cereals.....	30,440	100.0	25,400	100.0	24,960	100.0	26,240	100.0	26,736	100.0
Decrease below pre-war average.....			5,040	16.6	5,480	18.0	4,200	13.8	3,704	12.2
Potatoes.....	6,775		6,541		6,725		6,738		6,820	
Sugar beets ¹			962		1,031		947		975	
Sugar beets ²	1,075		821		881		829		876	
Fodder beets.....	(*)		1,803		1,939		1,869		1,809	

1909-1913: Prussia Königliches Statistisches Landesamt, Statistik der Landwirtschaft, 1909-1913 (Preussische Statistik, no. 221, 225, 230, 235, 240.)

1921: Germany, Statistisches Reichsamt Vierteljahrshefte zur Statistik des Deutschen Reichs.

1922, 1923, 1924: Germany, Statistisches Reichsamt, Jan. 7, 1925.

¹ Estimate for 1913 only. No basis for an estimate for earlier years.

² Estimate made in the Statistisches Reichsamt.

³ Upper row of figures from Statistisches Reichsamt and lower row from estimates of Die Deutsche Zuckerindustrie, exclusive of area for seed beets.

* No estimates available

The average production and yields per acre for the pre-war period (1909-1913) contrasted with that of the years 1921, 1922, 1923, and 1924, as far as statistics are available, are given in Tables 17 and 18.

TABLE 17.—*Production of cereals, potatoes, and beets in Germany, 1921-1924, as compared with the pre-war average, 1909-1913*

[In thousands—000 omitted]

Crop	Boundaries of 1923				
	Pre-war average 1909-1913	1921	1922	1923	1924 (preliminary)
Wheat:	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>
Winter.....	114,500	96,412	61,253	91,445	70,832
Spring.....	16,774	11,386	10,673	15,002	● 12,367
Total wheat.....	131,274	107,798	71,926	106,448	89,199
Rye:					
Winter.....	363,098	264,220	203,673	259,046	219,828
Spring.....	5,239	3,428	2,360	3,991	5,745
Total rye.....	368,337	267,648	206,033	263,037	225,573
Spelt.....	23,497	11,419	6,251	8,810	6,419
Total bread cereals.....	523,108	386,865	284,210	378,295	321,191
Barley:					
Winter.....	14,988	12,392	6,917	10,761	9,762
Spring.....	128,799	89,057	73,837	97,685	100,464
Total barley.....	133,787	101,449	80,754	108,446	110,226
Oats.....	527,178	344,812	276,643	420,731	389,625
Total cereals.....	1,184,073	833,126	641,607	907,472	820,942
Potatoes.....	1,373,609	960,888	1,494,180	1,197,095	1,337,540
Sugar beets ¹	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>
.....	.....	8,796	11,893	9,566	11,318
Sugar beets ²	14,679	8,297	10,253	8,087	10,714
Fodder beets.....	(?)	19,645	27,284	24,242	25,626

1909-1913: Prussia, Königliches Statistisches Landesamt, Statistik der Landwirtschaft, 1909-1913. (Preussische Statistik, Nos. 221, 225, 230, 235, 240.) Second estimate of sugar-beet production furnished by Die Deutsche Zuckerindustrie.

1921: Germany, Statistisches Reichsamt Vierteljahrshäfte zur Statistik des Deutschen Reichs.

1922-1924: Germany, Statistisches Reichsamt, Jan. 7, 1925.

¹ No official estimate of the production of winter barley was made for all Germany before 1923. Production estimated from the area reported or estimated on the basis of the relation of the yield per acre of winter grain to summer grain in Prussia where production statistics for winter grain are available.

² Lower row of figures are quantities of beets worked up at the beet-sugar factories taken from the statistics of Die Deutsche Zuckerindustrie. Upper row are production figures from the Statistisches Reichsamt.

³ No estimate available.

TABLE 18.—Cereals, potatoes, and beets: Crop yields per acre in Germany, 1921-1924, as compared with the average, 1909-1913

Crop	Boundaries of 1923				
	Pre-war average, 1909-1913	1921	1922	1923	1924
Wheat:	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>
Winter.....	32.5	30.6	20.9	29.3	24.4
Spring.....	33.1	27.6	23.0	28.3	25.7
Total wheat.....	32.6	30.3	21.2	29.1	24.6
Rye:					
Winter.....	29.2	25.6	20.2	24.5	21.6
Spring.....	19.9	17.2	14.4	18.8	17.1
Total rye.....	29.0	25.4	20.1	21.4	21.4
Spelt.....	33.3	30.7	20.0	27.8	21.1
Total bread cereals.....	30.0	26.7	20.4	25.0	22.2
Barley:					
Winter.....	43.0	40.4	26.9	40.3	36.8
Spring.....	38.5	31.7	25.9	33.1	30.4
Total barley.....	38.6	32.6	26.0	33.7	30.9
Oats.....	55.3	44.1	35.0	50.9	44.7
Total cereals.....	38.9	32.8	25.7	34.6	30.7
Potatoes.....	202.7	146.9	222.2	177.7	196.1
Sugar beets ¹	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>
Sugar beets ¹	9.1	11.5	10.1	11.6	11.6
Sugar beets ¹	13.7	10.1	11.6	9.8	12.2
Fodder beets.....	10.9	14.1	13.0	14.2	14.2

¹ Upper row of figures computed from area and production given by the German Statistisches Reichsamt; lower row from Die Deutsche Zuckerindustrie.

The differences between the average yields per acre during the period 1909-1913 and the years 1921, 1922, 1923, and 1924 are striking, ranging for total cereals from 4.3 bushels (1923) to 13.2 bushels (1922) below the pre-war. Part of this difference is attributable to the conservatism of the peasants in reporting their yields after the war and to the optimism of the German statistical office before the war; but lack of fertilizers, poorer cultural methods, and unsatisfactory climatic conditions have caused actual yields to fall considerably below those of pre-war days.

Based upon Tables 16 and 17 is the following distribution per 100 inhabitants (Table 19) of the areas seeded to and the production of the chief field crops:

TABLE 19—Cereals, potatoes, and beets: Area and production per 100 inhabitants in Germany, 1921-1924, as compared with the average, 1909-1913

Crop	Boundaries of 1923									
	Pre-war average, 1909-1913 ¹		1921 ²		1922 ³		1923 ⁴		1924 ⁵	
	Acres	Bushels	Acres	Bushels	Acres	Bushels	Acres	Bushels	Acres	Bushels
Wheat:										
Winter.....	6.1	193.1	5.2	157.9	4.7	92.2	5.0	146.8	5.0	122.3
Spring.....	.9	29.0	.7	18.6	.8	17.3	.9	24.1	.8	19.7
Total wheat.....	7.0	227.1	5.9	176.5	5.5	116.5	5.9	170.9	5.8	142.0
Rye:										
Winter.....	21.5	628.2	16.9	432.8	16.3	329.8	7.0	416.0	16.2	349.9
Spring.....	.5	9.1	.3	5.6	.3	3.8	.2	6.4	.5	9.1
Total rye.....	22.0	637.3	17.2	438.4	16.6	333.6	7.3	422.4	16.7	359.0
Spelt.....	1.2	40.6	.6	18.7	.5	10.1	.5	14.1	.5	10.2
Total bread cereals.....	30.2	905.0	23.7	633.6	22.6	460.2	23.7	607.4	23.0	511.2
Barley:										
Winter.....	.2	8.6	.5	20.3	.4	11.2	.4	17.3	.4	15.5
Spring.....	5.8	222.9	4.6	145.9	4.6	119.6	4.7	156.9	5.3	160.0
Total barley.....	6.0	231.5	5.1	166.2	5.0	130.8	5.1	174.2	5.7	175.5
Oats.....	16.5	912.1	12.8	664.8	12.8	448.0	13.2	675.6	13.9	620.0
Total cereals.....	52.7	2,048.6	41.6	1,364.6	40.4	1,039.0	42.1	1,457.2	42.6	1,306.7
Potatoes.....	11.7	2,375.6	10.7	1,573.8	10.9	2,419.5	10.8	1,922.3	10.9	2,129.0
Sugar beets ⁶		Short tons		Short tons		Short tons		Short tons		Short tons
Sugar beets ⁶	1.9	25.4	1.6	14.4	1.7	19.3	1.5	15.4	1.6	19.0
Fodder beets.....	(?)	(?)	3.0	32.2	3.1	44.2	3.0	38.9	2.9	40.8

¹ Population, 1910, 57,799,808.

² Population, 1921, 61,055,000 (estimated).

³ Population, 1922, 61,755,000 (estimated).

⁴ Population, 1923, 62,275,000 (estimated).

⁵ Population, 1924, 62,825,000 (estimated).

⁶ Upper row calculated from area and production given in Statistisches Reichsamt and lower row from Die Deutsches Zuckerindustrie.

⁷ No estimate for acreage available.

⁸ No estimate for production available.

The difference between German pre-war cereal production and the wheat, rye, spelt, barley, and oats now produced shows a falling off of 250,000,000 to 540,000,000 bushels, and sugar beets have dropped off at least 4,000,000 tons. The shortage in cereal production is due for the most part to the great reduction in acreage, especially in rye. Rye acreage has been from 2,000,000 to 2,500,000 acres below the 1909-1913 average ever since the war. Barley alone in 1924 was up to the pre-war acreage, but other cereals have shown greatly decreased areas. Total cereals in 1924 were 12.2 per cent, or around 3,700,000 acres, below normal.

GERMAN FOOD SITUATION AS AFFECTED BY VERSAILLES TREATY AND POSTWAR DEPRESSION

The territorial changes attending the Versailles treaty did not greatly affect Germany's cereal situation, the total effect (contrast-

ing the 1909-1913 average production per 100 inhabitants of the Empire and the territories included within the present boundaries of the Republic) being only about 3 per cent decrease in potential production. Comparing production per 100 inhabitants in 1924 with the average for the territories included within the present boundaries of the Republic in 1909-1913, the postwar depression is found to be profound, amounting to 43.5 per cent for bread cereals, 36.2 per cent for total cereals, and 29.1 per cent for sugar beets. Potatoes alone have tended to maintain their former importance, the production per 100 inhabitants being only 10.4 per cent below pre-war as shown in Table 20.

TABLE 20.—Cereals, potatoes, and sugar beets: Production per 100 inhabitants in Germany, 1923 boundaries, for 1909-1913, compared with total Empire and 1924 for the Republic

Crop	German Empire	Germany (1923 boundaries)		Republic of Germany	
	Average, 1909-1913	Average, 1909-1913	Per cent of 1909-1913, Empire	1924	Per cent of 1909-1913 (1923 boundaries)
	<i>Bushels</i>	<i>Bushels</i>	<i>Per cent</i>	<i>Bushels</i>	<i>Per cent</i>
Wheat.....	234.3	227.1	96.9	142.0	62.5
Rye.....	685.7	637.3	92.9	359.0	56.3
Spelt.....	36.2	40.6	112.2	10.2	25.1
Total bread cereals.....	956.2	905.0	94.6	511.2	56.5
Barley.....	244.2	231.5	94.8	175.5	75.8
Oats.....	611.8	612.1	100.0	620.0	68.0
Total cereals.....	2,112.2	2,048.6	97.0	1,306.7	63.8
Potatoes.....	2,590.6	2,376.5	91.7	2,129.0	89.6
Sugar beets.....	<i>Short tons</i> 28.3	<i>Short tons</i> 25.4	89.8	<i>Short tons</i> 18.0	70.9

LARGE ESTATES v. SMALL HOLDINGS IN GERMANY

Before this survey was made there had been a gradual natural decrease in the size of farm holdings for some years, as indicated by the comparison of the percentages of agricultural areas classified by size of holdings in 1895 and 1907 in Table 21.

TABLE 21.—Percentage of agricultural area, by size of holdings, 1895 and 1907

Year	Below 5 acres	5 to 12.4 acres	12.4 to 49.4 acres	49.4 to 247 acres	247 acres and over
1895.....	5.56	10.11	29.9	30.35	24.08
1907.....	5.40	10.40	32.7	29.30	22.20

German students of land economics state that the tendency shown from 1895 to 1907 has continued toward a still smaller percentage of large estates in recent years.

Land settlements which were brought to a standstill because of the war were again taken up with great enthusiasm in 1919, when the national settlement law was passed. The avowed purpose of the founders of this law was to place about one-third of the large estates

at the disposal of the settlers. This was felt to be necessary in order to take care of the impoverished population and the further increase of national agricultural laborers. From 1919 to 1923, inclusive, the total of new settlements in Prussia amounted to 238,511 acres. Such settlements were largely at the expense of large estates, although about 66,717 acres were given over from the Prussian domain. The results of these land settlements have been disappointing as a matter of national economics, the movement constituting, as it does, an appreciable change in the character of ownership. There are now many complaints that annexed lands have been taken from well-managed large estates and have fallen into the hands of those not skilled in agriculture and who are otherwise poor farmers.

The large farms of Germany have been very well managed. The production of grain per acre in proportion to the size of holdings was probably no greater than the average of medium and smaller farmers, but their surpluses were far greater because of the relatively small animal and human population maintained throughout the whole year. Consequently, the large farmers were particularly interested in the protective grain tariffs; they were politically active and powerful. The large farmer was at a distinct disadvantage in the production of pigs and cattle because of his smaller year-round labor supply; on the other hand, the small farmer fed or ate a large proportion of the grain he produced. The large farmer had the advantage of better scientific talent, could afford better implements, and, consequently, could till the soil better and deeper. What they lacked in animal fertilizers they made up by larger purchases of artificial manure.

The small farmer had some advantage in the production of hoed crops because with the aid of his family he had a larger amount of labor per acre. With the assistance of the large seasonal supply of labor and machinery, however, the large farmer greatly diminished this advantage, even in the case of the hoed crops (beets, potatoes, etc.), and in the production of sugar beets appears to have had a distinct advantage. In Germany, sugar-beet production depends upon deep plowing and thorough working of the soil, and small farmers do not have sufficient tractive power. There was a greater tendency toward sugar production on the large holdings than on the small.

A marked decrease in the percentage of large farms would decrease the production of domestic grain surpluses and consequently would probably increase the potential demand for foreign grain and would probably decrease the exportable surplus of sugar in Germany as a whole, while it should tend to increase animal production, especially cattle and swine.

WHEAT

Germany lies within the European winter-wheat belt, and wheat is produced rather generally throughout the country with varying success depending largely upon soil and climatic conditions. Wheat enters more largely into the rotation in the southern and western provinces than in the districts of the northeast, where lighter soils are better adapted to rye and potatoes. The south central districts, including the Province of Saxony, the Kingdom of Saxony, Anhalt, and Thuringia, have been the heaviest producing regions. These four regions alone produced nearly a quarter of Germany's domestic surplus.

The greater part of Germany's domestic wheat supply was grown in the southern and western provinces, but at the same time these regions, particularly the western, were the most highly industrialized sections of the Empire, in which the ratio of wheat consumers to producers was high. These districts consumed all the wheat they grew at home, all of the surplus from the eastern and northern districts and imported nearly half as much as the domestic surplus from foreign countries. Importations into these deficit districts were facilitated by their proximity to cheap water transportation of the Rhine, the Weser, and the Elbe, and the great ports of Bremen and Hamburg.

The German people consumed annually, on the average, before the war 192.6 pounds (3.21 bushels) of wheat per capita. The use of wheat as an article of diet, however, varied considerably in different parts of the Empire. When we contrast the wheat-eating Alsations on the west, consuming at least 434 pounds each per year, with the rye-eating Poles on the east, who consumed yearly not more than 164 pounds of wheat per capita, this dietary variation is striking. The district of Posen, with a population of 1,946,461 had only 194,000 acres under wheat, but exported on the average 2,000,000 bushels annually; Alsace-Lorraine, with a smaller population (1,874,014), had 341,000 acres under wheat and in addition to wheat produced locally imported yearly some 6,500,000 bushels.

EFFECT OF VERSAILLES TREATY ON THE GERMAN WHEAT SITUATION

Germany ceded to Poland from Posen, West Prussia, and East Prussia some of her best wheat lands that produced an average (1909-1913) surplus of approximately 2,500,000 bushels. Some of the ceded districts on the east, particularly Upper Silesia, showed an annual average deficit of about 1,500,000 bushels. Memel had a slight deficit, and the territories now composing Danzig Free State produced a small surplus. On the west, Alsace-Lorraine, the Saar, and the districts ceded to Belgium and Denmark required about 8,500,000 bushels annually in addition to the locally produced wheat.

The estimated average statistical wheat deficit (1909-1913) of the territories now comprised within the Republic of Germany was 61,400,000 bushels, as compared with 68,700,000 bushels, the average amount of wheat imported annually into the whole Empire.

It is estimated that the ceded territories, exclusive of the Saar district, required an annual net importation of 5,461,000 bushels of wheat.

The statistical analysis of the pre-war wheat situation in the ceded districts and in the territory now composing the Republic of Germany appears in Table 22.

Table 22 gives an approximation of production and consumption for the territories ceded, in comparison with the rest of the Empire now constituting the Republic. It must be borne in mind that these figures show a higher production than was actually the case and consequently a higher per capita consumption. If there were any unanimity of opinion as to the amount of the overestimation of crop yields, these estimates might be discounted in computing the tables; but, as it is, it seems better to publish the figures as they are officially given and merely call attention to the possibility of error. Several

inconsistencies also appeared in the official records of the local movement of wheat, so that the statistical balance of deficit to be imported was somewhat higher than the actual import. A correction has been applied to the amounts of surplus or deficit from each region, so that the total in Table 22 equals the actual average import of the Empire.

TABLE 22.—Wheat: Average approximate balance in the districts which composed the former German Empire, 1909-1913

District	Population Dec. 1, 1910	Area	Production	Seed	Net production	Dis- appearance	Deficit (-) or surplus (+) ¹	Dis- appear- ance per capita
		<i>Acres</i>	<i>1,000 Bushels</i>	<i>1,000 Bushels</i>	<i>1,000 Bushels</i>	<i>1,000 Bushels</i>	<i>1,000 Bushels</i>	<i>Bushels</i>
Germany, 1923 boundaries.	57,799,808	4,028,523	131,274	10,459	120,815	182,230	-61,416	3.15
Saar District:								
Rhine Province.....	572,112	8,888	230	23	207	1,827	-1,620	3.19
Bavaria.....	80,946	3,289	93	8	85	267	-182	3.30
<i>Areas ceded:</i>								
From East Prussia--								
To Memel.....	141,238	6,882	180	20	160	286	-126	2.02
To Poland.....	24,787	339	8	1	7	47	-40	1.90
From West Prussia--								
To Danzig Free State.....	330,630	32,212	1,310	88	1,222	930	+292	2.81
To Poland.....	964,704	109,080	3,383	299	3,084	2,642	+442	2.74
From Posen to Poland.	1,946,461	193,974	6,161	615	5,546	3,421	+2,125	1.76
From Pomerania to Poland.....	224							
From Upper Silesia--								
To Poland.....	893,074	14,035	335	33	302	1,836	-1,534	2.06
To Czechoslovakia	45,396	6,390	176	15	161	115	+46	2.53
From Lower Silesia to Poland.....	26,248	2,814	84	7	77	64	+13	2.44
From Schleswig-Hol- stein to Denmark.	166,348	20,667	876	57	819	681	-62	5.30
From Rhine Province to Belgium.....	60,003	62	1		1	165	-164	2.75
Alsace-Lorraine to France.....	1,874,014	341,067	8,008	887	7,121	13,574	-6,453	7.24
Total for ceded areas	6,473,127	727,522	20,522	2,022	18,500	23,961	-5,461	3.70
Total Empire.....	64,925,993	4,768,222	152,119	12,512	139,607	208,285	-68,678	3.21
Per cent in ceded districts and Saar.....		15.5	13.7	16.4	13.5	12.5	10.0	

Area and production of lost areas: Prussia. Königliches Statistisches Landesamt Statistik der Landwirtschaft, 1909-1913, (Preussische Statistik, Nos. 221, 225, 230, 235, 240), supplemented by statistics prepared in the Preussisches Landesamt.

¹ The quantities of surplus and deficit in each district as calculated from German official statistics have been corrected to such a degree that the total equals the average yearly import amount.

² One year only, 1914.

NOTE.—The estimates of the balances between production and disappearance of the various crops, although they are planned only to give an approximate idea of the variations in production and domestic consumption in the different parts of Germany, are believed to give a fairly accurate picture of conditions in general. It was impossible to get an average of the movement of grain in the interior trade for the whole of the period 1909-1913. The trade figures were therefore taken for that year in which the interior trade balance was most nearly in agreement with the five-year average foreign trade balance and a correction was then applied to these figures. Wherever possible the data were taken from the "Sonderabdruck aus Archiv für Eisenbahnwesen," published by the Königlich Preussisches Ministerium der öffentlichen Arbeiten "Deutschlands Getreideernte und die Eisenbahnen," which takes into consideration the ocean shipping trade of Hamburg and Bremen. This publication could not be used in the case of rye, spelt, and potatoes, whose balances appear in tables to follow. The figures for rye and potatoes were taken from "Statistik der Güterbewegung auf Deutschen Eisenbahnen nach Verkehrszirken" and "Verkehr und Wasserstände der Deutschen Binnenwasserstrassen," issued by the Kaiserliches Statistisches Reichsamt. For these two crops the statistics on trade and disappearance for the northern region, which includes Hamburg and Bremen, are incomplete.

It must be borne in mind that the disappearance per unit in each case is to be considered as a convenient means of measuring the quantity used for all purposes of the various districts and does not represent a per capita consumption for human food or, in the case of oats, for horses.

The return to France of the heavy wheat-deficit territories of Alsace-Lorraine did not materially reduce the average estimated per capita annual disappearance of wheat within the present boundaries of the Republic. This disappearance in 1909-1913 was 3.15 bushels, or 189 pounds per capita, which is not far from what it was for the Empire, 3.21 bushels, or 192.6 pounds. Since wheat and spelt are normally used almost entirely for human consumption, the per capita disappearance may be considered an approximate estimate of the per capita consumption of both these cereals. Rye, although used mostly for human food, is also used for livestock, so in terms of human consumption the disappearance per capita represents the quantity that was available for human food in case it was required.



FIG. 3.—Average 1909-1913 production of wheat in the German Empire balanced against disappearance

The districts represented by the shaded areas produced annually approximately 14,584,000 bushels more wheat than was locally consumed. This amount was available for shipment to the southwestern deficit regions, where local production fell short of consumption by about 83,262,000 bushels of wheat annually. This necessitated a yearly net importation of approximately 68,678,000 bushels of wheat.

ORIGIN OF WHEAT IMPORTED TO COVER GERMANY'S DEFICIT (1909-1913)

The pre-war wheat deficit of the German Empire was covered by importations averaging (1909-1913) about 68,678,000 bushels. These importations were chiefly from Russia, Argentina, and the United States. Russia alone supplied over half of the net requirement, Argentina supplied about a quarter, followed closely by the United States, as shown in Table 23.

Imports from other countries were more than offset by Germany's exports to neighboring European countries. Practically all the imports went to supply the deficits of the industrial centers on the seaboard and along the valleys of the Rhine and Weser and their tributaries.

TABLE 23.—Wheat, including wheat flour, in terms of wheat: Foreign trade¹ of the German Republic, 1921-22 to 1923-24, compared with that of the Empire 1909-10 to 1913-14

[Thousands of bushels—000 omitted]

Country	Years beginning July 1			
	Average, 1909-1913	1921	1922	1923 ²
United States.....	+16,595	+45,521	+25,204	16,073
Russia.....	+35,794	(³)	(³)	(³)
Argentina.....	+17,845	+12,051	+12,337	4,474
Rumania.....	+6,481	+143	(³)	(³)
Canada.....	+5,105	+1,495	+2,375	(³)
Australia.....	+3,718	+9,295	(³)	(³)
British India.....	+1,822	(³)	(³)	(³)
Alsace-Lorraine.....		+25	+145	(³)
Saar District.....		-1,213	-354	901
Hungary.....	-90	+31	+13	(³)
Austria.....		-1	-71	(³)
Czechoslovakia.....		-4	(³)	(³)
Belgium.....	-1,255	+23	(³)	(³)
Italy.....	-1,372	(³)	(³)	(³)
Finland.....	-1,737	-8	(³)	(³)
Denmark.....	-2,470	+145	(³)	(³)
Netherlands.....	-2,805	+643	+343	1,009
France.....	-3,733	+14	+302	3,298
Other countries.....	-5,210	+1,133	+1,759	+3,925
Total.....	+68,678	+69,293	+42,053	+29,590

¹ Germany, Statistisches Reichsamt (formerly Kaiserliches Statistisches Amt), Monatliche Nachweise über den Auswärtigen Handel Deutschlands.

² Net imports are indicated by (+) and net exports by (-).

³ Imports only, except for "other countries" and "total," since figures for exports are not complete enough to compile a fiscal year by countries. The exports, if any, for the countries given are included in "other countries."

⁴ If any, included in "other countries."

Since the war Russia has practically disappeared as a source of wheat, and for the first year or two Russia's place in supplying Germany's wheat requirements was taken by the United States. During the season 1921-22 the German Republic, through advantageous credits and gifts, imported more wheat than was imported by the former German Empire to supply the pre-war needs. The next two trade years show a marked falling off. In 1922-23 the total import was 42,000,000 bushels and the next year, 1923-24, only 30,000,000 bushels.

GERMANY'S WHEAT TRADE WITH THE UNITED STATES

Before the war Germany took from the United States annually about 16,600,000 bushels of wheat. In 1921-22 the quantity rose to 45,500,000, but in 1922-23 fell to 25,000,000. In 1923-24 there was a further drop to 16,073,000. In the crop year 1924-25 Germany had a crop of 89,200,000 bushels, as compared with 106,448,000 bushels in the previous season. During the six months July 1 to December 31, 1924, imports from the United States had reached 24,410,338 bushels, as compared with 6,064,836 for the same period during the previous season.

STATISTICAL WHEAT BALANCES OF THE GERMAN REPUBLIC

To contrast production and consumption of wheat, both before and following the war, involves several variable factors. There has been a falling off in imports, marked decreases in production, and increases in population. Production had fallen off more than 40,-

000,000 bushels in 1924, while the population in 1921 had increased 3,300,000 over pre-war estimates and in 1924 was probably 5,000,000 more than pre-war.

Assuming that the average imports of wheat during the period 1909-1913 about covered the Empire's wheat deficit, we have a pre-war picture of the approximate balance between production, requirement, and import for the territory within the present boundaries of the Republic in Table 24.

According to German official statistics wheat production during the years following the war has been far below the pre-war average crop. Some of the differences in production are recognized to be statistical rather than real. Before the war the Government reports are stated to have been overestimates of actual conditions, and since the war, German farmers have shown a marked tendency to understate their production. Government requisitions and legislation, with restrictions and other factors unfavorable to agriculture, have also tended to cause an actual decrease in areas seeded. The small crop of 1922, however, was largely due to adverse weather conditions. For each of the post-war years given in Table 24, even allowing for the variations in Government estimates, the production per capita must have been much less than pre-war, except 1921, which was not far below normal.

TABLE 24.—Wheat: Statistical balances, Germany, 1923 boundaries, 1921-22 to 1924-25, as compared with pre-war average, 1909-10 to 1913-14

[In thousands—000 omitted]

Item	Unit	Year beginning July 1				
		Average, 1909-1913	1921	1922	1923	1924
Area sown.....	Acre....	4, 029	3, 561	3, 395	3, 653	3, 624
Production.....	Bushel..	131, 274	107, 798	71, 926	106, 448	89, 199
Seed.....	do.....	10, 459	9, 327	8, 905	9, 584	9, 400
Net production.....	do.....	120, 815	98, 471	63, 021	96, 864	79, 799
Theoretical domestic requirement ¹	do.....	* 182, 230	192, 494	194, 701	196, 340	198, 075
Theoretical deficit.....	do.....	61, 415	94, 023	131, 680	99, 476	118, 276
Net imports.....	do.....	(²)	69, 293	42, 053	29, 590	* 35, 900
Uncovered deficit.....	do.....		24, 730	89, 627	69, 886	

¹ Based upon pre-war disappearance norm, 3.1528, times population. (See Table 19 for population.)

² Normal disappearance.

³ Net imports for 1923 boundaries assumed to be the same as the deficit

⁴ Six months ended Dec. 31.

During the year 1921-22 the German Government arranged the purchase of wheat from abroad. Imports from America were nearly three times what they were before the war, yet there still appeared to be a theoretical uncovered deficit of 24,700,000 bushels. Although the total imports of wheat into the German Republic exceeded the pre-war average for the German Empire, it is probable that the German people went on very short wheat-bread rations that year, especially in the cities and industrial regions, and resorted to substitutes, particularly potatoes.

The millers' association reported that during the period of relatively low purchasing power of the German mark a plentiful supply of potatoes greatly affected local demand for flour and bread grains. The millers themselves have not found it practicable to mix any large quantity of potato flour with the flour produced from German grain, because of the high moisture content of the latter, but individual bakers may introduce some potato flour into their bread, because this practice is not now forbidden. During the pre-war period, when bread was advertised as rye or wheat bread, it was required to contain only rye or wheat. In general the substitution of potatoes for bread cereals is done largely by the consumers themselves by eating potatoes instead of bread.

In the present state of German economic interrelationships it is impossible to trace any relationship between potato supply and imports of bread cereals.

During the season 1922-23 yields were better, probably up to normal, but imports had fallen off 27,000,000 bushels below the previous year, so there was more real lack of wheat in that year than in the comparatively good year of 1921.

Government requisitioning of grain had ceased in 1923 and there was not the incentive to minimize statements of yields that had characterized returns from the rural districts during the previous years, although the farmers were still suspicious of further possible wheat confiscations by the Government. Thus the 1923 production estimate may be slightly nearer the actual harvest than those of the two previous years. On the other hand, the rapidly depreciating currency up to December, 1923, made the farmer loath to market his wheat except when he was ready to buy something of about the same cost as the value of the grain he had to sell. This resulted in a bad distribution of the crop, with many of the workers in the industrial regions and the urban inhabitants going hungry, even though in some cases farmers might be feeding wheat to their livestock.

Increasing freight rates also tended to keep the crop from being well distributed. Imports were smaller in 1923-24 than in the preceding years. It was about this time that the German Government ceased importing grain and private firms had difficulty in arranging credits with which to buy the required supply.

POSTWAR FOREIGN TRADE IN WHEAT

Before the war imports were normally required in the German Empire to supply about 36 per cent of the total wheat requirement. Because of the loss of some of the wheat-consuming area as well as some of the wheat surplus-producing territory, the relative quantity required normally by the population within the present boundaries of the Republic has not changed materially. It is estimated that with a return to normal production within these boundaries about 38 per cent of the total normal supply will have to be imported. Formerly Russia supplied over one-half of the pre-war importation of wheat. Some of the falling off in importation these last years is certainly due to the inaccessibility of the cheap Russian supply, a situation which will improve very slowly in the future. Germany took about equal quantities of wheat from the United States and Argentina, with Argentina slightly in the lead. Since the war the

United States has outstripped that country and has done much, particularly in 1921-22, in supplying the lack caused by Russia's poor crops. In 1923-24 Germany's imports from the United States fell to about the pre-war normal.

Some uneasiness has been felt on the score of Canada's taking away some of our German trade by supplying a flour milled to suit the German taste. But German trade figures for the year 1923-24 (see Table 23, p. 36) indicate a much greater falling off in shipments from Canada to Germany than from the United States to Germany. Argentina has also lost German trade very heavily, with shipments only about a fourth of the pre-war amount and only a little over a third of the shipments for the preceding year.

TABLE 25.—Wheat and wheat flour: Imports into Germany by months, 1922-23 and 1923-24

Year and month	Wheat			Wheat flour			Wheat and wheat flour in terms of wheat ¹		
	Imports from—		Total	Imports from—		Total	Imports from—		Total
	United States	Other countries		United States	Other countries		United States	Other countries	
	1,000 bushels	1,000 bushels	1,000 bushels	1,000 barrels	1,000 barrels	1,000 barrels	1,000 bushels	1,000 bushels	1,000 bushels
1922-23:									
July.....	2,103	4,014	6,117	9	23	32	2,143	4,118	6,261
August.....	1,481	2,852	4,333	12	21	33	1,535	2,946	4,481
September.....	4,716	2,279	6,995	8	14	22	4,752	2,342	7,094
October.....	5,772	1,106	6,878	6	22	28	5,799	1,205	7,004
November.....	2,219	231	2,450	21	19	40	2,314	316	2,630
December.....	1,180	487	1,667	7	17	24	1,211	564	1,775
January.....	1,698	365	2,063	19	15	34	1,774	432	2,206
February.....	1,486	459	1,942	10	9	19	1,531	492	2,023
March.....	1,340	474	1,814	38	15	53	1,511	542	2,053
April.....	1,258	1,403	2,661	61	27	89	1,532	1,525	3,057
May.....	361	1,681	2,042	63	37	102	1,645	1,856	2,501
June.....	324	994	1,318	34	30	64	477	1,129	1,606
Total.....	23,928	16,342	40,270	268	250	538	25,224	17,467	42,691
1923-24:									
July.....	317	405	722	159	36	195	1,032	567	1,599
August.....	513	462	975	118	110	228	1,044	957	2,001
September.....	634	1,160	1,794	118	96	214	1,165	1,592	2,757
October.....	217	283	500	85	61	146	599	558	1,157
November.....	440	334	774	87	81	168	832	698	1,530
December.....	492	358	850	200	161	361	1,392	1,082	2,474
January.....	494	88	582	183	200	383	1,288	968	2,276
February.....	241	235	479	242	312	554	1,330	1,642	2,972
March.....	431	441	872	255	243	498	1,578	1,535	3,113
April.....	661	1,153	1,814	292	233	525	1,975	2,201	4,176
May.....	472	610	1,082	321	117	438	1,918	1,137	3,053
June.....	604	390	994	292	75	367	1,918	728	2,646
Total.....	5,486	5,922	11,408	2,352	1,725	4,077	16,069	13,685	29,754
1924:									
July.....	314	342	656	208	113	321	1,250	850	2,100
August.....	411	402	813	169	155	324	1,171	1,100	2,271
September.....	1,264	464	1,728	184	216	400	2,092	1,436	3,528
October.....	2,902	1,619	4,521	450	394	844	4,927	3,392	8,319
November.....	5,844	2,000	7,844	616	396	912	8,166	3,782	11,948
December.....	4,782	970	5,752	449	365	814	6,892	2,613	9,505

Germany, Statistisches Reichsamt, Monatliche Nachweise über den Auswärtigen Handel Deutschlands.

¹ Wheat flour converted to wheat on the basis that 1 barrel of wheat flour is the product of 4.5 bushels of wheat.

During the six-months' period July 1 to December 31, 1924 (Table 25), Germany imported 37,600,000 bushels of wheat as grain

and flour, of which 24,400,000 bushels originated in the United States. The wheat crop in 1924 was 17,000,000 bushels less than the previous season. During the six months July 1 to December 31, 1924, Germany imported 26,000,000 bushels more than was imported during the same period the year before. This increased importation is the consequence of the crop shortage of the 1924 season. It is probable that during the last six months of the present season monthly importations will continue heavier than in former years.

RYE

Rye is predominantly the bread grain of the German people. It was produced in all parts of the former German Empire, though it was employed to a varying degree in the rotation in different localities, based not only upon soil and climatic conditions but upon the food habits of the local population. Within the boundaries of the present Republic the ratio of rye acreage to wheat acreage was about 3.2 : 1, in Posen about 7.8 : 1, and in Alsace-Lorraine about 0.4 : 1. The relative areas given over to rye production in different parts of the Empire indicate to a certain extent poorer local soils not well adapted to wheat culture, but to a greater extent do these ratios reveal the character of the staple food consumed locally within the various districts.

The consumption of rye was heaviest in the eastern provinces, where the yearly per capita disappearance ranged from 280 to 790 pounds as contrasted to a local yearly per capita consumption of wheat amounting to only 110 to 170 pounds. This heavy rye disappearance is not due entirely to human consumption in the form of bread, since this cereal is fed in considerable quantities to livestock and to a less degree is employed in the manufacture of spirits. Most of the peoples living in the eastern provinces of the former Empire subsisted largely upon a cereal and potato diet, with but little meat. (This heavy rye disappearance in Germany should be compared with the yearly cereal consumption per capita in Rumania; corn (maize) 710 pounds and wheat 14 to 16 pounds.)

In the industrial regions of the west, where wheat and imported flour were used more extensively in making bread, the yearly per capita disappearance of rye ranged from 90 to 400 pounds in addition to a yearly per capita consumption of wheat ranging from 165 to 431 pounds. The population of Alsace-Lorraine was almost exclusively wheat-eating, consuming yearly 431 pounds per capita and requiring about 6,000,000 bushels in addition to their local production of 8,000,000 bushels. On the other hand, the per capita rye consumption of these Provinces averaged around 90 pounds per year; the production amounted to 3,500,000 bushels, and there remained a statistical surplus of about 200,000 bushels available for export.

EFFECT OF VERSAILLES TREATY ON RYE SITUATION

Germany ceded to Poland some of her best rye lands, producing an annual average surplus (1909-1913) of about 16,700,000 bushels. The ceded districts of Upper Silesia and Danzig Free State were deficit regions, requiring about 3,900,000 bushels of rye annually in addition to local production. On the west Alsace-Lorraine, northern Schleswig, and the Saar showed statistical surpluses, and the districts ceded to Belgium showed a small deficit.

The estimated average statistical rye surplus of the territories now comprised within the Republic of Germany was about 10,700,000 bushels, as compared with 25,600,000 net bushels actually exported from the Empire annually. It is estimated that the ceded territories and the Saar produced an average (1909-1913) surplus of about 14,900,000 bushels.

The statistical analysis of the pre-war rye situation in the ceded districts and in the territory now composing the Republic of Germany appears in Table 26.

TABLE 26.—Rye: Average approximate balance in the districts which composed the former German Empire, 1909-1913

District	Popula- tion Dec. 1, 1910	Area	Produc- tion	Seed	Net produc- tion	Disap- pear- ance	Surplus (+) or deficit (-) ¹	Dis- appear- ance per capita
		<i>Acres</i>	<i>1,000 bushels</i>	<i>1,000 bushels</i>	<i>1,000 bushels</i>	<i>1,000 bushels</i>	<i>1,000 bushels</i>	<i>Bushels</i>
Germany, 1923 boundaries	57,799,808	12,713,320	368,337	30,992	337,345	326,644	+10,701	5.65
Saar district:								
Rhine Province.....	572,112	42,271	1,253	104	1,149	1,182	-33	2.07
Bavaria.....	80,946	9,328	2,614	23	2,591	1,006	+1,585	12.43
Areas ceded:								
From East Prussia—								
To Memel.....	141,238	63,191	1,727	172	1,555	1,464	+91	10.37
To Poland.....	24,787	23,215	495	63	432	312	+120	12.59
From West Prussia—								
To Danzig Free State.....	330,630	38,165	1,178	99	1,079	2,991	-1,912	9.05
To Poland.....	964,704	670,308	17,023	1,742	15,281	12,918	+2,363	13.39
From Posen to Pol- land.....	1,946,461	1,517,409	43,699	3,790	39,909	25,947	+13,962	13.33
From Pomerania to Poland.....	224							
From Upper Silesia—								
To Poland.....	893,074	106,080	2,759	237	2,522	4,487	-1,965	5.02
To Czechoslo- vakia.....	45,396	9,904	302	22	280	280		6.17
From Lower Silesia to Poland.....	26,248	24,137	672	64	618	319	+299	12.15
From Schleswig-Hol- stein to Denmark.....	106,348	28,911	1,531	75	1,456	1,116	+340	6.71
From Rhine Prov- ince to Belgium.....	60,003	5,955	156	15	141	245	-104	4.06
Alsace-Lorraine to France.....	1,874,014	135,005	3,476	331	3,145	2,994	+151	1.60
Total areas ceded..	6,473,127	2,622,280	73,018	6,600	66,418	53,073	+13,345	8.20
Total Empire.....	64,925,993	15,387,199	445,223	37,719	407,503	381,905	+25,598	5.88
Per cent in ceded ter- ritory and in Saar.....		17.4	17.3	17.8	17.2	14.5	58.2	

Area and production, ceded areas: Prussia, Königlich Statistisches Landesamt, Statistik der Landwirtschaft, 1909-1913 (Preussische Statistik, Nos. 221, 225, 230, 235, 240), supplemented by statistics prepared in the Preussisches Landesamt; Bavarian Saar, Bavaria, Statistisches Landesamt, Zeitschrift des Bayerischen Statistischen Landesamts, 1922, Nos. 3 and 4, p. 438.

¹ The quantities of surplus and deficit in each district as calculated from German official statistics have been corrected to such a degree that the total equals the average yearly import quantity.

² One year only, 1914.

About 10,700,000 bushels of the rye exported yearly by the German Empire before the war originated in the territories now composing the Republic of Germany, as indicated in Table 26. About 1,600,000 bushels originated in the Saar region, and the districts ceded to neighboring countries on the east produced an exportable surplus of rye amounting to more than 13,000,000 bushels. It must be borne in mind that these figures are only approximately correct, but they indicate that as a result of the war the German Government¹ more than half of its potential exportable rye surplus. (Fig

DESTINATION OF RYE EXPORTED BY THE GERMAN EMPIRE (1909-1913)

Germany's rye exports were made to Russia, Norway, Denmark, the Netherlands, Finland, France, Belgium, and other near-by countries. Most of Germany's rye imports were from Russia and Rumania, shipments from other countries being negligible, as shown in Table 28.

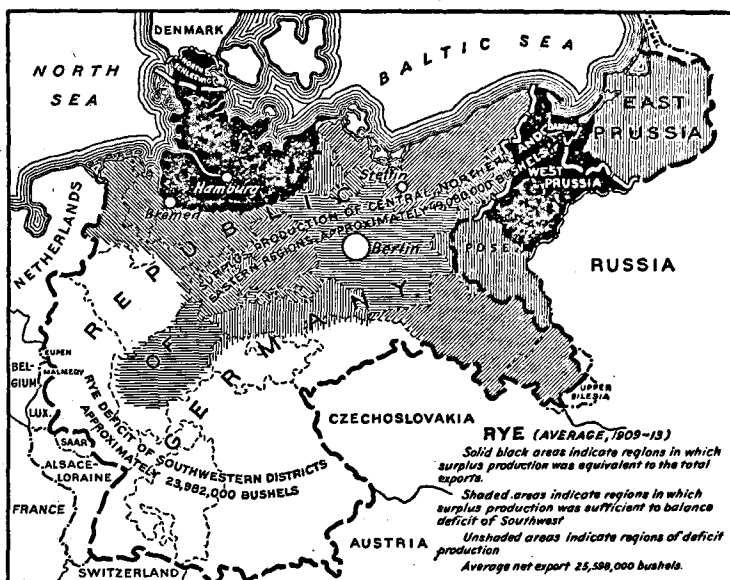


FIG. 4.—Average 1909-1913 production of rye in the German Empire balanced against disappearance

The districts represented by the solid black and shaded areas produced annually approximately 49,080,000 bushels more rye than was consumed locally. The regions of the southwest required approximately 23,982,000 bushels more rye than was produced locally to balance their local deficits. This left approximately 25,598,000 bushels annually available for export abroad. The surplus of the territories represented by the solid black areas approximately equaled the amount exported, and probably the bulk of the rye exported was grown in these regions. However, export rye may have originated in any part of the Empire.

STATISTICAL RYE BALANCES OF GERMANY (BOUNDARIES OF 1923)

For purposes of comparison, the pre-war rye data pertaining to the territories composed within the present boundaries of Germany are arranged in Table 27, bringing out the fact that before the war the territories within the boundaries of the Republic produced sufficient rye to meet their own requirements and had a very considerable surplus for export.

TABLE 27.—*Rye: Statistical balances, Germany, 1923 boundaries, 1921-22 to 1924-25, compared with pre-war average, 1909-10 to 1913-14*

Item	Unit	Year beginning July 1				
		Average 1909-1913	1921	1922	1923	1924 (preliminary)
Acres sown.....	Acre.....	Thousands 12, 713	Thousands 10, 539	Thousands 10, 237	Thousands 10, 789	Thousands 10, 525
Production.....	Bushel.....	368, 337	267, 648	206, 033	263, 037	225, 573
Seed.....	do.....	30, 992	26, 041	25, 291	26, 651	26, 000
Net production.....	do.....	337, 345	241, 607	180, 742	236, 386	199, 573
Theoretical domestic requirement ¹	do.....	326, 644	344, 961	348, 916	351, 854	354, 961
Theoretical surplus (+) or deficit (-).....	do.....	+10, 701	-103, 354	-168, 174	-115, 468	-155, 388
Actual net imports.....	do.....	(²)	4, 738	42, 114	24, 877	(³)
Uncovered deficit.....	do.....		98, 616	126, 060	90, 591	

¹ Based upon pre-war disappearance norm, 5.65 bushels times population. See Table 19 for populations.
² Normal disappearance.
³ Available for export.
⁴ Exports for Germany, 1923 boundaries, assumed to be same as the surplus.
⁵ Not available for total year. During the six-months' period July 1 to December 31 Germany imported 15,759,000 bushels of rye, as compared with 14,674,000 bushels during the same period in 1923.

Since the war this situation has changed. Instead of having a considerable quantity of rye for export, the Republic has actually been forced to import rye to maintain her population.

More than 2,000,000 acres have gone out of cultivation and yields per acre have fallen off. The agricultural tariff, amounting practically to a bonus on rye exports, enabled German farmers, especially the large-estate operators, to put hundreds of thousands of acres of submarginal lands into rye. The German Government was partially recompensed by Russia through a premium that the latter Government paid on its rye flour imports originating in Germany. With the removal of the bonus, the cultivation of these submarginal lands became unprofitable and were allowed to revert to grass. Export prohibitions and various laws regulating the farmer's business to his disadvantage, grain requisitions, the chaotic economic conditions, and shortage of labor have contributed to cut down the rye acreage.

In spite of the fact that Germany is importing more rye than was formerly exported, official German statistics indicate that the people are still from a fourth to a third short of their former rye ration, as indicated in Table 27.

The striking feature of the rye situation is that each year following the war Germany's net rye production has shown a falling off of from 96,000,000 bushels in 1921 to 138,000,000 bushels in 1924. Taking into consideration the fact that the population in the territory comprised within the 1923 boundaries of the Republic has increased from 57,800,000 in 1910 to 62,825,000 in 1924, this reduced production and increased requirement has forced Germany to import large quantities of rye. The quantities of rye imported, with the countries of origin, and the quantities exported, with countries of destination, are given in Table 28.

TABLE 28.—*Rye, including rye flour in terms of rye: Foreign trade¹ of the German Republic, 1921-22 to 1923-24, compared with that of the Empire, 1909-10 to 1913-14*

(Thousands of bushels—000 omitted)

Country	Year beginning July 1			
	Average 1909-1913	1921	1922	1923 ²
United States.....	+178	+4,761	+35,930	7,201
Russia.....	+7,832	(³)	(³)	(³)
Rumania.....	+1,040	(³)	(³)	(³)
Argentina.....	+127	+57	+668	(³)
Canada.....	(³)	+846	+1,880	(³)
Saar district.....		-879	-493	(³)
Hungary.....	-1,409	+20	+3	444
Austria.....	(³)	(³)	(³)	(³)
Czechoslovakia.....		-10	(³)	(³)
Belgium.....	-2,285	+9	(³)	(³)
France.....	-2,317	(³)	(³)	(³)
Finland.....	-3,733	(³)	(³)	(³)
Netherlands.....	-6,420	+17	(³)	(³)
Denmark.....	-6,525	(³)	(³)	(³)
Norway.....	-7,002	(³)	(³)	(³)
Other countries.....	-5,084	-83	+4,126	+17,232
Total.....	-25,598	+4,738	+42,114	+24,877

Germany, Statistisches Reichsamt (formerly Kaiserliches Statistisches Amt), Monatliche Nachweise über den Auswärtigen Handel Deutschlands.

¹ Net imports are indicated by (+) and net exports by (-).

² Imports only, except for other countries and total, which include the exports, if any, for countries given. The exports are not complete enough to compile a fiscal year by countries.

³ The heavy importation of 13,698,000 bushels of rye from Russia accompanied by a reexport of 5,866,000 bushels, nearly 50 per cent, is due to the preferential trade agreement that Germany enjoyed with the Empire of the Romanoffs. Russia exported only about 30,000,000 bushels of rye yearly, most of which passed through the Black Sea ports. The Russo-German preferential trade agreement was so advantageous to the latter people that it proved profitable to purchase rye in the south of Russia and transport it by water to western Germany. At the same time rye flour was exported from eastern Germany to northern Russia.

⁴ If any, included in other countries.

⁵ Figure for rye flour only.

⁶ Included in Hungary.

FUTURE OF GERMANY'S RYE TRADE

The present abandonment of more than 2,000,000 acres of rye lands is temporary, and a large part of this acreage will again be put into cultivation as improved economic conditions of the Republic render a stabilization of the agriculture possible. Governmental requisition, the removal of the export bonus, and the caprices of currency fluctuation and similar factors have been responsible in causing the German farmer to restrict his operations more nearly to the maintenance of his family and livestock rather than to produce a marketable surplus. This has been the case in many of the countries of central and eastern Europe during the past few years. But this situation, as far as Germany is concerned, is temporary (with the probable exception of the rye bonus) and the lost rye acreage will be largely regained, because the economic welfare of the Republic demands that agriculture be placed on a basis that will as nearly as possible supply the bread requirements of the population. German farms and farm equipment are in a relatively stronger position of potential production than before the war, and with the clearing up of the general economic situation the recovery of German agriculture will necessarily follow.

Although no reliable figures are available relative to the quantity of Russia's recent exports to Germany, nevertheless incomplete reports indicate that the Russian Government by concerted effort was able to assemble about 6,000,000 bushels for export to the western Republic during the season 1923-24. This was about 77 per cent of the quantity that Russia exported to Germany before the war under normal conditions of Russian production.

It is probable that these shipments of rye from Russia greatly tended to reduce purchases of rye from the United States by Germany. Our exports to Germany decreased from 36,000,000 bushels in 1922-23 to 7,000,000 bushels during 1923-24.

During the season 1924-25 poor crops in Russia practically eliminated this source of German supply. A poor crop yield at home, together with the increase in population, raised Germany's rye requirement (calculated on a basis of normal consumption)-to about 40,000,000 bushels over the previous year. During the first six months from July 1 to December 31, 1924, Germany imported 11,000,000 bushels of rye from the United States, as compared with about 5,000,000 bushels during the corresponding period in 1923, indicating that we were again taking Russia's place in the German rye trade. All things considered, the rye trade of the United States with Germany is destined to diminish rapidly in proportion to the recovery of the rye area and production in Germany and to a lesser extent to the recovery of Russia, Germany's normal source of rye supply.

TABLE 29.—Rye and rye flour: Imports into Germany by months, 1922-23 and 1923-24

Year and month	Rye			Rye flour			Rye and flour in terms of rye ¹		
	Imports from—		Total	Imports from—		Total	Imports from—		Total
	United States	Other countries		United States	Other countries		United States	Other countries	
1922-23:	<i>1,000 bushels</i>	<i>1,000 bushels</i>	<i>1,000 bushels</i>	<i>Barrels</i>	<i>Barrels</i>	<i>Barrels</i>	<i>1,000 bushels</i>	<i>1,000 bushels</i>	<i>1,000 bushels</i>
July.....	2,042	189	2,231	34	157	191	2,042	190	2,232
August.....	1,669	39	1,708	22	1,024	1,046	1,669	45	1,714
September.....	1,418	376	1,794	45	979	1,024	1,418	382	1,800
October.....	4,220	655	4,875	-----	461	461	4,220	658	4,878
November.....	4,648	601	5,149	22	304	326	4,648	503	5,151
December.....	3,439	305	3,744	11	304	315	3,439	307	3,746
January.....	7,288	276	7,564	787	1,114	1,901	7,293	283	7,576
February.....	2,796	193	2,989	34	585	619	2,796	197	2,993
March.....	3,281	228	3,509	-----	360	360	3,281	230	3,510
April.....	1,879	1,207	3,086	574	529	1,103	1,882	1,211	3,093
May.....	1,105	1,270	2,375	-----	1,361	1,361	1,105	1,278	2,383
June.....	2,138	1,556	3,694	-----	124	124	2,138	1,557	3,695
Total, 1922-23.....	35,923	6,795	42,718	1,529	7,302	8,831	35,931	6,841	42,771
1923-24:									
July.....	1,522	1,420	2,942	-----	427	427	1,522	1,423	2,945
August.....	909	1,209	2,118	1,114	3,588	4,702	916	1,230	2,146
September.....	874	1,029	1,903	-----	832	832	874	1,033	1,907
October.....	320	1,208	1,528	112	877	989	321	1,213	1,534
November.....	414	931	1,345	844	14,330	15,174	420	1,017	1,437
December.....	796	3,520	4,316	10,896	63,948	64,844	861	3,844	4,705
January.....	194	1,925	2,119	61,533	55,463	116,996	563	2,258	2,821
February.....	66	783	849	74,700	73,683	148,383	514	1,225	1,739
March.....	167	1,265	1,432	35,379	27,601	62,980	378	1,433	1,811
April.....	225	1,869	2,094	27,654	21,521	49,175	391	1,968	2,359
May.....	93	643	736	13,763	14,223	27,984	176	728	904
June.....	150	300	450	19,240	6,808	26,048	266	340	605
Total, 1923-24.....	5,730	16,102	21,832	245,234	273,300	518,534	7,201	17,742	24,943
1924:									
July.....	321	256	577	298,963	16,209	315,172	2,115	353	2,468
August.....	373	535	908	19,735	10,350	30,085	491	597	1,088
September.....	1,078	476	1,554	7,032	26,649	33,681	1,120	636	1,756
October.....	974	478	1,452	21,494	19,294	40,788	1,103	893	1,996
November.....	4,442	1,445	5,887	32,160	36,217	68,377	4,635	1,662	6,297
December.....	1,511	708	2,219	2,736	36,401	39,137	1,537	927	2,464

Germany: Statistisches Reichsam, Monatliche Nachweise über den Auswärtigen Handel Deutschlands.

¹ One barrel of rye flour is the product of 6 bushels of rye.

SPELT (Includes Maslin *)

In parts of Germany, more particularly in the regions where wheat is produced as a cash crop, the farmers employ spelt for home use in bread making. In France, Hungary, Austria, Czechoslovakia, and certain other countries the peasants plant a mixture of wheat and rye for use at home. This is to a certain extent a matter of dietary habit, but is much more a matter of economy. The use of spelt as a bread grain is customary in the Rhine provinces, northeastern Bavaria, Wurttemberg, Baden, Hesse, and to a lesser extent in Alsace-Lorraine.

The loss of Alsace-Lorraine did not perceptibly affect Germany's supply of bread grains grown for home consumption, as the amount grown was so small. In the other spelt-producing regions of the Republic the acreage has fallen off more than 50 per cent, the production in 1923 being only 37 per cent and in 1924 only 27 per cent of the 1909-1913 average of about 23,500,000 bushels (only about one-sixth of the pre-war wheat crop). This falling off in spelt production is the natural consequence of the general restriction of German agriculture to a more nearly home-maintenance basis. During the past few years the marketing of wheat has not been advantageous. As a result the German farmers have been eating more wheat and consequently have sown less spelt. With a return to normal conditions it is probable that more spelt will be grown, less wheat will be eaten at home, and relatively more locally grown wheat placed upon the market by these southern and western producers.

Before the war Germany exported to Switzerland and Austria-Hungary a few thousand bushels of spelt from contiguous territories. At present 2,000 to 3,000 bushels drift yearly across the southern and southwestern frontiers, but the demand for bread at home is sufficient to keep most of the diminished crop within the Republic to meet local food requirements.

Table 30 contrasts the present status of spelt production and utilization with the average pre-war condition of this crop.

TABLE 30.—*Spelt: Statistical balances, Germany, 1923 boundaries, 1921-22 to 1924-25, as compared with pre-war average, 1909-10 to 1913-14*

[In thousands—000 omitted]

Item	Unit	Years beginning July 1				
		Average, 1909-1913	1921	1922	1923	1924
Area.....	Acre.....	706	372	313	317	304
Production.....	Bushel..	23,497	11,419	6,251	8,810	6,419
Seed.....	do.....	3,555	1,703	1,432	1,451	1,360
Production less seed.....	do.....	19,942	9,716	4,819	7,359	5,029
Exports less imports.....	do.....	95	1	2	4	.....
Quantity available for domestic use.....	do.....	19,847	9,715	4,817	7,355	.....

* Wheat and rye mixed. Alsace-Lorraine planted an average (1909-1913) of 1,090 acres, producing 21,932 bushels of meal.

The significance of spelt is that the more of this grain that is produced the more wheat will be liberated from the farms for shipment to neighboring markets. In proportion as this cereal is not cultivated more wheat is retained on the farms for home consumption.

BARLEY

Barley is used in Germany mainly for brewing and as a feed for livestock. The home-grown summer barley of the two-row varieties is preferred for brewing because of its small percentage of protein and high yield of malt extract. Most of the barley grown in Germany is of this type. Official records of the area sown to winter barley were not kept separately during the pre-war period in all parts of the Empire, so that it is possible only to estimate roughly the relative area of each. This estimate is placed at 3 per cent winter barley to 97 per cent spring barley. The winter barley, mostly of the four-row varieties, has a higher protein content and is used for livestock feeding. To a lesser extent it is used for industrial purposes, for green fertilizer, and for the manufacture of French (pearled) barley for use in soups and for other culinary purposes.

Doctor Warmbold has estimated that before the war about a third of Germany's total barley supply, including the home-grown and imported, was employed for brewing. The residue from malt and beer manufacture, together with the offal from pearled barley and grits, all of which was fed to stock, was equivalent to about an eighth of this total supply.

On the average, nearly two-thirds of Germany's total barley supply was fed as grain to livestock. These proportions varied considerably from year to year, depending upon the available supply and upon the quantities of other available feed produced not only in Germany but in other countries. Corn and potato supplies and prices were influential in determining the extent to which barley was employed as a feed for stock. Year in and year out Germany's barley imports equaled the quantity of spring barley produced.

EFFECT OF VERSAILLES TREATY ON BARLEY SITUATION

Germany ceded to Poland territories that produced an annual average of 14,800,000 bushels of barley. Danzig Free State, Memel, and the district of Upper Silesia ceded to Czechoslovakia produced about 2,000,000 bushels. The surplus of these eastern districts was shipped to the interior of the Empire. On the west, Alsace-Lorraine produced 4,200,000 bushels of barley, having a surplus that was shipped east to the interior provinces. The Saar was a deficit district, while the territories ceded to Belgium and Denmark produced small quantities of barley that were probably consumed locally.

It is impossible to calculate the actual amount of this surplus, because of the varying degree to which this cereal was employed from year to year for feeding on the home farm or for industrial purposes, but within the present boundaries of the Republic of Germany an amount of barley was consumed each year considerably greater than the local production plus the total import of the Empire. In the northern parts of the Empire, where potato production is favored by the conditions of both soil and climate, but little barley was fed in good potato years or in years when imported maize was cheap. The lack of regularity with which this fodder grain was used in all sections

of the country makes it impossible to work out with any degree of accuracy a balance between local production and disappearance, but Table 31 gives the areas sown and the net production in the Republic and in each of the districts ceded to neighboring countries.

TABLE 31.—*Barley: Average area and production in the districts which composed the former German Empire, 1909-1913*

District	Area	Production	Seed	Net production
Barley, summer:				
Germany, 1923 boundaries.....	<i>Acres</i> 3,347,933	<i>Bushels</i> 128,799,163	<i>Bushels</i> 9,464,164	<i>Bushels</i> 119,334,999
Saar District—				
Rhine Province.....	4,067	149,270	11,482	137,788
Bavaria.....	596	128,476	11,637	126,639
Areas ceded—				
From East Prussia—				
To Memel.....	18,977	608,561	58,330	550,231
To Poland.....	3,442	91,399	10,564	80,835
From West Prussia—				
To Danzig Free State.....	25,874	1,327,353	75,783	1,251,570
To Poland.....	113,179	4,274,331	332,527	3,639,804
From Posen to Poland.....	280,673	11,112,562	818,456	10,294,106
From Upper Silesia—				
To Poland.....	11,016	386,264	27,558	358,706
To Czechoslovakia.....	4,991	203,926	12,401	191,525
From Lower Silesia to Poland.....	1,987	78,539	5,052	73,487
From Schleswig-Holstein to Denmark.....	42,019	1,854,620	123,549	1,731,071
From Rhine Province to Belgium.....	42	1,378	-----	1,378
From Alsace-Lorraine to France.....	121,363	4,615,422	343,093	4,272,329
Total areas ceded.....	623,563	24,552,355	1,807,313	22,745,042
Total Empire.....	3,976,149	153,529,264	11,294,796	142,244,468
Barley, winter: ¹ Total Empire.....	116,137	4,987,908	323,801	4,664,107
Barley, winter and summer: Total Empire.....	4,092,286	158,517,172	11,608,597	146,908,575

Area and production, Bavarian Saar: Bavaria, Statistisches Landesamt, Zeitschrift des Bayerischen Statistischen Landesamts, 1922, Nos. 3 and 4, p. 433.

Areas lost: Germany, Kaiserliches Statistisches Amt, Vierteljahrshefte zur Statistik des Deutschen Reichs, 1910-1914, heft 1; Prussia, Königliches Statistisches Landesamt, Statistik der Landwirtschaft, 1909-1913 (Preussische Statistik, Nos. 221, 225, 230, 235, 240); unpublished statistics prepared in the Preussisches Landesamt.

¹ One year only, 1914. Figures include winter barley.

² Estimate for one year, 1913. No basis for estimate for earlier years.

An estimate of the production-consumption balance of the barley crop for recent years, based on German official figures as compared with the pre-war estimate, is given in Table 32.

TABLE 32.—*Barley: Statistical balances, Germany, 1923 boundaries, 1921-22 to 1924-25, as compared with pre-war average, 1909-10 to 1913-14*

[In thousands—000 omitted]

Item	Unit	Years beginning July 1				
		Average, 1909-1913	1921	1922	1923	1924
Area.....	Acre.....	3,464	3,114	3,103	3,216	3,571
Production.....	Bushel.....	133,787	101,449	80,754	108,446	110,229
Seed.....	do.....	9,699	8,685	8,653	8,960	9,990
Production less seed.....	do.....	124,088	92,764	72,101	99,486	100,227
Imports less exports.....	do.....	141,475	10,911	13,006	23,072	-----
Quantity available for domestic use.....	do.....	265,563	103,675	85,107	122,558	-----

¹ Imports for the total Empire. In addition to this import from abroad Alsace-Lorraine and the German districts now incorporated into Poland shipped considerable quantities of barley to the districts now composing the Republic.

ORIGIN OF BARLEY IMPORTED TO COVER DEFICIT (1909-1913)

The pre-war imports were supplied almost entirely by Russia. This barley, grown under conditions of little rainfall, had a high protein content and was well suited to feeding livestock. Austria-Hungary and Rumania together supplied about 7 per cent of the imports and all other countries about 6 per cent. The United States was not an important source of Germany's barley supply—only a little over 1 per cent.

Table 33 contrasts the Republic's postwar international trade in barley with the pre-war trade of the Empire, all of which and more was consumed within the present boundaries of the Republic.

TABLE 33.—*Barley: Foreign trade¹ of the German Republic, 1921-22 to 1923-24, compared with that of the Empire, 1909-10 to 1913-14*

[Thousands of bushels—000 omitted]

Country	Years beginning July 1			
	Average, 1909-1913	1921	1922	1923
United States.....	+1,831	+1,271	+2,220	+3,472
Russia.....	+122,310	(²)	(²)	(²)
Austria.....	+6,217	+110	(²)	(²)
Hungary.....	(²)	+64	(²)	(²)
Czechoslovakia.....		+434	+2,657	+1,918
Rumania.....	+3,811	+3,446	+5,777	+6,506
British India.....	+2,828	(²)	(²)	(²)
Denmark.....	+1,280	+1,272	+211	(²)
Morocco.....	+969	+1,192	+56	(²)
Argentina.....	+273	+611	+443	(²)
Algeria.....	+60	+134	(²)	(²)
Netherlands.....	+22	+27	(²)	(²)
Tunis.....	+9	+503	+3	(²)
Saar district.....		-185	-111	(²)
Other countries.....	+1,835	+1,834	+1,720	+11,176
Total.....	+141,475	+10,911	+13,006	+23,072

Germany, Statistisches Reichsamt (formerly Kaiserliches Statistisches Amt), Monatliche Nachweise über den Auswärtigen Handel Deutschlands.

- ¹ Net imports are indicated by (+) and net exports by (-).
- ² If any, included in "Other countries."
- ³ Included in Austria.

Imports of barley were largely for purposes of stock feeding. In 1922-23 these imports were only about 9 per cent and in 1923-24 they were but 16.3 of the 1909-13 average. The acreage of home-grown brewing barley has been maintained, and if allowance is made for pre-war overestimates and post-war underestimates, these figures indicate that German barley production has not lost ground to a very noticeable degree except for the poor crop year 1922 (trade year 1922-23). Indeed, the acreage in 1924 was more than 100,000 acres above the pre-war average.

The large decrease in Germany's imports since the war has been due to the shutting off of the Russian source of cheap supply. A very small quantity of Russian barley originated in Congress Poland, but more than 100,000,000 bushels were brought by boat from the ports of the Black Sea. It is reported that during the last season (1923-24) Russia shipped to Germany only a relatively small quantity of barley. Rumania has nearly doubled her pre-war exports of

barley to Germany, as a result of the expansion of barley acreage in that country. Russian barley exports may be expected to increase and those from Rumania to continue in importance, since barley is a favorite grain in peasant agriculture, just as wheat was the favored cereal on the large estates of these two countries. America's export of barley to Germany, though double the pre-war quantity, is not significant.



FIG. 5.—Average 1909-1913 production of oats in the German Empire balanced against disappearance

The shaded areas roughly indicate the districts in which local production exceeded local consumption by about 38,059,000 bushels annually. In northwest and central Germany was a region (roughly indicated by the unshaded areas) in which local production fell short of supplying local requirements by about 47,791,000 bushels. The net annual deficit of the entire Empire covered by importations from abroad amounted to about 9,732,000 bushels annually.

Germany's crop for the season of 1924-25, according to the estimate of January 5, is 1,780,000 bushels larger than that for last year. With increasing numbers of livestock, particularly hogs, it is probable that Germany's demand for feeding barley will increase and with a stabilization of her currency her ability to purchase abroad will improve. But with Russia coming back into the market it is to be expected that Germany will turn as far as possible to her former source of supply to meet her future needs.

OATS

Oats are the chief fodder grain in Germany. Production is fairly uniformly distributed throughout the country. Consumption is centralized more in the western districts, and the surplus production of the east is shipped west to help supply the deficit of these districts. Oat production in Germany very nearly balanced consumption, before the war the Empire importing only about 2 per cent of its supply from foreign sources.

VERSAILLES TREATY AND GERMANY'S OAT SITUATION

Germany ceded to Poland territories that produced an annual average surplus (1909-1913) of about 1,300,000 bushels of oats. Memel, Danzig Free State, and the district of Upper Silesia ceded to Czechoslovakia produced annual surpluses totaling 600,000 bushels. On the west Alsace-Lorraine and the Saar district were deficit regions requiring approximately 2,000,000 and 1,400,000 bushels, respectively, in addition to local production. The districts ceded to Belgium and to Denmark, on the other hand, produced light surpluses of about 800,000 bushels.

The estimated average statistical oat deficit (1909-1913) of the territories now comprised within the Republic of Germany was 9,160,000 bushels, as compared with 9,700,000 bushels for the whole Empire (fig. 5) showing a potential net gain to Germany's national balance sheet of 570,000 bushels as a result of the territorial changes effected by the Versailles treaty, indicated in Table 34.

TABLE 34.—Oats: Average approximate balance in the districts which composed the former German Empire, 1909-1913

District	Number of horses, 1913	Area	Production	Seed	Net production	Disappearance	Deficit (-) or surplus (+) ¹	Disappearance per horse
		1,000 acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushels
Germany 1923 boundaries.....	3,807,057	9,529	527,178	40,066	487,112	496,272	-9,160	130.36
Saar District:								
Rhine Province.....	17,443	32	1,554	138	1,416	2,921	-1,505	167.46
Bavaria.....	2,917	9	605	30	766	618	+148	211.86
Areas ceded:								
From East Prussia—								
To Memel.....	33,507	62	3,077	294	2,783	2,346	+437	70.02
To Poland.....	5,968	4	139	19	120	326	-206	54.62
From West Prussia—								
To Danzig Free State.....	40,667	46	3,235	207	3,028	2,851	+177	70.11
To Poland.....	154,784	213	10,401	970	9,431	10,340	-909	66.80
From Posen to Poland.....	283,443	361	20,058	2,147	17,911	15,473	+2,438	54.59
From Upper Silesia—								
To Poland.....	28,510	79	3,850	307	3,543	3,631	-88	127.26
To Czechoslovakia.....	3,386	8	481	81	450	438	+12	129.36
From Lower Silesia to Poland.....	3,888	11	628	44	584	519	+65	133.49
From Schleswig-Holstein to Denmark.....	37,992	102	6,846	466	6,380	5,645	+735	148.53
From Rhine Province to Belgium.....	1,883	10	560	43	517	404	+113	214.55
Alsace-Lorraine to Franco.....	136,884	284	13,184	792	12,392	14,381	-1,989	105.06
Total areas ceded.....	730,912	1,180	62,459	5,320	57,139	56,354	+785	77.10
Total Empire.....	4,558,329	10,750	591,996	45,563	546,433	556,165	-9,732	122.01
Per cent in ceded territory and in Saar.....	16.5	11.4	10.9	12.1	10.9	10.8	5.9	-----

Area and production: Germany, Kaiserliches Statistisches Amt, Vierteljahrshäfte zur Statistik des Deutschen Reichs, 1910-1914, heft 1; Prussia, Königliches Statistisches Landesamt, Statistik der Landwirtschaft, 1909-1913 (Preussische Statistik, Nos. 221, 225, 230, 235, 240).
Seed: Germany, Kaiserliches Statistisches Amt, Vierteljahrshäfte zur Statistik des Deutschen Reichs, 1915, heft 2, and unpublished indications of Professor Opitz, of the Berlin Landwirtschaftliche Hochschule.

¹ The quantities of surplus and deficit in each district as calculated from German official statistics have been corrected to such a degree that the total equals the average yearly import quantity.
² Figures for the single year 1914.

³ 2.79 bushels per acre; Zede, Adolph. Der Hafer; Jena, Gustav Fischer, 1918, p. 124.

ORIGIN OF OATS IMPORTED TO COVER PRE-WAR DEFICIT (1909-1913)

Before the war Germany imported four times the quantity of oats required to balance her own deficit, conducting a transit trade between western Europe and Rumania and Russia, from which latter

country was imported 26,000,000 bushels annually, for the most part by way of the Baltic ports. About 7,000,000 bushels of oats from the Argentine and 2,000,000 from the United States also passed through Hamburg and Bremen, or were reshipped, largely to Great Britain. (See Table 35.)

TABLE 35.—Oats: Foreign trade¹ of the German Republic, 1921-22 to 1923-24, compared with that of the Empire, 1909-10 to 1913-14

[Thousands of bushels—000 omitted]

Country	Year beginning July 1			
	Average, 1909-1913	1921	1922	1923
Argentina.....	+7, 105	+3, 038	+565	+739
United States.....	+1, 828	+1, 762	+4, 587	+165
Rumania.....	+1, 654	+368	+738	+23
Russia.....	+26, 095	(?)	(?)	(?)
German Southwest Africa.....	-29	(?)	(?)	(?)
Norway.....	-271	(?)	(?)	(?)
Austria-Hungary.....	-431	-1	(?)	(?)
Belgium.....	-1, 435	(?)	(?)	(?)
France.....	-2, 370	-2	(?)	(?)
Sweden.....	-2, 778	+12	(?)	(?)
Canada.....	(?)	+11	(?)	(?)
Netherlands.....	-3, 837	+29	(?)	(?)
Denmark.....	-4, 535	(?)	(?)	(?)
Switzerland.....	-4, 771	-18	(?)	(?)
Great Britain.....	-6, 687	(?)	(?)	(?)
Saar district.....		-435	-86	(?)
Others.....	+374	+589	+1, 207	-5, 314
Total.....	+9, 732	+6, 253	+7, 009	-4, 377

Germany. Statistisches Reichsamt (formerly Kaiserliches [Statistisches Amt], *Monatliche Nachweise über den Auswärtigen Handel Deutschlands*.)

¹ Net imports are indicated by (+) and net exports by (-).

² If any, included in other countries.

³ Austria only.

POSTWAR TRADE IN OATS

Since the war the production of oats has fallen off in the territory still remaining to Germany. The 1924 area, which is the largest in the last four years, is still 9 per cent below pre-war, according to the German official estimates. German statistics indicate that production in 1923, the best postwar year up to that time, was 20 per cent below the pre-war level. Not allowing for pre-war overestimates and postwar underestimates, present production (in 1924) was 138,000,000 bushels below pre-war. In spite of the fact that the domestic supply lacked 109,000,000 bushels of enough to provide for a horse ration as great as pre-war, some oats were exported in 1923-24.

Imports of oats into Germany since the war have decreased. The Empire bought abroad, on an average, 9,700,000 bushels a year more than were reexported (Table 35). In 1921-22 and 1922-23 these purchases for the Republic were only 6,300,000 and 7,000,000 bushels, respectively; in 1923-24 the import movement was changed to an export of 4,400,000 bushels.

The foreign sources of supply, as well as the quantities imported from previous sources, have changed. Before the war Argentina supplied the equivalent of nearly the total German import requirement. Russia shipped to Germany three times the Empire's total import requirement; but this was mostly reexported to Great Britain,

Switzerland, Denmark, Sweden, and Holland. Since the war Russia has dropped out entirely. Imports from Argentina in 1921-22 were not quite two-thirds the pre-war purchases, and in the last two years they have dropped to 8 and 10 per cent of pre-war. Neighboring countries, which used to take small quantities of oats, reexported from Germany, have been shipping oats to Germany since the war. In 1923-24 imports from all countries were insignificant and exports predominated.

The United States has usually been one of the minor sources of the German oats supply. In 1922-23 Germany took between two and three times the usual quantity from the United States, owing to the short crop and consequent small surplus in Argentina. In 1923-24, with Germany exporting some of her own oats, she took only 165,000 bushels from the United States.

STATISTICAL OATS BALANCE OF GERMANY

Table 36 gives a comparison between the post-war production-consumption balance and the years preceding the war, based on the German official figures:

TABLE 36.—Oats: Statistical balances, Germany, 1923 boundaries, 1921-22 to 1924-25, as compared with pre-war average, 1909-10 to 1913-14

[In thousands—000 omitted]

Item	Unit	Average, 1909-1913	Year beginning July 1			
			1921	1922	1923	1924
Area sown.....	Acre.....	9,529	7,814	7,912	8,265	8,709
Production.....	Bushel..	527,178	844,812	276,643	420,731	389,525
Seed.....	do.....	40,066	33,768	34,192	35,704	37,636
Net production.....	do.....	487,112	811,044	242,451	385,027	351,889
Theoretical domestic requirement ¹	do.....	496,272	477,885	481,144	494,180	507,065
Theoretical deficit.....	do.....	-9,160	-166,841	-238,693	-109,153	-155,176
Actual net imports (+) or net exports (-).....	do.....	(²)	+6,253	+7,009	-4,377	.....
Uncovered deficit.....	do.....	.....	160,588	231,684	113,530	.....

¹ Based upon pre-war disappearance norm, 130,356, times number of horses. Number of horses in 1912, 3,807,000; 1921, 3,666,000; 1922, 3,691,000; 1923, 3,791,000 (estimated); and 1924, 3,890,000, including 40,000 military horses.

² Imports for Germany, 1923 boundaries, assumed to be same as the deficit.

It is evident that since the war horses in Germany have been fed oats rations of about two-thirds the pre-war normal. Basing post-war requirement upon the pre-war normal ration, Germany has had during the past four years a deficit ranging from 109,000,000 to 239,000,000 bushels yearly. Importations have not been more than 3 to 4 per cent of the requirement. During the season 1924-25 the indicated deficit is 155,000,000 bushels. It is improbable that any considerable portion of this deficit will be imported.

POTATOES

The commercial potato crop in the German Republic, even during the post-war depression in agriculture, has been greater than that of any other country in the world. During the pre-war period (1909-1913) almost one-half of the potato crop of the Empire was produced

in the six eastern provinces—East Prussia, West Prussia, Pomerania, Posen, Brandenburg, and Silesia. But most of the great distilleries, the starch factories, and the desiccators were located in these provinces, and almost the whole of the local potato crop except that which was consumed as human food or fed to livestock was locally manufactured into spirit and starch or was desiccated. Only the relatively small average quantity of 3,000,000 bushels was shipped from these six provinces to the deficit regions of the south and west, and these shipments were nearly covered by annual imports from Congress Poland on the east.

Hanover and the provinces to the north produced a surplus of about 9,000,000 bushels annually that was shipped to Westphalia, Thuringia, Saxony, and the districts to the south, whose combined deficit reached about 23,000,000 bushels. This left about 11,000,000 bushels deficit to be covered by imports from abroad, Westphalia, Alsace-Lorraine, and the Rhine provinces importing potatoes from the Netherlands, Belgium, and Italy.

The pre-war distribution of the potato crop is indicated in Table 37 prepared from estimates published by the Bureau of Economics of the German Ministry of Foods.¹⁰

TABLE 37.—Potatoes: Utilization of the German pre-war crop, 1914

Use	Total Germany	Six eastern provinces ¹
	Million bushels	Million bushels
Seed.....	249.9	113.9
Food.....	543.3	183.7
Drying.....	53.1	40.4
Starch.....	47.8	47.8
Alcohol.....	90.2	84.5
Waste (10 per cent).....	169.0	80.8
Other uses (probably mostly feeding).....	510.7	257.2
Total crop, 1914.....	1,675.5	808.3
Average 1909-1913:		
Crop.....	1,682.8	830.4
Imports less exports.....	10.9	-3.7
Available for disposition.....	1,693.7	826.7

¹ East Prussia, West Prussia, Brandenburg, Pomerania, Posen, and Silesia.

² Average surplus entering into interior trade, 1912-13, as reported by the Statistisches Reichsamt, in Statistik der Gueterbewegung auf Deutschen Eisenbahnen und Verkehr und Wasserstände der Deutschen Binnenwasserstrassen for 1912 and 1913 (Statistik der Deutschen Reichs, Bd. 265, 274).

The relative quantities of potatoes used for human food, feed for livestock, or used for industrial purposes varied greatly from year to year. The crops in the years immediately preceding the war were utilized approximately in the following proportions: Seed, 15 per cent; human food, 33 per cent; drying, 3 per cent; starch, 3 per cent; alcohol, 6 per cent; waste, 10 per cent; and other uses, principally feeding, 30 per cent. In times of shortage in the grain crop a larger proportion of the potato crop was used for human food. The average pre-war consumption for human food was estimated at 8½ bushels per capita. In general, before the war, Germany just about met its own potato requirements, and imports have been comparatively small (about 0.7 per cent of the total production) even in years of shortage.

¹⁰ Volkswirtschaftliche Abteilung des Reichsernährungsamts: Beitrage zur Kreiswirtschaft, Kartoffel-Trocknerei im Kriege, prepared by Professor Leutenbach, Berlin.

EFFECT OF VERSAILLES TREATY ON POTATO SITUATION

Germany ceded to Poland some of her best potato lands, producing an annual average surplus (1909-1913) of about 15,000,000 bushels. The ceded districts of Upper Silesia, Memel, and Danzig were deficit regions in which the potato disappearance, for food and for industrial purposes, exceeded local production by about 21,500,000 bushels. On the west, Alsace-Lorraine, the Saar district, and the territory ceded to Denmark were deficit regions requiring about 3,000,000 bushels annually in addition to local production.

The estimated average statistical potato deficit (1909-1913) of the territories now comprised within the Republic of Germany was 1,400,000 bushels, as compared with 10,874,000 bushels, which was the average importation into the German Empire. (Fig. 6.)



Fig. 6.—Average 1909-1913 production of potatoes in the German Empire balanced against disappearance

The eastern Provinces produced annually approximately 3,147,000 bushels more potatoes than were consumed locally, while the annual surplus of the northern Provinces amounted to about 8,180,000 bushels. The southwestern deficit region consumed each year about 22,261,000 bushels more than were produced locally, necessitating an annual average importation of potatoes totaling about 10,874,000 bushels.

It is estimated that the ceded territories and the Saar district required in addition to local production an annual net importation of about 9,000,000 bushels of potatoes of which about 2,000,000 bushels were consumed as human food and feed for livestock and the 7,000,000 bushels were used for industrial purposes.

The territorial changes following the Great War did not materially affect the German potato industry either as regards surplus production or manufacture.

The statistical analysis of the pre-war potato situation in the ceded districts and in the territory now comprising the Republic of Germany appear in Table 38.

TABLE 38.—Potatoes: Average approximate balance in the districts which composed the former German Empire, 1909-1913

District	Population December 1, 1910	Area	Production	Seed	Net production	Disappearance	Surplus (+) or deficit (-) ¹	Disappearance per capita
		1,000 acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushels
Germany, 1923 boundary.....	57,799,808	6,775	1,373,609	201,474	1,172,135	1,173,498	-1,363	20.30
Saar district:								
Rhine Province.....	572,112	45	7,749	1,332	6,417	7,689	-1,272	13.44
Bavaria.....	80,946	12	2,512	368	2,144	1,336	+808	16.50
Areas ceded:								
From East Prussia—								
To Memel.....	141,238	32	2,995	939	2,056	4,551	-2,495	32.22
To Poland.....	24,787	10	5,940	292	5,648	1,963	+3,785	75.16
From West Prussia—								
To Danzig Free State.....	330,630	22	4,671	667	4,004	14,059	-10,055	42.52
To Poland.....	964,704	332	70,160	9,875	60,285	50,809	+9,476	52.67
From Posen to Poland.....	1,946,461	663	152,204	19,723	132,481	132,174	+307	67.90
From Upper Silesia—								
To Poland.....	893,074	96	17,610	2,870	14,740	23,645	-8,905	26.48
To Czechoslovakia.....	45,396	7	1,477	214	1,263	1,306	-43	28.77
From Lower Silesia to Poland.....	26,248	13	2,821	382	2,439	1,099	+1,340	41.87
From Schleswig-Holstein to Denmark.....	166,348	10	1,777	285	1,492	2,599	-1,107	15.62
From Rhine Province to Belgium.....	60,003	5	1,018	157	861	944	+17	14.07
From Pomerania to Poland.....	224							
Alsace-Lorraine to France.....	1,874,014	229	37,416	6,798	30,618	31,985	-1,367	17.07
Total areas ceded.....	6,473,127	1,419	298,089	42,202	255,887	264,034	-9,047	40.93
Total Empire.....	64,925,993	8,261	1,681,959	245,376	1,436,583	1,447,457	-10,874	22.29
Per cent in ceded territory and Saar.....		17.9	18.3	17.9	18.4	18.9	87.5	

Area and production: Total German Empire—Germany, Kaiserliches Statistisches Amt, Vierteljahrshefte zur Statistik des Deutschen Reichs, 1910-1914, heft. 1; Bavarian Saar—Bavaria, Statistisches Landesamt, Zeitschrift des Bayerischen Statistischen Landesamts, 1922, Nos. 3 and 4, p. 438.

Ceded areas in Prussia: Königlich Preussisches Statistisches Landesamt; unpublished statistics prepared in the Landesamt.

Seed requirements, Germany, Kaiserliches Statistisches Amt, Vierteljahrshefte zur Statistik des Deutschen Reichs, vol. 24, heft 2, 1915, p. 216.

NOTE.—The uses of potatoes are so varied and so changing that the per capita disappearance should be considered only as a convenient method of estimating general disappearance.

¹ The amounts of surplus and deficit in each district as calculated from German official statistics have been corrected to such a degree that the total equals the average yearly import amount.

² One year only, 1914.

³ Based on a disappearance for the northern region, which excludes the ocean trade of Bremen and Hamburg, Germany.

STATISTICAL POTATO BALANCE OF GERMANY

The area planted to potatoes within the territory of the Republic since the war has not varied materially from the acreage under this crop before the war. (Table 39.) The yields have fluctuated considerably with the seasons, being low in 1921 and 1923 and high in 1922; the net production of 1924 was about 40,000,000 bushels below the 1909-1913 average. The food requirement has increased

with the increase in population, and it is probable that the per capita consumption has also increased materially, since potatoes have been substituted for wheat and rye which were both scarce and expensive. During the years 1921-22 and 1923-24 the quantities of domestic potatoes available for industrial purposes and for feeding livestock have been considerably below the average for the pre-war period (1909-1913) and during 1923-24 importations rose to nearly 8,500,000 bushels. The season 1924-25 shows an increased production of 140,000,000 bushels more than the preceding year and it is probable that imports will decrease in volume. The Netherlands and Belgium will continue to ship some potatoes into the western provinces, where trade relationships have been long established; on the east, Polish territory contiguous to alcohol and starch manufactories will continue to ship potatoes over the boundary into Germany.

TABLE 39.—Potatoes: Statistical balances, Germany, 1923 boundaries, 1921-22 to 1924-25, as compared with pre-war average, 1909-10 to 1913-14

[In thousands—000 omitted]

Item	Unit	Year beginning July 1				
		Average 1909-1913	1921	1922	1923	1924
Area sown.....	Acres ..	6, 775	6, 541	6, 725	6, 738	6, 820
Production.....	Bushels	1, 373, 609	960, 898	1, 494, 005	1, 197, 095	1, 337, 540
Seed.....	do.	201, 474	194, 531	199, 998	200, 300	204, 800
Net production.....	do.	1, 172, 135	766, 357	1, 294, 007	996, 795	1, 132, 740
Theoretical domestic requirement ..	do.	491, 298	518, 968	524, 918	529, 300	534, 000
Theoretical surplus.....	do.	680, 837	247, 389	769, 089	467, 495	598, 740
Actual net imports.....	do.	* 1, 363	1, 376	2, 936	8, 478	([†])
Total available.....	do.	682, 200	248, 765	772, 025	475, 973	-----

[†] Based upon pre-war disappearance norm, 8.5 bushels, times population. See Table 19 for population.
^{*} Estimated for the Republic.
^{*} Total year not available.

ORIGIN OF POTATOES IMPORTED TO COVER PRE-WAR DEFICIT (1909-1913)

Germany's small import and export trade in potatoes was confined largely to local transactions along the frontiers. On the east a few million bushels were shipped from Russia and Austria to near-by factories and distilleries, and on the west and south a few million bushels were shipped in from the Netherlands, Belgium, France Italy, and Austria. Likewise local producers shipped potatoes in small quantities to Austria, Switzerland, and England. (Table 40.)

TABLE 40.—Potatoes: Foreign trade¹ of the German Republic, 1921-22 to 1923-24, compared with that of the Empire, 1909-10 to 1913-14

[Thousands of bushels—000 omitted]

Country	Year beginning July 1			
	Average 1909-1913	1921	1922	1923
Russia.....	+4,778	(?)	(?)	(?)
Italy.....	+1,264	+540	+229	¹ 1,038
Denmark.....	+300	+18	(?)	(?)
France.....	-500	(?)	(?)	(?)
Great Britain.....	-1,176	(?)	(?)	(?)
Austria-Hungary.....	-1,352	⁴ -261	⁴ -345	(?)
Netherlands.....	+8,164	+1,282	+1,342	² 4,170
Poland.....		+755	+2,008	² 3,069
Memel.....		+649	+126	(?)
Latvia, Esthonia, and Lithuania.....		+351	(?)	(?)
Czechoslovakia.....		-9	(?)	(?)
Polish Upper Silesia.....		(?)	+559	(?)
Belgium.....	+2,210	+141	+768	(?)
United States.....	-12	(?)	(?)	(?)
Norway.....	-148	(?)	(?)	(?)
Brazil.....	-183	(?)	(?)	(?)
Sweden.....	-362	(?)	(?)	(?)
Switzerland.....	-1,987	(?)	(?)	(?)
Saar district.....		-2,244	-1,782	(?)
Other countries.....	-122	+154	+31	+201
Total.....	+10,874	+1,376	+2,936	+8,478

Germany, Statistisches Reichsamt (formerly Kaiserliches Statistisches Amt), *Monatliche Nachweise über den Auswärtigen Handel Deutschlands*.

¹ Net imports all indicated by (+) and net exports by (-).

² If any, included in other countries.

³ Imports only; exports, if any, included in other countries.

⁴ Austria only.

POSTWAR FOREIGN TRADE IN POTATOES

The western provinces have continued to import relatively small quantities of potatoes from the Netherlands, Belgium, and Italy, and have exported some potatoes to the Saar district, while the factories and distilleries in the eastern provinces have imported small quantities of potatoes from Memel and Poland. In 1923-24 the foreign potato trade of the Republic increased greatly because of the poor domestic crop. The western provinces imported 4,000,000 bushels from the Netherlands for food and the eastern provinces took 3,000,000 bushels from Poland largely for industrial purposes. (Table 40.)

SUGAR BEETS AND SUGAR

Beginning with 1850, the sugar-beet industry shows a continuous and rapid development up to the outbreak of the World War. The raw-sugar production increased from 59,000 short tons in 1850-51 to 2,994,000 short tons in 1913-14. Germany became a sugar exporting country about 1871, when the exports exceeded imports by a round 21,000 short tons. From that time until the season of 1917-18 Germany's exports continued to be greater than her imports, reaching a maximum in the season 1910-11, when the net export reached 1,228,715 short tons. The sugar sent abroad went chiefly to England.

Consumption as measured by internal sugar disappearance, increased from 6.6 pounds per capita in 1850-51 to a pre-war average of 45 pounds. During the war period the sugar disappearance in Germany appears to have been greater than at any other time, averaging 49.6 pounds per capita for the five sugar seasons 1914-15 to 1918-19.

The general facts concerning the supply and disappearance of sugar in the Empire of Germany appear in Table 41.

TABLE 41.—*Sugar, in terms of raw sugar: Supply and disappearance in the German Empire, 1850-1851 to 1918-19*

[Thousands of pounds—000 omitted]

Year beginning Sept. 1	Sugar produced	Imports	Exports	Disappearance	
				Total	Per capita (pounds)
1850.....	117,613	86,453	20,483	212,304	6.6
1860.....	278,939	18,571	5,618	282,288	9.2
1870.....	579,780	9,427	51,132	538,076	11.0
1880.....	1,225,570	12,362	625,901	612,038	15.0
1890.....	2,945,834	14,906	1,653,949	1,155,105	23.2
1900.....	4,363,164	2,970	2,517,434	1,706,290	30.1
1909 ¹	4,583,851	4,860	1,711,177	2,783,445	42.9
1910.....	5,709,625	4,083	2,461,514	3,051,001	46.7
1911.....	3,301,880	4,904	615,030	2,743,300	41.5
1912.....	5,966,369	5,605	2,332,956	3,149,575	47.1
1913.....	5,987,407	5,031	2,436,157	3,158,686	46.6
Average, 1909-1913.....	5,109,826	4,897	1,911,367	2,977,213	45.0
1914.....	5,533,770	37,137	355,354	3,749,690	55.4
1915.....	3,340,667	21,482	85,580	3,771,013	55.3
1916.....	3,434,612	14,500	22,891	2,053,135	43.4
1917.....	3,397,424	23,173	31,575	3,278,595	48.4
1918.....	2,927,079	80,867	17,886	2,866,343	45.0
Average, 1914-1918.....	3,726,710	36,632	102,657	3,323,755	49.6

Deutsche Zuckerindustrie. vol. 48, No. 6, Feb. 9, 1923, p. 76.

¹ Deutsche Zuckerindustrie, vol. 35, No. 41, Oct. 14, 1910, p. 798.

TABLE 42.—*Sugar, in terms of raw sugar:¹ Foreign trade of Germany, average 1909-1913*

Country	Imports (+)	Exports (-)	Net exports
	Short tons	Short tons	Short tons
United States.....	461	8,827	8,366
Morocco.....		9,674	9,674
Portugal.....		9,969	9,969
Chile.....		11,614	11,614
Denmark.....	1	16,394	16,393
Netherlands.....	71	19,305	19,234
Uruguay.....		21,151	21,151
Argentina.....		28,678	28,678
Switzerland.....		37,612	37,612
Norway.....		44,694	44,694
Great Britain.....	442	666,458	666,016
Other countries.....	4,593	62,426	57,833
Total.....	+5,568	-936,802	-931,234

Germany, Kaiserliches Statistisches Amt, Monatliche Nachweise über den Auwärtigen Handel Deutschlands.

¹ Refined sugar reduced to raw sugar at the ratio of 9 : 10.

During the five-year period 1909-10 to 1913-14 the area planted to sugar beets varied considerably from year to year, and the fluctuations in yield were even greater; but on the average 1,245,797 acres were put into cultivation annually and more than 300 sugar factories worked up about 15,715,229 short tons of beets, producing 2,460,407 short tons of raw sugar. In addition to the sugar made directly from beets, independent factories manufactured some 94,506 tons of sugar

from molasses, resulting in a gross sugar production of 2,554,913 short tons. Of this quantity, the average net export as reported by the German sugar industry was 953,235 tons,¹¹ the average yearly total supply available for use within the country being 1,488,607 tons (about 45 pounds per capita), of which 502,000 tons, or 33.7 per cent, were used yearly for industrial purposes, leaving 66.3 per cent, or 986,607 short tons, available for human consumption.

EFFECT OF VERSAILLES TREATY ON BEET-SUGAR INDUSTRY

Lack of consecutive detailed data makes it impossible to analyze the average pre-war relations of the beet-sugar industry of the ceded districts and of the area now comprised within the Republic of Germany, but statistics have been compiled by the Deutsche Zuckerindustrie, as given in Table 43 for the single season 1912-13, from which certain general conclusions can be drawn.

TABLE 43.—*Sugar beets and beet sugar: Production in the districts which composed the former German Empire, 1912-13¹*

District	Area (excluding area for sugar-beet seed)	Sugar beets worked	Sugar production in terms of raw sugar ²	Factories
	<i>Acres</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Number</i>
Germany, 1923 boundaries.....	1,074,979	14,679,155	2,340,268	
Areas ceded:				
From East and West Prussia.....	95,121	1,229,465	181,176	³ 10
From Posen.....	171,035	2,269,597	361,951	³ 19
From Alsace-Lorraine.....	12,046	166,521	18,169	³ 1
Total former German Empire.....	1,353,181	18,344,738	2,901,564	
Sugar made from molasses.....			81,620	
Total.....			2,983,184	

Statistics supplied by Die Deutsche Zuckerindustrie.

¹ Sept. 1 to Aug. 31.

² Relation of raw to refined sugar is 10 to 9. (Excludes sugar made from molasses in independent factories.)

³ Number in 1918-19.

During the season 1912-13 the territories ceded on the east to Poland, Danzig, Memel, and Czechoslovakia planted 266,156 acres of sugar beets. About 29 factories located within these territories worked up 3,499,062 short tons of beets, producing 543,127 short tons of raw sugar. Based upon the census of 1910 and the average per capita disappearance of sugar in the German Empire (1909-10 to 1913-14) of 45 pounds, there would have been available to the 4,372,762 inhabitants of all of the eastern ceded districts for human consumption and industrial uses about 98,387 tons of the 1912-13 sugar crop. This figure is probably high, since the peasants of Poland and Silesia undoubtedly consumed less sugar than the average for the Empire, but the exportable surplus produced in these eastern ceded territories was approximately 444,740 tons of raw sugar.

Only one beet-sugar factory was located in the western territories—in Alsace-Lorraine. In 1912-13 this factory worked up 166,521 short tons of beets, producing 18,169 short tons of sugar. In 1910 there

¹¹ This average export during the sugar years Sept. 1, 1909, to Aug. 31, 1914, should be compared with 931,234 short tons reported by the office of statistics as the average annual net export during the period July 1, 1909, to June 30, 1914.

were 2,753,423 inhabitants in the Saar district and in these western ceded territories—Alsace-Lorraine, the Eupen-Malmedy district ceded to Belgium, and northern Schleswig-Holstein ceded to Denmark. Again employing 45 pounds per capita, the sugar requirements of the western ceded districts amounted to at least 61,952 short tons or 43,783 short tons more than were produced by the Alsace-Lorraine factory. To cover this deficit Germany shipped sugar from the interior to the west and north so that the ceding of these territories would result in normal years in a potential net gain to the exportable surplus of the central districts of at least 43,783 tons. The ceding of the eastern territories meant a potential loss of 444,740 short tons to the exportable surplus of the nation. The difference between the potential gains on the west and the potential losses on the east gives a grand total net loss of about 400,957 tons. This loss to Germany's exportable surplus is, roughly, 42.1 per cent of the average net exports during the period 1909-10 to 1913-14. (Table 41.)

According to the data in Table 43, based upon the single season 1912-13, the cessions of territory following the Versailles treaty resulted in a loss of about 20 per cent of the nation's sugar-beet area, about the same percentage of its potential sugar production, and approximately 42.1 per cent (probably 50 per cent) of its exportable surplus.

TABLE 44.—Sugar: Approximate balance of the German Empire compared with that of the territory within the present boundaries of the Republic, 1912-13¹

Description	Empire of Germany	Ceded districts and the Saar	Germany, 1923 boundaries
Acreage planted ²		Acres 278,202	Acres 1,074,979
Sugar beets worked ³		Short tons 3,665,583	Short tons 14,679,155
Sugar, in terms of raw sugar:			
Visible supply Sept. 1, 1912 ⁴	163,064	32,613	130,451
Production at beet sugar factories ⁵	2,901,564	561,296	2,340,268
Production at refineries and from molasses ⁶	81,620		81,620
Imports ⁷	2,803	2,803	
Deficit of western "ceded territories" probably supplied by the central districts ⁸		40,980	
Total supply from all sources.....	3,149,051	637,692	2,552,339
Gross exports refined and raw sugar ⁹	1,166,478	400,957	765,521
Visible supply Aug. 31, 1913 ⁴	263,169	52,624	210,545
Unaccounted for.....	144,616	23,772	120,844
Deficit of western "ceded territories" probably supplied by the central districts ⁸			40,980
Total.....	1,574,263	477,353	1,137,890
Disappearance during year.....	1,574,788	160,339	1,414,449

¹ Sept. 1, 1912 to Aug. 31, 1913.
² Statistics supplied by Deutsche Zuckerindustrie Association. (See Table 43.)
³ Visible supply in "ceded territories" estimated to be 20 per cent of total for Empire. Deutsche Zuckerindustrie, vol. 38, No. 42, Oct. 17, 1913, p. 927.
⁴ Deutsche Zuckerindustrie, vol. 48, No. 6, Feb. 9, 1923, p. 76.
⁵ The deficit of the western "ceded districts" was supplied by a quantity equal to total imports plus shipments from territories now comprising the Republic of Germany.
⁶ Domestic disappearance included sugar consumed as human food, employed in industries, and held in storage elsewhere than at factories or official warehouses.
⁷ The export from the "ceded districts" is approximated at the net surplus (see above).

POSTWAR BEET-SUGAR SITUATION

Immediately following the war there was a great reduction in the area planted to sugar beets in the territories composing the Republic. Employing the area, factory run, and sugar production, given in Table 43, as a base, the season 1919-20 shows a drop in acreage of 40.7 per cent and a drop in sugar production of 66.5 per cent. The season 1920-21 shows a slight improvement, with the acreage 37.3 per cent and sugar production 48.8 per cent below pre-war (1912-13). During 1919-20 the German Republic imported (net) 103,363 short tons, bringing the per capita supply up to 33.8 pounds, which was 75 per cent of the pre-war average. (See Table 47.) During the next season a net import of 63,860 short tons brought the per capita supply up to 92.4 per cent of normal.

During the past four years there has been a marked recovery in the area planted to sugar beets, as brought out in Table 45.

TABLE 45.—*Sugar beets and beet sugar: Production in Germany, 1923 boundaries, 1919-20 to 1924-25, compared with 1912-13*

Year beginning September 1	Acreage ¹		Beets worked		Factories	Sugar produced (in terms of raw)			
	Total	Percentage of 1912-13	Total	Percentage of 1912-13		At beet-sugar factories		From molasses and at refineries	Total
						Total	Percentage of 1912-13		
	<i>Acres</i>		<i>Short tons</i>		<i>No.</i>	<i>Short tons</i>		<i>Short tons</i>	<i>Short tons</i>
1912	1,074,979	100.0	14,679,155	100.0	302	2,340,268	100.0	² 81,620	2,421,888
1919	637,540	59.3	5,286,904	36.0	260	783,123	33.5	2,343	785,466
1920	674,200	62.7	7,223,917	49.2	262	1,198,042	51.2	9,007	1,207,049
1921	821,439	76.4	8,296,621	56.5	263	1,415,606	60.5	18,136	1,433,742
1922	880,902	81.9	10,258,466	69.9	263	1,595,503	68.2	8,430	1,603,933
1923	829,371	77.2	8,087,130	55.1	264	1,240,038	53.0	24,181	1,264,219
1924	³ 875,648	81.5	³ 10,713,888	73.0	.....	³ 1,700,733	72.7	.....	.....

Statistics furnished by Die Deutsche Zuckerindustrie, quoting German Sugar Organization, revised to conform with latest figures carried by the official publications of the organization.

¹ Excludes acreage for sugar-beet seed.

² Quantity made in the total Empire.

³ Estimated.

ACCUMULATION OF SUGAR STOCKS IN GERMANY

During the season 1921-22, although the sugar-beet area within the Republic of Germany increased to 76.4 per cent of pre-war (1912-13), the season was not favorable. Two hundred and sixty-three factories produced only 60.5 per cent of the pre-war normal (1912-13), to which should be added 18,136 tons of sugar produced at refineries or made from molasses, giving a total of 1,433,742 short tons produced. Referring to Table 41 on "Supply and disappearance of sugar in Germany," it will be noted that this is nearly the quantity of sugar that was on the average available for the domestic use of the whole Empire during the five-year period 1909-10 to 1913-14. During the pre-war period the average per capita supply of sugar within the Empire was 45 pounds. In 1921-22 the production within the Republic itself was 46.4 pounds for a population of 61,755,000 that was probably consuming sugar at a rate below pre-war. On top of this surplus production, the German Republic imported (net) 179,664 tons, bringing the per capita supply up to 52.3 pounds.

This accumulation of stocks continued during the next season, 1922-23. The total production within the Republic was 1,603,933 short tons (see Table 47), or 51.5 pounds per capita. In spite of this surplus production, Germany imported 114,618 short tons. During this season 12,125 short tons were sent to Italy on reparations account and approximately 55,115 short tons were confiscated by the French from factories in the occupied districts and 19,478 short tons were exported. There was during this sugar year a supply of 1,517,691 short tons, or 48.7 pounds per capita, available for domestic use (population 1923 estimated at 62,275,000). There is a discrepancy in German official sugar figures (see footnote 16 on Table 48), and during this season 84,006 short tons are dropped from the records.

Only one conclusion can be drawn: Faced with conditions of a wildly fluctuating currency and precarious banking facilities, the Germans invested in sugar as a safe means of accumulating wealth, awaiting a stabilization of the currency to realize on their investments.

TABLE 46.—*Sugar, raw and refined, in terms of raw: Foreign trade¹ of Germany, 1921-22 to 1923-24*

Country	Years beginning July 1		
	1921	1922	1923
	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>
United States.....	+27,653	+67,093	(?)
Netherlands.....	+27,639	+31,111	-46,445
Czechoslovakia.....	+17,109	+3,808	(?)
Belgium.....	+4,653	+1,359	(?)
Sweden.....	+4,290	+20	(?)
Danzig.....	+4,096	+5,027	(?)
Dutch Indies.....	+3,617	+28,064	+2,891
Brazil.....	+3,454	+7,034	(?)
Great Britain.....	+3,135	+2,051	(?)
Cuba.....	+2,387	+18,511	(?)
Dominican Republic.....	+1,654	+798	(?)
Poland.....	+741	+19,926	(?)
Denmark.....	+718	+6,771	(?)
Saar district.....	-10,742	-8,907	-8,269
Other countries.....	+5,568	+19,855	-104,951
Total.....	+95,942	+203,150	-156,774

Germany, Statistisches Reichsamt, Monatliche Nachweise über den Auswärtigen Handel Deutschlands.

NOTE.—Refined sugar converted to raw sugar at the ratio of 9:10.

¹ Net imports are indicated by (+) and net exports by (-).

² If any, included in other countries.

UNLOADING ACCUMULATED STOCKS

With the stabilization of the currency in the fall of 1923 came the opportunity to realize cash for accumulated sugar. The season of 1923-24 was not specially favorable to the sugar industry, being 77.2 per cent of normal (1912-13) as regards acreage, 53 per cent as regards factory run, while the total production of beet sugar was 52.2 per cent of that of 1912-13. The supply produced in 1923-24 amounted to 40.2 pounds per capita (1924 population, 62,825,000) or 4.8 pounds per capita below pre-war average normal. In spite of this shortage in production, the sugar industry exported 257,028 net tons of sugar during the 1923-24 season.

TABLE 47.—*Sugar, in terms of raw sugar: Supply and disappearance in Germany, 1919-20 to 1923-24, as compared with 1912-13*

Year beginning Sept. 1	Boundaries of 1923				
	Sugar produced ¹	Imports	Exports	Disappearance ¹	
				Total	Per capita
	Short tons	Short tons	Short tons	Short tons	Pounds
1912.....	2,421,888	.....	765,521	1,414,449	48.9
1919.....	785,466	108,789	5,426	1,020,331	33.8
1920.....	1,207,049	74,280	10,420	1,271,247	41.6
1921.....	1,433,742	198,607	18,943	1,542,503	50.0
1922.....	1,603,933	114,618	31,603	1,517,691	48.7
1923.....	1,264,219	32,428	289,456	972,193	31.0
Average 1919-1923.....	1,258,882	105,744	71,170	1,264,793	41.0

¹ Based on data in Table 48.

PROSPECTS FOR 1924-25

The details of the post-war supply and distribution of sugar in Germany (see Table 47) show that in 1919-20 the actual disappearance of sugar was 33.8 pounds per capita, the season ending August 31, with a visible supply of about 104,000 short tons. The following season closed with a total visible supply of 69,000 short tons, and it is probable that the disappearance of 1,271,247 short tons, or 41.6 pounds per capita, between September 1, 1920, and August 31, 1921, represented actual consumption. The average disappearance 41 pounds per capita (Table 47) during the five-year post-war period tends to confirm this probability.

During the next two years the indicated disappearance of 50 and 48.7 pounds per capita, respectively, is probably due to private hoarding of sugar rather than to actual increase in consumption. This is confirmed by the fact that although the sugar production of 1923-24 was 340,000 short tons below 1922-23, still Germany exported 289,000 short tons, and the visible supply that was carried over into the season of 1924-25 was reported at 177,000 short tons. This is the largest officially reported carry over since the war.

The estimated probable production for the season 1924-25 is preliminarily placed at 3,401,466,000 pounds, or 54.1 pounds per capita (1924 population 62,825,000). During the season 1924-25 Germany should have an exportable surplus, which is roughly approximated in the last column of Table 48.

TABLE 48.—*Sugar, in terms of raw sugar: Supply and distribution in Germany, 1919-20 to 1924-25, as compared with 1912-13*

Description	Boundaries of 1923						
	1912-13 (estimated) ¹	1919-20	1920-21	1921-22	1922-23	1923-24	1924-25 (estimated)
	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>
Visible supply on Sept. 1	130,451	237,895	104,082	69,448	107,230	173,659	177,000
Production at beet-sugar factories	2,340,268	783,123	1,198,042	1,415,606	1,595,503	1,240,038	1,700,000
Production at refineries and molasses works	81,620	2,343	9,007	18,136	8,430	24,181	-----
Gross imports refined and raw sugar	-----	108,789	74,281	198,607	114,618	32,428	-----
Total supply from all sources	2,552,339	1,132,150	1,385,412	1,701,797	1,825,781	1,470,306	-----
Gross exports refined and raw sugar	806,501	5,426	10,420	18,943	31,603	289,456	200,000
Domestic raw sugar on hand at refineries on Aug. 31	-----	11,653	12,310	-----	-----	-----	-----
Raw sugar imports delivered at refineries	-----	-----	15,485	25,916	49,460	25,615	-----
Officially reported visible supply on Aug. 31:							
Domestic production ¹	210,545	78,431	69,406	106,089	173,659	176,853	177,000
Imported, refined ²	-----	12,908	42	924	-----	-----	-----
Imported, raw ³	-----	1,720	-----	217	-----	-----	-----
Unaccounted for:							
Confiscated from the French from factories in occupied territory	120,844	-----	-----	-----	55,000	-----	-----
Disbursed during year or on hand Aug. 31	1,137,890	110,138	107,663	152,089	309,722	491,824	377,000
Calculated disappearance during year	1,414,449	1,022,012	1,277,749	1,549,708	1,516,059	978,482	1,500,000
Domestic consumption as reported by the Deutsche Zuckerindustrie (see Table 47)	-----	1,020,331	1,271,247	1,542,503	1,517,691	972,193	-----

¹ Based on estimates supplied by Die Deutsche Zuckerindustrie. (See Table 44.)
² Deutsche Zuckerindustrie, vol. 46, No. 43, Oct. 28, 1921, p. 594.
³ Deutsche Zuckerindustrie, Oct. 28, 1921, Wöchentlicher Marktbericht, No. 43, p. 131.
⁴ Deutsche Zuckerindustrie, Oct. 20, 1923, Wöchentlicher Marktbericht, No. 42, p. 101.
⁵ Deutsche Zuckerindustrie, vol. 49, No. 41, Oct. 11, 1924, p. 1211.
⁶ Estimated to balance total sugar production given in Deutsche Zuckerindustrie, vol. 47, No. 42, Oct. 20, 1922, p. 696.
⁷ Deutsche Zuckerindustrie, vol. 49, No. 41, Oct. 11, 1924, p. 1211.
⁸ Deutsche Zuckerindustrie, vol. 48, No. 6, Feb. 9, 1923, p. 76.
⁹ Germany, Statistisches Reichsamts, Monatliche Nachweise über den Auswärtigen Handel Deutschlands.
¹⁰ Deutsche Zuckerindustrie, vol. 48, No. 42, Oct. 20, 1923, p. 607. Includes 12,125 short tons sent to Italy on reparations account.
¹¹ Roughly approximate forecast.
¹² Deutsche Zuckerindustrie, Oct. 27, 1922, Wöchentlicher Marktbericht, No. 43, p. 116.
¹³ Deutsche Zuckerindustrie, vol. 49, No. 41, Oct. 11, 1924, p. 1199.
¹⁴ Estimate prepared for U. S. Department of Agriculture by the German Sugar Industry, Nov. 28, 1923.
¹⁵ Deutsche Zuckerindustrie, vol. 48, No. 42, Oct. 20, 1923, p. 607. The visible supply at the end of the season 1921-22 is reported to be 66,598 short tons, while the visible supply employed at the beginning of the season 1922-23 is 106,089 short tons, a difference of 39,491 tons. The seasonal disappearance of 1,581,994 short tons given on p. 76 of Deutsche Zuckerindustrie, Feb. 9, 1923, is based upon the former incorrectly reported visible supply. Correcting the seasonal disappearance by subtracting 39,491 short tons, gives 1,542,503 short tons.
¹⁶ Deutsche Zuckerindustrie, vol. 49, No. 41, Oct. 11, 1924, p. 1199. The German sugar industry gives two figures for the visible supply on Aug. 31, 1923—first, the calculated supply of 257,665; second, the officially reported supply of 173,659. This gives a difference of 84,006 short tons. The reported disappearance of domestic sugar is placed at 1,433,585 short tons. Adding to this the above difference gives a total disappearance of 1,517,691 tons.

Even assuming that the present sugar consumption in the Republic of Germany is as high as it was before the war, and without including the amount (not at present known) of the sugar manufactured from molasses, Germany should have an exportable surplus during the season 1924-25 of at least 250,000 short tons of raw sugar. Undoubtedly there are still within the country considerable invisible stocks carried over from last season, so that the available sugar supplies probably considerably exceed the reported amount.

FODDER BEETS

Statistics relative to fodder beets do not occur in the "Vierteljahrshefte," giving the statistical status of Germany. The production statistics for fodder beets in Alsace-Lorraine for the years just before the war are also lacking, but a two-year average of the years 1912 and 1913 for fodder beets in Prussia is available and indicates that in the districts ceded to surrounding countries from Prussia, as shown in Table 49, about 94,000 acres were planted to fodder beets.

TABLE 49.—*Fodder beets: Average production and acreage in the districts which composed former Prussia, average, 1912-13*

District	Area		Production
	<i>Acres</i>	<i>Short tons</i>	
Present Prussia (excluding Saar).....	537,452	10,467,827	
Saar in Prussia.....	2,632	44,434	
Areas ceded:			
From East Prussia—			
To Memel.....	2,609	44,665	
To Poland.....	190	2,767	
From West Prussia—			
To Danzig Free State.....	4,801	111,828	
To Poland.....	21,965	384,405	
From Posen to Poland.....	30,549	586,809	
From Upper Silesia:			
To Poland.....	3,635	64,264	
To Czechoslovakia.....	358	6,603	
From Lower Silesia to Poland.....	731	13,869	
From Schleswig-Holstein to Denmark.....	28,451	343,400	
From Rhine Province to Belgium.....	230	4,299	
Total territories ceded from Prussia.....	93,519	1,562,929	
Total Prussia.....	633,903	12,075,190	
Per cent in territories ceded and in Saar.....	15.2	13.3	

Prussia, Königliches Statistisches Landesamt, Statistik der Landwirtschaft, 1909-1913 (Preussische Statistik, Nos. 221, 225, 230, 235, 240), supplemented by figures on the lost areas prepared in the Königliches Preussisches Statistisches Landesamt.

From Table 49 it is seen that before the war the Prussian districts now comprised within the Republic of Germany planted yearly about 537,000 acres to fodder beets. In 1921 (see Table 50) we find in Prussia alone 937,000 acres under fodder beets, or an increase of 74.5 per cent. Since only small quantities of fodder beets enter into commerce or are used industrially, the crop being almost entirely fed on the farms upon which grown, this increased acreage can only indicate an increased tendency toward bringing animal production up to normal.

Although no pre-war figures are available for a comparison between fodder-beet acreage of the Republic and the acreage of the same territories under the Empire, it is probable that the present fodder-beet area of the Republic of about 2,000,000 acres is greatly in excess of that formerly planted to this crop.

It is expected that in the near future Germany will tend to bring animal production up to its normal pre-war status, producing domestically, as far as possible, the requisite feedstuff supplies. This tendency to produce larger supplies of home-grown feedstuffs is shown not only by the larger area devoted to fodder beets but to a more marked degree by the hay situation, a discussion of which follows.

TABLE 50.—*Fodder beets: Area and production on present Prussia and the German Republic, 1921-24, as compared with 1912-13*

[In thousands—000 omitted]

Year	Prussia		German Republic	
	Area	Production	Area	Production
	<i>Acres</i>	<i>Short tons</i>	<i>Acres</i>	<i>Short tons</i>
Average, 1912-13.....	537	10,468	(1)	(1)
1921.....	937	11,023	1,803	19,645
1922.....	993	15,552	1,939	27,294
1923.....	927	13,644	1,869	24,242
1924.....			1,809	25,626

1909-1913: Supplemented by figures on the ceded areas prepared in the Königlich Preussisches Statistisches Landesamt.

1921: Germany, Statistisches Reichsamt, Vierteljahrshette zur Statistik des Deutschen Reichs.

1922-1924: Germany, Statistisches Reichsamt.

¹ No statistics available.

HAY

During the pre-war period 1909-1913 there was on the average in the German Empire 20,152,151 acres under clover, alfalfa, and in meadows of all classes that produced annually an average of 40,033,479 short tons of hay. In 1913 there were 4,558,000 horses, 20,994,000 cattle, 5,521,000 sheep, and 3,548,000 goats. Approximating the hay consumption of goats and sheep at one-seventh that of a mature large animal, we can estimate the hay supply available for large livestock in the Empire at about 2,983 pounds per head.

In the ceded districts and the Saar territory there were during this period 2,366,026 acres under hay crops that produced on the average 4,676,758 short tons of hay annually. This was 11.74 per cent of the acreage and 11.68 per cent of the production of the lands devoted to hay crops in the whole Empire.

The pasture and hay rations for the livestock, except swine, calculated to a large-animal basis, were but slightly better (3,016 pounds per head) in the territories now composing the Republic of Germany than on the average in the Empire as a whole.

The general details of the pre-war hay area and production in the ceded districts and in the territory now constituting the Republic of Germany appear in Table 51.

TABLE 51.—Hay: Average production in the districts which composed the former German Empire, 1909-1913

District	Clover		Alfalfa		Irrigated and drained meadows		Other meadows	
	Acres	Short tons	Acres	Short tons	Acres	Short tons	Acres	Short tons
Germany, 1923 boundaries	4,199,848	9,056,808	512,253	1,353,953	1,062,281	2,381,021	12,011,763	22,564,939
Saar district:								
Rhine Province	11,661	23,504	4,707	10,110	1,292	3,070	43,166	85,942
Bavaria ¹	870	1,367	813	5,010			23,680	44,112
Areas ceded:								
From East Prussia—								
To Memel	41,545	93,359	35	66	1,391	2,607	87,602	164,279
To Poland	3,813	5,862	10	17	324	685	10,250	13,689
From West Prussia—								
To Danzig Free State	30,581	68,044	526	1,500	2,745	6,913	53,243	112,784
To Poland	181,848	345,649	5,557	13,858	5,293	12,635	228,459	433,746
From Posen to Poland	225,172	401,503	13,005	30,451	9,116	22,712	479,401	831,581
From Upper Silesia—								
To Poland	24,888	51,655	205	442	1,900	4,589	61,478	90,235
To Czechoslovakia	4,314	8,731	20	40	47	115	4,870	7,507
From Lower Silesia to Poland	3,637	6,636	42	87	541	1,198	12,703	18,070
From Schleswig-Holstein to Denmark	36,170	81,244	482	1,283	3,200	6,258	99,769	142,786
From Rhine Province to Belgium	2,916	6,155			1,769	3,826	21,821	55,172
Alsace-Lorraine to France	100,426	233,853	67,824	182,445	130,311	344,797	340,519	734,571
Total ceded districts	655,310	1,302,691	87,706	230,198	156,697	406,334	1,400,115	2,604,420
Total Empire	4,867,689	10,384,370	605,479	1,599,271	1,220,250	2,790,425	13,458,733	25,259,413
Per cent for ceded districts and Saar	13.7	12.8	15.4	15.3	12.9	14.7	10.8	10.7

Total Germany and Alsace-Lorraine: Germany, Kaiserliches Statistisches Amt, Vierteljahrshefte zur Statistik des Deutschen Reichs, 1910, 1911, 1912, 1913, and 1914, Heft 1. Lost territories in Prussia: Prussia, Königliches Statistisches Landesamt, Statistik der Landwirtschaft in Preussischen Staaten, 1909, 1910, 1911, 1912, and 1913, and tables for divided regions compiled in the Preussisches Staatliches Landesamt. Bavarian Saar: Zeitschrift des Bayerischen Statistischen Landesamt, 1922, Nos. 3 and 4, p. 438. Bavaria: Statistisches Landesamt.

¹ One year only, 1914.

² Includes irrigated and drained meadows.

POST-WAR HAY SITUATION IN THE REPUBLIC OF GERMANY

Since the war the areas under forage crops in the Republic have been considerably increased, with the exception of irrigated and drained meadows, which show a falling off of 25.3 per cent. The average clover acreage of the Republic has increased 10.4 per cent; alfalfa, 30.9 per cent; and meadows, other than irrigated and drained, 5.5 per cent. The total area of grass and hay lands, including irrigated and drained meadows, shows an increase of 5.5 per cent.

The acreage has increased from 17,786,000 in 1909-1913, to 18,773,000 in 1924, while hay production has increased from 35,357,000 short tons to 37,018,000 short tons in 1924. The hay ration, on a basis of large animals, has been increased from the pre-war average of 3,016 pounds to 3,272 pounds per head in 1924.

Enough hay was produced in Germany in 1924 to feed the pre-war ration to 2,000,000 more head of cattle than were reported on December 1. Livestock in Germany are, however, being fed more roughage and less concentrated feedstuffs than before the war and, probably, in view of the decreased quantities of straw from cereals available, the stocks of hay now on hand are sufficient only to carry the present numbers of livestock through the winter.

TABLE 52.—Hay: Area and production in Germany, 1921-24, as compared with 1909-1913 average

[In thousands—000 omitted]

Kind of hay	Boundaries of 1923									
	Average 1909-1913		1921		1922		1923		1924	
	<i>Acres</i>	<i>Short tons</i>	<i>Acres</i>	<i>Short tons</i>	<i>Acres</i>	<i>Short tons</i>	<i>Acres</i>	<i>Short tons</i>	<i>Acres</i>	<i>Short tons</i>
Clover.....	4,200	9,057	4,044	7,865	4,678	7,745	4,818	10,569	4,635	9,768
Alfalfa.....	512	1,354	622	1,285	662	1,639	686	1,740	670	1,632
Irrigated and drained meadows.....	1,062	2,381	805	1,386	784	1,510	764	1,624	793	1,687
Other meadows.....	12,012	22,565	12,657	17,543	12,712	19,698	12,693	24,120	12,675	23,931
Total.....	17,786	35,357	19,028	28,069	18,834	30,592	18,961	38,053	18,773	37,018

1909-1913: Germany, Kaiserliches Statistisches Amt, Vierteljahrshefte zur Statistik des Deutschen Reichs, heft. I, 1910, 1911, 1912, 1913, and 1914.

1921: Germany, Statistisches Reichsamt (formerly Kaiserliches Statistisches Amt), Vierteljahrshefte zur Statistik des Deutschen Reichs, heft. I, 1922.

1922-1924: Germany, Statistisches Reichsamt, Jan. 5, 1925.

LIVESTOCK INDUSTRY

The expansion of the livestock industry in Germany is restricted by the area of pasturage available, the quantity of forage that can be produced, and the degree to which concentrated feedstuffs can be imported and fed at a profit. The development of the livestock industry involves the problem of the degree to which it is of greater economic importance to Germany to produce its meat, butter, milk, lard, bacon, and other animal products than to import them.

PRE-WAR LIVESTOCK SITUATION

During the years just preceding the war it had been possible to produce about 85.5 per cent of meats and nonvegetable fats (except butter) and about 88 per cent of the butter that were required to feed the population of the Empire. The available pasture lands of the northwest provinces—lands not well fitted for the profitable production of cereals or sugar beets but producing grass in sufficient quantities to render grazing and hay production profitable—were about fully stocked. In other parts of the country the competition between field crop production and livestock production had about reached a balance based upon the margin of profit per acre.

The 30-year period just preceding the war (1883-1913) that marked the rapid expansion of Germany's industries, with a concentration of population in urban centers and in industrial districts, also marked a rapid expansion in the numbers of all classes of livestock except sheep (Fig. 7); but, the increase in the total numbers of livestock did not keep pace with the increase in population, as shown in Table 53.

**GERMANY-INDEX NUMBERS OF LIVESTOCK
1873-1925**

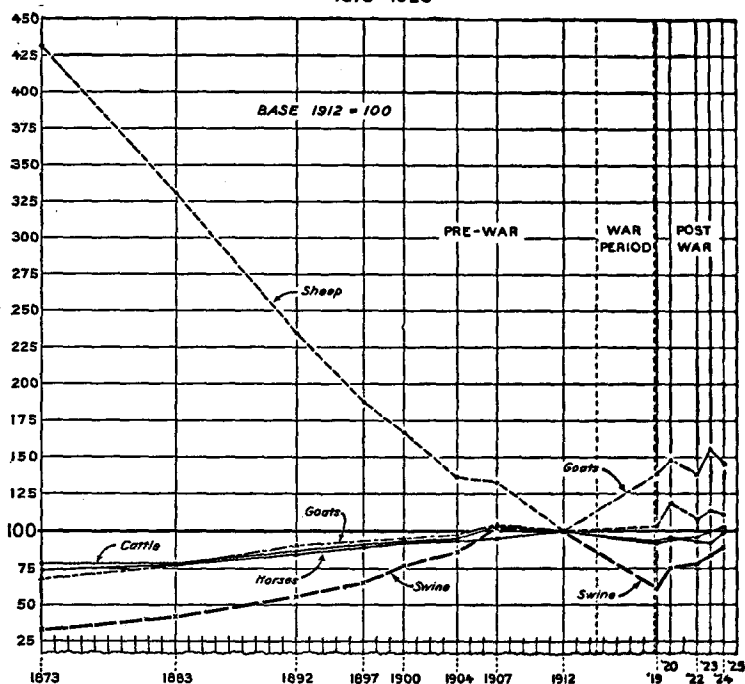


FIG. 7.—Index numbers of livestock in Germany from 1875 to 1925 compared with 1912 as 100

In each case the pre-war data are compared with the basic data for the whole of the German Empire, while post-war numbers are compared with 1912 data calculated on a basis of the area within the boundaries of the German Republic as of 1923. The outstanding features of this graph are the pre-war decrease in sheep and increase in swine. Since the war the numbers of sheep, goats, and horses have increased beyond the 1912 numbers. Swine and cattle are rapidly recovering their pre-war status. (See text.)

TABLE 53.—Livestock: Number in Germany, 1883 and 1913

Classification of animals	1883		1913	
	Number	Per thousand inhabitants	Number	Per thousand inhabitants
Horses	3,523	78	4,558	70
Cattle (beef and draft)	6,700	148	9,674	149
Cows	9,087	201	11,320	174
Sheep	19,190	424	5,521	85
Goats	2,641	58	3,548	55
Swine	9,206	204	25,659	396
Total	50,347	1,113	60,280	928
Population	45,222		64,928	

¹Population as of Dec. 1, 1910.

The economic factors (more particularly the increasing importations of Australian and Russian wool) that are associated with the falling off in the numbers of sheep held on German farms are discussed in detail elsewhere. (See "Sheep," p. 98.) The increase in beef and draft cattle was more rapid than that in dairy stock, the former class keeping pace with the increase in population while dairy cattle fell off 27 head per 1,000 inhabitants, indicating that the economic limit of the numbers of dairy cows that could be profitably maintained on the available lowlands of the northwestern provinces had been approached. The great increase in swine was due to the necessity of meeting, as nearly as possible, the growing requirements of pork and pork products of the industrial centers. This was possible because the native German breeds of swine were of very low grade compared with English breeds and feeding methods on German farms were also very primitive. The native semiwild breeds that ranged the woods summer and winter were replaced by rapid-maturing English breeds that could be stall-fed with great profit. Pork products became in a sense by-products of the dairy and potato industries.

EFFECT OF VERSAILLES TREATY ON LIVESTOCK SITUATION

The detailed effect of the changes of territory upon the livestock industry as affecting each class of animals is discussed separately under the swine, cattle, horse, and sheep situations later in this bulletin, but Table 54 is here given to indicate the extent of these territorial changes upon the industry as a whole. In general 16.5 per cent of the horses, 12 per cent of the cattle, 12.2 per cent of the swine, 9.7 per cent of the sheep, 10.8 per cent of the goats, and 12.5 per cent of the fowls of the former German Empire were found in the ceded territories and the Saar. Though the number of live animals per 1,000 inhabitants, with the exception of sheep and goats, was somewhat greater in the ceded districts than in the Empire as a whole, the differences between the numbers in the Empire and within the boundaries of the present Republic were not great: horses, 70 against 66; cattle, 323 against 320; swine, 395 against 390; sheep, 85 against 86; goats, 55 against 55; and fowls, 1,266 against 1,244. Total livestock (except fowls) numbered 928 per 1,000 inhabitants in the Empire as against 917 in the territories now composing the Republic—a difference of 11 animals, or 1.19 per cent. This difference is relatively so insignificant that the present livestock situation in Germany can not be considered to have been materially affected by the changes in territory brought about by the provisions of the Versailles treaty.

TABLE 54.—*Livestock: Classification and number in the districts which composed the former German Empire, 1913*

District	Cattle		Horses		Swine		Sheep		Goats		Fowls	
	Number	Per thousand inhabitants	Number	Per thousand inhabitants	Number	Per thousand inhabitants	Number	Per thousand inhabitants	Number	Per thousand inhabitants	Number	Per thousand inhabitants
Germany, 1923 boundaries.....	18,476	320	3,807	66	22,533	390	4,988	86	3,164	55	71,913	1,244
Saar district.....												
Rhine Province.....	58	101	17	28	88	154	2	3	50	87	330	577
Bavaria.....	16	198	3	37	18	222	1	12	10	124	71	877
Areas ceded:												
From East Prussia—												
To Memel.....	76	538	34	241	138	977	14	99	3	21	328	1,976
To Poland.....	16	645	6	242	21	847	5	202	1	40		
From West Prussia—												
To Danzig Free State.....	77	233	41	124	92	278	7	21	17	51	2,108	1,627
To Poland.....	421	436	155	161	648	672	204	211	52	54	3,426	1,700
From Posen to Poland.....	867	445	283	147	1,223	628	231	119	131	67		
From Upper Silesia—												
To Poland.....	96	107	28	32	134	150	1	1	33	37	569	605
To Czechoslovakia.....	15	330	3	66	13	286	0		6	132		
From Lower Silesia to Poland.....	16	610	4	152	17	648	5	190	2	76	50	1,905
From Schleswig-Holstein to Denmark.....	255	1,533	38	228	218	1,311	18	108	3	18	378	2,272
From Rhine Province to Belgium.....	54	900	2	33	23	383	1	17	1	17	111	1,850
Alsace - Lorraine to France.....	551	294	1,137	173	493	263	44	23	75	40	2,881	1,537
Total for ceded districts.....	2,444	378	731	113	3,020	467	530	82	321	50	9,850	1,522
Total Empire.....	20,994	323	4,558	70	25,659	395	5,521	85	3,548	55	82,164	1,266
Per cent in ceded districts and Saar.....	12.0		16.5		12.2		9.7		10.8		12.5	

Prepared in the German Statistisches Reichsamt, Sept. 15, 1923, using as basis for present territory, Vierteljahrshefte, 1923, heft. 3; for total areas lost; Statistisches Jahrbuch für das Deutsche Reich, 1921-22; total former Empire, Vierteljahrshefte, 1914, heft. 4. Division of lost areas according to country to which lost was obtained from statistics, prepared in the Preussisches Statistisches Landesamt.

¹ Figures for 1912. No figures for 1913 are available.

² Figures for poultry are difficult to estimate exactly and are apt to be too low. According to statements of the "Reichsernährungsamt" this figure should be raised by 25 per cent.

POST-WAR LIVESTOCK SITUATION

Germany's herds of cattle and swine were greatly depleted during the war. Comparing the numbers of head per 1,000 inhabitants within the present boundaries of the Republic with recent years there were 320 head of cattle in 1913 against 264 in 1922 and 275 in 1924, while there were 390 swine in 1913 against 238 in 1922 and 268 in 1924. (See Table 55.)

TABLE 55.—Livestock: Density in Germany, 1922-1924, as compared with 1913¹

Class	Boundaries of 1923							
	1913		1922		1923 ²		1924	
	Number	Per thousand inhabitants	Number	Per thousand inhabitants	Number	Per thousand inhabitants	Number	Per thousand inhabitants
	<i>Thousands</i>	<i>Number</i>	<i>Thousands</i>	<i>Number</i>	<i>Thousands</i>	<i>Number</i>	<i>Thousands</i>	<i>Number</i>
Horses.....	3,807	66	3,691	60	(³)	3,590	62	
Cattle, total.....	18,476	320	16,316	264	16,091	258	17,286	275
(Cows).....	(9,973)	(173)	(8,206)	(133)	(8,308)	(133)	(8,796)	(140)
Sheep.....	4,988	86	5,566	90	5,859	94	5,717	91
Goats.....	3,164	55	4,140	67	4,654	75	4,351	69
Swine.....	22,533	390	14,678	238	15,832	254	16,844	268
Total.....	52,968	917	44,391	719			48,098	765
Drop in number from pre-war.....			8,577				4,870	
Per cent of drop.....			16.2				9.2	
Geese.....			5,392	87			5,938	94
Ducks.....			1,668	27			2,065	33
Chickens.....			58,145	942			63,439	1,010
Total poultry.....	71,913	1,244	65,205	1,056			71,442	1,137
Population.....	67,800		61,755		62,275		62,825	

1913: See Table 54 for sources.
 1922: Germany, Statistisches Reichsamt, Wirtschaft und Statistik, vol. 3, heft 2, Dec. 21, 1923.
 1923: Germany, Statistisches Reichsamt, Vierteljahrshefte zur Statistik des Deutschen Reichs, vol. 33, heft 2, 1924.
 1924: Deutscher Reichsanzeiger und Preussischer Staatsanzeiger, Feb. 3, 1925.

¹ Census as of Dec. 1.
² The livestock figures for 1923 are officially reported as of Oct. 1; however, by subtracting slaughterings for October and November from the 1923 figures, it is possible to get figures which, although not absolutely correct, allow of comparison:

Classification	Oct. 1, 1923	Dec. 1, 1923 (estimated)
	<i>Thousands</i>	<i>Thousands</i>
Cattle.....	16,691	16,091
Swine.....	17,308	15,832
Sheep.....	6,105	5,859
Goats.....	4,675	4,654

³ Includes 40,289 military horses.
⁴ Not available.
⁵ From Wirtschaft und Statistik.

There is a general tendency throughout Germany to bring cattle and swine as nearly as possible up to pre-war numbers. The numbers of horses, sheep, and goats in 1924 actually exceeded the numbers that were found in 1913 within the territories now composing the Republic.

The great reduction in area sown to cereals and root crops has resulted in a large acreage returning to grass. As a consequence, sheep raising, stimulated by high wool prices, has greatly increased, especially on the large estates. During the period of monetary inflation and the circulation of an almost worthless mark, there were no better means by which the farmers could accumulate real wealth than by increasing the number of live animals on the farms. On the large estates of Pomerania and central Germany and on the larger farms of the northwest flocks have so increased during recent years that in 1922

the average density for the Republic was 90, in 1923 the density was 94, and in 1924 it was 91 per 1,000 inhabitants, against 86 in 1913.

Horse and sheep production have been industries more or less fostered by large estates and by the upper classes of European nations generally; among the poorer peasants, the tendency has been to produce a larger proportion of cattle and swine. It is noteworthy that during the war period horse breeding suffered relatively little in Germany. The enumeration of 1922 shows that in spite of the great depletion of the war there were only 116,000 fewer horses in the area of the Republic than in 1913, a decrease of only 3 per cent. During and after the war period breeding was maintained at a nearly normal rate, so that, in 1924 (excluding about 40,000 military horses) there were 43,000 more horses in the territories of the Republic of Germany than in 1913.

Goats are the milk animals of the very poor. Able to live and produce milk under conditions ruinous to the higher-bred dairy cow, goats are a boon to the needy, especially those living in small towns and on the outskirts of cities. It is not surprising that under the stress of adverse conditions in Germany during the past few years goats have increased in numbers.

The numbers of fowls kept on farms are subject to great fluctuation, depending upon market possibilities. It is probable that during the war the stocks of fowls on German farms were greatly depleted. In 1922 there were nearly 7,000,000 fewer fowls than were found in 1913 within the territories now composing the Republic. In 1924 the flocks of geese, ducks, and chickens had so increased that their number was only 471,000 below pre-war.

As a matter of national economy Germany will strive as far as possible to produce within the Republic its own meat supplies. Under the stimulus of better prices and a larger purchasing public, following the industrial revival, recovery of the livestock industry to a pre-war status will be rapid.

The actual as well as the per capita reductions of cattle and swine during the period of the war have greatly affected the meat and fat supply of Germany.

Table 56 shows that in 1912 the German Empire produced within its own borders 85.5 per cent of its total meat and nonvegetable fat requirements (except butter), 87.8 per cent of its butter requirement, and 59.2 per cent of its egg requirement. These estimates are for one year only and though only approximate they indicate that Germany was nearly self-supporting as far as meats were concerned. It will be noted that fish was the heaviest item in importations of meat. Deducting fish and fish fats from the totals above shows that the Empire of Germany produced 93.8 per cent of its total requirements of flesh and animal fats.

TABLE 56.—Animal products: Supply in the former German Empire, 1912

Class	Domestic slaughtering ¹	Imports less exports	Total supply	Supply per capita ²
Meats and fats:	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>Pounds</i>
Beef.....	2, 114, 377	83, 753	2, 590, 902	39. 9
Veal.....	392, 772			
Horse meat.....	92, 792			
Pork—				
Unclassified.....	4, 605, 310	39, 220	4, 644, 530	71. 5
Bacon.....		4, 189	4, 189	. 1
Ham.....		243	243	
Total.....	4, 605, 310	43, 652	4, 648, 962	71. 6
Mutton.....	147, 086	375	147, 411	2. 3
Goat meat.....	42, 549	22	42, 571	. 7
Chicken and unclassified fowls.....	161, 763	19, 489	181, 252	2. 8
Geese.....	103, 429	551	103, 980	1. 6
Ducks.....	11, 486		11, 486	. 2
Other domestic stock and game.....	92, 593	1, 014	93, 607	1. 4
Fish.....	380, 845	785, 830	1, 166, 675	18. 0
Lard.....	(³)	233, 952	233, 952	3. 6
Other animal fats.....	(³)	130, 270	130, 270	2. 0
Fish fats.....	(³)	82, 011	82, 011	1. 2
Total meats and fats.....	8, 144, 952	1, 380, 919	9, 525, 871	146. 7
Butter.....	881, 840	121, 981	1, 003, 821	15. 5
Eggs.....	<i>Thousands</i> 4, 875, 000	<i>Thousands</i> 4 3, 366, 000	<i>Thousands</i> 4 8, 241, 000	<i>Number</i> 127
Milk.....	<i>1,000 gallons</i> 3, 409, 378		<i>1,000 gallons</i> 3, 409, 378	
Milk.....		<i>Pounds</i> 68, 915, 796	<i>Pounds</i> 68, 915, 796	
Cream.....		92, 372, 740	92, 372, 740	

Slaughtering: Prepared from official sources under the supervision of the Reichsernährungsamt.
Imports and exports: Germany, Kaiserliches Statistisches, Amt, Monatliche Nachweise über den Auswärtigen Handel Deutschlands.

- ¹ Includes slaughtering or offal fats as well as those ordinarily considered as part of the dressed carcass.
- ² Population, 1910, 64,925,993.
- ³ Included in meats.
- ⁴ Includes shell eggs and egg powder reported in weight, but reckoned in number on the basis of a weight per egg of 0.11 pound. (See Monatliche Nachweise über den Auswärtigen Handel Deutschlands, December, 1922.)
- ⁵ Includes milk fed to calves.

EFFECT OF VERSAILLES TREATY ON MEAT SUPPLIES

The relation of the numbers of live animals in the former German Empire to the number slaughtered for food, with data on egg, butter, and milk production, is found in Table 57, which gives estimates for the year 1912. The number of cows in Germany ranged from 10,000,000 to 11,000,000. In view of this fact, the first column of this table indicates that relatively few calves were carried over at the end of the year. Hogs were turned over once a year, sheep once in two years, chickens once a year, and the numbers of geese and ducks slaughtered during the year were twice the number carried over winter. In the domestic production of such a large percentage of the home requirement Germany slaughtered each year just about the equivalent of the natural increase, maintaining from year to year as large a number of live animals as was possible under the economic conditions of the Empire's restricted feedstuff supplies.

TABLE 57.—*Animal products: Obtained from livestock in the former German Empire, 1912*

Classification	Number of livestock Dec. 2, 1912	Livestock slaughtered		Average slaughtering weight per head ¹	Total slaughtering weight	Supply per capita ²
		Thousands	Per cent			
Meats and fats:						
Cattle.....	18,450	3,703	20.1	571.0	2,114,377	32.6
Calves.....	1,732	4,454	257.2	88.2	392,772	6.0
Horses.....	4,523	179	4.0	518.4	92,792	1.4
Hogs.....	21,924	24,011	109.5	191.8	4,605,310	70.9
Sheep.....	5,803	2,779	47.9	52.9	147,036	2.3
Goats.....	3,410	1,206	35.4	35.3	42,549	0.7
Chickens.....	73,375	73,375	100.0	2.2	161,763	2.5
Geese.....	6,702	13,404	200.0	7.7	103,429	1.6
Ducks.....	2,605	5,210	200.0	2.2	11,496	0.2
Other domestic stock and game.....					92,593	1.4
Fish.....					380,845	5.9
Total.....					8,144,952	125.5
Slaughtering or offal fats:³						
Cattle.....		3,703		49.6	183,476	2.8
Calves.....		4,454		0.9	3,924	0.1
Hogs.....		24,011		11.0	264,673	4.1
Sheep.....		2,779		4.4	12,258	0.2
Geese.....		13,404		1.1	14,771	0.2
Total.....					479,302	7.4

Classification	Number of livestock, producing poultry, and dairy products	Production		Supply per capita ²
		Total	Per animal	
Poultry and dairy products:				
Butter.....	Thousands	1,000 pounds		Pounds
Eggs, from hens.....	65,000	4,375,000	75	75.1
Milk—		1,000 gallons	Gallons	Gallons
From cows.....	10,205	6,065,607	594.4	93.4
From sheep.....	3,321	61,288	18.5	1.0
From goats.....	2,609	241,187	92.4	3.7
Total.....		6,368,082		98.1
Uses of milk:			Per cent	
For butter.....		2,958,704	46.5	45.6
Human consumption and for calves.....		3,409,378	53.5	52.5
Total.....		6,368,082	100.0	

Prepared from official sources under the supervision of the Reichsernährungsamt.

¹ Slaughtering or offal fats have been added to the official slaughtering weights.

² Population, 1910, 64,925,993.

³ These figures do not include the fats ordinarily considered as part of the dressed carcass.

As far as home-grown feedstuffs are concerned, the livestock industry of the territories now composing the Republic was but little better situated during 1909–1913 than it was in the Empire as a whole, hay supplies in the former averaging 3,016 pounds per head against 2,983 pounds in the latter. The authorities of the Reichsernährungsamt estimate that about the same percentage of locally produced livestock was slaughtered in 1912 within the boundaries of the Republic as in the whole Empire. For this reason the percentages found in column 3 of Table 57 of animal products obtained from livestock in the former German Empire are employed in Table 58 pertaining to the animal products obtained from livestock in the Republic.

All of the animals imported from abroad for meat in 1912 (equivalent to about 117,000,000 pounds of meat) were probably slaughtered within the territories of the Republic. In addition, live animals or meats equivalent to about 70,000,000 pounds were shipped to the interior provinces from the districts that after the war were ceded to surrounding countries.

TABLE 58.—Animal products: Obtained from livestock in Germany, 1923 boundaries, in 1912

Classification	Number of live-stock Dec. 2, 1912	Livestock slaughtered		Average slaughtering weight per head ¹	Total slaughtering weight	Supply per capita ²
		Thousands	Per cent			
Meats and fats:	<i>Thousands</i>	<i>Thousands</i>	<i>Per cent</i>	<i>Pounds</i>	<i>1,000 pounds</i>	<i>Pounds</i>
Cattle.....	15,977	3,211	20.1	571.0	1,833,456	31.7
Calves.....	1,460	3,755	257.2	88.2	331,131	5.7
Horses.....	3,822	153	4.0	518.1	79,266	1.4
Hogs.....	18,877	20,670	109.5	192.0	3,968,159	68.7
Sheep.....	5,188	2,485	47.9	52.9	131,482	2.3
Goats.....	2,997	1,061	35.4	35.3	37,423	0.6
Chickens.....	63,961	63,961	100.0	2.2	141,006	2.4
Geese.....	5,707	11,414	200.0	7.7	88,074	1.5
Ducks.....	2,212	4,424	200.0	2.2	9,755	0.2
Other domestic stock and game.....					80,556	1.4
Fish.....					380,845	6.6
Total.....					7,081,153	122.5
Slaughtering or offal fats:³						
Cattle.....		3,211		49.6	159,282	2.8
Calves.....		3,755		0.9	3,307	0.1
Hogs.....		20,689		11.0	228,055	3.9
Sheep.....		2,485		4.4	10,957	0.2
Geese.....		11,414		1.1	12,588	0.2
Total.....					414,189	7.2

	Number of live-stock, producing poultry, and dairy products	Production		Supply per capita ²
		Total	Per animal	
Poultry and dairy products:	<i>Thousands</i>	<i>1,000 pounds</i>		<i>Pounds</i>
Butter.....		771,610		13.3
Eggs from hens.....	56,500	4,240,000	75	73.4
Milk:		<i>1,000 gallons</i>	<i>Gallons</i>	<i>Gallons</i>
From cows.....	8,986	5,341,253	594.4	92.4
From sheep.....	2,969	54,948	18.5	0.9
From goats.....	2,283	211,864	92.4	3.7
Total.....		5,608,065		97.0
Uses of milk:		<i>1,000 gallons</i>	<i>Per cent</i>	<i>Gallons</i>
For butter.....		2,588,866	46.2	44.8
For human consumption and for calves.....		3,019,199	53.8	52.2
Total.....		5,608,065	100.0	97.0

Prepared from original official sources under the supervision of the Reichsernährungsamt.

¹ Slaughtering or offal fats have been added to the official slaughtering weights.

² Population, 1910, 67,799,808.

³ These figures do not include the fats ordinarily considered as part of the dressed carcass.

In 1912 the general domestic per capita production of meat and fat supplies in the territories now constituting the Republic was somewhat less than in the Empire as a whole. This was due to a greater density of population in the boundaries of the Republic than in the Empire, rather than to any marked difference in potential meat production between the territories ceded and those that remained to Germany. The decreases in per capita supply of meats and meat products are, approximately, 3 pounds of meat, 0.2 pound fats (except butter), 0.3 pound butter, 1.7 eggs, and 1.1 gallons of milk.

In recent years the Republic of Germany has imported cattle, sheep, and swine from Memel, cattle and swine from Poland and cattle from Danzig, which is probably a continuation of trade relationships between shipping organizations in these districts and buying concerns in the interior that were established under the former Empire. These imports from the eastern ceded districts have exceeded the exports of cattle, sheep, and swine to the Saar district. Taking all factors into consideration, it is probable that in 1912 the per capita meat requirement of the territories now comprised within the Republic of Germany was somewhat greater than the average requirement of the Empire as a whole. The territory of the Republic consumed all of its locally produced meats and about 190,000,000 pounds in addition; the equivalent of the total imports of meat and live animals intended for slaughter into the Empire as a whole plus shipments of meat and live animals from the districts that were ceded to surrounding countries. The effect of the Versailles treaty was to increase somewhat (2 to 3 per cent) the burden of German meat and fat imports.

POSTWAR MEAT AND FAT SITUATION IN GERMANY

In order to compare post-war with pre-war conditions in the Republic of Germany, an approximate numerical expression of the Republic's meat supplies is essential. Lacking data as to the probable shipments of the ceded districts to the interior, the average per capita meat supply of the Empire has been employed in approximating the total meat supplies available in the territory of the Republic in 1912, and the difference between total supply and local production is considered to be the quantity imported. (See Table 59.) This gives an approximate figure with which to compare post-war data.

TABLE 59.—Meats: Supply in the German Republic, 1921–1924, as compared with the same territory and total Empire for 1912

Classification of meats	German Empire	Germany (1923 boundaries)	Republic of Germany			
	1912	1912	1921	1922	1923	1924
Home produced:	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>
Beef.....	2, 114, 377	1, 833, 456	1, 455, 047	1, 518, 672	1, 932, 400	1, 561, 167
Veal.....	392, 772	331, 131	274, 451	281, 406	1, 227, 500	345, 376
Pig.....	4, 605, 310	3, 968, 159	2, 328, 708	2, 326, 834	2, 022, 100	2, 896, 869
Mutton.....	147, 036	131, 482	131, 526	115, 047	1, 71, 430	111, 823
Goat.....	42, 549	37, 423	43, 034	40, 917	21, 992	24, 203
Horse.....	92, 792	79, 266	78, 175	125, 927	79, 919	57, 087
Chicken.....	161, 793	141, 006	116, 502	176, 368	128, 175	128, 175
Geese.....	103, 429	88, 074	84, 921	108, 025	83, 113	83, 113
Ducks.....	11, 486	9, 755	10, 417	11, 023	7, 407	7, 407
Other domestic stock and game.....	92, 593	80, 556	80, 556	80, 556	80, 556	80, 556
Fish.....	380, 845	380, 845	362, 557	364, 773	364, 773	364, 773
Total.....	8, 144, 952	7, 081, 153	4, 965, 894	5, 149, 548	4, 019, 365	5, 660, 549
Imported (net):			(¹)			
Beef and veal.....	83, 753	144, 500	67, 627	112, 326	182, 648	235, 605
Pig.....	43, 652	167, 619	223, 695	98, 214	142, 716	143, 947
Mutton.....	375					
Goat.....	22	5, 780	3, 371	3, 564	2, 856	2, 444
Chicken.....	19, 489	23, 120				
Geese.....	551	5, 780	64	10 -3	123	8, 755
Other domestic stock and game.....	1, 014		45	1, 431	130	1, 207
Fish.....	785, 830	658, 918	698, 651	324, 848	510, 239	668, 386
Shellfish.....			10 -3, 346	10 -15, 200	2, 878	29, 930
Total (except shellfish).....	934, 086	1, 005, 717	993, 453	540, 380	838, 712	1, 060, 344
Total supply:						
Beef and veal.....	2, 590, 902	2, 309, 087	1, 797, 125	1, 912, 404	1, 342, 548	2, 142, 148
Pig.....	4, 648, 962	4, 135, 778	2, 552, 403	2, 425, 048	2, 164, 816	3, 040, 816
Mutton.....	147, 411	131, 482	177, 931	159, 528	96, 278	138, 470
Goat.....	42, 571	43, 203	43, 203	40, 917	21, 992	24, 203
Horse.....	92, 792	79, 266	78, 175	125, 927	79, 919	57, 087
Chicken.....	181, 252	164, 126	201, 487	284, 390	211, 411	220, 043
Geese.....	103, 960	93, 854	10, 417	11, 023	7, 407	7, 407
Ducks.....	11, 486	9, 755				
Other domestic stock and game.....	93, 607	80, 556	80, 601	81, 987	80, 686	81, 763
Fish (except shellfish).....	1, 166, 675	1, 039, 763	1, 061, 208	689, 621	875, 012	1, 033, 159
Total (except shellfish).....	9, 079, 638	8, 086, 870	5, 959, 347	5, 689, 928	4, 858, 077	6, 720, 893

¹ Estimated by multiplying inspected slaughterings by average dressed weights, as furnished by the German Health Office. It has been assumed for the purpose of obtaining farm production that the 1923 farm slaughter was approximately the same as that reported for 1924 in the estimate as of Dec. 1.

² Estimated by multiplying inspected and farm slaughtering by average dressed weights.

³ Inspected and farm production. The figures for farm slaughterings for 1924 have been used for estimating farm production, as no data are available for 1923.

⁴ Estimated on basis of six months' slaughterings.

⁵ Production figure not available; assumed to equal that of previous year.

⁶ Includes meat brought from other parts of the Empire.

⁷ Exports for 1921 available for eight months only. Imports are for whole year.

⁸ Does not include corned beef.

⁹ Estimated on basis of official figures for eight months only.

¹⁰ Net exports.

The striking fact brought out in Table 55, page 73, is that there was a decrease of 198 head of livestock per 1,000 inhabitants within the territories of the Republic of Germany between 1913 and 1922. Sheep and goats increased in number. Considering cattle and swine there was a per capita decrease of 17.5 per cent in the case of the former and 39 per cent in the latter. In 1923 slaughtering were relatively somewhat less than in 1922, and there were consequently increased numbers of all classes of livestock carried over into 1924. At the end of 1924 the numbers of cattle and swine per capita had risen to 85.9 per cent of pre-war in the case of cattle and 68.7 per cent in the case of swine.

Referring to Tables 60 to 62, it is seen that the German people since the war have been on short meat and edible fats and oil rations. In 1921 per capita meat rations were estimated at 98 pounds, against 140 pounds in 1912; in 1922 they were 92, and in 1923 had fallen off to 78 pounds. Beginning with November, 1923, economic conditions in Germany began to improve, so that not only was home production greatly stimulated but importations were greater than before the war (1912) and the per capita supply increased to approximately 106.9 pounds, or 76.4 per cent, of the pre-war ration.

TABLE 60.—Meats: Per capita supply in Germany, 1921-1924, as compared with 1912

Meat classification	German Empire	Germany (1923 boundaries)	Republic of Germany			
	1912	1912	1921	1922	1923	1924
Home produced:	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Beef.....	32.6	31.7	23.8	24.6	15.0	24.9
Veal.....	6.0	5.7	4.5	4.6	3.7	5.6
Pig.....	70.9	68.7	38.1	37.7	32.5	46.1
Mutton.....	2.3	2.3	2.2	1.9	1.1	1.8
Goat.....	.7	.6	.7	.6	.2	.4
Horse.....	1.4	1.4	1.3	2.0	1.3	.9
Chicken.....	2.5	2.4	1.9	2.9	2.1	2.0
Geese.....	1.6	1.5	1.4	1.7	1.3	1.3
Ducks.....	.2	.2	.2	.2	.1	.1
Other domestic stock and game.....	1.4	1.4	1.3	1.3	1.3	1.3
Fish.....	5.9	6.6	5.9	5.9	5.9	5.8
Total.....	125.5	122.5	81.3	83.4	64.6	90.1
Imported:						
Beef and veal.....	1.3	2.5	1.1	1.8	2.9	3.8
Pig.....	.7	2.9	3.7	1.6	2.3	2.3
Mutton.....	(¹)	.1	.1	.1	.1	(¹)
Goat.....	(¹)	.1				
Chicken.....	.3	.4	(¹)	(¹)	(¹)	.1
Geese.....	(¹)	.1	(¹)	(¹)	(¹)	(¹)
Other domestic stock and game.....	(¹)		(¹)	(¹)	(¹)	(¹)
Fish.....	12.1	11.4	11.4	6.3	8.2	10.6
Total.....	14.4	17.4	16.3	8.8	13.5	16.8
Total supply:						
Beef and veal.....	39.9	39.9	29.4	31.0	21.6	34.2
Pig.....	71.6	71.6	41.8	39.3	34.8	48.4
Mutton.....	2.3	2.3	3.0	2.6	1.5	2.2
Goat.....	.7	.7	.7	.6	.2	.4
Horse.....	1.4	1.4	1.3	2.0	1.3	.9
Chicken.....	2.8	2.8	3.3	4.6	3.4	3.4
Geese.....	1.6	1.6	1.6	1.7	1.3	1.3
Ducks.....	.2	.2	.2	.2	.1	.1
Other domestic stock and game.....	1.4	1.4	1.3	1.3	1.3	1.3
Fish.....	18.0	18.0	17.3	11.2	14.1	16.4
Total.....	139.9	139.9	97.6	92.2	78.1	106.9

NOTE.—Derived from Table 59, refer to it for notes, and for populations, see Tables 9 and 19.

¹ Less than 0.05.

TABLE 61.—*Edible fats and oils: Supply in Germany, 1921-1924, as compared with 1912*

Item	German Empire	Germany (1923 boundaries)	Republic of Germany			
	1912	1912	1921	1922	1923	1924
German production:	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds
Animal fats and oils—						
Butter.....	882,000	1,792,000	1,579,000	584,000	584,000	293,000
Hog fat.....	1,174,000	1,012,000	631,000	530,000	579,000	101,000
Beef fat.....	280,000	329,000	243,000	254,000	187,000	88,000
Vegetable fats and oils.....	66,000	459,000	88,000	88,000	88,000	88,000
Total German production.....	2,502,000	2,192,000	1,441,000	1,456,000	1,438,000	1,438,000
Imported supplies (net):						
Animal fats and oils—						
Butter, etc.....	122,000	104,000	3,000	2,000	3,000	118,000
Lard.....	234,000	370,000	322,000	144,000	275,000	293,000
Other animal fats ¹	130,000	75,000	118,000	120,000	118,000	101,000
Fish fats and oils.....	82,000	75,000	64,000	137,000	97,000	73,000
Vegetable fats and oils—						
oil, and oil from oil material.....	820,000	734,000	750,000	959,000	661,000	525,000
Total imported supplies.....	1,394,000	1,283,000	1,257,000	1,368,000	1,154,000	1,110,000
Total produced and imported:						
Animal fats and oils—						
Butter.....	1,004,000	896,000	582,000	586,000	587,000	293,000
Other fats.....	1,918,000	1,711,000	1,214,000	1,054,000	1,159,000	101,000
Total animal fats and oils.....	2,922,000	2,607,000	1,796,000	1,640,000	1,746,000	394,000
Total fish fats and oils.....	82,000	75,000	64,000	137,000	97,000	73,000
Total vegetable fats and oils.....	892,000	793,000	838,000	1,047,000	749,000	601,000
Total all fats and oils.....	3,896,000	3,475,000	2,698,000	2,824,000	2,592,000	2,548,000

- ¹ Calculated on number of cows in present territory in 1912.
- ² Production per cow assumed equal to that in 1922.
- ³ Total production assumed equal to that in 1922.
- ⁴ Assumed to have been produced in present territory (divided according to population).
- ⁵ Production figures for 1924 unavailable; assumed equal to that in 1923.
- ⁶ Probably contains some inedible fats.
- ⁷ Estimated on basis of official figures for eight months only.

TABLE 62.—*Edible fats and oils: Per capita supply in Germany, 1921-1924, compared with 1912*

Oils and fats	German Empire	Germany (1923 boundaries)	Republic of Germany			
	1912	1912	1921	1922	1923	1924
German production:						
Animal fats and oils—						
Butter.....	13.6	13.7	9.5	9.5	9.4	4.7
Hog fat.....	18.1	17.5	8.7	8.6	9.3	1.6
Beef fat.....	5.9	5.7	4.0	4.1	3.0	1.1
Vegetable fats and oils.....	1.0	1.0	1.4	1.4	1.4	1.4
Total German production.....	38.6	37.9	23.6	23.6	23.1	22.9
Imported supplies:						
Animal fats and oils—						
Butter, etc.....	1.9	1.8	(¹)	(¹)	(¹)	1.9
Lard.....	3.6	6.4	5.3	2.3	4.4	4.7
Other animal fats.....	2.0	1.3	1.9	2.1	1.9	1.6
Fish fats and oils.....	1.3	1.3	1.1	2.2	1.6	1.1
Vegetable fats and oils and oil from oil material.....	12.7	12.7	12.3	15.5	10.6	8.4
Total imported supplies.....	21.5	22.2	20.6	22.1	18.5	17.7
Total produced and imported:						
Animal fats and oils—						
Butter.....	15.5	15.5	9.5	9.5	9.4	4.7
Other fats.....	29.6	29.6	19.9	17.1	18.6	1.6
Total animal fats and oils.....	45.1	45.1	29.4	26.6	28.0	6.3
Total fish fats and oils.....	1.3	1.3	1.1	2.2	1.6	1.1
Total vegetable fats and oils.....	13.7	13.7	13.7	16.9	12.0	12.0
Total all fats and oils.....	60.1	60.1	44.2	45.7	41.6	40.6

NOTE.—Refer to Table 61 for notes and to Tables 9 and 19 for populations.
¹ Less than 0.05.

It is probable that Germany will endeavor to make herself as far as possible independent of foreign meat supplies. In this endeavor the livestock industry must face the serious handicap of limited supplies of home-grown feedstuffs that can not be further increased to any considerable amount upon a profitable basis. Before the war Germany supplemented home-grown feeds by importations of large quantities of cheap barley from Russia, which are now unobtainable. Imported feedstuffs are now relatively more costly than formerly. The growth of the livestock industry, particularly in South America, has introduced a factor of competition that must be reckoned with. Use of cheap frozen beef has increased enormously during the past three years, amounting to 6,000,000 pounds in 1921-22, 24,000,000 pounds in 1922-23, and 116,000,000 pounds in 1923-24.

The future of the livestock industry in Germany involves several factors: (1) The quantity of home-grown roughage that can be profitably produced, which limits (2) The quantity of concentrated feeds that can be profitably fed, (3) The cost of imported feeding stuffs and (4) The cost of imported meat and the price that the German people are willing to pay.

Briefly the question is one of whether Germany can economically produce her total meat supplies in view of increased cost of foreign feedstuffs and the development of cheap meat supplies in other countries.

HORSES

Horse breeding in the former German Empire centered about the production of light and heavy types of horses suited to both agricultural and military uses. To the latter end the Government itself fostered the breeding of certain strains and maintained at its own expense large numbers of breeding animals in various parts of the country to build up local stock. In those districts in which the breeding of light types of horses prevailed, it was customary to employ oxen for heavy farm work. In the more highly intensive farming districts of the west and northwest heavy horses were bred for work animals which could be used for heavy cavalry and artillery purposes.

The names of Germany's important breeds of horses, the district where bred, and the purposes for which the breed was adapted appear in Table 63.

TABLE 63.—Horses: Breeds in the German Empire, 1912

Name and breed	Manner bred	District	Purposes
East Prussian.....	Most of the breeding done on small and medium-sized farms; most of the stallions owned by the State; colts brought up by large farmers and estate owners and held until mature.	East Prussia, Hanover, Mecklenburg, Posen, Schleswig-Holstein, and West Prussia.	Driving and riding; light and heavy cavalry; 60 per cent of the horses used in the German Army came from East Prussia.
Hanoverian.....	Mares owned by private individuals; stallions owned by State.	Departments of Stade, Lunburg, and Hanover, of the Province of Hanover; also bred in the Mecklenburgs and Brandenburg.	Riding, driving, and farm work; heavy cavalry and artillery; 11 per cent of the horses used in the German Army came from Hanover.
Oldenburg.....	Mares and stallions owned by private individuals and cooperatives.	Duchy and Grand Duchy of Oldenburg, Silesia, and South Germany.	Heavy carriage horses, often used for farm work; primarily artillery horses.
East Friesland.....	.....do.....	Department of Aurich in Province of Hanover.	Same as Oldenburg horses.
Holstein.....	Private individuals and cooperatives.	Western Holstein marshes, southern half of Schleswig-Holstein, the Duchy of Schleswig and Mecklenburg.	Same as Oldenburg; some of these horses were used by the Life Guards and Lancers.
Schleswig.....	Same as Holstein.....	Schleswig-Holstein.....	A strong working horse for farm, artillery, and draft purposes.
Rhenish.....	Stallions kept by the State and private individuals.	Whole district of the Rhine provinces, Westphalia, South Hanover, Saxony, Silesia, and other districts.	Similar to Belgian draft horse; used for heavy farm work, draying, and heavy guns in the artillery.
Rottal.....	.....do.....	Upper Bavaria.....	Light cavalry type.
Light Noric (Oberlaender).....	.....do.....	.....do.....	Do.
Heavy Noric (Pinsgau).....	.....do.....	Lower Bavaria.....	Heavy draft and artillery.

Deutsche Landwirtschafts-Gesellschaft, Berlin.

PRE-WAR HORSE SITUATION

During the 30 years preceding the war, horse breeding in Germany had not kept pace with the increase in population, there having been 78 horses per 1,000 inhabitants in 1883 as compared with 70 in 1913, although during this period the actual numbers had increased from 3,523,000 to 4,558,000, a gain of 29.4 per cent.

During this period not only had the density of horses diminished somewhat but there had been a growing tendency to breed draft animals in larger numbers, as indicated in Table 64.

TABLE 64.—Horses: Estimated classification in Germany, 1898 and 1911

Class	Percentage of total number	
	1898	1911
Light horses.....	Per cent 61.60	Per cent 50.46
Heavy horses.....	36.03	49.42
Cross breeds.....		.11
Unclassified.....	2.37	.01

Estimate furnished by the Deutsche Landwirtschafts-Gesellschaft, Berlin.

The period from 1883 to 1913 marked a great expansion in Germany's agriculture, and consequently an increased demand for farm-work animals, especially in the north central regions of the Empire.

EFFECT OF VERSAILLES TREATY ON HORSE SITUATION

Of Germany's total number of horses in 1913, 16.1 per cent were found within the boundaries of the territories ceded to surrounding countries under the terms of the Versailles treaty. Before the war, according to the enumeration of 1913, there were 4,558,000 horses in Empire of Germany, or 70 per 1,000 inhabitants. Of this number, 3,807,000, or 66 per 1,000 inhabitants, were found within the frontiers of the present Republic. As a result of the peace treaty Germany ceded territories, including the Saar, that before the war maintained 16.5 per cent of the Empire's total number of horses, and in which there were 105 horses per 1,000 inhabitants. This loss of horses was chiefly in the territories to the east, where light cavalry types were bred, so that, although the density per 1,000 inhabitants was decreased 5.7 per cent (see Table 65) the actual significance of this loss to German agriculture was not so great as the numbers would seem to indicate.

The statistical analysis of the pre-war horse situation in the ceded districts and in the territory now composing the Republic of Germany appears in Table 65.

TABLE 65.—Horses: Number in the districts which composed the former German Empire, 1913

District	Total number	Per 1,000 inhabitants
Germany, 1923 boundaries.....	Thousands 3,907	Number 66
Saar district:		
Rhine province.....	17	28
Bavaria.....	3	37
Areas ceded:		
From East Prussia—		
To Memel.....	84	241
To Poland.....	6	242
From West Prussia—		
To Danzig Free State.....	41	124
To Poland.....	155	161
From Posen to Poland.....	263	145
From Upper Silesia—		
To Poland.....	28	32
To Czechoslovakia.....	3	66
From Lower Silesia to Poland.....	4	152
From Schleswig-Holstein to Denmark.....	39	229
From Rhine Province to Belgium.....	2	33
Alsace-Lorraine to France.....	1 137	1 73
Total for ceded areas to neighboring countries.....	731	113
Total Empire.....	4,558	70
Per cent in ceded territories and Saar.....	16.5	

See Table 54 for sources.

1 Figures for 1912. No figures for 1913 are available.

ORIGIN OF HORSES IMPORTED TO COVER GERMANY'S PRE-WAR DEFICIT (1909-1913)

Before the war Germany imported 137,739 horses, largely of the cavalry type, for use in the army and exported about 7,000 annually. These imported horses originated chiefly in Russia, Denmark, Belgium, and the Netherlands. (See Table 67.) Carriage and draft animals were exported to Switzerland and breeding animals to the Netherlands and Austria.

POSTWAR HORSE SITUATION

During the war Germany lost a large number of horses, but conserved the breeding stock to a high degree, so that in 1922 there were only 116,000 fewer horses in the Republic than in the same territory before the war. Because of increased population the density per 1,000 inhabitants was 60 in 1922 as compared with 66 in 1913. (Table 66.) In 1924 the census of December 1 places the number of civilian horses at 3,850,000, in addition to which there were about 40,000 military horses. This is a larger number of horses, by 83,000, than was found within the boundaries of the present Republic in 1913, but because of the increased density of the population the number per thousand inhabitants—62—is still less than before the war.

TABLE 66.—Horses: Number in Germany in 1922 and 1924, as compared with 1913

Description	Unit	Boundaries of 1923		
		1913	1922	1924
Total number.....	Thousands.....	3,807	1 3,691	1 3,890
Difference.....	do.....		-116	+83
Percentage of difference.....	Per cent.....		-3.0	+2.2
Per 1,000 inhabitants ¹	Number.....	66	60	62

¹ Includes 40,000 military horses.
² For population see Table 19.

During the last few years a few horses have been imported, largely from Denmark and the Netherlands, as shown in Table 67.

TABLE 67.—Horses: Foreign trade¹ of the German Republic, 1921-22 to 1923-24, compared with that of the Empire, 1909-10 to 1913-14

Country	Year beginning July 1			
	Average, 1909-1913	1921	1922	1923
	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Russia.....	+55,356	(?)	(?)	(?)
Denmark.....	+26,640	+25,741	+4,975	+6,851
Belgium.....	+23,591	+2,248	+438	(?)
Netherlands.....	+13,157	+11,752	+4,709	+1,763
Czechoslovakia.....		+8,182	+732	(?)
Austria.....		+7,542	+4,753	+1,877
Hungary.....	+6,725	+1,798	(?)	(?)
Mennel.....		+1,613	+209	+288
Luxemburg.....		+1,595	+813	(?)
Danzig.....		+1,143	+674	+475
France.....	+5,968	(?)	(?)	(?)
Great Britain.....	+2,352	+256	(?)	(?)
Yugoslavia.....		+97	+124	(?)
Sweden.....	+367	+2,593	+687	(?)
British South Africa.....	-1	(?)	(?)	(?)
Argentina.....	-4	(?)	(?)	(?)
United States.....	-6	(?)	(?)	(?)
Switzerland.....	-5,024	-43	-30	(?)
Saar district.....		-98	-133	(?)
Other countries.....	+1,433	+12,301	+4,585	+4,936
Total.....	+130,554	+76,720	+22,536	+16,190

Germany, Statistisches Reichsamt (formerly Kaiserliches Statistisches Amt), *Monatliche Nachweise über den Auswärtigen Handel Deutschlands*.

¹ Net imports are indicated by (+) and net exports by (-).
² If any, included in other countries.

The horsepower on German farms is now well up to the pre-war standard and can be maintained with but few importations. This is especially true since the Republic does not maintain a large standing army and therefore does not withdraw from the farms such large numbers of horses of the cavalry and artillery types as was the case under the Government of the Empire.

CATTLE

The cattle of Germany are divided into two main classes, the highland and the lowland, each having a large number of subclasses and breeds. The lowland cattle, found principally in the north and east of Germany, are valued chiefly for their milk production. They are also moderately good beef animals. They have a mediocre capacity as work animals and are used only to a slight extent in farm work. "The breeders aim at high milk yield, good grazing quality and beauty of form, combined with a robust constitution." Bullocks, 2½ to 3 years old weigh about 1,500 pounds and cows about 1,600 pounds. Bulls dress out 58 per cent of live weight, cows 55 per cent. Production ranges from 12,600 pounds milk with 3 per cent butterfat down to 7,400 pounds milk with 3.32 per cent butterfat for average herds. Table 68 gives the distribution and indicates the relative importance of the principal breeds.

TABLE 68.—Cattle: Distribution of the German lowland breeds, based on survey made in 1906

Type	Breeding district	Per cent of total number of lowland cattle	Per cent of total number of all cattle	Tendencies to increase or decrease since 1906
Pedigree black and white lowland cattle (Holstein-Friesian).	East Friesland, Jeverland, Weser-Marsh, Pomerania, West and East Prussia, some districts of South Germany.	51.03	28.42	This is the favored breed of high milk capacity cattle. Its number and distribution are increasing. Animals entered in various herd books and alive on Jan. 1, 1911: Bulls..... 2,147 Cows..... 64,043 Heifers..... 14,170 Total..... 80,360
Pedigree red and white lowland cattle.	Rhineland and Westphalia.	7.23	3.82	Animals entered in various herd books and alive on Jan. 1, 1911: Bulls..... 643 Cows..... 4,355 Total..... 4,998
Red and white Holstein breeds.	Holstein, Elbe, Breitenburg, and Wiister marshes.	5.46	3.14	Although a large number of cows is registered, the breed is limited to home districts.
Angeln cattle.....	The peninsula of Angeln, in Schleswig-Holstein.	1.62	.90	A local breed.
Shorthorns.....	West coast of Schleswig-Holstein and Palatinat.	2.33	1.34	Animals entered in herd books and alive Jan. 1, 1911: Bulls..... 321 Cows..... 4,945 Total..... 5,266
Red East Friesland cattle.	East Friesland.....	.56	.31	Of local importance.
Other breeds.....	North and central Germany.	31.77	17.82	Progressively decreasing in view of increase of pedigree breeds.

The mountain cattle of South Germany (Table 69) are larger, as a rule, than the lowland cattle of the north. The southern cattle weigh:

Bullocks:	Pounds
First quality	1, 750-2, 000
Second quality	1, 650
Third quality	1, 320
Cows:	
First quality	1, 540
Second quality	1, 430
Bull dress out as high as 57.7 per cent of their live weight.	

In some districts, particularly in Southern Germany, cows are worked in the fields and dairying is of secondary importance. Generally, however, the farm work is done by horses and oxen, and in these districts, especially in the northwestern provinces, milk and butter production is on a paying basis. Average milk yield in Upper Bavaria is put at 5,730 pounds, the largest yield recorded being 8,790 pounds. The butterfat content ranges from 3.7 to 4.1 per cent.

There has been a tendency during recent years among breeders to aim toward developing a dual-purpose cow by increasing milk yield without reducing the meat capacity. The mountain cattle, particularly the cream and gray-brown, are nearly all descendants of the Simmenthal breed.

TABLE 69.—Cattle: Distribution of the German highland breeds, based on survey made in 1906.

Type	Breeding district	Per cent of total number of mountain cattle	Per cent of total number of all cattle	Tendencies to increase or decrease since 1906
Light-colored mountain cattle.	Bavaria, Wurttemberg, Baden, Thuringia, Saxony, Posen, Brandenburg, Mecklenburg.	51.35	22.73	Strong increase until 1914; then less progress; another increase during the past years.
Uniformly yellow Franken mountain cattle.	North Bavaria, Wurttemberg, Hessen-Nassau, Thuringia.	14.04	6.21	Breeds improved during the past years; gained in importance.
Gray-brown mountain cattle.	Bavaria, Wurttemberg....	5.32	2.36	Importance limited to breeding districts.
Red cattle of central Germany.	Westphalia, Hanover, Hessen-Nassau, Waldeck, both Saxonies, Bavaria, Silesia, Hessen.	6.14	2.72	Breeds improved through organization; important merely for home-breeding districts.
Red and brown cattle with white head.	Rhine Province, Hessen-Nassau, Bavaria, Westphalia.	1.72	.76	Little importance; decreasing.
Pinzgau cattle with white stripe on back.	Bavaria, Silesia.....	3.79	1.69	Importance decreasing steadily; supplanted more and more by other breeds.
Small colored mountain cattle.	Baden, Wurttemberg.....	1.10	.49	No importance.
Other breeds.....	South and central Germany.	16.54	7.29	Decreasing in proportion to increase of better breeds.
		100.00	44.25	

Deutsche Landwirtschafts-Gesellschaft, Berlin.

PRE-WAR CATTLE SITUATION

There was a considerable increase in the actual numbers of cattle held on German farms during the 30 years preceding the war but the actual ratio of cattle to population had decreased by the end of the period. In 1883 there were 15,787,000 cattle in Germany, whose population at that time was 45,222,113, resulting in a cattle density

of 349 per 1,000 inhabitants. In 1913 the population had increased to 64,925,993, while the numbers of cattle had increased to 20,994,000, giving a ratio of 323 animals to each 1,000 inhabitants.

As in the case of swine, so with cattle; the factors of cost of feed, the extent of available pasturage, and the price obtainable for meat, butter, and other products limit the degree to which the products of agricultural lands can be devoted to dairying or to beef production. Under the conditions just preceding the war that limit had been nearly approached in Germany

EFFECT OF VERSAILLES TREATY ON CATTLE SITUATION

Of Germany's total number of cattle in the year 1913, 11.6 per cent were found within the boundaries of the territories that later were ceded to neighboring countries. The important factor to the animal industry is not so much the actual numbers of percentage of the total animals of the German Empire that were found in the ceded districts as the relative density of animals to population; that is, the number of livestock per 1,000 inhabitants.

Before the war, according to the enumeration of 1913, there were 20,994,000 cattle in the Empire, of which 11,320,000 were cows of two years or older. Within the frontiers of the present Republic there were 18,476,000 cattle, including 9,973,000 cows.

As a consequence of the treaty of peace, Germany lost territories, including the Saar, that before the war maintained 12 per cent of the total cattle and 11.9 per cent of the cows. The cessions of territory did not, however, materially affect Germany's cattle industry as a whole, since the difference in the cattle density of the Empire and the Republic was only 1 per cent.

The statistical analysis of the pre-war cattle situation in the ceded districts and in the territory now comprising the Republic of Germany appears in Table 70.

TABLE 70.—Cattle: Number in the districts which composed the former German Empire, 1913

District	Total cattle		Cows 2 years and older	
	Total number	Per thousand inhabitants	Total number	Per thousand inhabitants
Germany, 1923 boundaries.....	18,476	320	9,973	173
Saar district:				
Rhine Province.....	58	101	37	65
Bavaria.....	16	198	10	124
Areas ceded:				
From East Prussia—				
To Memel.....	76	538	46	329
To Poland.....	16	645	8	323
From West Prussia—				
To Danzig Free State.....	77	233	48	145
To Poland.....	421	456	235	244
From Posen to Poland.....	867	445	451	232
From Upper Silesia—				
To Poland.....	96	107	50	66
To Czechoslovakia.....	15	330	9	198
From Lower Silesia to Poland.....	16	610	9	343
From Schleswig-Holstein to Denmark.....	255	1,533	106	637
From Rhine Province to Belgium.....	54	900	28	467
Alsace-Lorraine to France.....	551	294	301	161
Total for ceded areas.....	2,444	378	1,300	201
Total Empire.....	20,994	323	11,320	174
Per cent in ceded districts and Saar.....	12.0		11.9	

See Table 54 for sources.

POSTWAR CATTLE SITUATION

As a result of the conditions of heavy demand for meat supplies during the war and the unsettled state of economic conditions following the treaty of Versailles, the numbers of cattle have diminished, but not to the extent that might be expected. (Table 71.) Breeding stock was maintained well up to pre-war level, there being within the present boundaries of the Republic, in 1922 only 17.7 per cent, in 1923 only 16.7, and in 1924, 11.8 per cent fewer cows than in 1913. There appears to have been a general tendency throughout Germany to maintain the livestock industry nearer to the level of the pre-war status than was the case with the cereal production. The production of livestock in Germany is limited to the quantity of forage the German farmers are able to produce, and this will always be measured by utility—whether meat or bread cereals give the most profitable returns from a given area.

Although the total numbers of cattle on hand December 1 decreased only 11.7 per cent in 1922, 12.9 in 1923, and 6.4 in 1924 as compared with 1913, the increase in population has brought the density (number of head per 1,000 inhabitants) down to 17.5, 19.4, and 14.1 per cent, respectively, below pre-war.

 TABLE 71.—Cattle: Number in Germany, 1922-24, as compared with 1913¹

Item	Unit	Boundaries of 1923			
		1913	1922	1923 ²	1924
Number of cows.....	Thousand	9,973	8,206	8,308	8,796
Other cattle.....	do.	8,503	8,110	7,783	8,500
Total cattle.....	do.	18,476	16,316	16,091	17,296
Drop in number below pre-war:					
Cows.....	do.		1,767	1,665	1,177
Other cattle.....	do.		393	720	3
Total cattle.....	do.		2,160	2,385	1,180
Per cent of drop:					
Cows.....	Per cent		17.7	16.7	11.8
Other cattle.....	do.		4.6	8.5	---
Total cattle.....	do.		11.7	12.9	6.4
Per 1,000 inhabitants: ³					
Cows.....	Number	173	133	133	140
Other Cattle.....	do.	147	131	125	135
Total cattle.....	do.	320	264	258	275

¹ Census as of Dec. 1.

² The number of cattle in Germany on Oct. 1, 1923, was 16,691,000, from which was subtracted the slaughtering during October and November to obtain the number on hand Dec. 1.

³ For populations see Table 19.

ORIGIN OF THE CATTLE IMPORTED TO COVER DEFICIT

Before the war the German Empire imported large numbers of cattle from Denmark and the Austro-Hungarian Empire. The post-war economic conditions within Germany, coupled with the greatly reduced purchasing power of the people and the general consequent reduction in the use of meat in the diet in urban and industrial centers, reacted to cut down the importation of animals for slaughter, but when prorated over the population this drop in importation is not of great significance, being only 2 animals per 1,000 inhabitants in the season of 1921-22, 2.6 animals in 1922-23, and 2.5 in 1923-24, as shown in Table 72.

TABLE 72.—Cattle: Foreign trade¹ of the German Republic, 1921-22 to 1923-24, compared with that of the Empire, 1909-10 to 1913-14

Country	Year beginning July 1			
	Average, 1909-1913	1921	1922	1923
	Number	Number	Number	Number
Denmark.....	+136,367	+33,873	+39,842	.....
Austria.....	+68,933	+6,247	+429	.....
Hungary.....	(?)	+5,242	+63	.....
Czechoslovakia.....		+12,795	(?)	.....
Rumania.....	(?)	+9,900	+119	.....
Sweden.....	+5,316	(?)	(?)	.....
France.....	+4,071	(?)	(?)	.....
Netherlands.....	+3,003	+11	(?)	.....
Switzerland.....	+2,658	(?)	(?)	.....
Mamel.....		+22,636	+14,031	.....
Poland.....		+1,986	(?)	.....
Danzig.....		+459	(?)	.....
Great Britain.....	+4	(?)	(?)	.....
Peru.....	-5	(?)	(?)	.....
Russia.....	-222	(?)	(?)	.....
Saar district.....		-6,023	-6,137	.....
Other countries.....	+3,819	+6,535	+3,780	.....
Total.....	+213,944	+93,861	+52,127	+60,997
Drop below pre-war total.....		120,083	161,817	152,947
Per cent of drop.....		56.1	75.6	71.5
Drop per 1,000 inhabitants ²		2.0	2.6	2.5

Germany, Statistisches Reichsamt (formerly Kaiserliches Statistisches Amt), Monatliche Nachweise über den Auswärtigen Handel Deutschlands.

¹ Net imports are indicated by (+) and net exports by (-).

² Included in Austria.

³ If any, included in other countries.

⁴ Not available by countries.

⁵ For populations see Table 19.

Before the war Germany imported about 53,000,000 pounds of fresh and prepared beef largely from Denmark and the Netherlands. The United States supplied only 4 per cent of Germany's foreign beef requirement. (Table 73.)

TABLE 73.—Beef, fresh and prepared: Foreign trade¹ of the German Republic, 1921-22 to 1923-24, compared with that of the Empire, 1909-10 to 1913-14
[Thousands of pounds—000 omitted]

Country	Year beginning July 1			
	Average, 1909-1913	1921 ²	1922 ³	1923 ⁴
Denmark.....	+26,078	+1,756	+1,166	+427
Netherlands.....	+13,743	+4,259	+1,370	(?)
Sweden.....	+4,280	+224	+294	(?)
Russia.....	+2,715	(?)	(?)	(?)
United States.....	+2,267	+20,270	+14,008	+14,039
Brazil.....	(?)	+8,654	+6,881	+8,465
France.....	+2,146	(?)	(?)	(?)
Austria-Hungary.....	+948	(?)	(?)	(?)
Estonia.....	(?)	+313	+20	(?)
Great Britain.....	+251	+426	+4,005	(?)
Australia.....	+164	+8,118	+4,696	(?)
Argentina.....	+2	+5,639	+23,431	+115,732
New Zealand.....	(?)	+2,403	+751	(?)
Uruguay.....	(?)	+188	+1,120	(?)
Belgium.....	+138	(?)	(?)	(?)
Switzerland.....	+133	(?)	(?)	(?)
Italy.....	+17	(?)	(?)	(?)
Serbia.....	+4	(?)	(?)	(?)
Canada.....	+4	(?)	(?)	(?)
Helgoland.....	-73	-83	(?)	(?)
Saar district.....		-317	-1,245	(?)
Other countries.....	+285	+5,213	+6,871	+13,613
Total.....	+53,111	+56,063	+63,368	+152,276

Germany, Statistisches Reichsamt (formerly Kaiserliches Statistisches Amt), Monatliche Nachweise über den Auswärtigen Handel Deutschlands.

¹ Net imports are indicated by (+) and net exports by (-).

² Includes frozen beef.

³ If any, included in other countries.

Since the war the shipments of beef by the United States to Germany have fallen off rapidly in relative importance. In 1921-22 these shipments amounted to 36 per cent, in 1922-23 to 22 per cent, and in 1923-24 to only 9.2 per cent of the total imports of beef into the Republic. During 1922-23 Argentina greatly supplanted all other countries of the world in shipping beef to Germany, primarily because of the crisis in the animal industry in Argentina and the very low prices quoted on beef. During the season 1923-24 these shipments of frozen beef increased to a round 116,000,000 pounds, or 76 per cent of the total importations. If this trade continues, Argentina may become a serious competitor of the German farmer engaged in livestock production. It is to be expected that in all probability the German beef trade with the United States will drop back to its pre-war status of occasional shipments, determined by price and the condition of our own markets.

BUTTER

Germany imported about 118,000,000 pounds of butter during the calendar year 1924, exceeding average pre-war imports of the Empire by 7,000,000 pounds. (Tables 74 and 75.) Of this quantity Denmark supplied 59,000,000 pounds, an increase over the preceding year of 57,000,000 pounds. This is of interest to farmers of the United States, because if Germany continues to take such large quantities of butter from Denmark the Danes will discontinue, proportionately, their butter shipments to the United States.

TABLE 74.—Butter: Foreign trade of Germany, average, 1909-1913

Country	Imports (+)	Exports (-)	Net imports (+) Net exports (-)
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Russia in Europe and Russia in Asia.....	52,986,900		+52,986,900
Netherlands.....	36,677,269		+36,677,269
Denmark.....	11,681,073		+11,681,073
Finland.....	4,521,414		+4,521,414
Austria-Hungary.....	3,355,181	88,845	+3,266,336
Sweden.....	828,268		+828,268
France.....	482,146		+482,146
Turkey in Asia.....	5,291		+5,291
Helgoland.....		78,263	-78,263
Switzerland.....	59,965	194,005	-134,040
Other countries.....	843,700	136,906	+706,794
Total.....	+111,441,207	-498,019	+110,943,188

Germany, Kaiserliches Statistisches Amt, Monatliche Nachweise über den Auswärtigen Handel Deutschlands.

TABLE 75.—Butter: Foreign trade¹ of Germany, 1922-1924

Country	Calendar years		
	1922	1923	1924
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Argentina.....	+919,759		(?)
Great Britain.....	+606,706		(?)
Australia.....	+567,023		(?)
Denmark.....	+11,243	+1,533,519	+58,533,101
Norway.....	+144,842	+104,057	(?)
Netherlands.....	+69,445	+1,152,124	+32,172,169
Saar.....	-53,914	-92,583	(?)
Other countries.....	-26,895	+58,863	+27,031,703
Total.....	+1,739,209	+2,755,970	+117,836,973

Germany, Statistisches Reichsam, Monatliche Nachweise über den Auswärtigen Handel Deutschlands.

¹ Net imports are indicated by (+) and net exports by (-).

² If any, included in other countries.

SWINE

Swine breeding is distributed generally throughout Germany, but by far the greatest numbers are kept on the large dairy farms in the north and northwest provinces, as indicated by the cattle to swine ratio in Table 76.

TABLE 76.—Cattle to swine ratio in Germany, by districts, 1913

District	Households owning livestock	Cattle		Swine		Ratio, cattle to swine
		Total	Per household	Total	Per household	
North, west, and central	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	
Hanover	358,926	1,368,429	4	3,332,588	9	
Schleswig-Holstein	145,645	1,141,371	8	1,763,624	12	
Pomerania	193,763	862,060	4	1,329,794	7	
Brandenburg	285,742	906,098	3	1,378,460	5	
Westphalia	375,110	751,114	2	1,646,087	4	
Oldenburg	63,703	344,824	5	620,874	10	
Thuringia	269,844	658,359	2	1,158,806	4	
Province of Saxony	322,201	829,238	3	1,591,089	5	
Total	2,014,684	6,861,513		12,741,322		1 to 1.9
East:						
East Prussia	257,887	1,236,752	5	1,937,464	5	
West Prussia	187,442	709,936	4	1,026,525	5	
Posen	249,024	938,881	4	1,315,040	5	
Silesia	405,431	1,650,948	4	1,394,402	3	
Total	1,100,784	4,536,517		5,073,431		1 to 1.1
South:						
Bavaria	610,123	3,702,735	6	2,106,312	3	
Württemberg	232,766	1,123,903	5	589,672	3	
Baden	229,705	624,508	3	531,024	3	
Hohenzollern	10,480	49,651	5	30,653	3	
Total	1,083,074	5,560,797		3,801,661		1 to 0.6
Southwest:						
Rhineland	460,137	1,221,327	3	1,228,594	3	
Hessen-Nassau	203,882	622,907	3	768,790	4	
Kingdom of Saxony	172,297	713,928	4	760,291	4	
Alsace-Lorraine	179,174	550,517	3	422,873	3	
Other districts	271,356	926,838	4	1,292,188	5	
Total	1,286,846	4,035,517		4,542,726		1 to 1.1
Total for Empire	5,485,638	20,994,344	4	25,359,140	5	1 to 1.2

Germany, Kaiserliches Statistisches Amt. (now Statistisches Reichsamt), Vierteljahrshefte zur Statistik des Deutschen Reichs, vol. 23, 1914.

With the exception of a small part of Schleswig-Holstein that was ceded to Denmark, the territory in which there was a high hog to cattle ratio (1.9 to 1) remained within the German Republic. Both on the east and the west the ceded territories were about average (a little below) as pork-producing districts. The very low ratio of the southern districts is due to the fact there there are fewer swine per capita in these districts, and since the larger part of the farm work in these districts is of the peasant type on small holdings it is done by oxen rather than by horses. There is consequently a somewhat higher number of cattle per household in the south than in the north.

The manner in which swine are kept in Germany varies greatly "from an almost outdoor life to being kept nearly entirely in piggeries." They are fed on skim milk from the creameries in the northern and northwestern provinces, potatoes, roots, and various kinds of

grain and other feedstuffs. They also are turned into the fields after the harvest and in some instances are herded on grass, especially in the south. During the fattening period the improved breeds are universally housed. In Bavaria and some other parts of Germany the native unimproved swine run in the woods and fields and are never housed.

BREEDS

Several of the large white English breeds, as well as Berkshire are popular throughout Germany, though found for the most part in the north and northwest dairy sections. (Table 77.) Improved native pigs are bred especially in Hanover, Saxony, and Westphalia for size and to mature a little later than the finer English breeds. In Bavaria, Hanover, and Brunswick hardy late-maturing strains are popular, where swine are bred to withstand all conditions of climate, as they are kept at all times in the open. The sows of this breed crossed with Berkshires or Large Whites, produce pigs that can be fattened profitably.

TABLE 77.—*Swine: Breeds in the German Empire, 1912*

Name	Feed	District	Characteristics
Large White (Imported from English breeders).	Skim milk, potatoes, roots, grams, and other feedstuffs; pastured in fields after the harvest and on grass.	Distributed all over Germany; largest numbers are on the large dairy farms of the northwest.	General-purpose animal; meat of fine texture.
Improved Native (Op-eared marsh pig, English Whites).	Same as above.	Every part of Germany; especially in Hanover, Saxony, and Westphalia.	Hardy, later maturing, and coarser flesh than above.
Berkshire (imported from England).	do.	A few herds scattered throughout Germany.	Early maturing, good meat animal.
Native pigs.	Run in woods, pastures, and harvest fields; never housed.	Hanover, Brunswick and Bavaria.	Long legs and narrow bodies; late maturing, coarse meat; sows used to cross with Berkshires and Large Whites.

Deutsche Landwirtschafts-Gesellschaft, Berlin.

PRE-WAR SWINE SITUATION

During the 30-year period preceding the war Germany vastly expanded her swine production both in actual numbers and in relative density, the numbers of swine increasing almost twice as rapidly as the population.

In 1883 there were 9,206,000 swine in Germany, or 204 per 1,000 inhabitants. By 1913 the number had increased to 25,659,000, or 395 per 1,000 inhabitants.

The development of the swine industry is limited by the factors entering into cost of meat production; that is to say, the relation of the price received at the farm (influenced by the market price of fresh and prepared pork products imported into the country) and the cost of feed, much of which, especially for finishing the hogs, must be imported. This balance between the price receivable and the cost of feeding stuffs is the limiting factor not only in swine production but in the production of all animals and animal products.

EFFECT OF VERSAILLES TREATY ON SWINE SITUATION

Before the war, according to the enumeration of 1913, there were 25,659,000 swine in the Empire, or 395 per 1,000 inhabitants. Of this number, 22,533,000, or 390 per 1,000 inhabitants, were found within the frontiers of the present Republic. As a result of the peace treaty, Germany lost territories that before the war maintained 12.2 per cent of the Empire's total number of swine. This loss did not, however, materially affect the relative density of swine because the greatest concentration of the swine industry was in the dairy centers of the central northern districts that remained to the Republic.

The statistical analysis of the pre-war swine situation in the ceded districts and in the territory now composing the Republic of Germany appears in Table 78.

TABLE 78.—Swine: Number in the districts which composed the former German Empire, 1913

District	Total number	Per thousand inhabitants
	Thousands	Number
Germany, 1923 boundaries.....	22,533	390
Saar district:		
Rhine Province.....	98	154
Bavaria.....	18	222
Areas ceded:		
From East Prussia—		
To Memel.....	138	977
To Poland.....	21	847
From West Prussia—		
To Danzig Free State.....	92	278
To Poland.....	648	672
From Posen to Poland.....	1,223	628
From Upper Silesia—		
To Poland.....	134	150
To Czechoslovakia.....	13	296
From Lower Silesia to Poland.....	17	648
From Schleswig-Holstein to Denmark.....	218	1,311
From Rhine Province to Belgium.....	23	383
Alsace-Lorraine to France.....	498	263
Total for ceded areas.....	3,020	467
Total Empire.....	25,659	395
Per cent in ceded districts and Saar.....	12.2	

See Table 54 for sources.

POSTWAR SWINE SITUATION

During the war the number of Germany's swine was greatly depleted. (Table 79.) The estimates of the swine on farms in 1922 place the actual numbers 35 per cent below the 1913 estimates, while on account of the increase in population, the density per 1,000 inhabitants was 39 per cent below pre-war.

The limiting factor to the numbers of swine that can be maintained on German farms is the quantity of feed available at prices that make profitable the preparation of hogs and pork products for the local markets. The year 1922 ended with a large potato crop and consequently an abundance of cheap feed. The potato crop in 1923 was nearly up to the pre-war average, and in that year the numbers of swine on German farms increased 1,200,000 over 1922, the density per 1,000 inhabitants rising from 238 to 254.

In 1924 the potato crop was normal and the numbers of swine per 1,000 inhabitants increased to 268. It is expected that the swine density will tend to return to Germany's pre-war normal.

TABLE 79.—*Swine: Number in Germany, 1921–1924, as compared with 1913*¹

Item	Unit	Boundaries of 1923			
		1913	1922	1923 ²	1924
Total number.....	Thousands..	22, 533	14, 678	15, 832	16, 844
Drop below pre-war.....	Do.....		7, 855	6, 701	5, 689
Percentage of drop.....	Per cent.....		34. 9	29. 7	25. 2
Per 1,000 inhabitants ³	Number.....	390	238	254	268

¹ Census as of Dec. 1.

² In 1923 the livestock census was taken on Oct. 1. The Dec. 1 figure is obtained by subtracting from 17,306,000 the slaughtering during October and November.

³ For populations see Table 19.

FOREIGN TRADE IN SWINE

Russia was Germany's chief source of supply for live pigs before the war with a relatively insignificant importation from other countries. (Table 80.)

TABLE 80.—*Swine: Foreign trade¹ of the German Republic, 1921–22 to 1923–24, compared with that of the Empire, 1909–10 to 1913–14*

Country	Year beginning July 1			
	Average 1909–1913	1921	1922	1923
Yugoslavia.....	Number	Number	Number	Number
Russia.....	+120, 200	+150, 284	+1, 705	(?)
Memel.....		(?)	(?)	(?)
Poland.....		+41, 082	+39, 926	+24, 071
Rumania.....		+15, 112	(?)	(?)
Rumania.....	(?)	+13, 402	(?)	(?)
Switzerland.....	-9, 902	(?)	(?)	(?)
Austria.....	-807	(?)	(?)	(?)
Hungary.....		+6, 624	+72	(?)
Denmark.....	(?)	+4, 084	+3, 578	(?)
Estonia, Latvia, and Lithuania.....		+2, 237	(?)	(?)
Czechoslovakia.....		+962	(?)	(?)
France.....	+59	(?)	(?)	(?)
Great Britain.....	+28	(?)	(?)	(?)
Netherlands.....	+21	(?)	(?)	(?)
Saar district.....		-23, 938	-6, 867	(?)
Other countries.....	+1, 066	+12, 034	+30	+99, 915
Total.....	+110, 695	+221, 883	+38, 444	+123, 986

Germany, Statistisches Reichsamt (formerly Kaiserliches Statistisches Amt), *Monatliche Nachweise über den Auswärtigen Handel Deutschlands*.

¹ Net imports are indicated by (+) and net exports by (-).

² If any, included in other countries.

There was a drop in swine importations during 1922–23, probably due to currency fluctuations, but the average importation of swine into the Republic (1921–1924) is well up to the pre-war average importation of the Empire.

In addition to the considerable number of live pigs, Germany imported before the war an average of about 28,000,000 pounds of fresh and simply prepared pork. These importations were chiefly from the Netherlands, Denmark, and Russia. The United States

played a comparatively insignificant rôle as a source of German fresh pork supplies, shipping only 0.35 per cent of Germany's total importation, as shown in Table 81.

TABLE 81.—Pork, fresh and simply prepared: Foreign trade¹ of the German Republic, 1921-22 to 1923-24, compared with that of the Empire, 1909-10 to 1913-14

[Thousands of pounds—000 omitted]

Country	Year beginning July 1			
	Average 1909-1913	1921	1922	1923
Netherlands.....	+10,925	+1,532	+915	+4,714
Denmark.....	+8,513	+3,030	+11,662	+21,582
Russia.....	+5,613	(?)	(?)	(?)
Argentina.....	(?)	+629	+298	+2,599
Sweden.....	+1,076	+571	+1,647	+1,495
Great Britain.....	+692	(?)	(?)	(?)
Serbia.....	(?)	+381	(?)	(?)
Austria-Hungary.....	+223	(?)	(?)	(?)
Canada.....	(?)	+139	+154	+163
Belgium.....	+151	(?)	(?)	(?)
Switzerland.....	+108	(?)	(?)	(?)
United States.....	+99	+59,473	+22,700	+34,829
France.....	+49	(?)	(?)	(?)
Helgoland.....	-107	(?)	(?)	(?)
Saar district.....		-135	-394	(?)
Other countries.....	+1,001	+16,739	+1,456	+16,015
Total.....	+28,343	+82,359	+38,408	+81,397

Germany, Statistisches Reichsamt (formerly Kaiserliches Statistisches Amt), *Monatliche Nachweise über den Auswärtigen Handel Deutschlands*.

¹ Net imports are indicated by (+) and net exports by (-).

² If any, included in other countries.

³ Six months only, July to December, 1923. Last six months included in other countries and total.

⁴ Less than 500 pounds.

During the seasons 1921-22 and 1922-23 the United States occupied first place as a market from which Germany bought fresh pork, sending to that country more fresh pork than all other nations combined. During the season 1923-24, however, Denmark and the Netherlands encroached heavily upon United States trade. Except in years of heavy overproduction in America, with consequent cheap pork, it is to be expected that Germany can buy more satisfactorily from neighboring countries than from the United States. Argentina may develop a frozen-pork trade with Germany in competition with the United States, as indicated by the appreciable shipments of more than 2½ million pounds during the past season. The importations of fresh pork into the Republic in 1921-22 were 2.9 times as much as the importations into the whole Empire before the war; in 1922-23 they were 1.4 times as much and in 1923-24 they were again 2.9 times as much, as shown in Table 81.

The trade of the United States with Germany in lard and bacon has greatly increased since the war, but importations during the first six months of the fiscal year 1924-25 indicate an appreciable decline. (Table 82.) During the season 1923-24 the total net lard imports of the Republic were 295,000,000 pounds, against an average of 204,000,000 pounds for the Empire during 1909-1913; the importations of bacon were 90,000,000 pounds in 1923-24, against 2,700,000 pounds during 1909-1913. (Tables 83, 84, and 85.)

BUTTER V. PORK FATS

On account of the depressed economic condition of the Republic, pork fats have been substituted for butter to a considerable degree. Before the war the German Empire imported 111,000,000 pounds of butter annually. During the calendar year 1923 the butter importation of the Republic was only 2,800,000 pounds. Between January 1 and June 30, 1924, importations of butter into Germany increased to 40,000,000 pounds and during the next six months rose to 78,000,000 additional pounds, totaling 118,000,000 pounds for the year. It is probable that the decrease in our shipments of lard and bacon to Germany during the last six months of 1924 is attributable to this greater use of butter as a source of fat.

TABLE 82.—Lard and bacon importations into Germany from the United States contrasted with total butter importations, 1924

[Thousands of pounds—000 omitted]

Item	January-June, 1924	July-December, 1924
Lard (from United States).....	138,567	109,843
Bacon (from United States).....	33,459	19,982
Butter (from all countries).....	40,017	77,820

Germany, Statistisches Reichsamt, Monatliche Nachweise über den Auswärtigen Handel Deutschlands.

TABLE 83.—Lard: Foreign trade¹ of the German Republic, 1921-22 to 1923-24, compared with that of the Empire, 1909-10 to 1913-14

[Thousands of pounds—000 omitted]

Country	Year beginning July 1			
	Average 1909-1913	1921	1922	1923
United States.....	+192,164	+217,530	+172,519	+256,478
Denmark.....	+5,981	+6,721	+9,571	+7,825
Netherlands.....	+2,481	+13,255	+12,972	+7,062
Argentina.....	(²)	+282	+1,032	+296
Serbia.....	+2,418	(²)	(²)	(²)
France.....	+255	(²)	(²)	(²)
Other countries.....	+477	+2,197	+775	+22,885
Total.....	+203,796	+239,985	+196,869	+294,538

Germany, Statistisches Reichsamt (formerly Kaiserliches Statistisches Amt.) Monatliche Nachweise über den Auswärtigen Handel Deutschlands.

¹ Net imports are indicated by (+) and net exports by (-).

² Six months only, July to December, 1923. Last six months included in other countries and total.

³ If any, included in other countries.

TABLE 84.—*Bacon: Foreign trade¹ of the German Republic, 1921-22 to 1923-24, compared with that of the Empire, 1909-10 to 1913-14*

Country	Year beginning July 1			
	Average 1909-1913	1921	1922	1923
United States.....	Pounds +1,556,889	Pounds +70,473,566	Pounds +63,771,362	Pounds +85,905,987
Belgium.....	+276,677	(?)	(?)	(?)
Denmark.....	+225,751	(?)	(?)	(?)
France.....	+159,513	(?)	(?)	(?)
Netherlands.....	+117,726	+429,456	+2,346,135	¹ +975,756
Switzerland.....	+53,422	(?)	(?)	(?)
Serbia.....	+21,826	(?)	(?)	(?)
Great Britain.....	+16,314	(?)	(?)	(?)
Austria-Hungary.....	+221	(?)	(?)	(?)
Helgoland.....	-1,543	(?)	(?)	(?)
Saar district.....		-54,895	-165,786	¹ -25,794
Other countries.....	+225,000	+3,478,638	+584,880	+3,175,947
Total.....	+2,656,986	+74,326,765	+66,536,591	+90,031,896

Germany, Statistisches Reichsamt (formerly Kaiserliches Statistisches Amt), *Monatliche Nachweise über den Auswärtigen Handel Deutschlands*.

¹ Net imports are indicated by (+) and net exports by (-).

² If any, included in other countries.

³ Six months only, July to December, 1923. First six months of 1924 included in other countries and total.

TABLE 85.—*Ham: Foreign trade¹ of the German Republic, 1921-22 to 1923-24, compared with that of the Empire, 1909-10 to 1913-14*

Country	Year beginning July 1			
	Average, 1909-13	1921	1922	1923
Austria-Hungary.....	Pounds +892,643	Pounds (?)	Pounds (?)	Pounds (?)
Netherlands.....	+323,194	+235,231	+182,761	¹ +69,224
Denmark.....	+75,838	(?)	(?)	(?)
Great Britain.....	+21,605	(?)	(?)	(?)
Russia.....	+19,621	(?)	(?)	(?)
Belgium.....	+2,836	(?)	(?)	(?)
United States.....	-191,139	+1,626,995	+291,448	¹ +267,859
Switzerland.....	-242,506	(?)	(?)	(?)
France.....	-2,004,643	(?)	(?)	(?)
Saar district.....		-11,243	-92,593	¹ -5,952
Other countries.....	-439,818	+121,473	-5,512	+357,366
Total.....	-1,542,339	+1,972,456	+376,104	+688,497

Germany, Statistisches Reichsamt (formerly Kaiserliches Statistisches Amt), *Monatliche Nachweise über den Auswärtigen Handel Deutschlands*.

¹ Net imports are indicated by (+) and net exports by (-).

² If any, included in other countries.

³ Six months only, July to December, 1923; first six months of 1924 included in other countries and total.

SHEEP

In several districts of Germany, particularly in the south, distinct types of sheep have been bred for centuries (Table 86.) These have become so identified with their respective localities and are so well suited to the climatic and agricultural conditions that neither the merinos nor sheep imported from England have been able entirely to dislodge them from their position. About a third of the sheep of the German Empire are of these native strains.

TABLE 86.—*Sheep: Classification according to type in Germany, survey of 1912*

Type	Number	Per cent of total number
Merino	1,697,596	29.13
Crossbreeds of merino type	566,806	9.72
Total	2,264,402	38.85
Mutton	232,336	3.99
Crossbreeds of mutton type	1,063,495	18.25
Other crossbreeds	183,309	3.15
Total	1,479,140	25.39
German native ¹	1,382,311	23.72
Crossbreeds of German	562,438	9.99
Total	1,964,749	33.71
Indefinite	119,650	2.05
Total sheep	5,827,941	100.00

Deutsche Landwirtschafts-Gesellschaft, Berlin.

¹ A hardy coarse-wooled sheep kept in heath or mountain regions where the other breeds are not profitable.

The local superiority of the native sheep arises from the following facts: They are well qualified to make the best possible use of the feed that grows in their neighborhoods. The young animals produce mutton of a good and sometimes excellent quality. The ewes in some instances have a high milk yield and form an excellent foundation for crossbreed purposes for the production of lambs to be fattened for market. Crossbreeds grow quickly and reach maturity early. For this reason the ewes of the different breeds are largely reared to maturity by the small farmers themselves. The native breeds are not less important for small farms, on which the sheep are reared on rough forage, than they are on the larger farms, where they get a liberal supply of oil cake and corn. The best-known breeds of these native sheep are the Franken, the bastard of Wurttemberg, the Rhön, and the milk sheep of East Friesland.

Franken sheep are produced in the Kingdom of Bavaria, in the governments of Lower and Upper Franken. This breed has spread to neighboring Thuringia, to some localities in Wurttemberg, and even as far as Baden. This is a hardy and robust breed, capable of withstanding rough climatic and poor grazing conditions, producing meat of an excellent quality and strong, if coarse, wool.

The Wurttemberg bastard sheep owes its origin to a cross of the Spanish merino with the Franken sheep, which took place about the eighteenth century. The merino blood was used in various degrees, so that two types came into existence, the fine and the rough bastard, indicating the quality of the wool, which is produced in paying quantities.

The Rhön sheep originated in the Rhön Mountains and is a most hardy breed, capable of withstanding extremes in temperature, and produces a fair quantity of wool of medium quality.

The East Friesland milk sheep are found rather generally throughout Holstein and Schleswig, as well as in the Netherlands. The chief consideration of this breed is milk and lamb production. The ewe can be milked from 150 to 200 days in the year, with a yearly product

of more than 1,000 pounds if on good pastures. The milk contains from 5 to 6 per cent of butterfat and is therefore excellent for cheese making, and butter is sometimes produced from it.

The merino has held an important place (39 per cent of all sheep in Germany being of this extraction) ever since the first importation from Spain in the middle of the eighteenth century. Afterwards importations were made from merino flocks that had been bred in France. These sheep have been bred to meet varying conditions and requirements, so that now three types can be differentiated: (1) Tuchwollschaf, with extra fine cloth wool (there are various gradations both in length and fineness of wool grown on these sheep); (2) Stoffwollschaf, the wool of which possesses the waviness required for extra fine cloth but is long enough for the carding machine; (3) Kammwollschaf (carding wool), which can be subdivided into three types—(a) those especially bred for the excellence of their fleece, (b) those where wool and mutton production are equally considered, and (c) those chiefly bred for weight of carcass.

The English breeds of sheep were imported into Germany about the middle of the last century as a result of the growing importance of meat production and the decrease in the price of wool. The "downs" have been found best suited to meet the requirements of Germany, except in a few districts in the northwest. About a fourth of all German sheep are of the English mutton type.

Table 87 gives the names, district in which the breed is found, and the purpose for which each of the leading breeds is adapted.

TABLE 87.—*Sheep: Breeds in the German Empire, 1912*

Name	Manner bred	District	Purposes
German merinos:			
Merino (Tuchwollschaf).	Large flocks, owned privately.	East and northeast Germany	Extra fine cloth wool.
Merino (Stoffwollschaf).	Same as above.....	Central Germany, Saxony to Mecklenburg, Pomerania, Hanover, and Silesia.	High wool production.
Merino (Kammwollschaf).	Private breeders.....	Northeast Germany, extending to central regions.	Type A high wool production; type B, wool and mutton; type C, mutton.
English sheep:			
Shropshire.....	do.....	North German plain, Silesia, Pomerania, Mecklenburg, Saxony, and Hanover.	Early maturing meat breed.
Hamshire.....	do.....	Same as above.....	Do.
Oxford.....	do.....	Mecklenburg, Hanover, Oldenburg, and Friesland.	Do.
Native sheep:			
Franken.....	do.....	Bavaria: Middle, Lower, and Upper Franken, Thuringia, Wurttemberg, and Baden.	Strong, coarse wool; producing meat of excellent quality.
Wurttemberg bastard (merino and Franken).	do.....	Wurttemberg.....	Fine wool, good quality of mutton.
Rhön.....	do.....	Rhön Mountains, Lower Franken, Meiningen, and Hesse.	Excellent meat and fair amount of wool.
East Friesland milk	do.....	East Friesland, Oldenburg, Schleswig-Holstein.	Milk and meat. Produces about 1,000 to 1,400 pounds of milk (5 to 6 per cent butterfat) in year.

PRE-WAR SHEEP SITUATION

During the 30-year period preceding the war there was a great decrease in the numbers of sheep held on German farms, which in 1883 maintained 19,190,000 head, or 424 head per 1,000 inhabitants, as compared with 5,521,000, or 85 head per 1,000 inhabitants, in 1913. This great decrease is attributable directly to the expansion of wool and mutton production in Australia and in North and South America during this period. The production of cereal and other vegetable foodstuffs had become so profitable in Germany that increased areas were put into field crops, especially on the large estates in the eastern provinces, where the sugar-beet and potato industries grew to such large proportions.

EFFECT OF VERSAILLES TREATY ON SHEEP SITUATION

Of Germany's total number of sheep in 1913, 9.6 per cent, was found within the boundaries of the territories that later were ceded to neighboring countries under the terms of the Versailles treaty. Before the war, according to the enumeration of 1913, there were 5,521,000 sheep in the Empire, or 85 head per 1,000 inhabitants. Of this number 4,988,000, or 86 head per 1,000 inhabitants, were found within the present boundaries of the Republic, so that although within the ceded territories, including the Saar, there were some 533,000 head, the treaty of peace effected an actual increase in the density of sheep, as shown in Table 88.

The net effect of the Versailles treaty upon the sheep situation was an economic gain of about 1.2 per cent.

The statistical analysis of the pre-war sheep situation in the ceded districts and in the territory now composing the Republic of Germany appears in Table 88.

TABLE 88.—*Sheep: Number in the districts which composed the former German Empire, 1913*

Districts	Total number	Per thousand inhabitants
	Thousands	Number
Germany, 1923 boundaries	4,988	86
Saar district:		
Rhine Province	2	3
Bavaria	1	12
Areas ceded:		
From East Prussia—		
To Memel	14	99
To Poland	5	202
From West Prussia—		
To Danzig Free State	7	21
To Poland	204	211
From Posen to Poland	231	119
From Upper Silesia—		
To Poland	1	1
To Czechoslovakia	0	0
From Lower Silesia to Poland	5	190
From Schleswig-Holstein to Denmark	18	108
From Rhine Province to Belgium	1	17
Alsace-Lorraine to France	44	23
Total for areas ceded	530	82
Total Empire	5,521	85
Per cent in ceded districts and Saar	9.7	

See Table 54 for sources.

DESTINATION OF THE SHEEP EXPORTED FROM GERMANY, 1909-1913

Before the war Germany produced a small net surplus of sheep exporting an average of 19,500 more animals than imported. These sheep went chiefly to Switzerland (22,000) and Belgium (4,000), with smaller numbers to France and Great Britain. (See Table 89.) A few thousand sheep were imported from Austria-Hungary either in transit to Switzerland or for local consumption in the southeast.

TABLE 89.—*Sheep: Foreign trade¹ of the German Republic, 1921-22 to 1923-24, compared with that of the Empire, 1909-10 to 1913-14*

Country	Year beginning July 1			
	Average, 1909-1913	1921	1922	1923
	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Austria.....	+6,272	+302	(?)	.....
Hungary.....		+3,614	(?)	.....
Mexico.....		+2,412	+477	.....
Czechoslovakia.....		+1,578	(?)	.....
Denmark.....	+453	-4	(?)	.....
France.....	-54	(?)	(?)	.....
Great Britain.....	-975	(?)	(?)	.....
Belgium.....	-3,676	(?)	(?)	.....
Danzig.....		+5	(?)	.....
Saar district.....		-351	(?)	.....
Switzerland.....	-21,913	-3,761	-1,294	.....
Other countries.....	+391	-453	-326	.....
Total.....	-19,502	+3,342	-1,143	¹ -2,945

Germany, Statistisches Reichsamt (formerly Kaiserliches Statistisches Amt), *Monatliche Nachweise über den Auswärtigen Handel Deutschlands*.

¹ Net imports are indicated by (+) and net exports by (-).

² If any, included in other countries.

³ Not available by countries.

POSTWAR SHEEP SITUATION

During the war and the years that have followed the flocks of Germany have increased, 11.6 per cent in 1922, 17.5 per cent in 1923, and 14.6 per cent of pre-war in 1924. There are to-day more sheep within the boundaries of the German Republic than there were in the former Empire just preceding the war. (Table 90.)

TABLE 90.—*Sheep: Number in Germany in 1922-24 as compared with 1913¹*

Item	Unit	Boundaries of 1923			
		1913	1922	² 1923	1924
Total number.....	Thousand...	4,968	5,566	5,859	5,717
Increase above pre-war.....	do.....		578	871	729
Percentage of increase.....	Per cent.....		11.6	17.5	14.6
Per 1,000 inhabitants ³	Number.....	86	90	94	91

¹ Census as of Dec. 1.

² On Oct. 1, 1923, the number of sheep was reported at 6,105,000. Subtracting from this number the slaughtering reported during October and November gives the number on Dec. 1 as above.

³ For populations see Table 19.

This increase in sheep is a natural sequence of the decreased acreage of cereals. Especially on the large estates many acres of marginal lands formerly sown to rye are now left to grow wild grass, forming excellent pasturage for sheep. The high price of wool makes

it very profitable to produce sheep, as they require but little care in addition to the wild forage of the abandoned cereal areas. It is probable that when it again becomes profitable to produce cereals in Germany these wild-grass areas will be again put under the plow and the number of sheep will be reduced to the capacity of the permanent meadows and pastures, as was the case before the war.

GERMANY'S POSTWAR FOREIGN TRADE IN SHEEP AND MUTTON

During the fiscal year 1921-22 Germany's sheep imports from Hungary, Memel, and Czechoslovakia exceeded exports to Switzerland and other western neighbors, but during 1923 and 1924 there has been a small net surplus for export, as shown in Table 89.

Germany's imports of mutton before the war about equaled her exports of live animals, averaging around 650,000 pounds. Australia, Denmark, and the Netherlands were the leading sources of these importations, as shown in Table 91.

TABLE 91.—Mutton, fresh and prepared: Foreign trade of Germany, average 1909-1913

Country	Imports (+)	Exports (-)	Net im-ports (+); net exports (-)
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Australia.....	254, 411		+254, 411
Denmark.....	296, 739		+296, 739
Netherlands.....	179, 234		+179, 234
Austria-Hungary.....	58, 642	20, 503	+38, 139
Switzerland.....	6, 834	1, 984	+4, 850
Russia.....	3, 307		+3, 307
Helgoland.....		2, 866	-2, 866
France.....	8, 378	28, 439	-20, 061
Dutch East India.....		20, 723	-20, 723
Rumania.....		65, 697	-65, 697
Other countries.....	66, 799	84, 657	-17, 858
Total.....	+874, 344	-224, 869	+649, 475

Germany, Kaiserliches Statistisches Amt., Monatliche Nachweise über den Auswärtigen Handel Deutschlands.

Since the war mutton importations have increased in spite of the per capita increase in the number of live sheep within the boundaries of the Republic. (Table 92.) During 1922 and 1923 these importations have been about three times those before the war, and in 1924 they have risen to about five times the mutton imported before the war.

TABLE 92.—Mutton, fresh, prepared and frozen: Foreign trade¹ of Germany, 1921-22 to 1923-24

Country	Years beginning July 1		
	1921	1922	1923
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Great Britain.....	+1, 301, 375	+164, 463	+152, 969
Argentina.....	+294, 094	+1, 160, 281	+2, 707, 910
Other South American countries.....	+1, 122, 141	(?)	(?)
United States.....	+23, 810	+280, 425	+297, 621
Other countries.....	+122, 576	+596, 344	+628, 091
Total.....	+2, 863, 996	+2, 201, 511	+3, 786, 621

Germany, Statistisches Reichsamt, Monatliche Nachweise über den Auswärtigen Handel Deutschlands.

¹ Net imports are indicated by (+) and net exports by (-).

² If any, included in other countries.

THE GERMAN MARKET FOR AMERICAN AGRICULTURAL PRODUCTS¹²

ECONOMIC CHANGES IN GERMANY

In the 25 years before the war Germany passed through a period of tremendous industrial development. During this period the population of its industrial cities and the number of factory workers were trebled, its railway traffic almost quadrupled, and its bank deposits increased to seven times the amount at the beginning of the period.

In the same period the agricultural population remained practically stationary, although the application of improved methods greatly increased production. On the whole, however, Germany became increasingly dependent on foreign sources of supply. Germany became a large importer, not only of food products but of raw materials to be worked up in its mills for export to other countries. Since the United States produced a surplus of these raw materials and foodstuffs, Germany became, next to the United Kingdom, our best market for agricultural products.

As a result of the war, German industrial life has been thrown into confusion. By the loss and occupation of its chief industrial centers and the requisitioning of its coal and ore for reparations in kind it has been impossible in seven years for German factories to reach former standards of production or efficiency. Furthermore, foreign markets for manufactured products lost during the war have not all been regained.

German agriculture has undergone a great setback. It has not suffered as much as German industry, although the soils have been considerably exhausted by exploitation during and since the war. An increased use of fertilizers would probably eventually restore these soils to their former high productivity.

The German markets for different American agricultural products have been variously affected by these changed economic conditions. The German people have been impoverished and their purchasing power as a whole diminished, but there are certain necessities which they must have, even at the sacrifice of other things formerly deemed important. It is therefore necessary to analyze this trade situation more in detail before making any broad generalizations.

AMERICAN TRADE WITH GERMANY

The visible balance of trade between the United States and Germany has been and still is normally favorable to the United States, as indicated by Table 93.

TABLE 93.—*Trade of the United States with Germany (all commodities)*

Year ended June 30—	Imports from Germany	Exports to Germany	Balance of exports	Year ended June 30—	Imports from Germany	Exports to Germany	Balance of exports
	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>		<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
1910.....	168,805,137	249,555,926	80,750,789	1921.....	90,773,014	381,869,349	291,096,335
1911.....	163,242,560	287,495,814	124,253,254	1922.....	95,592,004	350,495,269	254,903,265
1912.....	171,380,380	306,959,021	135,578,641	1923.....	142,885,762	263,132,434	150,246,672
1913.....	188,963,071	331,684,212	142,721,141	1924.....	146,816,067	378,350,363	231,534,296
1914.....	189,919,136	344,794,276	154,875,140	1925.....	144,764,970	464,058,347	319,293,377
1920.....	45,085,975	202,176,079	157,090,104				

Compiled from the following publications of the U. S. Bureau of Foreign and Domestic Commerce, Washington, D. C.: Foreign Commerce and Navigation of the United States, June 30, 1914, 1915, p. xii; Monthly Summary of Foreign Commerce of the United States, June, 1920, 1921, 1922, 1923, 1924, and 1925.

¹² This section was prepared by G. B. L. Arner, agricultural statistician, Bureau of Agricultural Economics.

It would appear from these figures that by 1923 there was a relatively close approximation to the pre-war trade relations between the two countries. In pre-war years, however, although Germany had an adverse visible balance of trade in its commerce with all other nations, it enjoyed an invisible income from foreign investments, tourist expenditures, emigrant remittances, etc., which left a net favorable balance of payments, so that there was usually a material net importation of gold. Since the war, however, the interest from foreign investments and the tourist expenditures have been greatly reduced, so that with an adverse visible balance of trade Germany is becoming to an increasing extent a debtor nation. Furthermore, in considering only the visible balance of trade, the relation between general prices in pre-war and postwar years must be considered. In the years ended June 30, 1921-1925, the trade between the two countries, while approximately the same as before the war in terms of dollars, was smaller in volume and in the purchasing power of the proceeds than in any of the five years immediately preceding the war.

AGRICULTURAL EXPORTS TO GERMANY

American exports to Germany have always been predominantly agricultural. Table 94 shows the export value in the years beginning July 1, 1909-1913, 1921, 1922, 1923, and 1924 of the 12 most important agricultural exports to Germany, amounting in 1923-24 to nearly 75 per cent of our total exports to that country.

TABLE 94.—Value of Exports of 12 principal agricultural products, United States to Germany

Commodity	Year beginning July 1				
	Average 1909-1913	1921	1922	1923	1924
	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
Cotton, raw.....	154,454,688	130,841,050	118,436,466	198,787,795	227,182,818
Lard.....	15,688,461	30,233,767	39,495,719	41,545,284	38,516,237
Bacon.....	148,561	5,959,577	8,608,748	9,612,105	3,546,646
Oleo oil ¹	2,375,485	1,598,680	1,580,071	1,315,436	2,583,957
Milk, condensed and evaporated.....	31	4,774,050	1,565,068	4,380,156	3,960,554
Wheat.....	6,067,881	31,507,603	10,514,527	2,209,905	11,847,632
Wheat flour.....	990,535	8,543,188	5,629,680	7,225,117	14,246,332
Rye.....	65,064	6,364,324	15,774,787	3,716,239	10,904,124
Corn.....	3,245,266	18,939,147	9,663,437	640,681	35,429
Barley.....	913,718	3,200	336,953	23,201	7,943,802
Cottonseed oil, cake, and meal.....	4,447,827	2,511,435	2,914,365	864,875	4,064,627
Tobacco.....	4,537,348	4,869,472	4,393,668	8,157,966	4,245,662
Total.....	192,949,882	246,145,493	218,913,489	278,478,760	329,077,820
All other commodities.....	111,147,967	104,349,776	74,218,945	99,871,603	134,980,527

Compiled from the following publications of the United States Bureau of Foreign and Domestic Commerce, Washington, D. C.: Foreign Commerce and Navigation of the United States, 1910-1914; Monthly Summary of Foreign Commerce of the United States, June, 1922-1925.

¹ Includes neutral lard in 1909-10.

This is not a complete list of the agricultural exports to Germany, but it is sufficient to show the significance of the German market in American agriculture.

GERMAN IMPORTS OF AMERICAN AGRICULTURAL PRODUCTS

In measuring the importance of the German market it is perhaps more significant to consider German imports of American agricultural products rather than our exports to Germany. (Table 95.) The German import figures will not agree with American export figures for many reasons, one of which is that exports do not always actually go to the countries to which they are originally consigned; another reason is the difference between the time of shipment and that of arrival. For this purpose 12 important commodities imported into Germany from the United States in the calendar years 1913, 1921, 1922, 1923, and 1924 are chosen for consideration.

TABLE 95.—German imports of 12 American agricultural products

Commodity	Unit	1913	1921	1922	1923	1924
Cotton.....(500 pounds)	Bale.....	1,962,204	1,215,176	1,055,537	746,050	1,083,841
Lard.....	Pound.....	223,065,837	297,360,857	126,306,943	242,911,867	248,410,360
Bacon.....	do.....	2,306,012	103,345,034	54,796,435	78,933,719	53,440,827
Oleo oil.....	do.....	43,282,912	23,695,041	23,009,410	12,675,479	18,903,563
Pork, fresh or simply prepared.....	do.....	160,936	51,426,704	15,583,876	16,228,722	25,085,923
Wheat.....	Bushel.....	36,941,706	60,801,802	26,546,031	9,069,069	18,389,325
Wheat flour.....	Barrel.....	74,349	211,630	106,559	1,093,628	8,591,756
Rye.....	Bushel.....	769,251	12,128,769	19,080,166	23,323,049	9,564,730
Corn.....	do.....	6,755,588	19,897,453	35,068,861	5,961,823	1,955,291
Barley.....	do.....	8,633,090	1,568,521	2,051,965	2,123,045	4,588,696
Oil cake and meal.....	Pound.....	474,509,286	11,338,258	17,790,681	1,503,978	18,699,276
Tobacco, leaf.....	do.....	16,117,831	20,937,086	15,979,602	21,675,186	30,234,165

Germany, Statistisches Reichsamt, Monatliche Nachweise über den Auswärtigen Handel Deutschlands, December, 1913, 1921 to 1924.

On account of fluctuations in exchange the import values of these commodities, recorded in marks in German statistics, are not very significant. To arrive at comparable values it is better to multiply these quantities by the average export prices as shown in the United States export statistics. This process gives results as shown in Table 96.

TABLE 96.—German imports of 12 American agricultural products, in United States currency

Commodity	1913	1921	1922	1923	1924
	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
Cotton.....	115,780,225	86,985,498	105,738,418	106,714,184	145,303,955
Lard.....	24,983,374	38,062,190	14,777,795	29,678,160	33,094,578
Bacon.....	288,251	13,951,590	6,246,794	9,156,211	6,640,103
Oleo oil.....	5,107,384	2,630,150	2,369,969	1,471,331	2,627,595
Pork, fresh and simply prepared.....	20,278	8,279,699	1,870,065	2,365,622	2,985,225
Wheat.....	36,461,464	100,748,586	33,341,815	10,574,534	26,278,345
Wheat flour.....	375,537	1,454,253	562,951	5,061,266	20,569,141
Rye.....	535,399	20,594,650	19,022,926	22,016,929	10,332,447
Corn.....	3,816,907	16,037,347	25,214,511	5,079,473	1,894,901
Barley.....	5,024,458	1,312,852	1,526,662	1,618,446	8,704,163
Oil cake and meal.....	6,643,130	226,765	373,604	33,068	399,898
Tobacco, leaf.....	2,046,968	3,998,983	2,364,981	3,142,902	4,697,925
Total.....	201,063,372	293,382,553	213,410,491	197,132,267	293,689,276

Table 98 gives a more accurate picture of the position of American agricultural products in German markets than does Table 96. It will be noted that German imports of American grain are generally

higher than our exports of grain to Germany. This is explained by the heavy transshipments to Germany of grain originally consigned to the United Kingdom or the Netherlands. Oil-cake imports, on the other hand, are much lower than corresponding American exports, probably on account of the reshipment to Denmark of oil cake originally consigned to Germany. These figures appear more significant when combined in groups, as in Table 97.

TABLE 97.—German imports of American agricultural products, in United States currency

Commodity group	1913	1921	1922	1923	1924
	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
Cotton.....	115,760,225	86,085,498	105,738,418	106,714,184	145,303,985
Meats and fats.....	30,399,287	62,923,619	25,264,623	42,891,424	45,331,501
Breadstuffs.....	37,372,400	122,797,489	52,927,692	37,652,750	57,179,933
Feedstuffs.....	15,484,495	17,576,964	27,114,777	6,731,007	10,975,932
Tobacco.....	2,046,965	3,998,983	2,364,981	3,142,902	4,897,925
Total.....	201,063,372	293,382,553	213,410,491	197,132,267	263,689,276

These values may be more readily compared in the form of index numbers, as shown in Table 98.

TABLE 98.—German imports of American agricultural products, index numbers of value, base 1913

Commodity group	1913	1921	1922	1923	1924
Cotton.....	100	74	91	92	126
Meats and fats.....	100	207	83	141	149
Breadstuffs.....	100	329	142	101	152
Feedstuffs.....	100	114	175	43	71
Tobacco.....	100	195	116	154	239
Total.....	100	146	106	98	131
Total divided by United States Department of Labor wholesale price index.....	100	99	71	64	87

It thus appears that although German imports of these important commodities have exceeded the pre-war level in gross value during three years of the last four, the proceeds of our sales to Germany, expressed in terms of purchasing power, in 1924 were only 87 per cent of our sales to Germany in 1913.

To compare German imports of American agricultural commodities on the basis of volume, we may multiply the quantities of each commodity imported in each year by the average unit export price for 1913. The products, combined in groups, are shown in Table 99.

TABLE 99.—German imports of American agricultural products, value at 1913 export prices

Commodity group	1913	1921	1922	1923	1924
	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
Cotton.....	115,760,225	71,689,309	62,271,405	44,013,810	64,059,190
Meats and fats.....	30,399,287	55,498,325	25,674,498	40,601,570	39,893,509
Breadstuffs.....	37,372,400	69,521,894	40,018,959	30,253,310	42,617,930
Feedstuffs.....	15,484,495	12,313,676	21,257,220	4,625,620	6,347,532
Tobacco.....	2,046,965	2,659,010	2,029,409	2,752,749	2,839,731
Total.....	201,063,372	211,682,213	151,251,491	122,247,059	156,957,892

These figures may be expressed in the form of index numbers of volume, since the price is constant, as in table 100.

TABLE 100.—*German imports of American agricultural products, index numbers of volume, base 1913*

Commodity group	1913	1921	1922	1923	1924
Cotton.....	100	62	54	28	55
Meats and fats.....	100	183	84	134	131
Broadstuffs.....	100	186	107	81	115
Feedstuffs.....	100	80	137	30	41
Tobacco.....	100	130	99	134	188
Total.....	100	105	75	61	78
Total, less cotton.....	100	164	104	92	109

The heavy imports of these commodities in 1921 were followed by a drop in 1922 to 75 per cent of the volume in 1913, with a further decline in 1923. In 1924, because of increased imports of cotton, wheat, and wheat flour, the index number rose again to 78. Since cotton forms so large a part of these imports the index number of imports of other commodities is given separately, showing that the volume of German imports of other American agricultural commodities has in the past three years been practically equal to that of 1913.

THE GERMAN MARKETS FOR SPECIFIC COMMODITIES

It appears from the above tables that the war and postwar economic conditions have affected the German markets for different classes of commodities in different ways. It is therefore necessary in an analysis of the situation to consider each commodity group separately in arriving at conclusions regarding future German market conditions.

COTTON

Previous to the war Germany was a large importer of raw cotton and an exporter of cotton goods. The number of spindles in Germany on March 1, 1914, was 11,404,944, according to estimates by the International Federation of Master Cotton Spinners. As a result of the war the number of spindles was reduced to 9,400,000 on February 1, 1920, chiefly by the loss of 2,000,000 spindles, or 17.5 per cent of the total, in the ceded territory of Alsace-Lorraine. This loss of spindles is proportionately greater than the loss of population, which in the same period was approximately 10 per cent. It appears from Tables 96, 97, and 100 that in 1924 Germany paid in actual gold value \$30,000,000 more for cotton than in 1913, but that this sum paid for only 55 per cent of the quantity used in 1913.

In 1913 Germany obtained 77.3 per cent of her cotton from the United States; in 1923, 77 per cent; and in 1924, 79.2 per cent; so that the source of supply has not been materially shifted.

The decline of the German cotton-manufacturing industry, aside from the loss of spindles to France as noted above, is owing both to a decreased domestic demand resulting from the impoverishment of the people and to the loss of an important export trade. Germany since the war has become a net importer of cotton goods, and it is significant that the chief source of supply next to the United Kingdom is Alsace-Lorraine.

In the future Germany will undoubtedly continue to offer an important market for American raw cotton, although it is probable that the quantity of German purchases will be below the pre-war level for several years at least. The German people will probably return in a few years to their normal consumption of cotton goods, which are likely to be supplied by German mills largely from American raw cotton. It is not at all certain that the export trade will return to its pre-war volume; but, since the United States remains the world's chief source of raw cotton for which the aggregate demand is as great as ever, the decrease in German demand merely means that there is a compensating strengthening of demand in countries such as France and Japan, in which the cotton industry has expanded since the war.

MEATS AND FATS

The German market for American pork products is better than before the war. Even during the period of greatest economic demoralization in Germany, imports of pork products were exceptionally heavy. This apparently paradoxical situation arose from the fact that fats were necessities of life and American pork fats were the cheapest fats obtainable. The German hog population diminished greatly during the war, and the scarcity of feedstuffs has made it difficult to fatten hogs to the same weights as before the war. Butter has been scarce and too expensive for the average family, so the cheaper American lard has been used as a substitute. With the economic revival which followed the stabilization of the currency in December, 1923, and the subsequent acceptance of the Dawes plan, there was an immediate resumption of imports of butter from Denmark, which soon rose to the pre-war level. It seems probable that if economic improvement continues, more butter, margarine, kettle-rendered lard, and domestic pork will be used and consequently that the per capita consumption of American bacon and refined lard will decline toward its pre-war level. This will still mean an important market for lard, but there is little chance for a continuance of an important trade in American bacon.

Although the German market for American meats and fats has been relatively good in recent years, it should be noted that in relation to the purchasing power of the dollars received for these export products the trade is really no better than in 1913. The value of German imports of American pork products in 1924 was 149 per cent of the value of the same products in 1913, while the index number of wholesale prices in 1924 was 150.

BREADSTUFFS

German imports of bread grains and flour from the United States in the calendar year 1923 were approximately equal in value to the corresponding imports for 1913, but the volume of these imports was somewhat smaller. In 1924, because of a shortage in the German wheat and rye crops, together with a good crop of wheat in the United States, there was a sharp increase both in value and volume. Total imports of wheat in 1925 will probably be somewhat heavier than usual. In the five months January to May, imports of wheat amounted to 20,100,000 bushels, as compared with 4,800,000 bushels in the same months of 1924. Of this, 11,700,000 bushels were imported from the United States and 5,300,000 bushels from Argentina.

It is apparent from the experience of several seasons that the German consumption of bread cereals is relatively elastic. A grain shortage leads to longer milling and greater substitution, so that the deficit is never entirely made up by imports. For example, a total production of wheat and rye in 1921 of 376,000,000 bushels was followed by net imports of 74,000,000 bushels. In 1922, with a bread grain production 98,000,000 bushels smaller, net imports were only 10,000,000 bushels larger. In 1923, with a large crop of 369,000,000 bushels with low world prices, Germany was still able to import 50,000,000 bushels of wheat and rye. In 1924 again there was a small crop of 315,000,000 bushels with high world prices. Imports of wheat and rye for 11 months ended May 31, 1925, amounted to 87,000,000 bushels, indicating that the total imports for the season will be but slightly in excess of 90,000,000 bushels.

Germany is still far below its pre-war standard of bread-grain consumption, however; and, if the country returns to pre-war conditions of industrial prosperity, it is reasonable to suppose that the consumption of bread grains will increase.

TOBACCO

The German market for American leaf tobacco remained steady throughout the whole period of depression and was exceptionally good in the early months of 1924. In 1923 the volume of imports of American tobacco was 34 per cent and in 1924 it was 88 per cent greater than in 1913. Imports of American tobacco in 1923 constituted nearly 16 per cent of the total tobacco imports, as compared with 9 per cent in 1913. But in the first five months of 1925 imports of American tobacco have been much smaller than in the corresponding months of 1924, with only a slight reduction in total imports. Much of the American tobacco imported into Germany is for manufacture and export.

FEEDSTUFFS

Since the numbers of all classes of livestock in Germany are smaller than in the years immediately preceding the war, Germany is importing smaller quantities of feed stuffs than in pre-war years. But of such feedstuffs as have been imported since the close of the war the United States has replaced Russia as the most important source of supply. In 1920, 1921, and 1922 Germany imported large quantities of American corn, but this was used largely in the manufacture of industrial alcohol because of the restrictions imposed by the Government on the use of potatoes for this purpose. Since the lifting of these restrictions, corn imports have been of little importance, as few German farmers are familiar with the use of corn as a feedstuff. Barley imports from the United States have usually been unimportant, but following the short German barley crop of 1924 nearly 8,000,000 bushels of barley were exported from the United States to Germany in the year ended June 30, 1925. Oil cake and oil-cake meal was also exported from the United States to Germany in unusually large quantities in the year ended June 30, 1925, but the greater part was reexported, chiefly to Denmark.

SUPPLEMENTARY TABLES

The data for production, acreage, and yields per acre in Tables 101, 102, and 103 are the yearly figures from which averages in the foregoing text have been calculated.

Tables 104 and 105 give the numbers of livestock and the utilization of land in the Empire of Germany as far as available.

TABLE 101.—Cereals and potatoes: Production in Germany, 1878-1924
(Thousands of bushels—000 omitted)

Year	Rye	Wheat	Oats	Summer barley	Potatoes	Year	Rye	Wheat	Oats	Summer barley	Potatoes
1878	273,134	96,084	348,258	100,969	868,576	1902	373,758	143,299	514,430	142,380	1,596,939
1879	219,712	84,032	294,796	94,600	696,323	1903	391,356	130,623	542,400	152,669	1,576,362
1880	195,698	85,457	292,516	98,748	715,973	1904	396,080	139,808	477,847	135,399	1,333,305
1881	216,224	75,912	259,708	95,533	539,390	1905	378,207	135,950	451,047	134,205	1,775,548
1882	252,605	94,136	311,608	103,646	665,936	1906	378,955	144,769	530,843	142,896	1,577,648
1883	221,444	86,678	255,974	98,059	917,775	1907	384,152	127,630	630,309	160,660	1,673,218
1884	215,882	91,281	292,867	102,606	884,632	1908	422,663	138,449	530,137	140,543	1,702,796
1885	230,026	95,827	300,239	104,030	1,029,438	1909	446,746	138,008	628,724	160,568	1,716,134
1886	239,868	97,858	334,548	107,338	923,638	1910	413,802	141,896	544,261	133,332	1,597,159
1887	251,009	104,020	296,312	101,320	928,614	1911	427,796	149,398	530,757	145,136	1,263,015
1888	217,429	92,997	320,218	103,846	805,083	1912	458,588	160,238	586,975	159,925	1,844,846
1889	211,130	87,155	289,147	89,011	977,520	1913	481,169	171,075	622,674	168,125	1,988,591
1890	231,011	104,020	338,644	104,856	856,891	1914	410,478	145,944	622,674	144,077	1,674,377
1891	188,296	85,759	363,690	115,604	681,883	1915	360,310	141,676	412,400	114,077	1,983,161
1892	268,804	116,219	325,763	111,195	1,028,400	1916	351,826	113,393	484,007	128,450	921,317
1893	293,694	110,046	223,354	89,424	1,186,001	1917	275,696	83,945	254,041	85,644	1,281,922
1894	278,528	110,671	361,692	111,746	1,067,357	1918	315,301	85,805	301,839	93,504	909,183
1895	359,670	103,175	361,899	110,781	1,167,960	1919	240,161	79,701	309,587	87,741	789,210
1896	284,708	110,524	342,304	106,418	1,075,771	1920	194,255	82,583	332,490	82,344	1,024,301
1897	272,937	107,033	333,515	102,973	1,094,988	1921	267,648	107,798	344,812	89,036	960,889
1898	296,558	120,998	348,275	115,405	1,168,144	1922	295,033	71,926	276,643	73,837	1,494,181
1899	341,556	141,388	474,195	137,053	1,414,104	1923	263,037	106,448	420,731	108,446	1,197,095
1900	336,635	141,131	488,594	137,879	1,491,228	1924	225,573	89,199	389,525	110,226	1,337,540
1901	321,300	91,822	485,701	152,531	1,788,923						

1878-1912: Converted from revised rounded figures given in Die Deutsche Landwirtschaft, prepared by Kaiserlichen Statistischen Amt. These figures may not agree with yearly data appearing in Vierteljahrshefte for corresponding years.

1913-1922: Germany, Statistisches Reichsamt, Vierteljahrshefte zur Statistik des Deutschen Reichs.

1923 and 1924: Deutscher Reichsanzeiger und Preussischer Staatsanzeiger.

¹ New boundaries beginning 1918; however, the boundaries differ from year to year between 1918 and 1924.

² Includes winter barley.

TABLE 102.—Cereals and potatoes: Acreage in Germany, 1878-1924
(Thousands of acres—000 omitted)

Year	Rye	Wheat	Oats	Summer barley	Potatoes	Year	Rye	Wheat	Oats	Summer barley	Potatoes
1878	14,712	4,495	9,271	4,010	6,815	1902	15,209	4,725	10,269	4,062	8,009
1879	14,688	4,500	9,281	4,023	6,827	1903	14,858	4,468	10,601	4,203	8,001
1880	14,668	4,500	9,274	4,020	6,840	1904	15,071	4,739	10,353	4,020	8,125
1881	14,651	4,505	9,279	4,043	6,850	1905	15,187	4,762	10,334	4,035	8,196
1882	14,683	4,515	9,276	4,040	6,845	1906	15,078	4,784	10,433	4,065	8,159
1883	14,399	4,759	9,323	4,334	7,193	1907	14,952	4,317	10,816	4,206	8,149
1884	14,448	4,754	9,335	4,295	7,198	1908	15,123	4,658	10,564	4,025	8,137
1885	14,436	4,742	9,328	4,304	7,218	1909	15,150	4,594	10,650	4,067	8,214
1886	14,428	4,737	9,407	4,280	7,205	1910	15,288	4,801	10,698	3,879	8,144
1887	14,438	4,744	9,415	4,277	7,210	1911	15,162	4,878	10,694	3,917	8,209
1888	14,366	4,776	9,471	4,258	7,215	1912	15,488	4,759	10,840	3,929	8,282
1889	14,337	4,833	9,605	4,164	7,210	1913	15,849	4,878	10,967	4,087	8,453
1890	14,381	4,843	9,647	4,112	7,181	1914	15,565	4,932	10,843	3,909	8,367
1891	13,541	4,658	10,267	4,466	7,223	1915	15,843	4,950	11,404	4,002	8,827
1892	14,033	4,883	9,854	4,176	7,240	1916	14,823	4,159	8,935	3,766	6,914
1893	14,856	5,051	9,854	4,020	7,504	1917	13,715	3,751	8,808	3,610	6,293
1894	14,937	4,895	9,679	4,023	7,475	1918	14,199	3,375	7,510	2,997	5,720
1895	14,664	4,772	9,556	4,178	7,537	1919	10,880	4,030	7,396	2,781	5,389
1896	14,782	4,762	9,835	4,141	7,544	1920	10,589	3,399	7,940	2,949	5,986
1897	14,744	4,747	9,882	4,117	7,581	1921	10,539	3,561	7,814	2,806	6,541
1898	14,690	4,865	9,877	4,102	7,613	1922	10,236	3,395	7,912	2,846	6,725
1899	14,507	4,989	9,884	4,065	7,739	1923	10,789	3,653	8,265	3,216	6,738
1900	14,715	5,063	10,188	4,127	7,954	1924	10,525	3,624	8,713	3,571	6,821
1901	14,361	3,907	10,900	4,594	8,201						

1878-1912: Converted from revised rounded figures given in Die Deutsche Landwirtschaft, prepared by Kaiserlichen Statistischen Amt. These figures may not agree with yearly data appearing in Vierteljahrshefte for corresponding years.

1913-1922: Germany, Statistisches Reichsamt, Vierteljahrshefte zur Statistik des Deutschen Reichs.

1923 and 1924: Deutscher Reichsanzeiger und Preussischer Staatsanzeiger.

¹ New boundaries, beginning 1918; however, the boundaries differ from year to year between 1918 and 1924.

² Includes winter barley.

TABLE 103.—Cereals and potatoes: Average yield per acre in Germany, 1878-1924

Year	Rye	Wheat	Oats	Summer barley	Pota- toes	Year	Rye	Wheat	Oats	Summer barley	Pota- toes
1878	Bush. 18.6	Bush. 21.4	Bush. 37.6	Bush. 26.7	Bush. 127.5	1902	Bush. 24.6	Bush. 30.3	Bush. 50.1	Bush. 35.1	Bush. 199.4
1879	15.0	18.7	31.8	23.5	102.0	1903	26.3	29.2	51.2	36.3	197.0
1880	13.3	19.2	31.5	24.6	104.8	1904	26.3	29.5	46.2	33.7	164.1
1881	14.7	16.9	28.0	23.6	137.1	1905	24.9	28.5	43.6	33.3	216.6
1882	17.2	20.8	33.6	25.7	97.3	1906	25.1	30.3	55.7	35.2	193.4
1883	15.4	18.2	27.6	22.6	127.6	1907	25.7	29.6	58.3	38.2	205.3
1884	14.9	19.2	31.4	23.9	122.9	1908	28.0	29.7	50.2	34.9	209.3
1885	15.9	20.2	32.1	24.2	142.6	1909	29.5	30.5	59.0	39.5	208.9
1886	16.6	20.7	35.6	25.1	128.2	1910	27.1	29.5	51.4	34.4	196.1
1887	17.4	21.9	31.5	23.7	128.8	1911	28.2	30.6	49.6	37.1	153.9
1888	15.1	19.5	33.6	24.4	111.6	1912	29.5	33.7	54.1	40.7	223.4
1889	14.7	18.0	30.1	21.4	135.6	1913	30.4	35.1	61.0	41.8	235.8
1890	16.1	21.5	35.1	25.5	119.3	1914	26.4	29.6	57.4	36.9	200.1
1891	13.9	18.4	35.4	25.9	94.4	1915	22.7	28.6	36.2	28.5	224.7
1892	19.2	23.8	33.2	26.6	142.0	1916	23.7	27.3	54.2	34.1	133.3
1893	19.8	21.8	23.1	22.2	158.0	1917	20.1	22.4	29.1	23.7	263.7
1894	18.6	22.6	37.4	27.8	142.8	1918 ¹	22.2	25.4	40.2	31.2	158.9
1895	17.8	21.6	36.3	26.5	155.0	1919 ¹	22.1	19.8	41.9	31.6	146.4
1896	19.3	23.2	34.8	25.7	142.6	1920 ¹	18.3	24.3	41.9	27.9	171.1
1897	18.5	22.5	33.7	25.0	144.4	1921 ¹	25.4	30.3	44.1	31.7	146.9
1898	20.2	24.9	40.3	28.1	153.4	1922 ¹	20.1	21.2	35.0	25.9	272.2
1899	23.5	28.4	48.0	33.8	182.7	1923 ¹	24.4	29.1	50.9	33.7	177.7
1900	22.9	27.9	48.0	33.4	187.5	1924 ¹	21.4	24.6	44.7	30.9	196.1
1901	22.4	23.5	44.6	33.2	218.1						

¹ New boundaries, beginning 1918; however, the boundaries differ from year to year between 1918 and 1924.

² Includes winter barley.

TABLE 104.—Livestock: Number in Germany, specified years, 1873 to 1924

[In thousands—000 omitted]

Year and boundary	Horses	Cattle	Swine	Sheep	Goats	
Empire:						
1873	3,352	15,777	7,124	24,999	2,320	
1882	3,523	15,787	9,206	19,190	2,641	
1892	3,836	17,556	12,174	13,590	3,002	
1897	4,038	18,491	14,275	10,867	3,297	
1900	4,195	18,940	16,807	9,693	3,330	
1904	4,267	19,332	18,921	7,907	3,534	
1907	4,345	20,631	22,147	7,704	3,410	
1912 ¹	4,523	20,182	21,924	5,821	3,548	
1913 ¹	4,558	20,994	25,659	5,821	3,548	
1923 boundary:						
1912 ¹	3,822	17,437	18,877	5,188	2,997	
1913 ¹	3,807	18,476	22,533	4,998	3,164	
1922 ²	3,691	16,316	14,678	5,566	4,140	
1923 ³		16,091	15,832	5,859	4,654	
1924 ³		3,890	17,296	16,944	6,717	4,351

Germany, Kaiserliches Statistisches Amt, Die Deutsche Landwirtschaft, Berlin, 1913.

¹ Prepared in the German Statistisches Reichsam, September, 1923.

² For sources, see Table 55.

TABLE 105.—Utilization of land in the Empire of Germany, 1878 to 1900

[Thousands of acres—000 omitted]

Classification	1878	1883	1893	1900
Flow and garden lands	64,401	64,684	64,847	64,882
Meadows	14,613	14,587	14,618	14,718
Pastures	11,405	8,453	7,069	6,694
Vineyards	331	332	328	334
Forests and wood lots	34,280	34,368	34,487	34,564
Other woodlands	8,400	11,062	12,175	12,388
Total	133,430	133,496	133,554	133,594

Germany, Kaiserliches Statistisches Amt, Die Deutsche Landwirtschaft, Berlin, 1913.



UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

AGRICULTURAL SURVEY OF EUROPE:
SWITZERLAND

By ASHER HOBSON

Collaborator, Bureau of Agricultural Economics

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Swiss agriculture with all its topographical handicaps has a record of outstanding achievement. Some of these achievements are of international importance. The marked success of Swiss cooperatives is of particular importance and interest to the United States farmer, for cooperation in American agricultural life is to-day being given increasing consideration. A study of the Swiss farmers' success will yield valuable suggestions to leaders of similar movements in the United States. Interest is added to the importance of Swiss agriculture by a flavor of romance imparted by the struggle of the Swiss farmer in the conquest of his environment. Switzerland, a small mountain-ridden country, is known as a leader among nations for the attractiveness of its farm homes, the completeness and solidarity of its agricultural cooperative enterprises, and the intensity of its dairy industry. (Fig. 1.)

Perhaps one of the highest aims of a nation is the maintenance of an environment conducive to a comfortable and attractive home life. In all too many countries the cities have shown the way, but the appearance of the farm homes leads one to believe that this is not the case in Switzerland. This appearance is partly due to the characteristics of the country people who are endowed by inheritance with a generous supply of "landmindedness," and to the well-being of its agriculture. The prosperity of Swiss agriculture is dependent in a large measure upon the dairy industry and the cooperative movement.

Emphasis in this study is placed upon these two subjects. As a basis for their interpretation attention is given to a review of the economic phases of Swiss agriculture as a whole. In order to obtain direct information, the author spent some time in Switzerland observing conditions and gathering data.

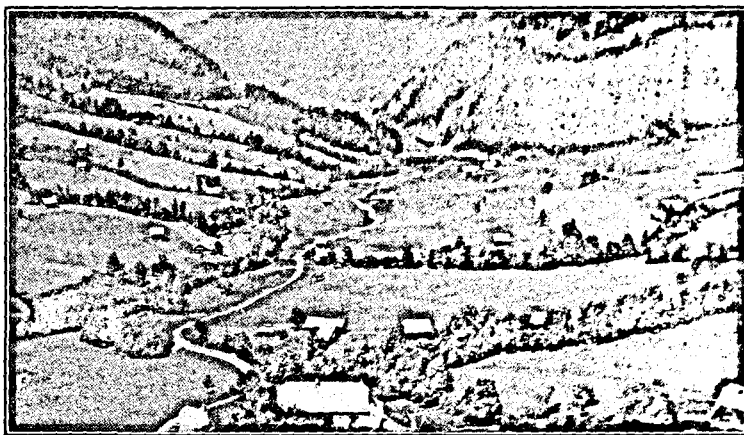


FIGURE 1.—Typical farm valley. Valleys like this explain the devotion of the Swiss peasant to his farm home and its mountainous environment

GENERAL CHARACTERISTICS

Switzerland is a confederation of 25 Cantons. Each of these is in a large measure self-governing. Most of the Cantons have, during some period of their existence, pursued their own courses as independent principalities. This self-governing tendency, protected by mountain barriers and generated by tradition, gives to many of the Swiss Cantons an individuality of their own. To-day the Cantons strive to preserve that individuality inherited from the past. Cantonal characteristics are guarded and perpetuated with the zeal of competitive sportsmen. The success of their efforts is attested by the variety of languages, dialects, costumes, manners, and customs found in Switzerland. It would be difficult to find elsewhere such linguistic and sociological variety in so small an area.

Official documents are published in French and German, and the use of French, German, and Italian is sanctioned on the floor of both Houses of Parliament. This language diversity is extended by

numerous dialects. Roughly speaking, about two-thirds of the population are German and one-third French, and one Canton employs Italian as the mother tongue.

It is a nation of differences that make a united whole. "United but diverse" is the Swiss characterization of themselves. It is a country where perpetuated diversity, democracy, and unity find a prosperous home.

From the standpoint of languages, customs, and traditions, Switzerland is an international cooperative union of small nations.

AGRICULTURAL POPULATION

Switzerland with its 15,945 square miles is somewhat larger than Maryland and about two-thirds the size of West Virginia. In 1920 it had a population of 3,880,000. Of this number slightly over a million people were dependent upon agriculture for a livelihood. Of those gainfully employed in 1920, 28 per cent were in agriculture, 47 per cent were engaged in manufacturing pursuits, 12 per cent were in commerce, and the remaining 13 per cent were distributed among all other callings. These figures emphasize the fact that Switzerland is an industrial nation. (Tables 1 and 2.)

TABLE 1.—Population of Switzerland, classified by occupation in census years 1870-1920

Occupation	1870	1888	1900	1910	1920	Percentage of total population employed				
						1870	1888	1900	1910	1920
	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>					
Production of raw materials ¹	552,646	491,743	487,124	483,194	492,306	46	40	33	29	28
Manufacturing.....	498,654	540,361	694,062	809,114	827,624	42	44	47	48	47
Commerce.....	69,831	92,083	140,558	194,105	217,152	6	8	10	11	12
Transportation.....	17,464	35,637	61,391	84,734	91,297	1	3	4	5	5
Public administration and liberal professions.....	45,392	60,653	72,513	97,310	98,895	4	4	5	6	5
Others.....	10,963	14,869	14,704	25,133	51,573	1	1	1	1	3
Total employed.....	1,194,950	1,225,346	1,470,352	1,693,590	1,778,847	100	100	100	100	100
Population, total.....	2,655,001	2,917,754	3,315,443	3,753,293	3,880,320					
Percentage employed.....						45	42	44	45	46

Federal census.

¹ Largely agriculture.

Nearly 53 per cent of the agricultural population is composed of children, elderly people not gainfully employed, and persons engaged solely in household work. Of those actually working on the land about 90 per cent are operators or members of operators' families. Switzerland is a nation of small farms. It is the home of peasant holdings, where the members of the family carry on with little outside assistance. One-fifth of the workers engaged outside the household are women. (Table 2.)

TABLE 2.—Agricultural population in Switzerland, classified by occupation, census years, 1888-1920

Occupation	1888	1900	1910	1920	Percentage of total agricultural population			
					1888	1900	1910	1920
Farm operators and members of family gainfully employed:								
Farm operators.....	Number 210, 331	Number 211, 420	Number 208, 257	Number 206, 544	19.4	20.3	21.4	21.3
Operator's family working on farm.....								
Male.....	92, 597	98, 494	90, 788	96, 116	8.6	9.4	9.3	9.9
Female.....	46, 141	39, 888	62, 833	59, 119	4.2	3.8	6.4	6.1
Total.....	349, 069	349, 802	361, 878	361, 779	32.2	33.5	37.1	37.3
Wage laborers:								
Weekly or monthly—								
Male.....	61, 320	57, 849	56, 504	186, 847	5.7	5.5	5.8	18.9
Female.....	9, 927	6, 779	5, 608	11, 057	.9	.6	.6	1.1
Day laborers.....	44, 179	45, 582	30, 720	.....	4.1	4.4	8.2	.....
Total.....	115, 426	110, 210	92, 832	97, 904	10.7	10.5	9.6	10.0
Persons living on the farm not directly engaged in agriculture:								
Operator's family occupied in house.....	230, 583	228, 025	175, 442	185, 972	21.8	21.9	18.0	19.1
Adults not gainfully employed.....	27, 237	16, 405	15, 052	16, 635	2.5	1.6	1.5	1.7
Children.....	343, 804	324, 339	319, 017	295, 309	31.8	31.1	32.7	30.4
Personal servants.....	16, 114	14, 623	11, 021	14, 097	1.5	1.4	1.1	1.5
Total.....	617, 738	583, 992	520, 532	512, 013	57.1	56.0	53.3	52.7
Total agricultural population ¹	1, 082, 233	1, 043, 404	975, 242	971, 696	100.0	100.0	100.0	100.0

Adapted from the Swiss General Census.

¹ Includes day laborers.² The totals for 1888, 1900, and 1910 given in the original do not check. Figures given here have been adjusted to check to the total of the individual figures.

AGRICULTURAL LABOR

Probably the most impressive difference to the American observer between United States and European agriculture is the intensive utilization of land in Europe by means of a lavish expenditure of labor, as compared to the intensive use of labor by means of the generous application of land in the United States. In Europe, where land is scarce as compared with man power, the economic problem is to exploit to the fullest extent the expensive element—land—through the greater use of the more plentiful element—labor. (Fig. 2.) In the United States the effort is toward high production per man although this entails a lower production per acre. In Europe the reverse is true. Each practice seems to be adapted to the economic environment in which it is employed. Certainly, it would be an idle recommendation that farmers in the United States hoe their corn by hand when the additional yield resulting from such action would not in all probability defray the added expense of hoeing; nor would it be desirable that United States farmers terrace their hillsides with retaining walls of masonry in order that those hillsides might be converted from pasture land into orchards and vineyards and tilled fields, when in all probability the added income from the fields would not pay interest charges on the cost of the construction of the retaining walls.

Both of these practices illustrate the intensive use of land in certain regions of Europe.

In a country like Switzerland, the labor cost of production at American wage rates would often amount to more than the total value of the products of the soil. (Fig. 3.) Yet it would be impracticable to recommend that the European peasant discard his hand tools and adopt machine methods, when the cost of operating machinery may be greater than the cost of performing the same labor by hand. This is partly due to the rough topography of the



FIGURE 2.—Terraces on the Swiss side of Lake Geneva. Much labor is required to make the hillsides profitable agriculturally

country, small-sized farms, and the available supply of family labor. It is impracticable to use mowing machines except in the valleys. (Fig. 4.) It is not unusual to see men taking straw from a thresher and tying it into bundles by hand. This operation gives an idea of the relative values of straw and labor in Europe, as compared with United States conditions. As many as 20 people may harvest grain in a small field. It is doubtful if the receipts from the entire crop

would pay for the harvest labor in the United States. Hay is cured on racks in the region of Lake Zurich, which further illustrates the cheapness of labor. (Fig. 5.)

Although it may be assumed that the methods used are the most economical practices for certain European countries, certainly it is not desirable that economic pressure force United States farmers to similar intensive application of labor, with its corresponding low



FIGURE 3.—Farms in mountainous region. The use of machinery on hills like these is difficult

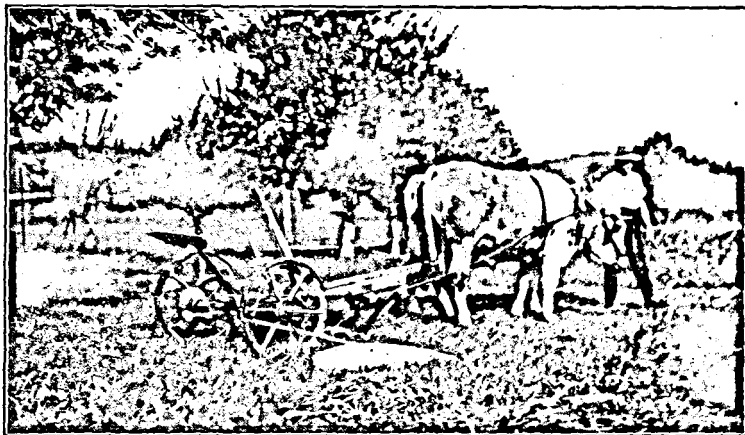


FIGURE 4.—Mowing outfit on a valley farm. Mowing machinery is used to some extent in the valleys

return per unit of labor, for the intensive use of land at the expense of a large amount of human labor tends toward a lower labor return, and hence a lower standard of living for those employed in agriculture. Farmers in the United States have been complaining of the high wages which they are forced to pay for farm help. But one side of the question too often overlooked by the farmers is that a large proportion of their income is a labor income. If conditions are such

as to justify a low-wage rate on the farm, then it is likely to follow that the same conditions will return the farmer a low wage for his own labor. Favorable agricultural conditions are indicated when farmers are justified in paying a high wage rate for farm help.

It is interesting to compare the farm wage scale in the United States with that of Switzerland. During the summer of 1925 the going farm wage in Switzerland ranged from \$2.21 per week with board and lodging for the women field workers to around \$4.39 per week with board for milkers and \$4.12 for horsemen. Day laborers, such as harvest help, received around \$1.20 per day. Through the seasons other than the harvest this same labor received about 90 cents per day. Table 3 gives the wage scale for Swiss agricultural laborers from 1911 to 1925, inclusive.



FIGURE 5.—Hay field near Lake Zurich. This method of curing hay requires considerable labor

TABLE 3.—Wages of agricultural workers in Switzerland, average, 1911–1919, annual, 1920–1925

Item	Average		1920	1921	1922	1923	1924	1925
	1911–1913	1914–1919						
Milker..... per week.....	<i>2.41</i>	<i>3.15</i>	<i>3.86</i>	<i>4.13</i>	<i>4.17</i>	<i>3.92</i>	<i>3.72</i>	<i>4.39</i>
Horseman..... do.....	<i>2.04</i>	<i>2.74</i>	<i>3.44</i>	<i>3.63</i>	<i>3.76</i>	<i>3.69</i>	<i>3.46</i>	<i>4.12</i>
Plowman..... do.....	<i>1.62</i>	<i>2.25</i>	<i>2.62</i>	<i>2.77</i>	<i>2.86</i>	<i>2.65</i>	<i>2.67</i>	<i>3.05</i>
Hired:								
Man..... do.....	<i>.96</i>	<i>1.15</i>	<i>1.42</i>	<i>1.36</i>	<i>1.77</i>	<i>1.35</i>	<i>1.51</i>	<i>1.38</i>
Woman..... do.....	<i>1.10</i>	<i>1.44</i>	<i>1.76</i>	<i>2.02</i>	<i>1.96</i>	<i>1.90</i>	<i>1.84</i>	<i>2.21</i>
Day laborer, with board and lodging:								
Man—								
At harvest..... per day.....	<i>.76</i>	<i>.93</i>	<i>1.23</i>	<i>1.17</i>	<i>1.26</i>	<i>1.05</i>	<i>1.03</i>	<i>1.21</i>
Other than harvest..... do.....	<i>.73</i>	<i>.70</i>	<i>.89</i>	<i>.88</i>	<i>.81</i>	<i>.76</i>	<i>.79</i>	<i>.91</i>
Woman—								
At harvest..... do.....	<i>.46</i>	<i>.57</i>	<i>.72</i>	<i>.77</i>	<i>.75</i>	<i>.70</i>	<i>.69</i>	<i>.85</i>
Other than harvest..... do.....	<i>.38</i>	<i>.47</i>	<i>.62</i>	<i>.61</i>			<i>.59</i>	<i>.69</i>
Day laborer, without board and lodging:								
Man—								
At harvest..... per day.....	<i>.98</i>	<i>1.34</i>	<i>1.78</i>	<i>1.55</i>	<i>1.40</i>	<i>1.42</i>	<i>1.52</i>	<i>1.55</i>
Other than harvest..... do.....	<i>.79</i>	<i>1.14</i>	<i>1.36</i>	<i>1.22</i>	<i>1.10</i>	<i>1.08</i>	<i>1.31</i>	<i>1.32</i>
Woman—								
At harvest..... do.....	<i>.66</i>	<i>.90</i>	<i>1.20</i>	<i>.98</i>	<i>1.01</i>	<i>1.02</i>	<i>.94</i>	<i>.90</i>
Other than harvest..... do.....	<i>.69</i>	<i>.74</i>	<i>1.07</i>	<i>.87</i>	<i>.70</i>	<i>.54</i>	<i>.80</i>	<i>.78</i>

Landwirtschaftliches Jahrbuch der Schweiz 1927 (17, p. 287). (Italic numbers in parentheses refer to "Literature cited," p. 63.)

There is a provision in the Swiss civil law (21, Art. 347, 349)¹ which provides that if a farm-labor contract does not stipulate the duration of the contract, it can not be terminated by either the worker or the employer without giving at least 15 days' notice in advance.

There is, however, a modification to this provision, which stipulates that if the employee has been working all the summer the employer can not discharge him in the fall without an advance notice of at least six weeks. If, on the other hand, the worker has been on the farm during the winter, he can not discontinue work in the spring without giving the employer six weeks' advance notice.

Only 10 per cent of the farm workers are wage laborers. This is a small proportion when compared with certain other European countries. In Italy, for instance, some 50 per cent of those gainfully employed in agriculture are connected with the land in the capacity of wage earners.

OWNERSHIP AND TENANCY

Switzerland is a land of family owned and tilled farms. Peasant proprietorship is usual. (Table 4.) Over three-fourths of the farm area is worked by owners, and over four-fifths of the farms are family owned and operated. Less than one-fifth of the farms of the country are rented.

TABLE 4.—Ownership and tenancy classified by size of farm in Switzerland, 1905

Size of holding (acres) ¹	Acreage in farms	Acreage in farms operated by—			Percentage of total acreage operated by—		
		Owner	Tenant	Trustee	Owner	Tenant	Trustee
	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>			
1 to 7.....	405,425	317,121	66,947	21,357	78.22	16.51	5.27
8 to 25.....	1,414,984	1,195,099	194,621	25,264	84.46	13.75	1.79
25 to 37.....	592,155	488,178	98,262	5,715	82.44	16.59	.97
37 to 74.....	735,669	566,025	162,219	7,425	76.94	22.05	1.01
74 to 173.....	491,017	325,265	153,224	12,528	66.24	31.21	2.55
Over 173.....	1,521,130	1,060,857	347,924	112,349	69.74	22.87	7.39
Total.....	5,160,380	3,952,545	1,023,197	184,638	76.59	19.83	3.58

Federal census of 1905 (4).

¹ Sizes as given in original were as follows: 0.5 to 3 hectares; 3.1 to 10 hectares; 10.1 to 15 hectares; 15.1 to 30 hectares; 30.1 to 70 hectares, and over 70 hectares.

The Swiss farmer is a home and land lover. His sentiment is exhibited in the attention he bestows upon his acres. House, barn, vegetable and flower gardens are mingled together to form a place in which to live, not so much in luxury as in contentment. The hominess of the usual farm dwelling in Switzerland can be commended. This is true, regardless of the fact that the barn and living quarters are likely to be housed in the same building, as shown by the type illustrated in Figure 6. The main feature of the front yard may be a manure pile, and the liquid manure pit is not considered out of place when under the front doorstep. (Fig. 7.)

In spite of these drawbacks, when considered from an American point of view, there are numerous things which make the place an attractive home. Window boxes with their profusion of flowers are

¹ Italic numbers in parentheses refer to "Literature cited," p. 63.

ever present during the growing season. In Switzerland it is said that the efficiency of the husbandman of a farm can be judged by the appearance of the manure pile, and that the measure of the efficiency of the housewife is her vegetable and flower garden. These gardens are often combined. The garden appears to be a place of real enjoyment. It is used for purposes other than a place in which to hoe and pull weeds. Too often the North American idea of a kitchen garden

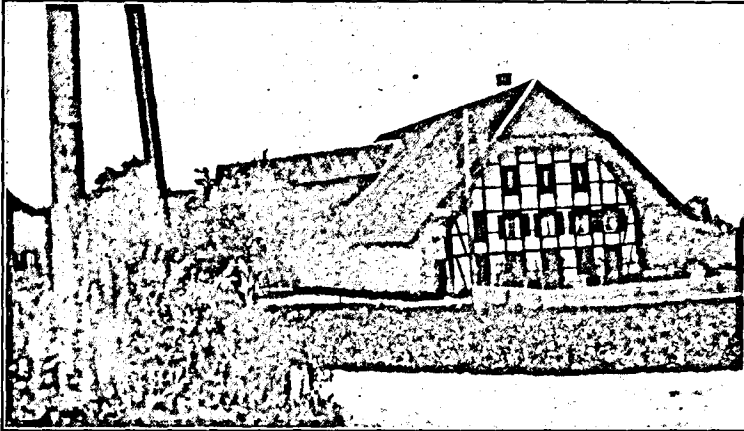


FIGURE 6.—A Swiss farm home. House and barn are commonly in the same building



FIGURE 7.—Manure is often stored in boxes in the front yard

is a place where one transforms disagreeable exertion into things to eat. It is seldom thought of as a haven of rest in the evening, or as a place to receive and entertain neighbors. The kitchen garden of the United States is strictly utilitarian in purpose, whereas the Swiss add social and aesthetic values to utility.

The Swiss farm is first of all a home. Other considerations are secondary. Undoubtedly the magic of ownership is a contributing

factor in support of the ideal. This ideal of an attractive home is fostered and encouraged in many ways. (Fig. 8.)

SIZE OF FARMS

Switzerland is a land of small farms. According to the last agricultural census—1905—41 per cent of the farms were under 7.4 acres in size, and over 83 per cent contained less than 25 acres. Only 3 per cent had more than 74.2 acres. (Table 5.)

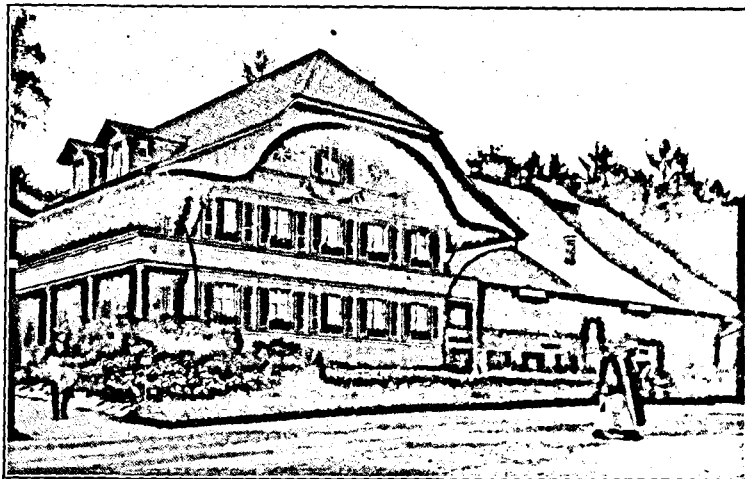


FIGURE 8.—A model Swiss farm house and barn. This dwelling and yard was exhibited at an agricultural fair as an example of a model type of farm home

TABLE 5.—Farms: Number and area in Switzerland, 1905

Size of farm (acres) ¹	Farms	Acreage in farms	Parcels of land		
			Total	Average per farm	Average size
	<i>Number</i>	<i>Acres</i>	<i>Number</i>	<i>Number</i>	<i>Acres</i>
1 to 7.....	100,390	405,425	1,209,052	12.0	0.34
8 to 25.....	101,529	1,414,984	1,666,910	16.4	1.85
25 to 37.....	19,763	592,155	323,582	16.4	1.83
37 to 74.....	14,744	735,669	209,845	14.2	3.51
74 to 173.....	4,620	491,017	45,999	10.0	10.66
Over 173.....	2,664	1,521,130	23,849	9.0	63.78
Total or average.....	243,710	5,160,380	3,479,207	14.3	1.48

Federal census of 1905 (4).

¹ Sizes as given in the original were as follows: 0.5 to 3 hectares; 3.1 to 10 hectares; 10.1 to 15 hectares; 15.1 to 30 hectares; 30.1 to 70 hectares, and over 70 hectares.

The small farms, together with the substantial buildings on most of them, render the country one of high production costs in the growing of farm products. A complete set of buildings serve, on an average, 20 acres. The same set of buildings would suffice, without additional overhead expense, for two or three times as much land as is attached to it. For the whole of the country the buildings

represent more than one-fourth of the value of the entire capital of the farmer—land, buildings, livestock, and equipment (6, 7). In 1923 it was estimated that the buildings had an average valuation of about \$170² per acre of the total area in farms.

Since the buildings serve as a home as well as a part of the productive equipment of the farm, overcapitalization is not so serious a matter because a part of the returns come in the form of satisfaction and can not be measured accurately on the balance sheet.

STRIP FARMING

Economic phases of agriculture in many parts of Europe, can not be considered without taking into consideration the division of the farms into many separate noncontiguous strips, and this is especially true of Switzerland. For example, in the district of St. Maurice there is an area of about 5.2 acres of land which contains 34 different properties, divided into 56 separate parcels. Here 34 farmers till 56 different fields grouped together in an area a little greater than 5 acres. This is an extreme case. The average for all Switzerland is 14.3 separated fields to the farm. Since the farms average about 21 acres in size, the strips have an average size of 1.5 acres. (Table 5.)

In nine geographical divisions of the country, there are from 40 to 129 separate parcels to the farm. Unfortunately, the small and medium-sized farms have more divisions than the larger farms.

The strip system is probably the greatest single handicap to agricultural progress in Europe (northern Europe and particularly Scandinavia excepted). The expense of fencing small plots makes such practice prohibitive. Hence pasturing must be done under the supervision of a herdsman. The cost of modern machinery is not likely to justify its use on acre lots. The burden of farming operations must fall upon hand labor. The loss of time in going from one parcel of land to another is considerable, inasmuch as many of the pieces belonging to a single farm may be 1, 2, or 3 miles apart. Figure 9 gives a good idea of the location of the separated strips. This diagram also shows the results which may be obtained by consolidation.

The Swiss Peasants Union—a cooperative farm organization—succeeded in securing enforcement, beginning January 1, 1912, of a provision of the Federal civil law which provides that if two-thirds of the owners occupying at least one-half of the land in any one district decide to consolidate their farms into fewer pieces of land, all the farmers of the district are compelled to exchange their numerous strips for land of equivalent value located in a smaller number of parcels. For defraying the expenses of such a consolidation the Federal Government grants a subsidy equal to that granted by the Canton and parish combined.

It is seldom possible to consolidate farms so that all the land will be contained in one piece. The best that can be hoped for is to reduce the number of parcels to two or three per farm. Very little progress has been made towards consolidation. From 1912 to the end of 1924, only 49,818 acres had been consolidated under the law. Considering the progressiveness of the Swiss people, their hesitancy to take advantage of the opportunities provided by this law is a matter

² See Table 53 for value of the franc.

of some surprise. There seem to be two main reasons for this hesitancy—cost and custom.

The total cost of consolidating the 49,818 acres was 16,957,615 Swiss francs, divided as follows.³

	Francs
Federal subsidies.....	5, 517, 711
Cantonal subsidies.....	4, 111, 503
Parish subsidies.....	1, 973, 824
Total subsidies.....	11, 603, 038
Paid by landowners.....	5, 354, 577
Total cost of consolidation.....	16, 957, 615

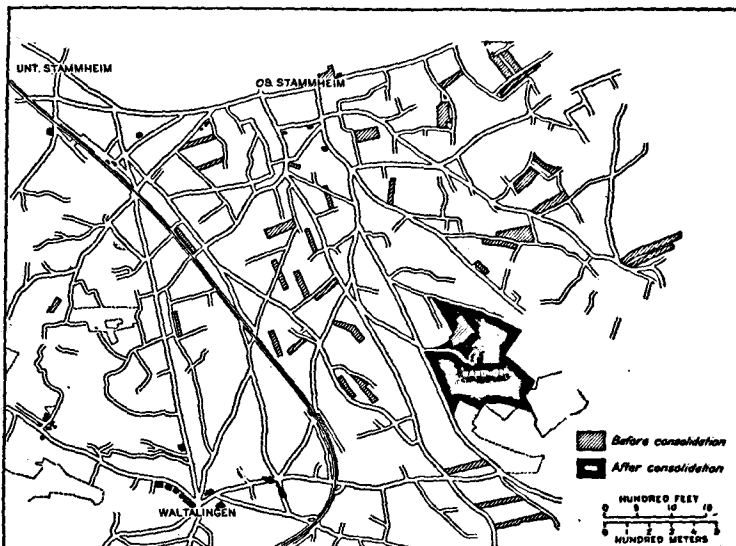


FIGURE 9.—A Swiss farm before and after consolidation. This farm covering a total area of 40.2 acres was composed of 39 separate pieces, before consolidation. In 1923 exchanges were made and the farm was consolidated into one piece.

The total cost amounted to 340 francs—around \$65—per acre, of which amount the farmer paid on an average 107 francs, or nearly \$21, per acre.

The strips are irregular in size and shape not only because of subdivision, but also on account of topographical location. Many have never been surveyed, so it is not always known how much land they contain. If the district is divided into very small strips, the value of the land may not justify the cost of consolidation into larger holdings.

Custom is the second reason. By way of illustrating a general tendency, one may say that practically every farm in the United States is for sale. In the same light, one may say of Switzerland that no farm is for sale. Farm land there does not change hands frequently. Inheritance is an important factor in the exchange of ownership of land. Much of the land has been in the same family

³ L'Union Suisse des Paysans.

for generations. The owners have an inherited affection for each of these strips. This affection, together with a natural tendency of an owner to believe that the land he possesses is likely to be just a little better than that which he will receive through consolidation, explains in a large measure why consolidation has made little progress. Strip farming is a persistent relic of the medieval age. Its extinction seems to be a slow and painful process.

INHERITANCE OF RURAL PROPERTY

The inheritance laws of a country may have grave economic consequences on the agriculture of that country. Especially is this the case in Europe where inheritance plays an important part in land transfers. A good example of this is shown by the operation of the Napoleonic Code in France.

The Napoleonic Code, which now governs France in the matter of inheritance, states that "each heir has the right to demand in kind his share of real and personal property." This means that every piece of property must be divided among the heirs, if the heirs demand such a division. The result of this law is that farms have been divided, and subdivided, and divided again to a point where some of them have become too small to support their owners. Examples are given of heirs being assigned a certain row of grapes in the vineyard, and a certain number of trees in the orchard. Such division of property perpetuates and accentuates the costly burden of farming small separated plots.

In contrast, the inheritance laws of Switzerland are designed to avoid excessive division of property. Prior to 1912 there was no Federal law on this subject which was valid for the whole of Switzerland. Each of the 25 Cantons had its own laws on the matter. In 1898 it was decided by a referendum vote to codify the civil law of Switzerland, including the laws of inheritance. The Swiss Peasants Union, through its secretariat, was consulted, with a view to the formulation of legislation which would avoid the danger of excessive subdivision of farms and at the same time avoid the excessive encumbrance of debt incurred to settle the claims of coheirs. The following is a brief summary of the existing legislation.

The Swiss law provides that any heir may demand the whole estate undivided. If the heirs are unable to decide among themselves concerning the one who is to receive the undivided estate, the question is submitted to a designated court for decision. In deciding, the judge is required by law to consider certain factors. For example: (1) The heir who will actually live on the farm and work the land has preference over heirs who wish to sell it; (2) the son who has lived on the farm the longest has preference over other sons; (3) other things being equal, the sons have preference over the daughters; and (4) the customs of the different Cantons regarding inheritance must be respected in giving preference to heirs.

An important point in the law is that the one who receives the farm pays for the shares of the other heirs on the basis of the earning capacity of the farm and not on the basis of its market value. Land in Switzerland is overcapitalized as it is in America. Experience expressed through the medium of detailed farm-accounting data shows that the relative earning value of small Swiss farms is nearly

always lower, and sometimes very much lower, than their average market value. It has been found that the market value of a Swiss farm is generally from one-sixth to one-third higher than that justified by earning capacity.

The reasons for this lie in part in the fact that in some sections of the country the demand for land exceeds the supply. Psychological reasons also play an important rôle, since there is a great desire to possess land even though the interest justly chargeable against the sales value of the land may be lower than the interest on ordinary capital.

Switzerland does not consider it to be good national economy for an heir to be compelled to acquire land at a price higher than that justified by the earning capacity of the land in question. The Swiss Peasants Union has been keeping farm accounts and farm-cost records for a period of 25 years. These data furnish much information on the earning capacity of farms in all sections of the country, and for different types of farming. Upon the basis of these records, the organization has worked out rate formulas for use by the courts and by interested parties in arriving at land values based upon earning capacity.⁴

The Napoleonic Code tends to promote division of property. The Swiss law is designed to maintain rural property undivided. When Alsace-Lorraine was taken over by France after the World War, those Provinces had a law similar to the Swiss law. After considerable difficulty they have succeeded in securing permission from the French Government to retain those laws rather than return to the Napoleonic Code.

The question of inheritance has been treated in some detail because of its possible application to United States conditions. It is believed that there is room for improvement in the United States in the matter of the transfer of rural property by inheritance. Certainly many an heir of farm property is forced to pay the penalty of over-capitalization in settling with the other heirs, in order to maintain the old homestead intact.

UTILIZATION OF LAND

Switzerland has an area of 10,204,000 acres. Of this, 22 per cent is classed as unproductive agriculturally. (Table 6.) Since the country is known for the height, ruggedness, and plentifulness of its mountains, altitude and topography explain why a considerable portion of Switzerland is unavailable agriculturally. The productive area consists roughly of one-third forests and farm wood lots, one-half hay and pasture lands, with the remaining 17 per cent given over to peat bogs, orchards, gardens, and field crops.

TABLE 6.—*Acreege of agricultural land in Switzerland, 1924 (26)*

Class of land	Acreege (1,000 acres)	Percent- age of total acreege
Productive:		
Agricultural.....	5, 678	55. 6
Forests.....	2, 225	21. 8
Total.....	7, 904	77. 4
Unproductive.....	2, 301	22. 6
Total.....	10, 204	100. 0

⁴ See also discussion on Office of Land Valuation, p. 50.

The plowed land approximates less than 10 per cent of the total productive area, and about 7 per cent of the total area of the nation.

A fact worthy of notice is that the agricultural industry with a tilled area no larger than the State of Rhode Island supports in an acceptable manner, when measured by United States standards, an agricultural population of over 1,000,000 people, and is a country of no mean importance as an exporter of dairy products.

Meadows rank first in importance from the standpoint of area, cereals are second, and potatoes rank third. All other tilled crops combined occupy less than 4 per cent of the plowed area. (Table 7.)

TABLE 7.—Utilization of farm land in Switzerland, average, 1901-1923, annual, 1923 (26)

Classification	Distribution of total farm acreage	
	Average 1901-1923 ¹	1923 ²
	Per cent	Per cent
Plowland:		
Cereals.....	13.0	12.4
Potatoes.....	4.3	3.7
Root crops.....	1.2	1.5
Gardens.....	.7	1.7
Artificial prairie.....	15.7	12.3
Animal forage.....	.3	.1
Industrial plants.....	.1	.2
Total.....	35.3	31.9
Natural prairie.....	57.3	59.9
Marsh land.....	3.5	3.7
Pasture land.....	2.5	3.2
Vineyards.....	1.4	1.3
Total.....	100.0	100.0

Farm wood lots and forests excluded.

¹ Based upon the detailed accounts of 1,794 farms.

² Based on detailed accounts of 77 farms.

CEREALS

The cereals, although occupying a relatively small proportion of the total area of Switzerland, are an important crop nationally. Ordinarily, Switzerland can purchase cereals at less expense than it can grow them. During the World War, however, the country underwent an experience which it does not care to repeat. Wheat imports were reduced from 22,046,000 bushels in 1916 to 2,116,000 bushels in 1918. This situation brought about a serious food shortage. Its amelioration has been the aim of extended Government action.

In 1917 the Government purchased all bread cereals under a system of fixed prices. Up to and including the year 1920 the prices paid by the Government were less than the market price, but the Government-guaranteed price since 1920 has been above the market price. It is certain that the Swiss farmer can not afford to compete with regions that are better suited to the production of cereals without the assistance of a subsidy of some sort. It is a question of national importance as to whether the Government should continue to encourage the production of cereals through a system of guaranteed prices. In a recent national election it was decided, by a narrow margin, that the cereal monopoly should be discontinued. The Swiss public must say whether it is willing to bear the cost of cereal self-sufficiency. Table 8 gives the production of cereals in Switzerland for 1917, 1918, and 1921-1927.

TABLE 8.—Cereals: Production in Switzerland, specified years (26)

Year	Wheat		Rye		Spelt	Oats	Barley		Maslin ¹	Corn
	Winter	Spring	Winter	Spring			Winter	Spring		
	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>
1917..	2,869,654	161,671	1,208,593	74,012	1,857,376	4,209,408	128,602	564,010	427,616	274,784
1918..	4,967,699	304,970	1,531,410	95,270	3,169,112	5,008,576	95,073	858,875	645,448	417,290
1921..	3,477,756	96,268	1,523,536	35,037	1,890,444	3,035,459	80,376	472,611	465,627	218,492
1922..	2,259,715	102,881	1,458,611	37,006	1,526,686	2,463,640	72,109	419,333	293,787	183,454
1923..	3,483,268	110,230	1,602,272	43,305	2,055,790	3,058,882	82,672	496,849	605,536	165,345
1924..	3,012,953	99,207	1,393,622	39,368	1,758,168	2,693,746	73,487	445,513	452,323	177,155
1925..	3,420,804	95,533	1,598,335	39,368	1,984,140	2,686,856	82,672	445,513	497,936	177,155
1926 ²	3,872,747	157,996	1,495,979	86,609	1,741,634	3,107,108	78,060	496,849	448,522	129,914
1927..	-----	-----	-----	-----	-----	3,058,882	-----	583,300	-----	153,535

Estimates, Secrétariat des Paysans Suisses.

¹ Wheat and rye mixed.

² The yields in bushels per acre for 1926 are given as follows: Winter wheat, 32; spring wheat, 25.3; winter rye, 32.7; spring rye, 25.2; spelt, 50; oats, 61.5; winter barley, 37; spring barley, 34.7; maslin, 38.8, and corn, 39

It is interesting to note from the data contained in Table 9 that the average yield of winter wheat, of which most of the wheat crop in Switzerland is composed, is 32 bushels per acre—over twice that of the United States.

TABLE 9.—Yield per acre of specified agricultural products, average 1917-1921 (26)

Crop	Weighted average yield 1917-1921	Crop	Weighted average yield 1917-1921
Wheat:	<i>Bushels</i>		<i>Short tons</i>
Winter.....	32.0	Beets.....	18.7
Spring.....	25.3	Carrots.....	8.5
Rye:		Rutabagas.....	13.4
Winter.....	33.5	Rape.....	8.9
Spring.....	27.1	Artificial prairies:	
Spelt.....	49.1	Hay, first cutting.....	2.6
Maslin.....	34.1	Hay, second cutting.....	1.2
Barley:		Natural prairies:	
Winter.....	39.0	Hay, first cutting.....	2.2
Spring.....	35.7	Hay, second cutting.....	1.1
Oats.....	57.2	Tobacco.....	.8
Corn.....	47.8		
Potatoes.....	237.9		

POTATOES

Potatoes are an important crop. Around one-seventh of the plowed area is given over to their culture. The average yield in 1926 was 189.9 bushels per acre. (Table 10.)

TABLE 10.—Potatoes: Acreage and production in Switzerland, 1913-1926

Year	Acreage	Production	Average yield per acre	Year	Acreage	Production	Average yield per acre
	<i>Acres</i>	<i>1,000 bushels</i>	<i>Bushels</i>		<i>Acres</i>	<i>1,000 bushels</i>	<i>Bushels</i>
1913.....	114,902	28,639	231.8	1920.....	123,105	28,248	229.3
1914.....	114,902	19,107	166.3	1921.....	112,851	25,371	224.8
1915.....	121,079	30,681	253.4	1922.....	111,637	24,820	221.9
1916.....	134,670	18,372	136.4	1923.....	110,454	25,206	228.2
1917.....	140,229	38,573	275.1	1924.....	110,454	19,641	179.6
1918.....	147,766	34,304	232.1	1925.....	110,500	27,190	246.1
1919.....	140,106	30,313	216.4	1926.....	118,000	22,413	189.9

Estimates of the Secrétariat des Paysans Suisses (27).

FRUITS

Fruits occupy a recognized place in the Swiss farm system. Apples, grapes, pears, cherries, and prunes are the most important. Of the home-grown fruits (other than grapes) 45 per cent are consumed fresh and around 50 per cent go into cider. Canning and preserves take only a little over 1 per cent. The remainder is distilled or exported.

In certain Cantons the grape wine-making industry is an important farm enterprise. (Table 11.) It is estimated that in 1924 vineyards occupied nearly 35,000 acres, producing 8,078,345 gallons of wine, valued at \$7,274,000.

TABLE 11.—Acreage in grapes and production of wine in Switzerland, 1910-1926 (26, 27)

Year	Acreage in grapes	Total production of wine	Production of wine per acre	Total value	Average price per gallon	Year	Acreage in grapes	Total production of wine	Production of wine per acre	Total value	Average price per gallon
	Acres	1,000 gallons	Gallons	1,000 dollars	Dollars		Acres	1,000 gallons	Gallons	1,000 dollars	Dollars
1910.....	59,895	6,435	107.4	2,881	0.448	1919.....	46,400	15,577	335.7	12,290	.789
1911.....	58,165	19,787	340.2	8,694	.439	1920.....	45,573	15,996	351.0	13,629	.852
1912.....	56,583	17,406	307.6	5,672	.326	1921.....	44,221	12,643	285.9	11,895	.941
1913.....	54,789	4,787	87.4	1,839	.384	1922.....	37,285	26,931	722.3	12,724	.472
1914.....	52,761	9,724	184.3	4,055	.417	1923.....	35,753	19,747	552.3	11,332	.574
1915.....	51,150	17,603	344.1	7,675	.436	1924.....	34,940	8,078	231.2	7,274	.900
1916.....	49,731	8,757	176.1	5,131	.586	1925.....	36,694	14,529	396.0	12,659	.871
1917.....	45,634	16,053	351.8	13,366	.833	1926.....	36,531	12,024	331.0	11,588	.964
1918.....	46,393	20,214	435.7	27,539	1.362						

See Table 53 for average yearly values of the franc.

† Preliminary.

LIVESTOCK

The last livestock census was made in 1921. At this time the number of cattle equaled the number of all other livestock on farms. However, there have not been as many cattle in the country since the war as there were in 1916. (Table 12).

TABLE 12.—Livestock: Number in Switzerland, specified years (26)

Kind	1886	1906	1916	1918	1920	1921	1926 ¹
Horses.....	98,622	135,372	136,836	128,971	129,769	134,147	139,283
Mules.....	2,742	3,153	3,079	3,092	3,588	3,835	-----
Donkeys.....	2,046	1,679	1,288	1,072	910	904	-----
Cattle.....	1,212,538	1,498,144	1,615,893	1,530,522	1,382,116	1,425,341	1,587,110
Hogs.....	394,917	548,970	544,563	365,738	546,122	640,091	635,349
Sheep.....	341,804	209,997	172,938	229,649	240,553	245,344	169,252
Goats.....	416,323	362,117	358,887	350,455	333,852	330,048	287,063

¹ Annuaire Statistique de la Suisse (5).

Of the 1,425,341 cattle in 1921, over one-half, 746,591 were dairy cows. Hogs are an important adjunct to the farm dairy. Large numbers of hogs are kept to utilize the whey of cheese factories.

FARM RECEIPTS AND EXPENSES

The utilization of land is one index to the farm activities of a country, but the division of farm expenses and receipts is perhaps a better one. In no country are farm-accounting data so readily available as in Switzerland (12). For nearly 25 years the Swiss Peasants' Union has conducted accounting schools attended by 120 to 130 farmers each year.

The union pays the round-trip railway fares of the participants to and from their homes to the place where the course is given. In addition, the union furnishes rooms and meals during the course, as well as all materials needed in the course. In return for this compensation, the farmer-students sign a written agreement to keep an account of their farm activities for one year according to the prescribed method and to place their books at the disposition of the union for analysis. Many farmers keep accounts for more than one year. Up to April, 1925, the union had received and analyzed 6,944 yearly records. This number gives Switzerland with its limited farm area, a valuable and reliable body of data pertaining to the profitableness of farming. (See discussion on "Office of research on the profitableness of agriculture," p. 49.)

The gross returns to agriculture for different years are shown in Table 13. In 1924 the returns from dairying, stock feeding, and hog raising—three branches of the dairy industry—account for more than two-thirds of the total returns from all farm activities (1). Fruits came next with 7 per cent. Cereals amounted to only 2.66 per cent—a rather small item. Not only is dairying the corner stone, but it forms a goodly part of the income structure.

TABLE 13.—Gross returns of agriculture in Switzerland, 1911, average, 1920-21, annual, 1923-1926 (26, 28)

Item	Value of product						Percentage of total value					
	1911	Average 1920-21	1923	1924	1925	1926 ¹	1911	Average 1920-21	1923	1924	1925	1926 ¹
	1,000	1,000	1,000	1,000	1,000	1,000						
	dols.	dols.	dols.	dols.	dols.	dols.						
Cereals.....	4,825	16,957	10,655	7,289	11,538	10,139	2.78	4.95	3.90	2.66	3.89	3.65
Potatoes.....	6,680	11,514	9,996	9,712	10,147	9,039	3.84	3.36	3.74	3.54	3.42	3.26
Sugar beets.....	114	512	307	381	387	406	.07	.15	.11	.14	.13	.15
Hemp and flax.....	149	38	36	36	29	19	.09	.01	.01	.01	.01	.01
Tobacco.....	67	43	36	146	116	19	.04	.01	.01	.05	.04	.01
Other cultivated plants.....	58	51	90	91	77	68	.03	.01	.03	.03	.03	.02
Hay for horses not occupied on farms.....	1,308	1,790	1,387	860	812	11,898	.75	.52	.52	.31	.27	.32
Vines.....	6,022	17,128	14,583	9,439	13,915	11,598	3.46	5.00	5.48	3.44	4.70	4.18
Fruits.....	14,784	24,046	19,124	20,190	14,493	19,757	8.51	7.19	7.16	7.37	4.89	7.12
Nurseries and gardens.....	4,246	5,224	5,870	6,013	6,571	5,466	2.44	1.52	2.29	2.19	2.22	1.97
Cattle breeding.....	1,830	514	2,158	935	928	946	1.05	.15	.81	.34	.31	.34
Stock feeding.....	33,242	70,997	50,330	57,227	57,864	55,506	19.12	20.72	18.83	20.88	19.52	20.01
Horses.....	3,667	5,995	6,395	5,851	5,556	5,408	2.11	1.75	2.29	2.14	1.88	1.95
Hogs.....	19,989	51,993	35,759	36,718	38,208	34,145	11.50	15.17	13.38	13.40	12.93	12.31
Sheep.....	801	2,318	1,566	1,795	1,643	1,487	.46	.68	.59	.66	.59	.54
Goats.....	704	1,319	898	982	773	753	.40	.38	.34	.36	.29	.27
Poultry.....	3,976	18,725	12,488	12,860	13,587	14,272	2.29	5.46	4.67	4.69	4.58	5.14
Bees.....	866	1,355	1,093	802	3,062	618	.50	.40	.41	.29	1.04	.22
Silk culture.....	29	33	33	29	27	29	.02	.01	.01	.01	.01	.01
Dairying.....	70,459	111,575	94,430	102,741	116,521	106,859	40.54	32.56	35.34	37.49	39.31	38.52
Total.....	173,816	342,727	267,232	274,094	296,394	277,412	100.00	100.00	100.00	100.00	100.00	100.00

See Table 53 for average value of the franc.

¹ Preliminary.

The labor income of the farmer and the adult members of his family working on the farm and in the household ranged from 73 cents per person per day for the period 1901-1905 to \$4.71 for 1918. In 1923 it was \$1.89. (Table 14.) The labor income is arrived at by subtracting from the gross returns all operating expenses and interest on land and capital at 4½ per cent. The remainder is considered as compensation for the work of the operator and members of his family. The year is considered as having 330 working days.

TABLE 14.—Labor income per day for farm operator and family, classified by size of farm, average, 1901-1919, annual, 1918-1925 (10)¹

Year	Income per day by size of farm					
	7 to 12 acres	13 to 24 acres	25 to 37 acres	38 to 74 acres	Over 74 acres	Average
Average:	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
1901-1906.....	0.54	0.63	0.70	0.80	0.99	0.73
1906-1913.....	.63	.80	.90	1.14	1.13	.92
1914-1919.....	1.49	1.87	2.32	3.08	4.01	2.55
1918.....	2.48	3.20	4.19	5.69	7.98	4.71
1919.....	1.82	2.36	3.04	3.54	5.20	3.10
1920.....	1.77	1.97	2.20	2.84	3.60	2.48
1921.....	.82	1.16	1.34	1.48	1.40	1.24
1922.....	.62	.81	.87	.54	1.22	.81
1923.....	1.27	1.48	1.73	2.79	2.19	1.89
1924.....	1.38	1.34	1.46	1.90	1.20	1.46
1925.....	1.22	1.34	1.49	1.86	1.17	1.42

¹ "Family" consists of adults occupied on the farm and in the household.

The division of the cost of farm operations per acre is interesting inasmuch as it gives the application of labor and capital per unit of land. These data are given in Table 15. In 1924 labor claimed 42 per cent of the total costs. Interest on land and capital took 23 per cent. The Swiss farmer applied on an average around \$45 worth of labor per acre for all land in farms in 1924. This gives an idea of the intensity of cultivation when compared with labor expenditures in the United States.

TABLE 15.—Cost of production and net returns per acre for acreage cultivated, in Switzerland, 1908-1913 and 1920-1924 (3)

Item	COST OF PRODUCTION PER ACRE						
	Average		1920	1921	1922	1923	1924
	1908-1913	1920-1924					
Depreciation:	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
Land and buildings.....	1.51	2.81	2.39	2.63	3.11	2.96	2.97
Livestock.....	.85	6.24	2.76	9.98	11.65	3.17	3.64
Miscellaneous.....	1.41	3.23	2.54	3.67	3.91	3.03	3.02
Total.....	3.77	12.28	7.68	16.28	18.67	9.16	9.63
Unexhausted improvements.....	.08	.17	.12	.26	.19	.15	.11
Losses of stock.....	1.35	2.62	3.22	3.30	3.31	1.48	1.78
Working expense:							
Purchase of fertilizers.....	1.15	2.20	3.00	2.22	1.94	1.88	1.95
Purchase of concentrated feeds.....	4.36	6.72	6.32	6.52	7.15	7.53	6.05
Repairs.....	1.43	3.66	3.69	4.21	3.37	3.55	3.49
Miscellaneous.....	6.23	12.32	11.30	11.30	12.70	11.86	14.45
Total.....	13.17	24.90	24.31	24.25	25.16	24.82	25.94
Interest on capital assets.....	17.79	25.32	24.94	26.35	26.15	24.33	24.83
Wages:							
Members of family.....	17.61	29.34	32.11	31.25	29.85	26.68	26.79
Employees.....	7.76	18.08	18.36	18.42	18.30	17.54	17.80
Total.....	25.37	47.42	50.47	49.67	48.15	44.22	44.59
Other expenses.....	.06	.12	.11	.11	.22	.10	.08
Total cost per acre.....	61.59	112.83	110.85	120.23	121.85	104.26	106.96

NET RETURNS PER ACRE

Net returns.....	14.55	14.35	27.13	1.44	8.26	20.25	14.68
Net returns in per cent of capital assets.....	Per cent 3.57	Per cent 6.85	Per cent .89	Per cent 1.15	Per cent 4.06	Per cent 2.68	Per cent 2.93
Total income of the farm.....	Dollars 25.06	Dollars 30.17	Dollars 49.37	Dollars 25.39	Dollars 12.19	Dollars 34.94	Dollars 28.98
Agricultural income.....	Dollars 21.71	Dollars 25.88	Dollars 44.89	Dollars 20.86	Dollars 7.72	Dollars 30.99	Dollars 24.93

AGRICULTURAL IMPORTS AND EXPORTS

Since the money has remained fairly stable ⁶ in Switzerland it is possible to compare the relative importance of imports and exports on a basis of value.

Cereals are the outstanding agricultural imports. In 1925 they amounted to over 40 per cent of the total. Meat, wines, and cattle, came next in the order named. (Table 16.)

TABLE 16.—Imports of agricultural products into Switzerland, average, 1906-1913, annual, 1920-1926 (16, 26, 27)

Item	Average, 1906-1913	1920	1921	1922	1923	1924	1925	1926 ¹
	<i>1,000 dollars</i>	<i>1,000 dollars</i>	<i>1,000 dollars</i>	<i>1,000 dollars</i>	<i>1,000 dollars</i>	<i>1,000 dollars</i>	<i>1,000 dollars</i>	<i>1,000 dollars</i>
Forestry.....	2,314	3,940	2,369	3,245	5,195	5,568	5,008	5,565
Field cereals.....	35,877	58,504	54,214	38,513	46,848	45,502	54,352	50,190
Animal products.....	10,169	22,378	18,638	11,595	15,399	10,025	15,951	16,017
Poultry products.....	5,513	5,607	7,042	6,471	6,871	7,480	8,068	7,840
Dairy products.....	3,896	13,364	9,275	7,308	6,680	9,431	9,584	8,063
Fruit.....	1,588	1,702	2,558	1,925	1,959	2,432	3,338	3,717
Vineyard products.....	8,278	24,466	18,973	15,135	11,078	12,031	13,410	13,298
Vegetables.....	1,910	2,702	2,074	2,808	2,757	2,830	3,259	3,618
Bee products.....	104	436	254	115	136	184	230	219
Tobacco.....	2,080	11,852	2,001	2,451	5,480	1,345	3,026	3,732
Horses and mules.....	2,138	4,171	3,507	2,056	1,621	1,978	1,992	2,008
Cattle.....	7,798	2,814	2,586	1,112	3,378	9,725	6,652	4,140
Small livestock.....	2,518	197	722	365	1,862	1,467	537	1,853
Total.....	84,183	152,193	124,213	93,099	109,564	116,008	123,432	120,220

See Table 53 for average yearly values of the franc.

¹ Preliminary.

As to exportations, dairy products (principally cheese) overshadow all other items. Combined, they constitute about 90 per cent of the total. (Table 17.)

TABLE 17.—Exports of agricultural products from Switzerland, average, 1906-1913, annual, 1920-1925 (26)

Item	Average, 1906-1913	1920	1921	1922 ^a	1923 ^b	1924	1925
	<i>1,000 dollars</i>	<i>1,000 dollars</i>	<i>1,000 dollars</i>	<i>1,000 dollars</i>	<i>1,000 dollars</i>	<i>1,000 dollars</i>	<i>1,000 dollars</i>
Fruit.....	932	3,095	357	623	328	1,069	465
Wine.....	81	144	44	39	42	51	44
Meat.....	304	403	26	299	76	32	183
Cattle.....	2,415	643	451	1,954	2,115	935	948
Hogs.....	13	.8	6	1	8	19	103
Sheep and goats.....	13	3	19	3	2	8	5
Dairy products.....	18,747	10,941	14,441	19,723	18,997	24,750	27,672
Wood.....	672	7,222	1,658	1,815	1,254	1,062	1,069
Total.....	23,177	22,459	17,002	24,457	22,820	27,946	20,509

See Table 53 for average yearly values of the franc.

^a There is a slight difference between these totals for 1922 and 1923 and those in the original source. The numbers in the source do not add to the total.

^b Landwirtschaftliches Jahrbuch der Schweiz, 1927 (15, p. 248).

¹ See Table 53 for values of the franc.

The interesting point in the comparison is that the value of agricultural imports is over four times that of agricultural exports, which is another indication that Switzerland is predominantly an industrial nation.

It is estimated that Switzerland imports in normal times one-fourth of its food supply (2).

Table 18 gives a summary of the per capita consumption and the percentage of important food products imported during 1906-1912 and 1920-21.

TABLE 18.—Annual per capita food consumption in Switzerland, showing percentage domestic and imported, average, 1906-1912 and 1920-21 (26)

Item	Unit	Average, 1906-1912			Average, 1920-21		
		Per capita consumption	Percentage of total		Per capita consumption	Percentage of total	
			Domestic product	Imported product		Domestic product	Imported product
Bread cereals.....	Pound.....	375	16	84	293	27	73
Potatoes.....	Bushel.....	5.0	87	13	4.4	95	5
Wine.....	Gallon.....	14	33	67	13	28	74
Meats:							
Beef.....	Pound.....	67.0	73	27	56.7	88	12
Pork.....	do.....	45.2	79	21	43.2	83	17
Mutton.....	do.....	2.4	36	64	1.5	90	10
Goat.....	do.....	1.1	98	2	1.1	99	1
Poultry.....	do.....	3.5	30	70	2.6	53	47
Fish.....	do.....	4.4	33	67	4.0	40	60
Eggs.....	Number.....	117	35	65	123	68	32
Honey.....	Pound.....	1.4	88	12	1.0	65	35
Milk.....	do.....	619	100	-----	617	100	-----
Cheese.....	do.....	24.7	92	8	24.0	98	2
Butter.....	do.....	11.2	73	27	11.0	63	37
Sugar.....	do.....	50.0	4	96	47.0	6	94
Coffee.....	do.....	0.2	-----	100	7.3	-----	100

THE DAIRY INDUSTRY

Swiss agriculture revolves around the dairy cow. The climate, and a mountainous topography especially suitable for utilization as pastures and the production of hay and forage, together with a people backed by traditions and experiences of centuries as herdsmen and stock raisers, combine to make this small country outstanding in the production of milk and dairy products.

MILK PRODUCTION

In 1925 there were 842,000 dairy cows in the country producing an annual average of 756.4 gallons of milk per cow. (Table 19.) One of the important achievements of the industry is the high average production per cow. Compare the above figure with the yearly average of 4,500 pounds, or 523.3 gallons,* for United States cows in 1925.

*Converted on the basis of 8.6 pounds=1 gallon.

TABLE 19.—Milk production in Switzerland in specified years (26)

Year	Milk cows	Milk goats	Annual milk production		Total milk production	Year	Milk cows	Milk goats	Annual milk production		Total milk production
			Per cow	Per goat					Per cow	Per goat	
	<i>Number</i>	<i>Number</i>	<i>Galls.</i>	<i>Galls.</i>	<i>1,000 galls.</i>		<i>Number</i>	<i>Number</i>	<i>Galls.</i>	<i>Galls.</i>	<i>1,000 galls.</i>
1866.....	553,205	262,837	511.4	78.9	294,801	1918.....	786,565	250,000	638.3	97.4	528,079
1876.....	592,413	277,200	548.6	76.9	336,586	1919.....	738,896	247,242	617.8	97.4	481,936
1886.....	663,102	291,420	584.5	76.9	398,622	1920.....	729,909	242,599	674.2	102.5	517,625
1896.....	688,052	291,100	620.4	79.5	450,277	1921.....	746,591	239,863	717.8	102.5	560,481
1901.....	739,922	248,200	653.7	79.5	503,469	1922.....	760,000	240,000	709.0	102.5	609,065
1906.....	785,950	253,500	699.8	89.7	573,452	1923.....	790,000	240,000	774.2	102.5	628,465
1911.....	796,909	238,900	763.9	102.5	634,463	1924.....	810,000	240,000	774.2	102.5	661,090
1916.....	849,011	254,369	740.8	102.5	656,253	1925.....	842,000	225,000	756.4	102.5	659,842

The total milk-production figures 1916-1924 are estimates of the Swiss Milk Commission.

The increase in the production of milk for commercial purposes has been marked during the past few years. There was an 18 per cent increase in 1922 over 1921; 4½ per cent increase in 1923 over 1922; and a 6 per cent increase in 1924 over 1923. These increases are due, in part at least, to the marked decrease in production following 1916.

UTILIZATION OF MILK

The milk production in 1925 amounted to about 660,000,000 gallons. Roughly, 16 per cent is fed to livestock, 42 per cent is consumed as whole milk, and 41 per cent is manufactured into dairy products. (Table 20.) In all, over two-thirds of the milk leaves the farm and enters market channels.

TABLE 20.—Production and utilization of milk in Switzerland in specified years (26)

Year	Production	Fed to livestock		Consumption				Used in manufacture of dairy products	
		Total	Percentage of production	On the farm	By population other than on farms	Total	Percentage of production	Total	Percentage of production
	<i>1,000 gallons</i>	<i>1,000 gallons</i>		<i>1,000 gallons</i>	<i>1,000 gallons</i>	<i>1,000 gallons</i>		<i>1,000 gallons</i>	
1866.....	294,801	54,474	18.5	165,986	165,986	56.3	74,341	25.2	
1886.....	398,622	67,678	17.0	185,064	185,064	46.4	145,962	36.6	
1896.....	450,277	74,598	16.6	202,516	202,516	45.0	173,163	38.4	
1911.....	634,463	109,205	17.2	99,463	170,728	27.0	191	40.2	
1918.....	528,079	112,794	21.4	94,849	158,936	253,785	48.0	161,500	30.6
1923.....	628,465	110,230	17.5	94,849	175,599	270,448	43.0	245,634	39.1
1924.....	651,691	110,230	16.9	96,131	179,444	275,575	42.3	228,938	35.4
1925.....	659,842	107,667	16.3	98,694	179,444	278,138	42.1	269,765	40.9

Figures for 1918-1925 are estimates of the Swiss Milk Commission.

1 2,153 gallons (0.34 per cent) of whole milk exported in 1923 not included.
 2 8,947 gallons (1.37 per cent) of whole milk exported in 1924 not included.
 3 4,332 gallons (0.7 per cent) of whole milk exported in 1925 not included.

Of the milk handled during the year 1922-23 by 3,572 cooperative dairy societies, nearly one-half was used for the manufacture of cheese. Table butter is made if the factory has not enough milk or if it lacks the proper installation, or for some other reason is not in position to make a full-sized Emmenthal or Gruyere cheese. Skim-milk cheese is the by-product of butter manufacturing. Cooking butter is made from whey cream as a by-product of the ordinary cheese factory. One-fourth of the milk was sold for wholesale consumption, and one-fifth was retailed by their societies. Condenseries and chocolate factories took 7 per cent. (Table 21.)

TABLE 21.—Milk: Utilized commercially in Switzerland, 1922-23.

Utilization of milk	Quantity (1,000 gallons)	Percent- age of total
For manufacture of:		
Cheese, full and half cream.....	108, 631	37.0
Butter and skim-milk cheese.....	32, 357	11.0
Whole milk for city consumption:		
Wholesale.....	71, 300	24.3
Retail.....	60, 256	20.5
Used in condenseries, chocolate manufacturing, etc.....	20, 993	7.2
Total.....	293, 537	100.0

Based on replies from 3,572 cooperative associations to an inquiry made by the secretariat of the Swiss Farmers' Union.

Milk used for manufacturing purposes in 1924 went for the following purposes:

	Per cent
Cheese and butter made in factories (on the plains).....	75
Cheese and butter (on the farms).....	8
Cheese (in the mountain chalets).....	8
Condenseries and chocolate factories.....	9

Butter and cheese making on the farm has been decreasing since 1911 until recently. (Table 22.)

TABLE 22.—Milk used in the manufacture of dairy products, 1911 and 1920-1925 (9, 13)

Utilization of milk	1911 ¹	1920	1921	1922	1923	1924	1925
For manufacture of:							
Cheese and butter —	1,000 gallons	1,000 gallons	1,000 gallons	1,000 gallons	1,000 gallons	1,000 gallons	1,000 gallons
On the plains.....	175, 599	103, 821	123, 815	173, 984	185, 391	183, 630	197, 927
In the homes.....	28, 198	20, 508	20, 508	19, 226	19, 226	19, 739	21, 790
Cheese, in the mountains.....	20, 508	19, 226	19, 226	19, 226	20, 508	20, 508	24, 353
Used in condenseries and chocolate factories.....	30, 762	12, 817	19, 226	16, 663	20, 508	23, 071	25, 635
Total.....	255, 067	156, 372	189, 775	229, 099	245, 633	256, 938	269, 705

¹ Estimates of Swiss Farmers' Union.

² Practically all butter is made from the whey cream of the cheese factory.

The amounts of the principal products manufactured are shown in Table 23.

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TABLE 23.—*Dairy products: Manufactured in Switzerland, 1911 and 1920-1925*
(9, 13)

Product	1911 ¹	1920	1921	1922	1923	1924	1925
	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds	1,000 pounds
Cheese (all kinds).....	144,401	84,877	102,007	122,027	125,845	141,418	144,467
Butter.....	31,526	209,437	26,896	28,660	28,660	26,676	27,358
Condensed milk.....	99,207	48,287	66,138	48,501	70,547	73,193	80,468
Total.....	275,134	340,611	195,041	199,188	225,052	241,287	252,493

¹ Estimate of Swiss Farmers' Union.

When compared with that of the United States, the per capita consumption of milk and cheese is high, whereas that of butter is much lower. The figures in Table 24 give the comparison for the year 1926:⁷

TABLE 24.—*Per capita consumption of milk, cheese, and butter in Switzerland and in the United States, 1926*

Product	Switzerland, 1926	United States, 1926
Milk.....	290.6	221.2
Cheese.....	24.3	4.4
Butter.....	11.9	17.8

The organized dairy industry in Switzerland is actively engaged in increasing the consumption of milk. In this connection, the consumption of alcoholic beverages must be considered since these beverages are in direct competition with whole milk. In the wine and cider sections of the country the per capita consumption of milk is lower than in other sections.

Practically all retail milk is sold in bulk. Some of the dairy organizations would like to improve the quality of the milk and introduce the bottle as a retail container. This, however, does not seem to be feasible at the present time, since the price of milk, like that of bread, is a matter of such vital public concern that any increase in price makes it a public question subject to strong opposition and in some cases to legislation. The public is not willing to assume the additional cost of higher-quality milk in bottles. It should be added, however, that the hygienic qualities of milk are not of so great concern in Switzerland as in the United States. In Switzerland practically all milk consumed as a beverage is drunk in the form of "café au lait" or in some other boiled state.

The organized dairy industry, through its central organization, introduced the commercial manufacture of ice cream into the country for the first time in September, 1925. It is expected that this branch of the industry will develop a considerable demand for milk.

PRICES

During 1924 the farmer received around 20 cents per gallon for milk delivered to the local collecting station. Milk for city consumption brought a slightly higher price, and milk for cheese factories and

⁷ Statistique Laitiere de la Suisse, 1927 (14), for Swiss figures and United States Department of Agriculture for United States figures. It is reasonable to assume that the per capita consumption of dairy products is unduly exaggerated by the large tourist population.

condenseries was somewhat lower in price. (Table 25.) The effort of the farmers' cooperative organizations is to equalize the price of milk used for different purposes.

TABLE 25.—Milk: Average farm price per gallon in Switzerland, November, 1921–April, 1926 (8, 14)

Period	City consumption	Used in manufacture of —	
		Cheese	Con-densed milk
<i>Average:</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
November, 1921–January, 1922.....	27.4	26.6	26.6
February–March, 1922.....	24.4	23.7	23.6
April, 1922.....	19.8	19.0	19.0
May–July, 1922.....	16.7	15.1	14.4
August–October, 1922.....	17.1	15.5	14.8
November–December, 1922.....	18.5	17.4	17.3
January–April, 1923.....	19.1	18.1	18.0
May–October, 1923.....	19.5	18.5	18.6
November, 1923–April, 1924.....	20.2	19.7	19.5
May–July 1924.....	20.9	20.2	18.6
August–October, 1924.....	21.4	20.8	20.5
November, 1924–April, 1925.....	22.5	21.4	21.6
May–October, 1925.....	22.1	20.8	21.0
November, 1925–January, 1926.....	22.4	21.5	21.5
February–April, 1926.....	20.9	19.9	19.9

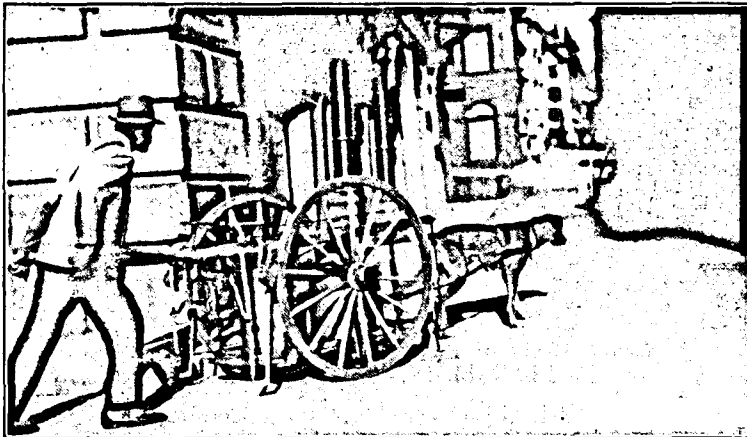


FIGURE 10.—Delivering milk in bulk. Most of the milk is sold in bulk.

The retail price of milk delivered to the residences in the larger cities averaged for 1926 about 26 cents per gallon. (Table 26.) In 1924 the farmer received 20 cents per gallon at the local shipping station; the distribution costs amounted to 7 cents, and in the larger cities the consumer paid 27 cents. Hence the marketing costs involved in taking the milk from the local shipping point to the consumer's door amount to about 25 per cent of the retail price. It must be remembered, however, that this is milk sold in bulk and not in bottles. (Fig. 10.)

TABLE 26.—Milk: Retail price per gallon in the larger cities of Switzerland, 1924-1926

Year and month	Average price in 33 of the largest cities	Basel	Berne	Geneva	Lausanne	Lucerne	St. Gall	Zurich
	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
1924	26.2	27.6	27.6	27.6	27.6	26.2	26.2	27.9
1925	28.5	29.3	29.3	29.3	29.3	27.8	27.8	30.0
1926:								
January	26.5	29.2	29.2	29.2	29.2	27.8	27.8	30.0
February	27.7	28.4	28.4	27.0	28.4	27.0	27.0	29.2
March	27.7	28.4	28.4	27.0	28.4	27.0	27.0	29.1
April	27.8	28.5	28.5	27.0	28.5	27.0	27.0	29.2
May	27.1	27.8	27.8	27.1	27.8	26.4	24.9	28.6
June	26.4	27.8	27.8	27.1	27.8	26.4	24.9	28.6
July	26.4	27.8	27.8	24.2	27.8	26.4	24.9	28.6
August	24.9	26.3	26.3	24.1	26.3	24.9	23.4	27.1
September	24.9	26.3	26.3	24.1	26.3	24.9	23.4	27.1
October	24.9	26.3	26.3	24.1	26.3	24.9	23.4	27.0
November	24.1	25.5	25.5	24.1	25.5	23.4	22.6	25.5
December	24.1	25.6	25.6	24.1	25.6	23.4	22.7	25.6
Average	26.2	27.3	27.3	25.8	27.3	25.8	24.9	28.0

Annuaire agricole de la Suisse, 1927 (14, p. 287) See Table 53 for average yearly value of the franc. (Conversions made direct from source.)

The comparative prices of milk used for different purposes are shown in Table 27.

TABLE 27.—Milk: Average price per gallon in Switzerland, classified by utilization, 1921-1925 (8, 9)

Utilization	1921	1922	1923	1924	1925
<i>Retail price:</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
In cities	33.5	27.6	26.6	27.7	29.4
In rural villages	32.5	26.1	25.2	26.3	27.9
To cheese factories	28.4	26.8	24.1	25.6	27.1
<i>Wholesale price:</i>					
Delivered—					
To local receiving stations	28.6	19.0	19.8	21.0	22.2
To cities	27.9	20.3	20.7	22.4	23.9
To cheese factories—					
Without whey	28.8	16.7	17.8	19.0	19.7
With whey	24.9	17.7	18.8	20.4	21.2
To condensaries, delivered to local shipping stations	24.9	17.3	18.8	20.2	21.2

See Table 53 for average yearly value of the franc.

The wholesale prices of cheese are given in Table 28, and butter prices are contained in Table 29.

TABLE 28.—Wholesale price of cheese in Switzerland, 1927 (29, p. 29)

Kind	Average weight per single cheese	Butterfat content in dry matter	Basic price per pound ¹
	<i>Pounds</i>	<i>Per cent</i>	<i>Cents</i>
Export Emmenthal, first quality	132 to 148	45	19.78
Emmenthal, first quality	110 to 121	45	19.61-19.96
Do	Less than 121	46	19.43-19.61
Gruyere, first quality	At least 44	48	19.43-19.61
Spalen, first quality, and small mountain Emmenthal		48	19.43-19.61
Three-fourths fat round and hard		35	15.98-16.28
One-half fat round and hard		25	13.57-13.92
Spalen and Gruyere, first quality for grating		48	20.14

¹ This is the range of prices guaranteed to producers by the Central Union of Swiss Producers of Milk for cheese manufactured after May 1, 1927. At the time these prices were set no statement was made as to how long they would continue in force. Basic price converted at the rate of 19.3 cents per franc.

² To these basic prices are added premiums varying from 0 to 10.5 cents per pound according to quality.

For marketing cheese of second quality, the basic prices according to quality are from 87.5 to 262.6 cents per 100 pounds less than those for the first quality.

TABLE 29.—Butter: Wholesale and retail price per pound in Switzerland; 1926 (19, p. 672, 673)

Month	From machine-separated cream ¹		From hand-separated cream ²		From whey cream	
	Wholesale ³	Retail	Wholesale ³	Retail	Wholesale ³	Retail
	Cents	Cents	Cents	Cents	Cents	Cents
January.....	44.6	48.4	41.3	45.7	38.2	40.1
February.....	44.7	48.1	40.6	44.7	36.1	39.7
March.....	45.1	48.6	40.8	44.9	36.5	40.3
April.....	45.1	48.8	40.9	44.9	36.7	40.4
May.....	42.9	46.7	39.0	43.3	35.6	39.5
June.....	41.8	45.8	38.6	42.7	34.6	38.7
July.....	41.4	45.3	37.8	42.2	33.5	37.8
August.....	41.7	45.3	37.5	41.9	32.1	36.3
September.....	41.6	44.2	37.3	41.7	31.2	35.8
October.....	41.9	45.6	37.1	41.3	31.6	35.1
November.....	42.1	45.5	37.2	41.4	32.1	36.0
December.....	42.1	45.2	37.4	41.2	32.7	36.7
Average.....	42.9	46.5	38.8	43.0	34.1	38.0

¹ Centrifugal separator.

² Cream from milk in pans.

³ Price paid producers for butter delivered to wholesale markets.

DAIRY IMPORTS AND EXPORTS

In 1925 Switzerland imported \$9,531,420 worth of dairy products and exported over three times as much measured in value, \$34,289,391. (Tables 30 and 31.) Nearly 85 per cent of the total dairy imports consist of butter. Nearly one-half the value of dairy exports consists of hard cheese (Emmenthal), and condensed milk and chocolate account for another 40 per cent.

TABLE 30.—Dairy products: Imports into Switzerland, 1921-1926 (8, 14, 18)

QUANTITY

Product	1921	1922	1923	1924	1925	1926 ¹
Milk:	1,000 lbs.	1,000 lbs.	1,000 lbs.	1,000 lbs.	1,000 lbs.	1,000 lbs.
Fresh.....	27,363	18,814	21,496	17,775	26,280	28,417
Condensed.....	1,432	5	177	120	68	71
Cream.....	12	5	3	3	2	5
Butter:						
Fresh.....	15,964	15,086	14,682	19,980	19,089	17,814
Processed.....	30	2	2	13	3	4
Cheese:						
Soft.....	780	1,400	1,845	2,367	2,511	2,384
Hard.....	1,114	391	686	1,765	1,264	1,072
Total.....	46,275	35,703	38,903	42,053	49,207	49,767

¹ Preliminary.

TABLE 30.—*Dairy products: Imports into Switzerland, 1921-1926 (8, 14, 18)*—Con.

Product	VALUE					
	1921	1922	1923	1924	1925	1926 ¹
Milk:	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
Fresh.....	1,002,101	558,444	554,262	455,206	722,389	621,961
Condensed.....	432,673	973	25,645	15,854	7,959	8,185
Cream.....	3,729	1,480	903	911	581	1,331
Butter:						
Fresh.....	7,161,236	6,099,645	5,683,482	7,941,678	7,899,474	6,602,810
Processed.....	11,972	824	722	4,920	1,432	1,484
Cheese:						
Soft.....	237,120	384,543	457,640	548,871	568,090	530,591
Hard.....	375,672	137,312	221,235	443,725	330,895	278,432
Total.....	9,224,503	7,183,221	6,943,889	9,411,165	9,531,420	8,044,794

See Table 53 for average yearly value of the franc.

¹ Preliminary.TABLE 31.—*Dairy products: Exports from Switzerland, 1921-1926 (8, 14, 18)*

Product	QUANTITY					
	1921	1922	1923	1924	1925	1926
Milk:	<i>1,000 lbs.</i>	<i>1,000 lbs.</i>	<i>1,000 lbs.</i>	<i>1,000 lbs.</i>	<i>1,000 lbs.</i>	<i>1,000 lbs.</i>
Fresh.....	7,857	14,907	18,591	76,972	37,420	35,393
Condensed.....	46,825	45,474	55,828	58,225	67,555	73,940
Powdered.....	5,457	6,411	6,472	6,286	5,928	5,594
Cream.....	70	24	28	165	141	156
Butter:						
Fresh.....	10	8	20	252	177	131
Processed.....	(¹)	(¹)	(¹)		(¹)	
Cheese:						
Soft.....	7	819	666	978	1,164	645
Hard.....	10,091	44,981	37,805	41,982	49,885	60,776
Other.....	498	352	574	816	679	551
Chocolate.....	24,859	13,557	14,207	17,502	19,521	16,987
Total.....	95,674	126,533	134,191	203,178	182,469	194,163

VALUE

Milk:	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
Fresh.....	227,628	201,922	245,255	2,327,234	1,219,974	1,014,187
Condensed.....	7,981,476	5,490,708	5,765,294	6,514,469	7,892,029	7,901,962
Powdered.....	1,173,743	835,818	789,583	676,613	667,438	627,927
Cream.....	27,733	7,351	7,766	51,570	37,269	39,635
Butter:						
Fresh.....	5,378	3,386	9,211	112,070	83,639	57,508
Processed.....	142	110	108		60	17
Cheese:						
Soft.....	3,210	35,839	45,330	139,399	140,364	69,832
Hard.....	4,876,049	13,087,614	12,059,204	14,784,508	17,505,431	17,426,967
Other.....	145,712	67,762	75,130	143,778	129,180	91,754
Chocolate.....	9,757,249	4,869,675	4,606,925	5,993,843	6,617,007	5,804,225
Total.....	24,198,320	24,600,185	23,603,806	30,743,484	24,289,391	23,033,914

See Table 53 for average yearly value of the franc.

¹ Less than 500 pounds.² Estimated.

Switzerland finds it more advantageous to make cheese for exportation and to buy butter from abroad. During the war it was necessary to form a Government agency in order to secure enough butter to supply the minimum demands. (See discussion on Swiss Central Butter Society, p. 44).

The frontier city of Geneva imports about one-fourth of its supply.

The dairy industry in Switzerland is still handicapped by an inequality of the price level of milk as compared with the price levels of the products which the dairyman has to buy. In other words, a gallon of milk in May, 1925, would not buy as much of most commodities as it would before the World War. This comparison is shown in Table 32. The farmer's demand in Switzerland, as in the United States, is that the purchasing power of farm products be placed on a level with the purchasing power of other classes of services and commodities in common use.

TABLE 32.—Decrease in purchasing power of milk in Switzerland, pre-war compared with May, 1925 (26)

Item	Amount of milk farmer must sell to pay for specified items		
	Pre-war	May, 1925	Increase
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
1 pound sugar.....	2.5	3.0	0.5
1 pound coffee.....	11.6	13.5	1.9
1 pair shoes.....	143.3	244.7	101.4
1 yard mixed wool textile.....	76.6	88.7	12.1
100 pounds peanut oil cakes.....	108.0	111.0	3.0
100 pounds basic slag.....	34.0	30.0	¹ —4.0
1 reaper.....	2,551.0	4,654.0	2,103.0
Weekly wage of a cow herd.....	150.0	179.0	29.0
Weekly wage of a farm servant.....	126.0	148.0	22.0
1 visit of the veterinary.....	60.0	62.0	2.0
Shoeing a horse.....	77.0	106.0	29.0
1 hour work of a mason.....	7.1	14.8	7.7
1 hour work of a locksmith.....	7.7	15.4	7.7
Construction of a barn with hay-loft ²	11,916.0	13,880.0	1,964.0
1 acre land, including buildings ³	26,525.0	24,783.0	¹ —1,742.0

¹ Decrease.

² On the basis of one head of cattle.

³ Buildings of average size for peasant property.

AGRICULTURAL COOPERATION

An outstanding characteristic of Swiss agriculture is the extent and diversity of its cooperative enterprises. Data pertaining to these activities are especially complete because of the research studies conducted by the Swiss Peasants' Union ¹ in 1910, and repeated in 1920. The reports of these studies (22, 25) contain analyses of the number, membership, and growth of agricultural cooperative societies and associations in Switzerland.

Table 33 gives the number and membership of local organizations in Switzerland in 1910 and 1920.

¹ Although the Swiss Peasants' Union is an association of farmers, it is subsidized by the Government to collect and compile agricultural statistics. From this standpoint it is a semi-official body.

TABLE 33.—Number and membership of local agricultural organizations in Switzerland, 1910 and 1920 (25)

Class	Associations				Members			
	1910	1920	Increase		1910	1920	Increase	
	Number	Number	Number	Per cent	Number	Number	Number	Per cent
General-purpose societies and associations.....	494	519	25	5	60,084	81,059	20,975	35
Societies of ornithology, poultry, and rabbit breeding.....	158	257	99	63	8,153	18,689	10,536	129
Beekkeepers.....	121	143	22	18	7,330	15,493	8,163	111
Cooperative syndicates (for commercial transactions).....	557	772	215	39	48,469	80,192	31,723	65
Dairies and cheese factories.....	2,785	3,519	734	26	77,227	102,677	25,450	33
Associations of the dairy industry.....	17		1-17		1,419		1-1,419	
Cattle breeding.....	913	1,217	304	33	28,434	40,628	12,194	43
Horse breeding.....	44	56	12	27	3,821	7,575	3,754	98
Goat breeding.....	220	358	138	63	8,265	11,374	3,109	38
Sheep breeding.....	38	52	14	37	613	1,464	851	139
Swine breeding.....	48	82	34	71	1,217	2,625	1,408	116
Pomological and the utilization of fruits.....	68	117	49	72	3,648	10,276	6,628	182
Grape growing and wine making.....	50	49	1-1		2,744	3,557	813	30
Distilleries.....	53	52	1-1		974	1,278	304	31
Advancement of cultural practices.....	15	16	1	7	1,874	731	1-1,143	
Horticulture and nurseries.....		33	33			2,784	2,784	
Alpine pasturage.....	227	344	117	52	7,471	15,546	8,075	108
Forestry.....		83	83			4,910	4,910	
Land reclamation.....	73	191	118	162	3,628	11,060	7,432	205
Utilization of agricultural machinery.....		19	19			609	609	
Threshing.....	133	270	137	103	3,946	9,814	5,868	149
Mills.....	39	41	2	5	6,059	7,119	1,060	17
Bakeries.....	5	16	11	433	388	1,968	1,600	412
Slaughterhouses.....		2	2			152	152	
Mutual-credit societies.....	139	266	127	91	10,024	20,738	10,734	107
Livestock loans.....	5	19	13	260	457	749	292	64
Cattle insurance.....		1,919	1,919			128,785	128,785	
Goat insurance.....		127	127			4,352	4,352	
Horse insurance.....	31	45	14	45	7,474	17,133	9,659	129
Hog insurance.....		10	10			654	654	
Political and economic associations.....		349	349			53,051	53,051	
Total.....	6,231	10,942	4,711	76	293,719	657,082	363,363	124

¹ Decrease.

A generous quantity of additional information is made available by the fact that local associations tend to federate into cantonal associations, and the cantonal associations in turn to federate into national organizations. Many of these larger bodies publish annual reports covering their business and membership activities.

The classification in this bulletin follows that contained in the 1920 report of the Swiss Peasants' Union. In this connection it should be explained that the classification is necessarily an arbitrary one. It is not easy at all times to distinguish between the accomplishment of certain cooperatives, although they have been founded to further different ends. For instance, a general-purpose society established to advance farming interests in general, but which also buys supplies for its members, may have much in common with an association established for the special purpose of purchasing supplies.

All the organizations contained in the classification are predominantly agricultural in their interests and are controlled according to accepted principles of cooperation.

In Switzerland one distinguishes between the word "association" and the word "society." In general the word "association" refers

to groups designed to advance cultural methods, political, social, and educational well-being, or professional interests, whereas the "society" is primarily concerned with the conduct of commercial transactions for its members. (The latter term is similar to the word "company" in the United States.) Much of this distinction loses its importance, however, for many of the general-welfare "associations" conduct commercial transactions in a "society" manner. In this bulletin the terms are used synonymously.

LEGISLATION

It is well to note here two or three of the outstanding provisions of the Swiss legislation controlling cooperative organizations.

Before 1881 cooperatives were governed by the legislation of the several Cantons. This condition explains in part the rapid development in some Cantons, and the lack of development in others.

The Federal code of obligations, drawn up in 1881 (20), gave a national uniform status to cooperative enterprises. By the terms of article 684 of this code the right of withdrawal of members from the society must not be restricted. Since the withdrawal of any considerable numbers of its members at one time may imperil the existence of an association, it has been found to be advisable to lay down in the by-laws certain conditions for withdrawals without prejudicing the right conveyed by law. It is believed by leaders of cooperation in Switzerland that the law should be modified in order to safeguard more thoroughly than is now possible the interests of the association with respect to the withdrawal of members.

Article 689 of the code specifies:

Whenever a provision excluding personal liability on the part of the members is not actually contained in the rules, or is not clearly expressed in terms, it is understood that they are jointly and severally liable with their own capital.

Hence both types—limited and unlimited liability of members—are found among the Swiss cooperatives. For the most part the locals have adopted the unlimited liability principle, while the federations adopt a limited liability form of organizations.

GENERAL-PURPOSE ASSOCIATIONS

LOCAL WELFARE SOCIETIES

In 1910 this general group contained 494 local organizations with 60,000 members. This number had grown to 519 associations in 1920 with 81,000 members. The majority of these associations carried on commercial activities in connection with their general welfare work; 355 purchased farm requisities, 101 sold farm products, 17 carried on operations in common among their members, and 90 per cent were affiliated with federations.

ORNITHOLOGICAL, POULTRY-BREEDING, AND RABBIT-BREEDING SOCIETIES

The group of ornithological, poultry-breeding, and rabbit-breeding societies contained 257 locals with 18,689 members in 1920; 79 purchased feeds for their members and 229 were affiliated with central organizations.

BEE ASSOCIATIONS

Local bee associations in 1920 numbered 143 with 15,493 members; 65 of these purchased sugar cooperatively and 130 were federated.

Most of the local associations federate into cantonal associations, of which they form sections. In 1920 there were 79 such cantonal associations. These cantonal associations in their turn form inter-cantonal and national associations. The following general-purpose associations are of national importance: The Swiss Agricultural Society, the Federation of Agricultural Associations of French Switzerland, the Tessin Cantonal Agricultural Society, the Swiss Society of Alpine Husbandry, and the Swiss Horticultural Society.

In 1920 the Swiss Agricultural Society had 81,059 members and 31 sections.

FORMER STUDENTS OF AGRICULTURAL COLLEGES

Considerable importance for agricultural progress is attached to the societies formed by the former students of the agricultural schools. In 1920 these societies had an enrollment of 7,815 members, all former students at agricultural colleges. In 1921 these local societies formed a federation. The purpose is to keep the members in touch with one another, with a view to promoting agricultural progress and to assisting them in their professional careers.

The number and membership of the above general-purpose groups of associations, together with their growth during the 10-year period from 1910 to 1920, are given in detail in Table 34.

TABLE 34.—Number and membership of agricultural associations in Switzerland, 1910 and 1920¹ (25)

Class ¹	Associations		Members	
	1910	1920	1910	1920
Local:				
General agricultural.....	494	519	60,084	81,059
Ornithology, poultry, and rabbit breeding.....	168	257	8,153	18,849
Beekeepers.....	121	143	7,330	15,493
Cantonal:				
Federations for the amelioration of agriculture.....	22	28	90,969	167,270
Societies for the amelioration of agriculture with membership of individuals.....	6	5	3,987	2,692
Societies of ornithology, poultry, and rabbit breeding.....	11	19	2,741	12,563
Societies of beekeepers.....	16	27	4,221	11,900
Societies of ex-students of agricultural colleges.....	15	28	4,169	7,815
National:				
Federations with member associations of agriculture.....	2	3	69,517	122,070
Societies with membership of individuals.....	3	3	439	630
Societies for ornithology, poultry, and rabbit breeding.....	4	21	9,610	24,715
Societies of beekeepers.....	2	2	8,656	19,586
Total.....	856	1,065	268,876	484,482

¹ General purpose, agriculture.

COMMERCIAL AGRICULTURAL-COOPERATIVE ORGANIZATIONS (SYNDICATE AGRICOLES)

In the previous group commercial activities (buying, selling, manufacturing) were, for the most part, side lines, but the organizations listed in the group of commercial agricultural cooperatives were founded for the special purpose of conducting commercial transactions for their members.

LOCAL PURCHASING SOCIETIES

In the class of local purchasing societies there were 772 societies in 1920, with a membership of 80,912. Practically all of these are engaged in buying farm supplies cooperatively, but 327 also sold farm products for their members. These sales consisted largely of fruit, cider, potatoes, and hay.

Only 49 were engaged in processing and manufacturing enterprises.

Of these locals, 703 formed 13 federations. Their membership status is given in Table 35.

TABLE 35.—Number and membership of agricultural associations, 1910 and 1920

Class	Associations		Members	
	1910	1920	1910	1920
Local agricultural.....	557	772	48,469	80,192
Federated.....	10	13	57,259	238,849

BULL CLUBS

Bull clubs constitute an important branch of the cooperative movement. Strictly speaking, the principal economic activity of these associations is the cooperative maintenance of breeding stock, but many of them buy and sell for their members. A number own buildings, and the joint control of pastures and grazing lands is common among them.

The local associations to the number of 1,186 have formed 61 federations; 857 locals are affiliated with other bodies.

The figures contained in Table 36 show the number of organizations in this group and their membership status.

TABLE 36.—Number and membership of cooperative livestock-breeding associations in Switzerland, 1910 and 1920 (22, 25)

Class	Associations		Members	
	1910	1920	1910	1920
Local:				
Cattle breeding.....	913	1,217	28,434	40,628
Horse breeding.....	44	56	3,821	7,575
Goat breeding.....	220	358	8,265	11,374
Sheep breeding.....	38	52	613	1,464
Pig breeding.....	48	82	1,217	2,625
Total.....	1,263	1,765	42,350	63,666
Cantonal, intercantonal, and national federations and associations:				
Cattle breeding.....	11	19	23,395	36,351
Horse breeding.....	9	18	3,264	3,946
Goat breeding.....	10	11	9,875	18,541
Breeding of sheep species.....		3		91
Breeding of swine species.....		9		1,132
Silkworm breeding.....		1		82
Total.....	30	61	36,564	60,143

FRUIT-CULTURE ASSOCIATIONS

In 1910 there were 68 local organizations dealing with horticultural matters. For the most part these groups confined their attention to the improvement of cultural methods, but, of the 117 associations in 1920, 19 purchased supplies. Sales were conducted by 56, and 38 manufactured cider and alcohol. Buildings were owned by 42, and 38 owned storage cellars and presses. Of these local organizations, 79 belong to federations.

The number and membership status of these associations are given in Table 37.

TABLE 37.—Number and membership of fruit-culture associations, 1910 and 1920

Class	Associations		Members	
	1910	1920	1910	1920
Local	68	117	3,648	10,276
Cantonal, intercantonal, and national	12	19	5,678	7,682

In addition there is a closely allied group which has to do with horticulture and gardening, most of which are of recent origin. In 1920 there were 33 locals with 2,784 members; and 28 cantonal, intercantonal, and national associations with 9,197 members.

One of the important activities of some of the locals in this group is the securing of vegetable-garden plots near large cities for their members.

GRAPE-GROWING AND WINE-MAKING ASSOCIATIONS

The membership in the grape-growing and wine-making group of organizations increased, but the total number of organizations was actually reduced by 1 (49 organizations instead of 50) during the 10-year period. This is one of the few branches of Swiss agricultural cooperation which show an actual decrease in the number of organizations during this period. (Table 38.)

Aside from promoting general cultural interests of the grape growers, 15 carry on cooperative purchases, 25 make collective sales, and 23 engage in wine making and distilling. Buildings are owned by 13, and 11 have cellars and presses. Seventeen of the forty-nine locals belong to federations.

TABLE 38.—Number and membership of grape and wine associations, 1910 and 1920

Class	Associations		Members	
	1910	1920	1910	1920
Local	50	49	2,744	3,557
Cantonal, intercantonal, and national	7	5	2,242	2,826

COOPERATIVE DISTILLERIES

For the most part these distilleries possess concessions granted under the Swiss law for the manufacture of alcohol. Thirty-eight of the fifty-three locals fall in this class. (Table 39.) The others distill materials not under the control of the Federal monopoly.

Thirty-four locals belong to federations.

TABLE 39.—Number and membership of cooperative distillery associations, 1910 and 1920

Class	Associations		Members	
	1910	1920	1910	1920
Local.....	53	52	974	1,278
Cantonal, intercantonal, and national.....		1		820

COOPERATIVE ORGANIZATIONS FOR SELECTION OF SEEDS AND PROMOTION OF CULTURAL METHODS FOR SPECIFIC CROPS

It is difficult to classify some of the organizations. The selection and production of seeds is their important function, and a number of them deal with the promotion of cultural methods of specialized crops such as tobacco, cabbages, sugar beets, and vegetables. Thirty-four of the fifty-two locals were affiliated in 1920. Later in 1921 a central organization was founded—Union Suisse des Selectonneurs. The entire group became members of this federation. Their number and membership are shown in Table 40.

TABLE 40.—Number and membership of seed associations, 1910 and 1920

Class	Associations		Members	
	1910	1920	1910	1920
Locals.....	15	16	1,874	731
Cantonal, intercantonal, and national.....		12		1,178

ASSOCIATIONS FOR OWNERSHIP AND OPERATION OF ALPINE PASTURES

The Swiss Farmers' Union does not consider its inquiry complete in regard to associations for ownership and operation of Alpine pastures. Although 344 local associations reported in 1920, it is believed that many more exist. Because of their isolation and informal character it is difficult to locate and reach them in an inquiry.

Of the 344 locals, 7 are for the promotion of the general economy connected with Alpine pastures, better usage. These 7 organizations do not engage in commercial operations. The remainder carry on the following economic activities: 46 purchase supplies and requisites for their members, 57 sell dairy products, and 130 make cheese and butter. The principal property owned or controlled consists of 3 warehouses, 76 cheese factories, 32 cheese cellars, 251 pastures, 14 other agricultural properties, and 119 forests. Seventeen of the locals are federated. Their number and membership are classified in Table 41.

TABLE 41.—Number and membership of Alpine pasture associations, 1910 and 1920

Class	Associations		Members	
	1910	1920	1910	1920
Local:				
Noncommercial.....		7		429
Commercial.....	227	337	7,471	15,117
Cantonal, intercantonal, and national.....	6	7	3,696	12,576

FORESTRY COOPERATIVES

Forestry is an important factor in the agricultural economy of Switzerland. Much forest land is owned and controlled by the communes. It is not always easy to distinguish between those operated by the communes and those that are cooperatively owned. In 1920 there were 83 local forestry cooperatives. Twenty-five of these were founded before 1850. Twenty-nine belong to federations. In 1921 a central organization was founded with offices at Soleure-L'Union forestière Suisse. Since this group was not included in the 1910 inquiry it is not possible to show its growth during the 10-year period. (Table 42.)

TABLE 42.—Number and membership of forestry associations in 1920

Class	Number of associations	Number of members
Locals.....	83	4,910
Cantonals.....	3	255

LAND-RECLAMATION COOPERATIVES

Land-reclamation cooperative enterprises have had a rapid growth during the last few years. Of the 191 locals, with a membership of 11,060 in 1920, nearly two-thirds were founded after 1909—an 80 per cent increase in 10 years. Drainage and irrigation are the most important tasks handled. Seven are affiliated with other organizations.

ORGANIZATIONS FOR THE UTILIZATION OF AGRICULTURAL MACHINERY

Organizations for the utilization of agricultural machinery are of recent origin. Some are concerned with movements founded for furnishing electricity to a group of farmers; others deal with the common uses among members of agricultural machinery. In 1920, exclusive of threshing associations, there were 19 societies with a total membership of 609 farmers. Two of these belonged to cooperative federations.

THRESHING ASSOCIATIONS

Threshing organizations doubled in number during the 10-year period, there being 133 in 1910 with 3,946 members, and 270 in 1920 with 9,814 members. This increase is accounted for by the added emphasis placed on the growing of grain after 1914. Fifteen of these organizations are federated.

FLOUR AND FEED MILL COOPERATIVES

In 1920 there were 40 flour-and-feed-mill cooperatives. In addition, some of the cooperative bakeries operate mills. Thirty of these companies perform purchases for their members, 14 conduct sales in addition to their regular milling activities, and 16 do baking. Most of the cooperative mills as well as some of the cooperative bakeries are affiliated with a central association, L'Union Suisse des Moulins Agricoles.

The number and membership of the local cooperative mills were 39 and 6,059, respectively, in 1910 and 41 and 7,119, respectively, in 1920.

AGRICULTURAL COOPERATIVE BAKERIES

Of the 16 agricultural cooperative bakeries in 1920, only 3 existed in 1910. Ten of these organizations are home bakeries. The others make collective arrangements with private bakers. There were three locals with 388 members in 1910, and 16 locals with 1,988 members in 1920.

ABATTOIR ASSOCIATIONS

Two abattoir associations, with a total of 152 members, reported in 1920.

AGRICULTURAL CREDIT AND INSURANCE COOPERATIVES

AGRICULTURAL-CREDIT COOPERATIVES

The number of agricultural credit cooperatives has nearly doubled within the last 10 years. (Table 43.) In most countries cooperative-credit organizations were among the first to gain a footing, and have long since passed the stage of rapid development, but in Switzerland, since there are whole Cantons which do not have one of these organizations, there is room for growth in this direction.

The Reiffeisen system is the common type followed. Practically all the locals are affiliated with the Swiss Union of Mutual Credit Banks. Cooperative purchases are made by 23 of these companies, and 6 conduct sales activities for their members.

TABLE 43.—Number and membership of cooperative credit banks, 1910 and 1920

Class	Associations		Members	
	1910	1920	1910	1920
Local.....	139	266	10, 024	20, 758
Cantonal, intercantonal, and national.....	1	4	8, 155	28, 140

LIVESTOCK-CREDIT ASSOCIATIONS

Two Cantons—Zurich and Thurgovie—possess 18 cooperative livestock credit associations, with a membership of 749 members.

COOPERATIVE LIVESTOCK-INSURANCE ASSOCIATIONS

Livestock-insurance cooperation shows a greater recent development than do any other cooperative groups in Switzerland, largely because of cantonal and Federal subsidies. In 1910 there were 41 livestock-insurance organizations, and in 1920 there were 2,118. (Table 44.)

The following figures give an idea of their activities in 1919:

Animals insured.....	Number	772, 174
Casualties.....		20, 835
	Dollars	
Indemnities paid.....	1, 024, 474	
Cantonal subsidies.....	226, 341	
Federal subsidies.....	139, 238	

Practically all the local organizations belong to a federation; 2,101 are so affiliated.

TABLE 44.—*Number and membership of cooperative livestock insurance associations in Switzerland, 1910 and 1920 (22, 25)*

Class	Associations		Members	
	1910	1920	1910	1920
Local associations:				
Cattle.....		1,919		128,785
Goats.....		127		4,352
Horses.....	31	45	7,474	17,133
Swine.....		10		654
Total.....	31	2,101	7,474	150,924
Federations, cantonal, intercantonal, and national:				
Cattle.....		3		1,935
Goats.....				
Horses.....	8	9	6,815	9,534
Pigs.....		2		150
Bees (foul brood).....		1		245
Hail insurance.....	2	2	59,102	84,916
Total.....	10	17	65,917	96,780

POLITICAL AND ECONOMIC ASSOCIATIONS

Switzerland has 349 local agricultural associations of an economic, political, and semipolitical character. (Table 45.) All strive to promote agricultural welfare by exerting an influence in the councils of the nation. They are confined, for the most part, to three Cantons—Zurich, Berne, and Argovie. All belong to federations.

TABLE 45.—*Number and membership of political and economic associations, 1910 and 1920*

Class	Associations		Members	
	1910	1920	1910	1920
Local.....		349		53,051
Cantonal.....		5		73,787
Union Suisse des Paysans.....	1	1	144,377	331,474

The importance of the Swiss Farmers' Union—Union Suisses des Paysans—to the cooperative movement of the country is so great as to make it advisable to treat its development and activities in a separate section.

COOPERATION IN THE SWISS DAIRY INDUSTRY

Switzerland has long been known for the voluntary cooperation among its dairy farmers. The farmers in the Alpine regions formed voluntary organizations as early as the fifteenth century for the pasturing of their herds and for the making of cheese. Cooperation among the farmers in the agricultural valleys began at a later date. The first cooperative cheese factory established by valley farmers was founded in 1815.

The growth of the cooperative dairy movement during the last 75 years is shown by the following tables, which give the approximate date of the founding of the existing local cooperative dairy companies (1).

Dairy societies founded:	Number
Previous to 1850.....	345
1850-1869.....	546
1870-1879.....	324
1880-1889.....	483
1890-1899.....	436
1900-1909.....	654
1910-1919.....	659
1920.....	12
Date unknown.....	60

Cooperative dairy societies in Switzerland are concerned for the most part in the sale of milk and the manufacture of cheese. There are no creameries for the making of butter exclusively, since butter is a secondary consideration. The fact that cheese and whole milk bring higher returns is the simple explanation why Switzerland, a dairy country, imports a goodly portion of its butter supply. There are no cooperative condenseries, although there are a number of cooperative societies which sell whole milk to condenseries. Cheese is the hub of the Swiss dairy industry.

COOPERATIVE DAIRIES AND CHEESE FACTORIES

In 1920 there were 3,519 local dairy associations with a membership of 102,659, as compared with 2,802 organizations with a membership of 78,646 in 1910. Of this number 376 purchase cooperatively, 2,163 sell, and 943 manufacture cheese and butter.

Of the local associations, 3,108 were federated in 1920 with the Swiss Dairy Industry Society founded in 1887. For commercial purposes practically the whole industry, from the producers' end and for the export sale of cheese, is united with the Central Union of Swiss Milk Producers.

Table 46 gives the number and membership of these associations in 1910 and 1920. Table 47 gives their geographical distribution.

TABLE 46.—Number and membership of the cooperative dairy associations in Switzerland, 1910 and 1920 (22, 25)

Class	Societies		Members	
	1910	1920	1910	1920
Local societies of dairying and cheese making.....	2,802	3,519	78,646	102,659
Societies and federations of Switzerland (cantonal and intercantonal) for the dairying industry:				
Professional.....	3	15	1,368	5,612
Associations of milk purchasers.....		11		2,544
Federations of milk producers.....	14	28	60,457	196,826
Total.....	2,819	3,573	140,471	307,641

TABLE 47.—Number of farms and distribution of cooperative dairy societies in Switzerland, 1920 (1)

Canton	Farms	Societies		
		Total	Members	Number of members per 100 farms
Zurich.....	22,251	422	9,773	43.9
Berne.....	44,422	687	19,255	43.3
Lucerne.....	10,758	295	6,744	62.7
Uri.....	1,781	6	151	8.5
Schwyz.....	4,553	52	996	22.9
Unterwalden.....	2,922	11	273	9.3
Glarus.....	1,900	29	632	33.3
Zug.....	1,363	27	811	59.5
Fribourg.....	12,156	293	8,285	68.2
Solothurn.....	8,372	115	3,517	42.0
Basel.....	5,899	81	2,831	48.0
Schaffhausen.....	4,297	16	469	10.9
Appenzell.....	5,113	15	930	18.3
St. Gall.....	17,431	223	5,774	33.1
Grisons.....	13,215	123	3,846	29.1
Aargau.....	20,815	197	6,667	32.1
Thurgau.....	11,426	187	6,263	54.8
Ticino.....	16,372	38	1,161	7.1
Vaud.....	29,779	495	16,136	77.7
Valais.....	17,899	94	4,632	25.9
Neuchâtel.....	3,711	60	1,541	41.5
Geneva.....	2,561	62	1,946	76.0
Total.....	249,796	3,519	102,659	41.1

TYPES OF ORGANIZATIONS

Local Swiss cooperative dairy organizations classified by type may be divided into three groups:

(1) The simplest form is for negotiating the sale and delivery of whole milk to a purchaser on contract. Often these organizations have no capital and no rules and regulations other than verbal agreements. A committee elected by the members contracts for the sale of the members' milk for a certain period—usually six months or a year, at an agreed price. The principal reason for collective action is that of securing the most advantageous contract price.

The usual procedure is to provide quarters for the collecting and measuring of the milk, which work, together with the delivery of the milk to the buyer, is performed by one of the members. A small assessment is made on each kilogram of milk handled to meet the running expenses. The payments to members are handled by the treasurer of the society.

In some cases the volume of business may become such as to warrant the building or buying of quarters and to hire a full-time employee. In such case the society may charge an entrance fee and issue capital stock.

(2) The second type relates largely to cheese factories owned by cooperatives but rented to the cheese maker who purchases the milk at a contract price. These organizations are operated much like those described above, with the exception that they own property, charge entrance fees, and issue shares. This is a common form of organization for the manufacture of cheese. The profit realized from the manufacture of the cheese goes to the maker. The basis of this is the belief that the possibility of receiving a profit rather than a

fixed wage on the part of the maker results in the making of a higher grade of cheese, which gives the industry an advantage on the export markets. In many instances the dairy producers do not wish to assume the risk of manufacture.

(3) The third type of cooperatives are those which assume full responsibility in the manufacture of the products.

FEDERATIONS

As cooperative societies grew in number, the competition from private dairy manufacturers and dealers increased in sharpness. Hence it became evident that the isolated cooperative was in somewhat the same position as the isolated farmer before the advent of cooperation—helpless in defending his own interests.

The logical outcome of this realization was federation. A few societies around Geneva and Lausanne took the lead in the eighties. They grouped themselves into small federations for the purpose of selling the milk of members in these two cities.

The Federation of the Cooperative Dairies and Cheese Factories of the Northwest of Switzerland followed. It was founded in 1904. This federation was composed of the cooperative dairy organizations within the milk supply area of the city of Basel. Federations of the cooperatives supplying the cities of Zurich and Winterthur were the next in line. The success of the federations was so pronounced that their number grew and extended to every branch of the industry.

The organization and range of activities of these federations depend upon the stage of their development. Each local association is represented in the federation by delegates. The number of delegates depends upon the number of members of the local association. The meetings of delegates fix the minimum price of milk conforming to the basic price fixed by the central union. Milk that can not be disposed of at this price is taken over by the federation. Milk thus bought is put through the processes of manufacture by the federation. Some of these federations carry on a large business in the manufacture and sale of dairy products and in the distribution of whole milk for city consumption.

Another function of the federation is that of regulating the milk supply, which means the running of cheese factories to their full capacity during the summer months, and diverting milk from the cheese districts to the cities during the winter months.

THE CENTRAL UNION OF SWISS MILK PRODUCERS (UNION CENTRALE DES PRODUCTEURS SUISSE DE LAIT)

The final step in federating the dairy industry was taken in 1907 with the organization of the Central Union of Swiss Milk Producers—a federation of federations. This organization is essentially economic in its activities. It plays the rôle of a commercial coordinator among the different branches of the industry. It unifies the sales activities of the cooperative milk producers, manufacturers of dairy products, whole-milk distributors, and the cooperative wholesale organizations for the export sale of cheese.

One of its noteworthy functions is that of its cooperative relationship with the cheese-makers' organizations and the organizations of the private dealers in the export of cheese.

The union began its existence in 1907 with 9 member federations controlling 102,000 cows. In 1924 it had 24 member federations representing 3,340 local societies with 102,127 members. It controlled the product of 534,852 cows. Table 48 shows the number and size of the federations adhering to the union in 1924.

TABLE 48.—Organizations belonging to the Central Union of Swiss Milk Producers, 1924

Organization	Members	Cows
	Number	Number
Verband bernischer Käseerei- und Milchgenossenschaften.....	19,759	131,262
Verband nordostschweizerischer Käseerei- und Milchgenossenschaften.....	16,414	70,172
Verband nordwestschweizerischer Milch- und Käsegenossenschaften.....	9,389	36,622
Verband argauischer Käseerei- und Milchgenossenschaften.....	5,542	20,622
Verband thurgauischer Käseerei- und Milchgenossenschaften.....	6,796	38,262
Verband zentralschweizer, Milchverwertungsgenossenschaften.....	7,591	69,344
Verband zugerischer, argauischer und luzernerischer Milchgenossenschaften.....	644	6,545
Verband St. Gallischer Käseerei- und Milchgenossenschaften.....	2,640	23,143
Milchproduzentenverband St. Gallen-Appenzell.....	1,461	10,806
Milchproduzentenverband Rheintal-Appenzell.....	2,367	6,620
Milchproduzentenverband Rorschach und Umgebung.....	270	1,796
Milchproduzentenverband Nidwalden.....	342	2,570
Milchproduzentenverband Obwalden.....	266	2,003
Milchproduzentenverband Appenzell I. Rh.....	55	330
Federation laitiere Vaudoise-Fribourgeoise.....	7,332	32,836
Federation des Laiteries du Jura.....	2,965	12,969
Laiterie Agricole Lausanne.....	1,192	5,476
Syndicat des Producteurs de Lait de Lausanne et Environs.....	302	1,417
Laiteries Reunies.....	1,982	10,177
Federation Laitiere de la Region du Lemane.....	1,768	5,934
Federation des Societes Fribourgeoises de Laiterie, Zone de la Montagne.....	3,128	17,366
Federation laitiere neuchateloise.....	1,711	10,452
Federation valaisanne des Producteurs de Lait Walliser Milchproduzentenverband.....	6,873	15,801
Associazione ticinese Produttori di latte.....	1,133	3,368
Total.....	102,127	534,852

Union Centrale des Producteurs Suisses de Lait.

It will be noted from Table 48 that the organizations united in the central union control the product of about 535,000 cows. The Swiss Milk Commission estimated the number of cows in Switzerland in 1924 at 810,000. Hence the owners of 66 per cent of the total cow population of the country were enrolled in the central union. But since a large proportion of the cows in the mountainous districts are kept for breeding rather than dairy purposes, the percentage of dairy cows controlled by the union is considerably greater than indicated by the above figure. The union estimates that 90 per cent of the dairy cows of the country belong to its members. This is a good index of the extent of cooperation among the dairy farmers.

The union was organized to carry out the following purposes:

- (1) To keep the milk industry informed regarding market conditions of milk and milk products.
- (2) The preparation for sale, and the sale of milk and dairy products.
- (3) Technical improvement in the methods of production and handling of milk and its products.
- (4) Purchase and distribution of dairy requisites.
- (5) Arrangement of contracts with cheese-makers' and cheese-trade organizations.

Some of its activities in accomplishing these ends are the following:

- (1) Collection, tabulation, and classification of market data, which are used as a basis for arriving at a decision concerning prices to be adopted for the ensuing year.
- (2) Publications in two languages (French and German) of a weekly journal dealing with technical and economic phases of the dairy industry.

(3) Maintenance of an office of dairy building construction. This office furnishes oral and written statements on all questions relating to the construction of dairy buildings and the purchase and installation of dairy machinery and equipment for large and small farms.

In connection with the development of trade in milk and dairy products, the central union has taken an active part in the formation of trade institutions which have played a leading rôle in molding the commercial policies of the industry.

S. A. ZOLLIKOFEN

S. A. Zollikofen is a company formed in 1911 by the cooperative dairy industry for the export of Emmenthal cheese. At that time the exporting of Swiss cheese was tending toward concentration in the hands of a few powerful dealers. It was believed that these dealers were acting in unison to the detriment of the interests of the dairy farmer. The Emmenthal Cheese Exporting Co. was organized for the purpose of evading these dealers in sales abroad.

This action on the part of the producers precipitated a bitter trade war between the cooperatives and the private wholesale dealers. At first it was difficult for the new company to gain a foothold against the dealers' league with its large capital resources. After a few years, however, it succeeded in establishing a well-organized system of warehouses, and is now one of the most important factors in the exportation of Swiss cheeses.

The initial capital was \$135,100;⁹ this has been increased by successive steps to \$966,340.⁹ The entire amount was subscribed by federations.

By the establishment of this institution the producers expressed their determination to be a partner in the cheese-export business, and to have an intimate contact with the barometer of their industry.

SWISS UNION OF CHEESE EXPORTERS

At the beginning of the World War the cheese market underwent a crisis. The wholesale cheese market was disorganized. Warehouses, cooperative and private alike, were full of a semiperishable product which had to be moved at some price. This threatening catastrophe brought about a collaboration between the cooperatives and the private dealers, and the Swiss Union of Cheese Exporters (Union Suisse des Exportateurs de Fromage) was formed. Both cooperatives and private dealers participated in the ownership and control of the new company. The Government also participated in its formation by subscribing to its stock.

In 1916 the Federal Council granted the Swiss Union of Cheese Exporters a monopoly on the export of hard cheese. In 1920 the Government withdrew as a participator, but the official monopoly of the export business was not withdrawn from the union.¹⁰

In 1921 the name was again changed and a reorganization effected. It is now the Swiss Union for the Sale of Cheese (Union Suisse du Commerce de Fromage—U. S. F.). The capital was fixed at 10,000,000 Swiss francs (\$1,735,000).⁹ Of this amount the Central Union of Swiss Milk Producers furnished 4,000,000 francs, (\$694,000)⁹ and

⁹ See Table 53 for the average yearly value of the franc.

¹⁰ The official monopoly privileges were abolished July 31, 1926.

the Emmenthal Cheese Exporting Co.—S. A. Zollikofen—subscribed 1,000,000 francs (\$174,000).¹¹ The Cheese Makers Union, which joined the organization in August, 1925, subscribed 1,000,000 francs (\$194,000).¹¹ The remaining capital is in the hands of the dealers' organization. Hence the milk producers furnish nearly one-half of the capital of the new society.

The society devotes its attention to the systematic organization of the export trade. Here is an example of successful cooperation between the producer and the private dealers.

SWISS BUTTER CENTRAL (LA CENTRAL SUISSE DU BEURRE)

Although Switzerland is essentially a dairy country, it depended before the World War upon imports for a large portion of its butter supply. These imports amounted to not less than 11 to 12 million pounds per year. In 1916 foreign supplies fell to 900,000 pounds and were reduced to practically nothing in the two following years. These changes led to such an increase in price that the Federal Council on November 27, 1915, fixed a maximum price for butter, in order to check speculation. As the lack of butter increased this measure was found to be insufficient. Butter disappeared entirely from the open market and was sold clandestinely at exaggerated prices, especially in hotels.

As the situation grew worse it became necessary in the early summer of 1916 to extend the protective measures which until then had been limited to fixing a maximum price and to the prohibition of exports. It was then that the Central Union of Swiss Milk Producers in June, 1916, undertook to distribute from 10 to 20 per cent of the butter procured from the manufacture of "serac" and casein, as well as the whey butter, and to distribute it to the classes of consumers most in need of it—hospitals and homes.

On the 1st of November, 1916, the central union established a temporary butter central, which may be considered as the mother of the federation centrals and official cantonal centrals which were established later. The following agreement was made by this central union with the Federal Department of National Economy:

The Central Union undertakes, at the request of the Federal Department of National Economy, to establish on the 1st of November, 1916, a central Butter Depot, to which it assures a daily supply of at least 2,205 pounds of butter. Delivery will be made as a rule only on orders, the payment of which is guaranteed by the Cantonal and Town authorities. The Central Union and its sections are authorized by the Federal Department of National Economy to pay for the milk they purchase with a view to butter making up to 9 cents per pound. Skim milk, resulting from butter and cheese manufacture, will be counted at 0.5 cent per pound.

The quantities of butter which the federations undertook to supply to the butter central were fixed in this agreement, the central in its turn delivering the butter to five depots situated in different parts of the country.

Under these conditions the arrangement agreed upon between the central union and the department of national economy for provisioning the country with milk were confirmed, as was the distribution by the central union. The principal federations supplying butter to the union were increased from 12 to 15, which undertook to deliver 2,527

¹¹ See Table 53 for the average yearly value of the franc.

pounds of butter a day. Moreover, the general regulation for the provisioning of butter by dairy federations was determined as follows:

The Central Union proposes jointly with the affiliated Federations to organize the provisioning of butter. For this purpose the Federations must see that all contracts for sale make it compulsory for the purchaser of milk, or for the associations which utilize the milk, to consign on request (apart from local sales) all their butter to the Central Depot of the Federations.

These war activities led to the establishment in 1920 of the permanent organization—The Swiss Butter Central. This organization established as a branch of the Central Union of Swiss Milk Producers has taken over the supervision of butter imports formerly under the Minister of Public Economy.

The main functions of the central at present are the following: (1) Requesting the manufacture and sale of Swiss-made butter, (2) importation of butter, and (3) periodical fixing of the price of butter to be adopted by members of the producers' organization.

In attempting to measure the efficiency of the cooperative movement among dairy farmers in Switzerland, the fact must be kept in mind that the export price of Emmenthal (Swiss) cheese is the barometer of the industry. This is a price that can not be controlled by any national movement. The goal to be achieved through cooperation is to know the export situation and the condition of the world's cheese markets and to direct local efforts along lines best adapted to take advantage of conditions as they exist.

Development of the home market, assurance of a uniform supply of standard quality to the domestic and foreign consumer, opening of new trade areas, and systematic organization of the import and export trade in dairy products—these are the outstanding accomplishments of the organized efforts of the Swiss dairy farmer.

THE SWISS PEASANTS' UNION

The Swiss Peasants' Union is one of the world's outstanding achievements in the field of agricultural cooperation. It is a national organization supported by practically all the cooperative agricultural associations in Switzerland. It is a federation of federations. It represents the organized agricultural interests of a nation. Its stability is attested by more than 29 years of continuous growth. It began to function in 1898 with 20 member associations, having an enrollment of 74,227 farmers. In 1910 the union contained 24 associations with 144,377 members; in 1920 its membership rolls contained 47 associations with a total of 331,474 members; in 1926 there were 52 member associations and 402,158 members. Its progressive growth is shown in Table 49.

TABLE 49.—Growth in membership of the Swiss Peasants' Union, 1898-1926 (23)

Year	Members	Year	Members	Year	Members
	Number		Number		Number
1898.....	74,227	1906.....	111,789	1918.....	244,292
1899.....	76,048	1909.....	139,952	1919.....	263,412
1900.....	78,319	1910.....	144,377	1920.....	331,474
1901.....	80,489	1911.....	151,468	1921.....	364,428
1902.....	82,888	1912.....	163,943	1922.....	364,994
1903.....	83,595	1913.....	176,798	1923.....	382,190
1904.....	86,254	1914.....	182,940	1924.....	385,893
1905.....	88,868	1915.....	191,310	1925.....	395,847
1906.....	92,962	1916.....	197,761	1926.....	402,158
1907.....	98,144	1917.....	214,725		

The census of 1905 placed the number of farms in Switzerland above 1.2 acres in size at 243,710. It is not likely that the number has markedly increased since that time. Hence it will be noted that the Swiss Peasants' Union has some 160,000 more members than there are farms in Switzerland. This is explained by the fact that many farmers belong to more than one cooperative association which adheres to the union.

A state of affairs in which a national agricultural association has more members than there are farms in the nation is significant of two noteworthy facts: (1) The large extent to which farmers engage in cooperative activities; and (2) the complete manner in which their cooperatives have federated into one central union for the purpose of promoting the agricultural interests of the nation.¹²

The diversity of agricultural interests between the different associations which belong to the union is indicated by the list in Table 50 containing the names of these associations. It will be noted that 35 of the 51 member organizations are themselves federations rather than local cooperatives.

Because of the important part played by the Swiss Peasants' Union in agricultural cooperation in Switzerland, its origin and development are given in detail.

TABLE 50.—List of member societies affiliated to the Swiss Peasants' Union, 1925

Title	Member- ship
	<i>Number</i>
Swiss Society of Agriculture.....	102,661
Federation of Agricultural Societies of Romande, Switzerland.....	35,500
Tessin Society of Agriculture.....	3,000
Swiss Society of Alpine Husbandry.....	2,000
Federation of Agricultural Cooperative Societies of East Switzerland.....	21,440
Federation of Agricultural Cooperative Societies of the Canton of Bern and Neighboring Cantons.....	28,000
Federation of Agricultural Cooperative Societies of Central Switzerland.....	6,000
Federation of Agricultural Cooperative Societies of Northwest Switzerland.....	8,003
Zurich Federations of Agricultural Associations and Syndicates.....	8,103
St. Gall Federation of Agricultural Cooperative Societies.....	11,448
Swiss Federation of Breeding Syndicates for Brown Cattle.....	9,226
Agricultural Cooperative Society of Worb.....	100
Federations of Breeding Associations of Brown Cattle of East Switzerland.....	2,900
Swiss Federation of Breeding Associations of Red Spotted Cattle.....	16,051
Federation of Breeding Syndicates of Red Spotted Cattle of East Switzerland.....	2,000
Federation of Breeding Associations of Simmental Cattle of the Alpine Regions.....	550
Swiss Federation of Breeding Syndicates of Black Spotted Cattle.....	600
Bern Federation of Horse Breeding Syndicates.....	2,500
Federation of Cheese and Dairy Associations of Northeast Switzerland.....	16,800
Federation of Dairy Societies of Northwest Switzerland.....	9,312
Bern Federation of Cheese Making and Dairy Associations.....	21,398
Federation of Societies for Utilizing Milk of Central Switzerland.....	8,009
Federation of the Dairy Associations of the Districts of Zurich, Argovie, and Lucerne.....	640
Federation of Fribourg Dairy Societies of the Mountain Zone.....	3,325
St. Gall Federation of Cheese Making Societies.....	3,000
Federation of Milk Producers of St. Gall-Appenzell.....	1,470
Federation of Milk Producers of Rheintal-Appenzell.....	2,242
Argovienne Federation of Dairy and Cheese Making Societies.....	5,497
Thurgovienne Federation of Cheese Making Societies.....	6,765
Vaudois-Fribourg Dairy Federation.....	7,300
Lausanne Agricultural Dairy.....	1,200
Federation of Jura-Vaudois Dairies.....	2,925
Dairy Federation of the Léman District.....	3,400
Valaisanne Federation of Milk Producers.....	5,000
Neuchâtel Dairy Federation.....	1,800
United Geneva Dairies.....	2,000
Agrarian Party of Canton Zurich.....	7,000
Peasants' Political Association of Canton St. Gall.....	2,000
League of Argovienne Peasants.....	2,000

¹²The Swiss Peasants' Union (L'Union Suisse des Paysans). For a more detailed account of the history of the origin and growth of this organization see No. 69 Publications du Secrétariat des Paysans Suisse, entitled "L'Union Suisse des Paysans 1897-1922" (24).

TABLE 50.—*List of member societies affiliated to the Swiss Peasants' Union, 1925—Continued*

Title	Member-ship
	<i>Number</i>
Association of Neuchâtel Farmers.....	1,000
Geneva Chamber of Agriculture.....	2,500
Romande Federation of Vineyard Owners.....	1,740
Swiss Federation of Subalpine Foresters.....	820
Swiss Association of Nurserymen.....	70
Association of Swiss Horticulturists.....	700
Federation of Horticultural Societies of German Switzerland.....	1,750
Federation of Horticultural Societies of Romande Switzerland.....	2,890
Swiss Union of Farm Mills.....	5,000
Swiss Association of Distillery Concessionaires.....	820
Swiss Association of Land Improvement Concerns.....	4,650
Swiss Union of Plant Breeders.....	680
Total.....	395,847

HISTORY AND ORIGIN

Hard times on the farm, great industrial progress, little agricultural progress, necessity—these, perhaps, are the outstanding causes which led to the formation of the Swiss Peasants' Union. In basic principles they are not unlike the causes which play a leading rôle in the origin of successful cooperation the world over.

During the latter part of the eighteenth century agriculture in Europe was at a low ebb. The farmer was encumbered with taxes so numerous and so heavy as to render progress impossible. This condition, coupled with feudal customs of a past age, together with the old 3-field system, forced the farmers to organize in order to insure the continuance of their industry on a basis of fair profit.

At the beginning of the nineteenth century matters began to mend. The agricultural progress taking place in England at that time made itself felt in Switzerland. The French Revolution also lent a helping hand. Heavy taxes were abolished; large estates were broken up. The farmer gained liberties never before enjoyed. Science turned its attention to agriculture. Better cultural methods were evolved. By the middle of the nineteenth century the land had greatly increased in productivity, yet the economic position of the farmer was unsatisfactory—so unsatisfactory that Swiss agriculture was on the decline. The situation is not difficult to explain. Agricultural forces had succeeded in improving cultural methods but had failed to adjust their activities to changing economic conditions.

It is the same old story. Improved methods of communication and transportation had widened the zone of competition without a corresponding readjustment. Farmers continued to grow products long after they had ceased to be profitable. For example, cereals could be imported at a price below that which would return the Swiss farmer production costs. Furthermore, these same forces (improved communication) brought on an industrial growth which threatened to drive Swiss agriculture out of existence. Workers from the land flocked to the towns and factories. Switzerland, as a pastoral nation, was fast being transformed into an industrial and commercial nation to the detriment of agricultural progress. Legislation, especially the tariff, was formulated to meet the needs of the manufacturer with little consideration to the needs of agriculture.

During this period it became apparent that if Swiss agriculture was to survive salvation must come from its own hands. Many agricultural associations came into existence. For the most part they were organized along commodity lines and hence failed to consider the needs of agriculture as a whole. Conflicting interests of different agricultural organizations nullified the influence of agriculture in the councils of the Nation. Need was felt for a union of forces of organized agriculture modeled along lines of existing bodies designed to promote the welfare of industry and of labor.

The League of Zurich Farmers first advanced the idea in 1893. A meeting in 1896 decided to create a "farmers' secretariat," and a committee was appointed to formulate a plan of organization to be presented at the next Federal Assembly—the law-making body of the nation. As a result of these activities, the Swiss Peasants' Union was founded and opened its offices on July 1, 1898.

Ernest Laur was appointed director, and Henry Nater was made assistant director. The efficiency of the leadership of these two men is attested by the fact that these important administrative positions are still held by the original appointees.

Another interesting sidelight on the stability of the organization is shown by the fact that in 1925, 7 of the 11 members of the executive committee had served in that capacity since its founding in 1898—a quarter of a century of service. The statutes governing the Swiss Peasants' Union are given on page 54.

ACTIVITIES

The development of the major activities of the union may be divided into three periods:

(1) *Economic-political, 1898-1906.*—During the early years of the organization attention was devoted to the revision of the tariff and to the formulation of treaties of commerce. Prior to this time agricultural influence in these fields had been lacking. Hence there was much to do in placing the position of agriculture before the lawmakers of the country.

(2) *Stimulation of the cooperative movement, 1906-1913.*—It was during this period that the union devoted most of its energies to the sale of agricultural products. The question of a remunerative price to the grower was uppermost. An information service on prices was established. A federation of milk producers was organized, and a cooperative cheese-export company was founded. Intensive work was done to fortify the position of agricultural cooperation.

(3) *War and post-war adjustments in agriculture, 1914 to the present.*—This was a period during which much attention was, from necessity, given to the regulation and readjustment of the agricultural resources of the country. The union served as an intermediary between the Government and the farmers. The membership in the union increased at a rapid rate. A majority of the different services—offices—of the union were founded during that period, and the union itself was placed on a satisfactory financial basis.

The following is a list of the services conducted by the union and the date of their inauguration:

Date founded	Service
1898.	The secretariat of the union.
1900.	Office of research into the profitableness of agriculture.
1901.	Paysan Suisse—official journal of the union, published in German and in French.
1908.	Office of price information.
1909.	At the request of the Federal Department of Agriculture the secretariat of the union assumed the responsibility of furnishing official statistical information on the agriculture of Switzerland to the International Institute of Agriculture at Rome.
1911.	Revue Suisse des marches agricoles.
1913.	Office of valuation (for the evaluating of landed property).
1914.	Office of information on health and accident insurance.
1916.	Office of farm-building construction.
1919.	Office of information on agricultural machinery annexed to the office of farm-building construction.
1920.	Publication of the Paysan Suisse in the Italian language.
1921.	A branch office of farm building construction at Winterthur.

THE SECRETARIAT

A description of the functions of the different bureaus gives an idea of the lines of activity of the secretariat. The secretariat is more than the administrative office. It conducts many research studies as a basis for advising with the Government concerning the needs of the farmer; it has assisted in the taking of agricultural censuses; it conducts courses in agricultural accounting, and performs numerous researches, which are necessary as a base for intelligent political economic activities. The union is the political and public-welfare spokesman for agriculture. The secretariat is the scientific and technical service agency of the union. The secretariat endeavors at all times to know the exact condition of Swiss agriculture and to place this condition before the public and the lawmaking bodies.

OFFICE OF RESEARCH ON THE PROFITABLENESS OF AGRICULTURE

These activities began in 1899 as a result of a request on the part of the federal department of agriculture that the secretariat begin to study the exact situation of agriculture. These studies were begun by inviting 10 farmers of different regions to come together under the direction of the secretariat for the purpose of receiving a short course in farm accounting, it being understood that each of these men would keep accounts of their farm activities for one year according to the methods of instruction, and submit their books to the union for analysis.

As a result of this experience, the secretariat began in 1901 to give an intensive 3-day course in farm bookkeeping. This course is given each year, free of charge, and is attended by from 120 to 130 farmers. In addition, the secretariat pays third-class round-trip railway fare from the home of the farmer to the place where the course is held, furnishes board and room during the course, and supplies all necessary materials. The candidate taking the course, in turn, agrees to keep an account of his farm activities for the ensuing year and to place his books at the disposition of the union.

Up to and including the year 1923 a total of 2,406 farmers had received instruction, representing nearly 17 farms out of 1,000 farms of more than 7 acres each. On an average each participant in the course submits his accounts to the secretariat for three years. Four

of the 130 who took the course in 1901 were still submitting their accounts in 1923. The following tabulation gives the percentages of those keeping accounts for one year or more:

Number of years that accounts were submitted by same farmer	Percentages of these farmers taking course
1	85 to 90
2	50
3	33
4	25
5	20
10	11

To encourage the participants to keep records for a series of years the union gives a special reward to each one who completes 10 consecutive years, and another to each who completes 5 consecutive years. Arrangements are being made for special recognition of merit for those who complete a 25-year period.

As a result of these activities, at the end of March, 1925 the union had received a total of 6,944 usable yearly accounts upon which to base its researches on the profitableness of farming. The values of the studies made from data contained in these accounts are classified by the union as follows:

They contribute to the understanding of the profitableness of agriculture in Switzerland and assist in following the economic fluctuations.

They assist in the solution of a great number of questions pertaining to the field of agricultural economics.

They furnish a valuable collection of information for use in agricultural schools.

They furnish a voluminous documentation in support of agricultural policies and thus play an essential rôle in the field of national economy.

They contribute to the professional instruction of the farmer.

They permit the farmer-accountant to have an exact idea of the value of agricultural property, and frequently they serve as a base for fixing a value upon inherited property. They place the farmer on his guard against purchasing agricultural properties at exaggerated prices.¹³

OFFICE OF PRICE INFORMATION

The development of the dairy industry in Switzerland called for more timely and more accurate market-information service relating to dairy products. This division was created to fill that demand. It issues weekly a press service under the title "Review of Markets," which contains statistical data regarding the existing status of the agricultural markets and forecasts future trends. Since the important markets for Swiss cheese—the barometer of the Swiss dairy industry—are foreign, the market reporting must necessarily be international in make-up.

During the World War this division estimated the food supplies of the country.

This office has been designated by the Swiss Government as the official statistical contact office between Switzerland and the International Institute of Agriculture at Rome.

OFFICE OF LAND VALUATION

In 1912 the secretariat proposed to the union the foundation of a service of information on the valuation of real estate, in view of the great importance of securing reliable data both on the capital value and the yield from farm operation. It was pointed out that under

¹³ For a detailed account of the organization and operation of this division of the union see *Les Recherches du Secrétariat des Paysans Suisses sur la Rentabilité de l'Agriculture* by Fritz Zaugg (30).

the revised Swiss Civil Code, the laws concerning the transmission by inheritance of farm property, enacted with a view to avoiding its excessive subdivision, make it especially important to secure reliable information on the income derived from the farm.

The sons of farmers who wish to take over the farm often complain of the difficulty encountered in determining the value of the property. In many cases the authorities who settle these matters have only a vague knowledge of the value of the land. It must be admitted that accurate appraisal of farm property is a difficult task. The essential accumulated data, systematically collected, pertaining to the earning capacity of farm property are often lacking.

The Swiss Peasants' Union by its extended work in farm accountancy has obtained accurate records of farm operations from all parts of the country. These records enabled it to ascertain the earning capacity of farms engaged in important types of enterprises. Hence the Swiss Peasants' Union is in a particularly favorable position for organizing this work of land valuation, and to put it in form so that the inheritance laws can be carried out.

The following tasks are intrusted to this office of land valuation: (1) Surveys and appraisements carried out for individuals on the occasion of repurchase of inheritance, divisions of property and acquisition, and statements of crop losses due to floods and other causes; (2) preparation of appraisements and surveys made in the interests of banks and the Government; (3) preparation of appraisements and surveys in case of expropriation of lands; (4) assistance in appraisements made by the public authorities; and (5) scientific work in the fields of agricultural taxation.

Most of the valuations of this office are made in connection with inheritance of property but its activities are not limited to appraisements of farm property alone. It conducts a consultative service on equitable rates of rent, land expropriation for telephone, electric, and hydraulic uses, and the average value of landed property in different districts.

In August, 1919, this office established a division for the transfer of farm properties, which deals with the sale of farms and the renting of farms and, on the request of the parties concerned, it estimates the value of the estate or calculates its equitable rent.

In 1920 a further branch was added for placing probationers and young people who wish to learn farm work or to pass their vacations on farms. This branch was intrusted with the finding of employment on farms. The office hopes by this means to induce young people to take up farm work, thus remedying to some extent the insufficiency of labor under which agriculture now suffers.

OFFICE OF CONSTRUCTION OF AGRICULTURAL BUILDINGS

The office of construction of agricultural buildings began to function in 1917. Its purpose is to furnish information, advice, plans, and specifications for the construction of farm buildings. Its staff is composed of technically trained employees. The work was divided into two main divisions. One is purely advisory, and the other is concerned with the details of carrying out specific undertakings, such as drawing up specifications, compiling estimations of cost, and the supervision of actual construction. A third division of agricultural machinery was added in 1919.

OFFICE OF HEALTH AND ACCIDENT INSURANCE

As a result of a law passed in 1912 creating a system of voluntary health and accident insurance for workers, the union founded in 1914 a special office of information pertaining to the application of insurance to agricultural workers. This office devotes its attention to the study and to the giving of information on health and accident insurance, compulsory (cantonal) state insurance, medical tariffs, voluntary accident insurance, and diverse questions of insurance.

LIBRARY

The secretariat devotes a part of its Government subsidy to the upbuilding of a central agricultural library. This library now contains some 12,000 volumes.

PERSONNEL

The paid staff of the union increased from that of director and assistant director in 1898 to 61 persons in 1923, not including the numerous designated correspondents and agents throughout the country—"hommes des confiances."

The division of the staff among the different major services is as follows:

Services	Number of persons employed
Secretariat.....	12
Office of research on the profitableness of farming.....	10
Office of land valuation.....	10
Office of price information.....	5
Office of farm-building construction at Brougg.....	17
Office of farm-building construction at Winterthour.....	7
Total.....	61

FINANCES

Since its beginning the union has received a subsidy from the Government, but as the activities of the union have developed the Federal subsidy has become relatively smaller. In 1898 the Government fund was 83 per cent of the total receipts; in 1913 it was 25 per cent; in 1914 it was only 14 per cent.

Table 51 gives the amount and sources of the receipts of the union. In 1924 its total income amounted to \$108,755. The expenses for 1924 are shown in Table 52. The average value of the franc for recent years is shown in Table 53.

It is interesting to attempt to compare the activities of the Swiss Peasants' Union with the national or general welfare farmers' organizations of the United States. The functions of the secretariat of the Swiss Peasants' Union are largely those of an intermediary between the farmers and the State. It is the duty of this section to see that the interests of the farmer are fully brought to the attention of the public and the lawmakers of the country. Its activities are semipolitical. In this the Swiss organization has much in common with the general farmers' organizations of the United States. But here the similarity in a large measure ceases, for the functions of the other divisions are, in our country, performed for the most part by the State and the Federal Governments.

TABLE 51.—Receipts of the Swiss Peasants' Union, 1898-1924

Year	Federal subsidies	Regular subscriptions from sections	Payments made by sections, agricultural papers, etc., for the Paysan Suisse ¹	Voluntary subscriptions of collaborating members	Receipts of the price-information office	Receipts of the land valuation office	Receipts of the building office	Gifts paid into an unalienable fund	Total
	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars	Dollars
1898	3,474	693							4,167
1899	3,944	759							4,703
1900	4,255	756							5,011
1901	4,246	777	453						5,476
1902	4,825	795	1,453						7,073
1903	4,825	787	1,320	3,468					10,340
1904	5,790	851	1,371	2,470					10,482
1905	5,790	857	1,583	2,735					10,965
1906	5,790	883	2,027	3,371					12,071
1907	5,790	961	1,443	3,858					12,052
1908	7,720	1,079	1,888	4,246					14,933
1909	7,720	1,350	2,017	4,494					15,581
1910	7,720	1,419	1,749	4,869					15,757
1911	7,720	1,488	2,076	6,739	4,037				22,060
1912	7,720	1,608	1,897	7,047	8,210				26,452
1913	7,720	1,735	2,127	7,157	7,277				26,016
1914	7,792	1,811	1,908	7,224	8,096				26,801
1915	7,563	1,837	2,111	7,438	7,019	723			26,691
1916	7,706	1,934	2,244	8,263	7,576	1,796			29,518
1917	8,553	2,327	2,753	9,832	9,546	2,989	7,766		43,768
1918	8,651	2,684	3,697	10,848	12,950	5,269	11,851		55,950
1919	7,593	2,548	3,358	13,116	14,003	5,270	21,695		67,583
1920	12,677	2,969	5,265	13,227	14,260	7,339	25,291		81,028
1921	13,015	3,239	5,689	13,989	16,243	7,540	24,132	24,935	106,782
1922	14,209	3,844	7,910	21,228	18,807	12,836	38,404	1,696	118,924
1923	13,545	3,725	7,417	14,608	17,050	11,238	32,445	1,111	101,139
1924	13,667	3,756	7,429	22,327	17,083	10,680	32,394	1,419	108,755

¹ This is the organ of the union, first published in 1901. Published in German, French, and Italian, and embodied as a supplement in 22 Swiss agricultural papers.

² In 1912 the Lausanne Federal Exhibition of Agriculture made out of the profits, a gift to the Swiss Peasants' Union, which was used as the nucleus for a special donation fund. Details are not given beyond stating that on the 31st of December, 1923, it amounted to 143,682.16 Swiss francs. (See Table 53 for average yearly value of the franc.)

TABLE 52.—Expenses of the Swiss Peasants' Union, 1923 and 1924

Item	Expenditures	
	1923	1924
Secretariat:		
Salaries	6,195	6,676
Commissions of experts	7	15
Library	297	338
Binding	96	113
Newspapers	128	128
Postage	286	515
Printing	2,207	1,107
Furniture	20	24
Stationery, etc.	322	335
Rent of office, etc.	665	729
Taxes, insurance	36	78
Interest on C/A	18	20
Sundry	199	124
Total	10,476	10,205
Division of farm accountancy	12,630	12,041
Price-information office	17,050	17,083
Land-valuation office	11,238	10,680
Architect's office and farm-machinery section:		
At Brouge	23,060	21,498
At Winterthour	9,395	10,895
Union's paper, Paysan Suisse	7,417	7,429
Total	91,256	89,831

For average yearly values of the franc see Table 53.

TABLE 53.—Average value of the Swiss franc, 1913–1927

Month	1921	1922	1923	1924	1925	1926	1927
	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
January.....	15.68	19.42	18.78	17.32	19.34	19.31	19.27
February.....	16.86	19.52	18.80	17.37	19.26	19.26	19.23
March.....	17.06	19.45	18.59	17.29	19.26	19.25	19.24
April.....	17.96	19.45	18.24	17.60	19.33	19.30	19.23
May.....	17.86	19.21	18.03	17.72	19.35	19.35	19.23
June.....	17.01	19.04	17.94	17.66	19.40	19.36	19.24
July.....	16.55	19.10	17.55	18.19	19.41	19.36	19.25
August.....	16.82	19.04	18.05	18.82	19.40	19.32	19.28
September.....	17.20	18.79	17.86	18.88	19.31	19.32	19.28
October.....	18.23	18.42	17.87	19.18	19.27	19.31	19.29
November.....	18.80	18.44	17.55	19.28	19.27	19.28	19.29
December.....	19.39	18.91	17.45	19.38	19.30	19.32	-----
Average ¹	17.3539	19.0652	18.06	18.2228	19.3268	19.3130	-----

Federal Reserve Bulletins, average rate of exchange.

¹ Prior to 1921 the average value of the franc is given as follows: 1913 (par), 19.3 cents; 1914, 19.48 cents; 1915, 18.908 cents; 1916, 19.262 cents; 1917, 21.388 cents; 1918, 21.6275 cents; 1919, 18.983 cents; 1920, 16.903 cents.

Researches into the profitableness of farming constitute an activity which is carried on by the farm-management departments of nearly every agricultural college in the United States and by the United States Department of Agriculture. Farm-building construction is also a phase of study of most agricultural colleges. Price-information service has become an important governmental service in the United States. It should be remembered, however, that the Swiss organization is a semigovernmental body, inasmuch as it receives a Government subsidy and is charged with the making of many official statistical inquiries.

Hence it is difficult to compare the activities of the Swiss Peasants' Union with the general farmers' organization in the United States, for in one country the farmers perform many services for themselves which in the other country are looked upon as public-welfare functions to be performed by the State and Federal Governments.

Without doubt the Swiss Peasants' Union is one of the outstanding examples of successful cooperation in promoting the general welfare of agriculture.

ARTICLES OF ASSOCIATION OF THE SWISS PEASANTS' UNION, 1920

Purpose

ARTICLE 1. The Agricultural Associations of Switzerland (*societies, associations, agricultural syndicates, and Agrarian parties*) form the Swiss Peasants' Union, the purpose of which is to represent and safeguard the interests of agriculture.

Sections and Members

ARTICLE 2. The Swiss Peasants' Union consists of sections and collaborating members.

ARTICLE 3. Any association, regardless of political and religious opinions, consisting of a majority of Swiss nationals and formed for the purpose of defending agricultural interests, is entitled to affiliation with the Swiss Peasants' Union as a section, if it is not already affiliated to an existing section. The Committee may also, as an exception, accept organizations affiliated to its sections; for instance, sections of Cantonal associations.

Organization

ARTICLE 5. The organs of the Swiss Peasants' Union are:

- (a) The Assembly of Delegates.
- (b) The Committee of the Union.
- (c) The Directing Committee.
- (d) The Director.
- (e) The agricultural Secretariat.
- (f) The confidential agents.

Assembly of Delegates

ARTICLE 6. The ordinary Assembly of Delegates is held as a rule once a year. The Committee of the Union may, nevertheless, be called once every two years if there are no urgent matters to discuss, and during the interval the Committee will discharge current business.

When important and urgent matters require it, the Committee of the Union summons the delegates to a special Assembly. Besides this, one-quarter of the sections of the Union may ask the Committee to send out a special convocation.

ARTICLE 7. Delegates are appointed by the associations affiliated to the Union as a section. Each section has the right to elect a delegate.

Associations with more than 500 members appoint one delegate for every 500. The membership is reckoned on the basis of the figure used in determining the last annual subscription.

Committee of the Union

ARTICLE 8. The President and the members of the Committee of the Union are appointed every four years by the Assembly of the Delegates. The Assembly of Delegates proceeds at its next meeting to fill any vacancies in its membership.

The Committee of the Union consists of 80 members. In its appointment the different languages spoken in the country must be taken into consideration, so that they may be represented proportionately to the number of members of the sections affiliated to the Union.

The Committee of the Union fixes and prepares the agenda for the Assemblies of delegates, and appoints the directing Committee.

Directing Committee

ARTICLE 9. The directing Committee consists of 11 members; the President, the first and second Vice-Presidents, and eight assessors. It must be so formed that the languages of the country are equitably represented thereon.

This Committee is selected from the Committee of the Union, and appointed by it for a period of four years. It represents the Swiss Peasants' Union in its relations with outsiders, directs its business, and supervises the institutions of the Union. It submits each year a report on management to the Committee of the Union.

Director

ARTICLE 10. The Director of the Swiss Peasants' Union jointly with the President of the Union discharges current business.

The Director is appointed by the Committee of the Union.

He has a consultative vote at the Assembly of Delegates and at the meetings of the Committee of the Union and of the Directing Committee.

Agricultural Secretariat

ARTICLE 11. The Agricultural Secretariat is the central scientific bureau of the Swiss Peasants' Union. Its duty is to study the agricultural situation of the country and the means to ensure its progress, to collect documentation for this purpose, and to submit proposals with a view to developing and encouraging the professional farmer.

ARTICLE 12. The Agricultural Secretary is the responsible head of the Secretariat. He and his assistants are appointed every four years by the Committee of the Union. They must be Swiss nationals, and belong to two different linguistic regions. The Agricultural Secretary and the first assistant take part in the deliberations of the Committee of the Union and of the Directing Committee, and exercise the functions of secretary and translator. The Secretary has a consultative vote.

Confidential Agents

ARTICLE 13. The confidential agents are appointed to support by their efforts in the political commune in which they are domiciled the accomplishment of the work which the Swiss Peasants' Union has undertaken.

They are designated by the Secretary of the Union who takes into account the recommendations and proposals of the Agricultural Associations.

They enjoy the rights of collaborating members without being required to pay a subscription.

Finances

ARTICLE 14. To meet the expenses of the Union, the associations pay an annual subscription of 5 centimes at least per member, with a minimum of 100 Swiss francs. The Committee of the Union may authorize special arrangements with agricultural associations which do not possess the necessary funds to make the annual subscription.

The Union also receives the voluntary contributions paid in by collaborating members.

Federal subsidies must not be spent on the administration of the Union. The institutions of the Union which receive federal subsidies must keep separate accounts from those of the Union.

Regulations

ARTICLE 15. The regulations, which must be discussed beforehand by the Directing Committee of the Union and approved by an assembly of Delegates, set forth the rights and duties of the several organs of the Swiss Peasants' Union.

Amendment of the Articles of Association

ARTICLE 16. The amendment of the Articles of Association can only be decided on by two-thirds of the delegates present at the Assembly which is called to deliberate thereon.

These present articles repeal those approved by the Assembly of Delegates on the 15th of March, 1909.

Berne: 26th March 1920.

On Behalf of the Assembly of Delegates.

First Vice-President: NÄGLI.

Secretary: DR. ERNEST LAUR.

MISCELLANEOUS INFORMATION ON COOPERATIVES¹¹

LOCALS

In 1910 there were 6,231 local agricultural organizations in Switzerland. Their combined membership totaled 293,719—an average of around 48 members to the local association. In 1920 the number of organizations had increased to 10,942 and the number of members to 657,082—an average of 60 members to the local. In other words, the number of local associations increased 76 per cent and the membership 124 per cent. (See Table 33.)

FEDERATIONS

Most of the local associations are affiliated with federations, and many of the federations are in turn affiliated with other federations. The Swiss Peasants' Union is the keystone of the federated arch. It represents and is supported by the whole of organized agriculture in Switzerland.

In 1910 the cantonal, intercantonal, and national organizations, most of which were federations, numbered 177, with 577,012 members—an average of 3,260 members to the federation. In 1920 there were 368 federations, with 1,440,928 members—an average of 3,915 members to the federation. During the 10-year period organizations increased 108 per cent and membership 160 per cent.

In considering these figures it must be remembered that many farmers belong to more than one organization, and for that reason the total membership does not necessarily represent separate individuals. One individual may represent several memberships. (Table 54.)

¹¹ See also the sections on "Cooperation in the dairy industry," and on the "Swiss Peasants' Union."

TABLE 54.—Number and membership of cantonal, intercantonal, and national agricultural associations in Switzerland, 1910 and 1920 (25)

Class	Associations				Members			
	1910	1920	Increase		1910	1920	Increase	
Cantonal, intercantonal, and national agricultural associations	176	367	191	109	452,635	1,109,454	676,819	156
Swiss Peasants' Union	1	1			144,377	331,474	187,097	130
Total	177	368	191	108	577,012	1,440,928	863,916	150

LOCALS AND FEDERATIONS

Table 55 gives the total number of all agricultural associations—locals and centrals—and their combined membership. The number of all organizations increased 76 per cent during the 10-year period, and the membership increased 141 per cent. Only three of the groups failed to show an increase in the number of societies, and one group—grape growing—showed a decrease. No group lost in membership.

TABLE 55.—Number and membership of all agricultural organizations in Switzerland, 1910 and 1920 (22, 25)

Class	Associations				Members			
	1910	1920	Increase		1910	1920	Increase	
Agricultural	856	1,055	190	23	266,876	484,482	217,606	82
Agricultural cooperative societies	567	785	218	38	105,728	319,041	213,313	202
Dairying	2,819	3,573	754	27	140,471	307,659	167,188	119
Stock breeding	1,293	1,826	533	41	78,904	123,809	44,905	57
Pomological	80	136	56	70	9,326	17,938	8,632	98
Vine culture	57	74	1—3	—5	4,886	6,381	1,395	26
Distillery	53	53			974	2,088	1,124	115
Associations for advancement of cultural practices	15	28	13	87	1,574	1,009	35	2
Horticultural		59	59			11,981	11,981	
Alpine husbandry	233	351	118	51	11,167	28,122	16,955	152
Forestry		86	86			5,165	5,165	
Society for land improvement and irrigation	73	193	120	164	3,628	11,060	7,432	205
Associations for threshing and for the utilization of agricultural machinery and implements	133	290	157	118	3,046	10,423	6,477	164
Cooperative bakeries, slaughterhouses, and mills	42	60	18	43	6,447	14,259	7,812	121
Cooperative credit	145	288	143	99	18,636	47,647	29,011	156
Cooperative insurance	41	2,118	2,077	5,066	73,391	247,704	174,313	238
Political or economic		354	354			126,838	126,838	
Swiss Peasants' Union	1	1			144,377	331,474	187,097	130
Total	6,408	11,310	4,902	76	870,731	2,098,010	1,227,279	141

¹ Decrease.

In 1920 the 11,310 locals and federations had a combined membership of 2,098,010. The last agricultural census (4) gave the number of farms in Switzerland of 1.2 acres and above in size at 245,000 in round numbers. There is no reason to believe that this number has materially changed. Hence there is an average of nine memberships to each farm. This is explained in three ways: (1) Usually more than one person connected with a given farm belongs to farm organiza-

TABLE 56.—Commercial activities of the cooperative agricultural associations of Switzerland, 1920 (25)

Class	Associations conducting—															
	Purchase of—					Sales of—						Manufacture of—				
	Fertilizer feeds and seeds	Agricultural machinery	Wine, sugar, and flour	Groceries, clothing, and merchandise	Total ¹	Milk, cheese, and butter	Grains	Potatoes and hay	Fruits and cider	Wine	Total ¹	Cheese and butter	Wine, cider, and alcohol	Flour and seeds	Bread	Total ¹
Agricultural societies and associations.....	Number 356	Number 100	Number 159	Number 66	Number 363	Number 19	Number 23	Number 62	Number 45	Number 11	Number 104	Number 8	Number 6	Number 5	Number 3	Number 17
Societies of poultry and rabbit breeding.....	86	1		66	86		1	2		2	291					
Societies of bee keepers.....					79											
Agricultural syndicates.....	780	253	402	275	785	83	91	189	211	66	335	9	25	18	9	51
Dairy and cheese-making societies.....	374	63	68	53	376	2,153	31	39	53	8	2,163	936	12	10	7	943
Dairy-industry societies.....						4					4	3				3
Cattle-breeding syndicates.....	102	22	18	10	126	18	4	12	5	1	27	16	3	2		20
Horse-breeding syndicates.....	7				7											
Goat-breeding syndicates.....	14		1	1	14				1		1					
Sheep-breeding syndicates.....																1
Swine-breeding syndicates.....	23	1	2	1	23											
Fomological societies and for the utilization of fruits.....	18	1	2		19		2	5	64		65		43	3		43
Grape-growing and wine-making associations.....	4	1	10	1	15		1	1	3	24	25		23			23
Distillery societies.....													27			27
Cultural associations.....	20	3			20	1	12	6			12			1		1
Horticultural associations.....	9		2		10	0	1	3		1	3					
Associations of Alpine husbandry.....	45	1	5	3	49	49	2	6			59	131				131
Forestry associations.....	1				1	1					1	1				1
Promotion societies.....	4				4		1		0							
Societies for the utilization of agricultural machinery.....	1	2			3		1				1					
Threshing societies.....	9	4	1	1	11	2	4	1	2		6	1	2			5
Mills.....	31		5	1	31	1	14				15			17		17
Bakeries.....	4	1	7	1	9	1	2	1		1	3			4	7	8
Slaughterhouses.....																
Mutual-credit societies.....	22	2	2	1	23	1		1	4		6	1		1		1
Livestock loans.....																
Cattle-insurance societies.....																
Goat-insurance societies.....																
Horse-insurance societies.....																
Hog-insurance societies.....																
Insurance against bee diseases (foul brood).....																
Insurance against hail.....																
Political and economic associations.....	3			2	3	2		1	2	1	3		2	1		2
Total.....	1,913	455	763	416	2,057	2,336	190	330	391	115	3,126	1,107	143	64	26	1,294

¹ Since many associations carry on more than one line of activity listed in the above classification, the total of the itemized columns is greater than the total for the group as a whole.

tions. (2) Because of the specialized nature of most of the organizations a farmer may belong to a number of locals. (3) The local may have a number of affiliations and enroll its membership with each affiliation. But even with these explanations the average number of memberships per farm appear to be extraordinarily large.

PROPERTY OWNED OR CONTROLLED BY COOPERATIVES

The following list (Table 57) contains a classified summary of the property owned or controlled by the cooperative associations: 570 warehouses and buildings (with necessary mechanical installations), 2,095 cheese factories and dairy plants, 103 mills, 32 bakeries, 89 distilleries, 235 cellars and presses, 409 pastures, 89 other agricultural lands, and 223 forests.

TABLE 57.—Number of agricultural associations owning or controlling property in Switzerland, 1920

Class	Agricultural associations owning or controlling—									Total associations owning or controlling property
	Warehouse buildings mechanically equipped	Cheese factories and dairy plants	Mills	Bakeries	Distilleries	Cellars and presses	Pastures	Other agricultural lands	Forests	
Agricultural associations	66	6	12	1	3	8	17	3	9	85
Societies ornithology, poultry, and rabbit breeding										
Societies of beekeepers										
Agricultural syndicates	272	13	38	15	34	4	5	2	1	263
Dairy and cheese-making societies	45	1,968	7	4	3	113	16	27	5	1,203
Associations of the dairy industry										
Cattle-breeding syndicates	7	10	2			1	42	10	13	56
Horse-breeding syndicates							14	1	3	14
Goat-breeding syndicates							18	3	4	20
Sheep-breeding syndicates							2			2
Swine-breeding syndicates			1							1
Pomological societies and for the utilization of fruits	29		3		15	43	2	4	2	47
Grape-growing and wine-making associations	2		1			11				13
Distillery societies	6				33	12		4		35
Cultural associations	4						1		1	5
Horticultural associations								3		3
Associations of Alpine husbandry	3	76				32	288	14	125	291
Forestry societies							3	11	57	57
Land-reclamation societies	1						1	6	3	10
Societies for the utilization of agricultural machinery	3			1	1	1				6
Threshing societies	117	1	4			8				123
Mills	10		32							34
Bakeries	3	1	2	10		1		1		11
Slaughter house societies										
Credit societies	2		1	1						3
Livestock loans										
Cattle-insurance societies										
Goat-insurance societies										
Horse-insurance societies										
Hogs-insurance societies										
Insurance against bee diseases										
Insurance against hail										
Political associations										
Total	570	2,095	103	32	89	235	409	89	223	2,312

The above property is in the hands of 2,312 societies.

The comparison of the status of cooperation in 1910 with that of 1920 emphasizes its extraordinary growth during the 10-year period. During these 10 years the Swiss nation passed through the experiences

of war-time control of industry. Much of the control of agriculture was turned over by the Government to the cooperative associations. These experiences and trials brought the farmer closer to his organizations. The benefits which he derived from united efforts emphasized his dependency upon his organizations. As a result, the financial position of the cooperatives in Switzerland is to-day the strongest in the history of the movement.

THE AGRICULTURAL PRESS AND COOPERATIVES

A description of cooperation in Switzerland would be incomplete without mention of the numerous journals regularly issued by many of the cooperative organizations. An idea of their number and extent is given in Table 58.

TABLE 58.—Name, frequency of issue, language, and circulation of publications issued by agricultural cooperative organizations

Name	Frequency of issue	Language	Circulation
Schweizer Bauer	3 times per week	German	17,300
Der Genossenschafter	Weekly	do	20,300
Schweizerische landwirtschaftliche zeitschrift	do	do	14,200
Alpwirtschaftliche monatsblätter	Monthly	do	
Schweizerisches Zentralblatt für Milchwirtschaft	Weekly	do	9,300
Schweizerische Milchzeitung	Semiweekly	do	
Schweizerische Zeitschrift für Kleinviehzucht	Weekly	do	
Schweizerische bienenzzeitung	Monthly	do	1,500
Schweizerische Geflügel zeitung	Weekly	do	
Die Tierwelt	do	do	
Schweizerische Zeitschrift für Forstwesen	Monthly	do	
Schweizerische Zeitschrift für obstand weinbau	do	do	
Der praktische Forstwirt	do	do	
Zürcher Bauer	Semiweekly	do	11,600
Der Landwirt	Weekly	do	4,750
Blätter des Obwaldner Bauernvereins	Monthly	do	
Bauernblatt der Nordwest Schweiz	Weekly	do	5,200
St. Galler Bauer	do	do	7,200
Neue Berner Zeitung	Daily	do	
Binder Bauer	Weekly	do	1,850
Der ostschweizerische Landwirt	do	do	5,300
Schaffhauser Bauer	Daily	do	2,100
Aarganser Hausfreund	Semiweekly	do	
Zuger Bauernblatt	Weekly	do	900
Journal d'agriculture Suisse		French	
Le Paysan jurassien	Weekly	do	115
Le Paysan fribourgeois	do	French and German	6,440
Agricoltore ticinese	do	Italian	4,000
Le Terre vaudoise	do	French	11,800
Le Valsais agricole	do	do	3,000
Bulletin agricole Neuchatelois	Monthly	do	3,300
Journal d'horticulture Suisse		do	
Journal forestier Suisse	Monthly	do	
L'aviculture	Weekly	do	
L'Ape	Monthly	Italian	
Industrie laitiere Suisse	Weekly	French	18,050
Le laitier romand	do	do	
Bulletin de l'Association des maraichers de Genève		do	
Il Faesce	Semiweekly	Italian	
Paysan vaudois	Weekly	do	
Schweizerische Freie Presse	Daily	German	
Schweizerische Marktzeitung	Weekly	do	100,000
Revue Suisse des marchés agricoles	do	French	35,000
Schweizerische bauernzeitung	Monthly	German	120,000
Le Paysan Suisse	do	French	46,500
Contadino Svizzero	do	Italian	4,000

The above information was compiled in 1924-25.

SUMMARY

Switzerland is a federation of 25 small States called Cantons. These Cantons are in a large measure self-governing. It has three official languages—German, French, and Italian. Because of the

great diversity of traditions, customs, and languages, it is in reality an international United States. "United but diverse" is its apt slogan.

It has about two-thirds the area of the State of West Virginia and had a population of 3,880,000 in 1920. Only about one-fourth of the population depends upon agriculture for a livelihood.

Agriculture is intensive from the standpoint of expenditure of labor, even in the mountainous districts. Approximately \$50 worth of labor was applied to each acre of land on farms in 1924. Farm labor that is hired on a permanent basis—dairy hands and horse-men—receives about \$4.25 per week with board. Harvest help, that is hired by the day is paid around \$1.20. Day labor during other seasons of the year may be had for 90 cents per day. Hired labor does not play an important rôle, since all but 10 per cent of those working on the land are farm operators or members of their families.

Switzerland is a land of family owned and tilled farms. Over four-fifths of the farms are operated by owners. Pride of ownership may account for the preponderance of attractive rural homes.

The farms are small in size. On an average they contain about 20 acres. Without question an economic unit for most types of farming should contain more than this area. Such limited areas result in a high capitalization for buildings.

Perhaps the greatest single handicap to Swiss agriculture is that many of the farms are divided into a number of separated strips. On an average, each farm has 14 separated fields. Legislation provides for the consolidation of farms into fewer separate holdings, but consolidation is not a simple matter. Custom is difficult to overcome.

Switzerland possesses enlightened legislation on the inheritance of rural property. It is designed, on the one hand, to prevent excessive subdivision through inheritance, and, on the other hand, to prevent excessive payments to coheirs on the part of the heir who is desirous and capable of working the farm intact.

From an agricultural standpoint the area of Switzerland may be roughly divided into three-fourths productive and one-fourth unproductive. Of the productive area, two-sixths are forests and farm wood lots, three-sixths pastures and meadows, and the other sixth consists of peat bogs, orchards, gardens, and field crops. The plowed land is less than 10 per cent of the productive area or about 7 per cent of the total area.

Switzerland imports approximately one-fourth of its food supply. Cereals, the largest single item, were nearly 40 per cent of all agricultural imports in 1924. The value of agricultural imports is four times that of exports. Dairy products make up 80 to 90 per cent of the agricultural exports and of these cheese is the important item.

Switzerland imports butter and exports cheese. The value of dairy exports in 1924 was nearly three times that of dairy imports.

Two-thirds of the farm receipts of the country come from dairying, cattle feeding, and hog raising—three branches of the dairy industry. Dairying is the keystone.

Labor and interest on land and capital are the largest items of costs of farm operation. Interest at 5 per cent on capital investment accounted for approximately one-fourth of total farm costs in 1924. Labor represented another 42 per cent.

Switzerland is a dairy country. The 842,000 dairy cows produce on an average 756 pounds of milk per cow per year.

About 16 per cent of the milk is fed to livestock. Forty-two per cent is consumed as whole milk, and 41 per cent is manufactured into dairy products. Around two-thirds of the milk enters market channels. Nearly one-half of the commercial milk is utilized in the manufacture of cheese.

The annual per capita consumption of milk in Switzerland in 1926 was 290.6 quarts; that of cheese, 24.3 pounds; and that of butter, 11.9 pounds.

Retail milk is sold in bulk. The consuming public is not now willing to pay the added cost of bottle protection.

Handling costs from local shipping points to the consumer's door amount to about 25 per cent of the retail price.

The purchasing power of milk is still less than it was before the World War. The Swiss farmer is demanding the equalization of farm prices with those of other classes of necessities.

The extent of agricultural cooperation in Switzerland is amply illustrated by the fact that in 1920 there were nine cooperative memberships for every farm in the country. This number is accounted for by the following facts: A single individual may be enrolled in more than one local cooperative, a local cooperative may be affiliated with more than one central organization, and more than one member of a farm household may be a member of one or more cooperatives. But with duplications eliminated the figure is impressive.

In 1920 there were 10,942 locals with 657,082 members. In addition there were 368 federations, cantonal, intercantonal, and national bodies, with an enrollment of 1,440,928.

When the cooperative organizations engaging in commercial transactions are classified by major activities, 2,336 are found to sell farm products, 2,075 to purchase farm requisites, and 1,294 to engage in manufacturing and processing.

The financial position of the Swiss cooperative is stronger to-day than ever before.

Cooperation and dairying are almost synonymous in Switzerland. In 1920 there were 3,519 local dairy cooperatives with 102,659 members. These locals are united into a number of different types of federations. The Central Union of Swiss Milk Producers is the hub of the organized dairy movement. It has 25 member federations representing 3,392 local societies with 99,059 members. It controlled the product of 534,852 cows of the total cow population of 810,000 in 1924. Hence the production of 66 per cent of all the cows in the country is controlled by one central federation. This is an impressive indication of the extent of cooperation among Swiss dairy farmers.

The federated dairy farmers have joined forces with the private cheese dealers in handling the export-cheese trade. This trade is in the hands of the Swiss Union for the Sale of Cheese, a company owned and controlled on an equal basis by the cooperatives and the private wholesale cheese merchants. This is an outstanding example of successful and open cooperation between organized producers and organized dealers.

The Swiss Central Butter Society, operating under the supervision of the Central Union of Swiss Milk Producers, has sole charge of the butter imports of the country.

The federation of federations, the representative of organized agriculture of the nation, is the Swiss Peasants' Union. It has grown from 20 adhering associations with 74,227 members in 1898 to 52 affiliating federations with 402,158 members in 1926. It has 160,000 more members than there are farms in Switzerland, because many members belong to more than one affiliating body.

Its director and assistant director have served since its founding—nearly 30 years. Seven of the eleven members on its executive committee have seen a quarter of a century of service as committee members.

The Swiss Peasants' Union has a staff of 61 persons. Many of these are specialists and scientific workers. The confidence of the nation in the accuracy and reliability of its scientific work is attested by a Federal subsidy for promoting economic studies in the field of agriculture.

In the promotion of the general welfare of agriculture it is doubtful if the Swiss Peasants' Union has a cooperative equal.

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UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

AGRICULTURAL SURVEY OF EUROPE:
HUNGARY

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HUNGARY AND THE UNITED STATES

Hungary is competing with the United States in Austria and Czechoslovakia on the wheat and flour markets and can become a very considerable competitor as regards pork, lard, and other pork products on the markets of central Europe. The future exportable surpluses of rye, barley, corn, and oats will probably be smaller than before the World War on account of larger domestic use as feeding stuffs in the livestock industries. Hungarian sugar will not in all probability become an important factor in western European markets. It is improbable that the American tobacco situation will be affected, in even a slight degree, by Hungarian demand, as Hungary has in the past utilized very little tobacco grown in the United States. On the other hand, an expanding textile industry will probably absorb increasing quantities of American-grown cotton.

¹ With the collaboration of Susie White, Bureau of Agricultural Economics.

THE PEACE TREATY AND HUNGARIAN TRADE

Before the World War, the old Kingdom of Hungary possessed a variety of industries that had reached a relatively high grade of development (5).² After the war, the territories constituting residual Hungary had shrunk to about one-third the size of the former Kingdom. The industries found within this restricted territory continued to develop along the lines that had marked the industrial development of the old régime. Certain lines of endeavor, as the flour-milling industry, fell into a state of stagnation, and some of the milling plants were transformed to meet the requirements of other lines of manufacture.

In pre-war times, the old Kingdom of Hungary controlled its own sources of food products and raw materials, with the exception of cotton. The old Kingdom, with 20,000,000 population, constituted a common-duty territory with the former Austrian Empire, whose population was more than 31,000,000. The agricultural industry of the eastern and southern parts of the Dual Monarchy and the industrial and commercial interests of the west and north enjoyed perfectly free internal trade and protection against the products of outside States. This situation was, in some respects, advantageous to Hungary. A market for practically the whole of the agricultural surplus of the old Kingdom was assured within the former Austrian Empire and, as a rule, Hungarian sellers were not compelled to seek customers beyond the frontiers of the monarchy.

On the other hand, on account of the close association with Austria, the basic industries of Hungary were not developed to a degree commensurate with its raw-material supplies. It had been the policy of the former monarchy to keep Hungary at the level of a raw-material producing country and to concentrate industrial production in Austrian and Czech centers. However, certain industries deeply rooted in agriculture or in forestry, inevitably did develop—such as the milling industry (after Minneapolis, Budapest had the greatest flour mills in the world), the sugar industry, the manufacture of alcohol, beer, starch, salame sausage, vegetable oils, commercial fertilizers, the products of wood distillation, cellulose, and tannin. It was an ancient endeavor of the country to employ a considerable part of the wool crop for the manufacture of cloth, with which to satisfy the demands of its own agrarian population.

As a consequence of the peace treaty, the conditions and prospects of production in Hungary have undergone a material and critical change. Surpluses of all the principal agricultural products of present-day Hungary are dependent for a market on the export trade. Wheat, rye, barley, oats, corn, livestock and meat, potatoes, eggs, vegetables, oilseeds—all alike must be exported for the most part in considerable quantities. Although there is a near-by demand for these materials—at a price—there has developed since the World War, even in States preponderantly industrial in character, a tendency to develop their own agricultural resources—to become as nearly as may be independent of outside sources of supply. As a consequence, the sale of agricultural materials in foreign countries encounters ever-increasing difficulties. It is the tendency of western States, as Austria, Czechoslovakia, and Germany, to force by energetic methods

² Italic numbers in parentheses refer to "Literature cited," p. 104.

a free path for their manufactured products and at the time to build up their economic status by employing as far as possible the products of their own agriculture.

Hungarian corn for feeding livestock can find a market here and there in the feed lots of lower Austria and Bohemia, but Hungarian flour is faced with obstacles almost insurmountable. The powerful competition of American flour and lard is keenly felt by Hungarian farmers. In 1913 there were 13 flour mills in Budapest with a daily capacity of 338 carloads³ of wheat and 79 carloads of other grain. In 1925 only 10 mills with a daily capacity of 300 carloads of wheat worked 20 per cent of their capacity. It is reported that some of these mills have been dismantled as to their milling machinery, and are being fitted with spindles and looms.

The general situation in Hungary may be outlined as follows.

THE AGRICULTURAL SITUATION IN HUNGARY

Hungary, like each of the succession States, has passed through a crisis that has strained national resources to the breaking point. However, the season of 1927 found the worst of Hungary's troubles forced into the background. Its position on the world's money market was improved. The land value of residual Hungary (the portion of the great plains east of the Danube, the Alföld, and the western highlands now comprised within the present frontiers of the country) was estimated at 6,000,000,000 gold crowns or about \$1,215,600,000⁴ and there was a national inventory amounting to about 2,000,000,000 additional gold crowns or \$405,200,000.⁴ The American people have become richer and the Hungarians poorer since the World War; but for this very reason production of farm crops and animal products in Hungary is cheaper than in the United States and the surplus-producing areas of this whole region are in close conjunction with the markets in which American farmers must meet their competition.

Before the World War (1913), it was possible to market American wheat in Liverpool 11 per cent (9) cheaper than the Hungarian farmer could sell his wheat in Budapest. In 1925, Hungarian wheat in Budapest was 8 per cent cheaper than was overseas wheat of similar quality in Liverpool. On the other hand, in spite of a lower standard of living in the countries to the south, the cost of agricultural production in Hungary is relatively less than that in the neighboring Balkan countries because the handling of the soil and animals in southeastern Europe is less scientifically systematic than in Hungary. At the close of 1926, the prices of cattle and swine in Rumania and Yugoslavia were higher than in Hungary. Yields per acre in Hungary average higher than in the southeast and in the best years approach average German standards.

In 1926, Hungarian industries produced wares valued at 1,698,000,000 gold crowns or \$344,014,800, in the manufacture of which domestic and foreign raw materials to the value of 900,000,000 gold crowns or \$182,340,000 were utilized. On the other hand, the land and the farmers of Hungary produced farm crops, animals, and animal products to the value of 1,800,000,000 gold crowns or \$364,680,000.

³ A carload is 10 metric tons or 22,046 pound is.

⁴ The value of the gold crown was 20.26 cents.

The territories comprising the present Hungarian State, occupying the rolling country west of the Danube and the great plains region east of the Danube, the Alföld, have almost no natural resources other than the products of their agriculture. Nearly the entire industry and commerce of the former Kingdom of Hungary^a was

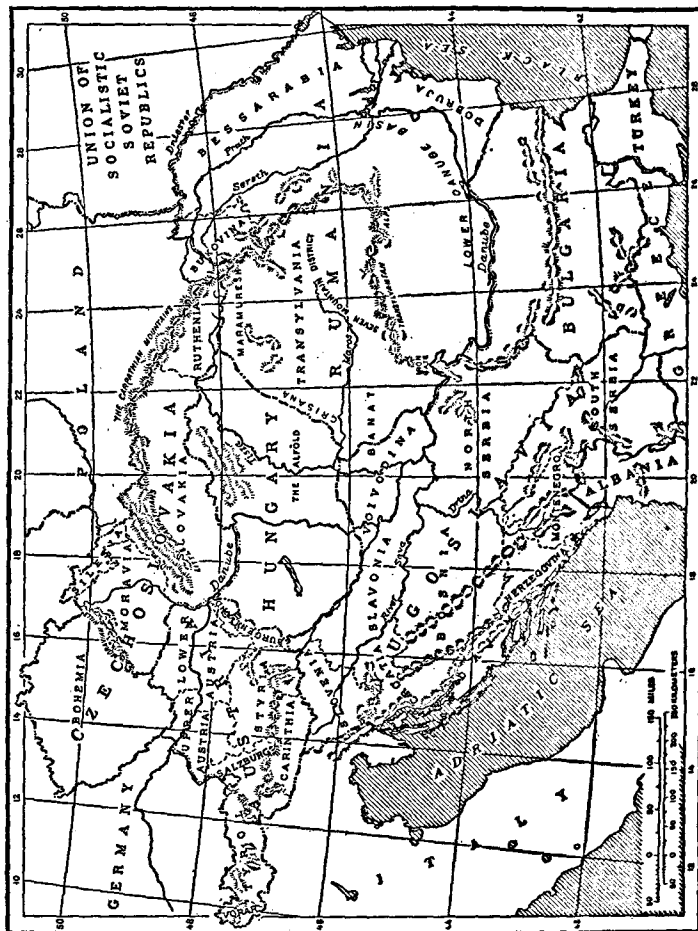


FIGURE 1.—MAP OF THE DANUBE BASIN
Hungary is the residual part of the old Kingdom of Hungary after segregating the territories of Slovakia, Ruthenia, Maramuresh, Crisana, Seven Mountains, Banat, Volodina, and Burgenland to neighboring States.

founded upon the manufacture of and trade in commodities whose raw materials were the products of its own agriculture. More than half of these agricultural products originated in the outlying regions of the old Kingdom which after the World War, were segregated from

^a In 1913, total exports from the old Kingdom of Hungary were valued at \$380,400,000, of which manufactured and semiprocessed goods were valued at \$183,200,000. Raw materials were valued at \$197,200,000. The most important products of agricultural origin were flour, \$51,200,000; cattle and hogs, \$46,200,000; wheat, \$22,800,000; and barley and corn \$15,000,000 (Wilgress (16)).

residual Hungary by the treaty of Trianon ⁶ and were ceded to one or another of the succession States, which were created out of units of the former Austro-Hungarian Monarchy.

The industrial and commercial machinery for handling the surplus raw materials produced in the territories that comprised the old Kingdom of Hungary (that is, (1) in the present residual State of Hungary; (2) in Croatia, Slavonia and Voivodina, ceded to Yugoslavia; (3) in eastern Banat, Crisana, southern Maramuresh and the Seven Mountain region, ceded to Rumania; (4) in Slovakia and Ruthenia, ceded to Czechoslovakia; and (5) in Burgenland, ceded to Austria) was centralized for the most part in Budapest. For this reason, when residual Hungary began its career as a separate, isolated State, it was burdened with an enormous "overhead" of mills that had been cut off on the one hand from their former sources of wheat and other grains to be ground and on the other from the former markets in which they had been accustomed to sell their flour.

There were banks without funds or official affiliations with their branches in former outlying regions. There was an army of merchants whose occupation had been to assemble products from the surplus regions to the east and south and arrange for their transport and disposition in the deficit regions of the north and west. The former Austria-Hungarian Monarchy had been a well-balanced, nearly self-sufficient economic unit. At the beginning of the postwar reconstruction period, these merchants found themselves almost without transportation facilities with which to handle even the small fraction of the former quantities of agricultural products that were available for commerce. The economic existence of the residual Hungarian State is dependent upon the development of a highly intensive agriculture, producing surpluses of field crops and animal products within its own frontiers for export and upon the importation of raw materials or semimanufactured agricultural products for final processing by its mills and factories and the exportation of these in finished form.

The problems of an agricultural State, like Hungary, are totally different from those of an industrial region like northwestern Czechoslovakia or a commercial State like Austria. An agricultural State has the advantage that it can subsist under the most straitened circumstances without impairing its international credit through costly importations of food, as was the case with the Republic of Austria. On the other hand, it must depend upon the products of its soil to build up its international credit because it has no large surplus of manufactured goods (cotton, glass, iron, etc.) to send abroad as is the case with Czechoslovakia.

Thus, at the outset of its restricted existence, residual Hungary, although passing through very nearly as catastrophic a period of currency depression as residual Austria, was nevertheless able to subsist upon the products of its own soil and to survive the succession of crises of the past few years.

The struggle of Hungarian agriculture during the first few years following the World War has been that of adjustment to the burdensome conditions of heavy taxation and lack of credit at home and the

⁶ For a discussion of the changes in boundary following the treaty of Trianon upon the agricultural situation in Hungary see (10, p. 4-45).

difficulty of finding favorable markets abroad. The situation, broadly speaking, is that Hungary, an essentially agricultural country, must endeavor to secure markets for its agricultural products by opening its doors to manufactured articles from abroad. On the other hand, highly industrialized countries, such as Germany, Austria, and Czechoslovakia, the most important markets from the Hungarian point of view, are naturally reluctant to throw down the barriers which protect their own agricultural interests, since the Hungarian market for their manufactures is too insignificant to outweigh the disadvantages involved in opening their markets to Hungarian wheat, flour, pork, beef, sausages, and lard. It is not so much Hungarian competition that they fear as that of Canada, Argentina, the United States, and even a resuscitated Russia, against which countries they could not consistently close their frontiers once they had opened them to Hungary.

By 1926, Hungarian agriculture, in spite of all handicaps, had recovered its pre-war averages as regards rye, corn, potatoes, and sugar beets, as indicated in Table 1. However, there are some indicative shifts in the relative manner in which the various cereals were seeded in 1926 as compared with the pre-war manner of seeding.

TABLE 1.—Cereals, potatoes, and sugar beets: Average acreage seeded in present Hungary, 1909-1913 and in 1926, and acreage sown by large and small holdings during 1926

Crop	Total acreage sown in— ¹				Holdings in 1926 of 100 Jochs (142.2 acres) or more ²		Holdings in 1926 of less than 100 Jochs (142.2 acres) ²	
	Average 1909-1913		1926		Acreage sown	Percentage	Acreage sown	Percentage
	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent
Wheat.....	3,712	38.3	3,706	37.8	1,126	35.3	2,535	38.3
Rye.....	1,608	16.6	1,729	17.7	1,533	16.7	1,190	18.0
Total.....	5,320	54.9	5,435	55.5	1,659	52.0	3,725	56.3
Barley.....	1,322	13.7	1,050	10.7	419	13.2	684	10.3
Oats.....	849	8.8	679	6.9	334	10.5	355	5.4
Corn.....	2,192	22.6	2,631	26.9	775	24.3	1,854	28.0
Total 5 cereals.....	9,683	100.0	9,795	100.0	3,187	100.0	6,618	100.0
Potatoes.....	619	.....	619	.....	181	.....	441	.....
Sugar beets.....	131	.....	156	.....	139	.....	17	.....

¹ Total acreages were taken from succeeding tables which show the latest available figures for 1926. These figures will not check in all cases with the sum of the figures for separate holdings which are preliminary and were taken from a different source.

² From (8, p. 141).

The outstanding shift in relative cereal acreage occurs in corn, which by 1926 had increased 439,000 acres over the pre-war average. The next important change is in rye, which shows an increase of 121,000 acres. As will be shown later, not only has rye production increased somewhat, but there has been a positive increase in rye consumption, more than offsetting the decrease in wheat disappearance.

There was a small decrease in wheat of 6,000 acres in 1926, but in 1927 wheat acreage was 309,000 acres above the pre-war average. In 1926, barley and oats had fallen off appreciably—272,000 acres in

the case of the former and 170,000 acres in the case of the latter cereal—with a further decrease in 1927.

On the whole, the acreage of the five chief cereals had increased; but the rates at which corn and rye were seeded indicate an increased influence of peasant agriculture following the Hungarian land reform in which greater areas are devoted to the production of human food and feed for hogs and cattle to be consumed on the farm. The decreased seeding of barley and oats indicates a decreased influence of large-estate agriculture, in which wheat and barley were grown extensively as cash crops and oats as feed for horses, whose breeding was a well-established industry among the landed nobility.

It will be noted that 71 per cent of the potato acreage was planted by the peasants in 1926; whereas the estates planted 89 per cent of the sugar-beet area.

These shifts in areas seeded have not affected the general utilization of land.

UTILIZATION OF LAND

The area of residual Hungary in 1927 was placed at 22,970,000 acres, of which 93.8 per cent was classified as productive land. Of this productive land, 60.3 per cent was under plow, 18.1 per cent meadows and pastures, and 11.7 per cent forests. A small acreage was devoted to gardens and vineyards. (Table 2.)

TABLE 2.—Utilization of land in Hungary, present boundary, 1911, 1921, and 1927

Utilization of land	1911 ¹		1921 ¹		1927 ²	
	Acreage	Percentage of total acreage	Acreage	Percentage of total acreage	Acreage	Percentage of total acreage
	<i>1,000 acres</i>	<i>Per cent</i>	<i>1,000 acres</i>	<i>Per cent</i>	<i>1,000 acres</i>	<i>Per cent</i>
Plowlands.....	13,351	58.2	13,784	60.1	13,857	60.3
Meadows.....	1,706	7.4	1,646	7.2	1,657	7.2
Pastures.....	2,523	11.0	2,501	10.9	2,497	10.9
Gardens.....	246	1.1	246	1.1	252	1.1
Vineyards.....	490	2.2	539	2.4	534	2.3
Forests.....	3,064	13.5	2,714	11.8	2,695	11.7
Reeds.....	81	.4	69	.3	73	.3
Unproductive.....	1,422	6.2	1,422	6.2	1,425	6.2
Total.....	22,923	100.0	22,921	100.0	22,970	100.0

¹ U. S. Dept. Agr. Bul. 1234 (10, p. 8).

² Die Landwirtschaftliche Produktion der Welt im Jahre 1927 (6, p. 355).

Hungary is outstandingly a country devoted to field-crop production and the livestock industry. Wine making is also an important industry though restricted in scope.

THE MAGYAR PEOPLE

In the sixth century, Attila, the "scourge of God," raided Europe, was defeated, and his shattered hordes drifted back over the Carpathian Mountains toward Asia. Some 300 years later the vanguards of a similar people, the Magyars, under seven great princes seeped through the mountain passes into the forests of Seven Mountains (now part of Transylvania). When Kaiser Arnulf invited these Magyar princes to aid him against the Moravians, who were crowding his people, the Germans, up into the Alps, he opened the way for this

steppe people, weary of their sojourn in the mountains, to appropriate a new fatherland admirably suited to their needs. This was in the year 896.

Originating in the steppe countries north of the Caucasus Mountains, these closely related peoples, called Magyars, had for centuries drifted across the steppes of southern Russia and up into the Carpathians at last to find a resting place on the Alföld—the lowland plains or steppes of the Danube basin. They found the land sparsely inhabited by herders of cattle and tenders of sheep living in mud huts. The Magyars pitched their tents and appropriated the best of the pastures and meadows for their own wiry horses, their enormously long-horned cattle, and their long-haired milk sheep.

They had brought with them Slavic slaves whom they set to tilling the soil and herding cattle and sheep. The care of the swine was woman's work. The men occupied themselves only with the breeding and care of the horses and those pursuits that fitted them for battle. When they arrived, the Magyars found Slavic tribes scattered over the plain, as well as Teutons, Avars, Goths, and perhaps some remnants of the aboriginal Celts. The Serbs, Croats, and Slovenes were driven into the highlands to the south, the Germans into the foothills of the Alps, the Czechs, Slovaks, and Ruthenians into the foothills of the Carpathians, and the Rumanians into the Transylvanian Mountains. The other peoples, having no place to which to retreat, remained to be absorbed.

The princes and the warriors proceeded to war until, as the centuries passed, the flaming spirit to battle became more and more feeble and it became more and more difficult to muster raiding parties just for the love of raiding. The clusters of mud huts took on more permanent form, whose architecture was borrowed from the Czechs. Tilled fields encroached farther and farther out into the grasslands; but, until recent times grazing and herding remained the chief occupations of this people.⁷

The Hungarian (Magyar) peasants are serious, intelligent, and industrious. They are not as commercially inclined as are the Czechs or the Slovaks, and therefore their land holdings are operated for the welfare of the household and not for the monetary profit involved. The chief aim of the Hungarian peasant is to live a quiet life and to assure the well-being of his descendents. In their migrations, the Magyars were characterized as an obedient people and accepted the civilization, the religion, and the education of western Europe at the command of their leaders. As Doctor Leopold (9) says, the Hungarian peasant is no "far-western farmer" neither is he a "near-east mus-hik." Of Asiatic blood, this people were quick to adopt the civilization of the west and so are the meeting point of the Occident with the Orient. In recent years, they have adopted improved methods of farming, better seeds, and better breeds of livestock. The Hungarians are not so far advanced in agricultural technic as the Germans or the Czechs, but are superior to the peoples to the south and east. Much peasant grain is still harvested with a sickle, but the Hungarians have adopted the scythe and the cradle as well as the flail, whereas in Rumania, Yugoslavia, and Bulgaria these "modern" farm implements are seldom if ever seen.

⁷ The horse herder was a leading man in the village and was distinguished by a special black shirt. The cattle herder was also a personage and rode on horseback. The sheep herder went on foot or at best was seated on a donkey. (7, p. 86.)

The working year in Hungary is not mutilated with the untimely holidays of the nations to the south and east, and therefore farming operations are performed in a more nearly timely manner. Yields per acre obtained by the Hungarian, as well as the general quality of his farm animals, are higher than those found in the Balkans, Transylvanian Alps, the Carpathians, and the plains beyond.

As in other countries, when the nomadic clans began to settle on the land, groups of villagers fell under the control of a prince or other noble. As field cultivation superseded the earlier pastoral life, these great lords retained their equity in the soil and became owners of vast estates, whereas the common people were allotted land holdings barely sufficient to maintain a family. These villagers who have dwelt in the same communities for forgotten generations are passionately attached to the soil and are strongly bound by ties of loyalty to the families of their hereditary princes or lords.

POPULATION

In 1920 the total population of residual Hungary numbered 7,980,143, of whom 7,147,053, or 89.6 per cent, claimed Hungarian as their mother tongue. There were 551,211, or 6.9 per cent, who spoke German and 141,882, or 1.8 per cent, Slovakian. Other races were represented by insignificant numbers totalling 139,997, or about 1.7 per cent.

Next after the Magyar population, the German-speaking element plays an important rôle in the economic life of the country just as it is an important factor in the economic life of Czechoslovakia. About 94,000 German-speaking Hungarian subjects lived in the large cities^a and county seats in 1920. They are occupied chiefly with finance, commerce, and industry. There are relatively few Germans on the watershed of the Tisza River; but 330,826 are found in small hamlets, villages, and towns of lesser importance in the counties on the right and left banks of the Danube. Although it is not possible to analyze the status of this German population as to occupations it is safe to say that the great majority of them are farming colonists brought into the country by various monarchs who established small groups of these northerners among the Magyars to set an example in farm procedure. In the western counties are found 107,159 additional Germans. Those along the Austrian frontier are native to the country, whereas those more in the interior are colonists who have migrated from the north during recent centuries.

In 1910, there were 56 per cent of the population of residual Hungary dependent upon agriculture for a livelihood, as compared with

^a Cities whose populations exceed 24,000. The only city of importance in Hungary is the capital, Budapest, whose population in 1920 was placed at 928,996, of whom 60,425 claim German as their mother tongue. This is the great commercial center in which all railway lines converge and whose position on the Danube makes it the most important river port next after Vienna. Nearly all the other large towns are "market towns" to which the surrounding farmers bring their products and whose chief activities are concentrating agricultural surpluses and supplying the simple wants of the surrounding districts. Szeged, with 119,109 inhabitants in 1920, is the commercial center of lower Hungary. It is located on the Tisza, near the Yugoslavian frontier. Debrecen (103,186 inhabitants) is the most important town in the northeast. Kecskemet (73,109) is an important grain and cattle market on the Alföld between the Danube and the Tisza. In the northwest, Győr (50,036) and in the southwest Pécs (47,556) are the most important market centers. Other large towns are Miskolc (56,932), Hodmezgyásárhely (60,922), Erzsébetfalva (40,545), Székesfehérvár (39,109), Rakospalota (36,008), Sopron (35,248), Bekes (23,161), Torokszenmiklos (26,303), Csongrad (25,888), Szarvas (25,224), and Oroshaza (24,079). In 1920 there were 44 cities ranging from 10,069 to 19,371 inhabitants each, totaling 574,641. There were 127 large towns ranging from 5,005 to 9,985 inhabitants each, totaling 875,152. Many of these towns are largely communities of farmers and farm laborers. There were 660 towns ranging from 2,000 to 5,000 and totaling 1,696,975 inhabitants and 832 villages (1,000 to 2,000 inhabitants each), totaling 1,163,660 for the group. The remaining 1,350,254 inhabitants of Hungary lived in small hamlets and villages of less than 1,000 each.

30 per cent industrials and 4 per cent in public service. The remainder of the population formed small groups engaged in various occupations. There were 4,256,172 farming peasants and their families in 1910, as compared with 4,449,105 in 1920. During this decade, total population had increased from 7,606,971 to 7,980,143, so that the proportion of farm population remained about the same as before the World War, being 55.7 per cent of the total in 1920. As indicated in Table 3, there were increases in those engaged in commerce in transport, in public service, in the army, and in the capitalistic class, but there was a sharp decline in the number of day laborers.

TABLE 3.—Population classified according to occupation in residual Hungary, 1910 and 1920

Occupation	1910		1920	
	Number	Per cent	Number	Per cent
Agriculture.....	4,256,172	56.0	4,449,105	55.7
Mines, industry, commerce, and transport.....	2,274,898	29.9	2,402,790	30.1
Public service.....	303,445	4.0	372,165	4.7
Army.....	63,164	.8	124,600	1.6
Day laborers.....	178,015	2.3	97,499	1.2
Capitalists, etc.....	145,510	1.9	196,825	2.5
Domestics.....	214,979	2.8	175,461	2.2
Other professions and unknown.....	170,788	2.3	161,719	2.0
Total.....	7,606,971	100.0	7,980,143	100.0

Pub. Statist. Hongroises, Recense. de la Population en 1920, 71:1.* 1925.

THE LAND REFORM

Immediately following the World War a series of peasant disturbances developed into a Bolshevik uprising. Thousands of landless peasants, who had no means of livelihood other than the wages received for working on some large estate or for some of the more fortunate small landowners, joined forces with the idle workingmen in the large centers and temporarily gained control of the centers of government. In many cases estate owners were forced to let their modern machinery stand idle and to allow their fields to be cultivated by the primitive hand methods of the lowest class of peasants in order to give employment to larger numbers of land-hungry malcontents.

Many of these large estates had been held by individual families of the Magyar nobility for centuries; but others had been acquired by the newly rich during the World War and postwar years. It was this last class of recently acquired holdings that particularly irritated the many landless farm laborers and small farmers who did not own sufficient land for the support of an average family. These conditions led to the enactment of the Land Reform Law XXXVI of 1920; but on account of the peculiar attachment of the Hungarian peasants for the families of the Magyar nobility this land reform was not so drastic as in parts of Rumania⁹ to the east, where the landed gentry was often of blood foreign to that of the common people.

At the time of the passage of the land-reform law in 1920 there were approximately 17,000,000 acres of plowland, meadows, and

⁹ In Transylvania and Bessarabia.

pastures in residual Hungary. About one-third of this area, or 5,830,000 acres, was operated in holdings of more than 1,000 Jochs (1,422 acres) each. This land was owned by a very few great landlords. As indicated in Table 4, there were, in 1920, only 8,008 owners or operators of holdings of more than 100 Jochs (142.2 acres) each actively engaged in farming; whereas 548,000 heads of families owned or operated less than 100 Jochs each. In addition to the small land-owners (who were aided by 574,180 members of their own families), there were 753,638 farm laborers (probably landless) and 234,019 domestics and other employees classified as gaining a livelihood by farming. Thus out of 2,118,145 active farmers and farm laborers only 8,008, or 0.38 per cent, were owners or operators of holdings of more than 142.2 acres each.

TABLE 4.—Active agricultural population in residual Hungary, 1910 and 1920

Classification	1910	1920
Heads of families:	<i>Number</i>	<i>Number</i>
Proprietors of more than 142 acres.....	7,084	6,111
Farmers of more than 142 acres.....	2,124	1,897
Small owners.....	518,227	526,537
Planters.....	8,546	18,802
Herders, etc.....	951	500
Gardeners.....	2,423	2,461
Total.....	539,355	556,308
Other members of families helping in farm work:		
Males.....	266,659	303,801
Females.....	103,378	270,379
Total.....	370,037	574,180
Laborers:		
Employees.....	5,079	5,331
Domestic.....	246,286	228,688
Day laborers.....	516,297	753,638
Total.....	767,662	987,657
Grand total.....	1,677,064	2,118,145

Pub. Statist. Hongroises, Recense. de la Population en 1920 71:8. * 1925.

The land reform in Hungary was of two general types: (1) Under the first of these, known as land expropriation, certain properties of over 500 acres were subject to division among the peasants according to their local needs. The peasant had to assume responsibility for the share of the mortgage debt of the estate allotted on a pro rata basis to the land that he accepted. (2) The second type of land reform was known as wealth redemption and applied only to properties of more than 1,000 acres. It was intended to apply primarily to lands acquired since the beginning of the World War. Usually only 10 per cent of an owner's holdings have been taken, although occasionally a much larger percentage has been expropriated. Such lands were taken from the owner without compensation and had to be transferred to the State free of all encumbrances.

Most of the land that has been distributed among the peasants during the land reform has come into possession of the State under the provisions of the wealth redemption law. Only such part of any large holding acquired 50 or more years before the World War as would not jeopardize the profitable cultivation of the estate has been taken from those estates belonging to the established landed gentry.

The court in charge of readjustments of land holdings under the provisions of the land-reform law began to function on June 20, 1921, and continued until September 16, 1926. During this period 1,590,000 acres of land were assigned to new owners. Of this area, 344,000 acres were designated as sites for buildings.

The land reform has resulted in increasing the proportion of plowland held in small plots from 55.5 per cent in 1913, to 66.7 per cent in 1926.

The enactment of the land reform law in 1920 created a nervous attitude on the part of the large-estate owners toward making necessary improvements and even toward carrying out a full planting program because there was the possibility that the owners would be dispossessed of their fields. As a result of this and other deterrent factors, including the system of maximum prices fixed by the Government, about 2,548,000 acres were left unplowed in 1921.

The acreages of wheat, rye, corn, and sugar beets in 1926 had not only recovered their pre-war status, but the production of these commodities was greater than it had been before the World War, as indicated in Table 5.

TABLE 5.—Cereals, potatoes, and sugar beets: Average production and yield per acre in present Hungary, 1909-1913 and 1926, and production and yield per acre by large and small holdings during 1926

Crop	Total production— ¹				Production in 1926 on holdings of 100 Jochs (142.2 acres) or more ²		Production in 1926 on holdings less than 100 Jochs (142.2 acres) ³	
	Average 1909-1913		1926		Total	Yield per acre ⁴	Total	Yield per acre ⁴
	Total	Yield per acre ⁴	Total	Yield per acre ⁴	Total	Yield per acre ⁴	Total	Yield per acre ⁴
	<i>1,000 bushels</i>		<i>1,000 bushels</i>		<i>1,000 bushels</i>		<i>1,000 bushels</i>	
Wheat.....	71,493	19.3	74,908	20.2	23,441	20.8	45,759	18.1
Rye.....	31,377	19.5	31,416	18.2	10,196	19.1	19,819	16.7
Total.....	102,870	19.3	106,324	19.6	33,637	20.3	65,578	17.6
Barley.....	32,369	24.5	25,509	24.3	8,560	20.4	14,095	20.6
Oats.....	28,464	33.5	24,802	36.5	12,315	34.9	11,816	32.7
Corn.....	60,813	27.7	76,544	29.1	25,246	32.6	53,580	28.9
Total 5 cereals.....	224,516	23.2	233,179	23.8	79,758	25.0	144,869	21.9
Potatoes.....	71,118	114.9	68,880	111.3	21,944	121.2	45,386	102.9
	<i>1,000 short tons</i>		<i>1,000 short tons</i>		<i>1,000 short tons</i>		<i>1,000 short tons</i>	
Sugar beets.....	1,513	11.5	1,592	10.2	1,363	9.8	144	8.5

¹ Total production average 1909-1913 and annual 1926 were taken from succeeding tables which show the latest available figures for 1926. These figures will not check with the sum of the figures for separate holdings which are preliminary and were taken from a different source.

² Separate holdings, 1926 (p. 142).

³ See Table 1, for acreages.

PEASANT FARMING AND YIELDS PER ACRE

Comparing the mean yields per acre obtained in 1926 with those of 1909-1913, rye, barley, potatoes, and sugar beets averaged less than before the World War. This falling off in yield is the result of poor returns on small holdings. (See p. —.) The yields per acre for four out of the seven major crops on the large estates were greater in 1926 than the 1909-1913 average for each crop on both large estates and peasant holdings in all residual Hungary. On the other hand, the yields were less on small holdings, except in the case of corn, which was 1.2 bushels greater than the 1909-1913 average for both large and small holdings.

Among the great drawbacks to agriculture in residual Hungary are the capricious rainfall and the devastating dry winds that sweep over the great plains in early spring, at plowing time, and intermittently during the growing season. The small peasant holdings are usually located on the poorest land—stony not uniform in soil characteristics, and of such irregular shapes and small size as to preclude the use of modern machinery in the tillage of the soil.

This is in sharp contrast to the large estates, which are able to employ moisture-conservation methods—deep fall plowing, proper and timely preparation of the seed bed in the spring, and timely cultivation, especially of corn, potatoes, and sugar beets, during the growing season. The peasants not only lack a proper appreciation of the necessity for timely moisture conservation but they do not have the proper cultural implements. Consequently, when drought comes, the falling off in yield is greater on peasant holdings than is the mean falling off in the country as a whole.

On the other hand, the peasants are relatively better supplied with horse and ox power than are the estates, and if they were equipped with machinery and had sufficient technical knowledge they would be able to cultivate their larger fields, at least, more intensively than at present.

Before the World War, the peasants holding less than 284.5 acres each were in possession of 55.5 per cent of the plowlands of residual Hungary. Together with landless individuals, they owned (Table 6) 87.2 per cent of the horses, 70.3 per cent of the cattle, 84.5 per cent of the swine; but only 28.8 per cent of the sheep.

TABLE 6.—*Livestock and owners of livestock classified according to size of land holdings in Hungary, present boundaries, 1911, and total 1928*

Size of land holding	Owners of livestock	Horses	Cattle	Swine	Sheep	Goats	Mules	Donkeys
Without land.....	273, 880	84, 845	207, 044	896, 075	102, 206	13, 751	81	1, 979
Less than 1 arpent (1.4 acres)	34, 976	9, 089	23, 226	78, 357	7, 434	3, 420	6	271
1 to 5 arpents (1.4 to 7.1 acres)	183, 828	89, 749	25, 291	386, 095	43, 811	9, 720	50	1, 558
5 to 10 arpents (7.1 to 14.2 acres)	131, 254	137, 191	296, 602	346, 697	52, 077	3, 487	12	295
10 to 20 arpents (14.2 to 28.4 acres)	115, 195	191, 650	360, 523	438, 455	96, 641	2, 028	5	182
20 to 50 arpents (28.4 to 71.1 acres)	68, 860	178, 060	320, 312	396, 347	171, 729	1, 255	9	158
50 to 100 arpents (71.1 to 142.2 acres)	13, 901	50, 660	108, 407	117, 060	106, 225	245	1	121
100 to 200 arpents (142.2 to 284.4 acres)	4, 606	23, 944	65, 749	59, 880	98, 767	220	3	138
Total small and middle-sized land holders.....	552, 620	679, 343	1, 200, 110	1, 819, 921	576, 684	20, 375	86	2, 723
200 to 500 arpents (284.4 to 711 acres)	3, 121	23, 517	101, 414	71, 805	192, 040	237	34	451
500 to 1,000 arpents (711 to 1,422 acres)	1, 677	24, 672	122, 977	92, 891	278, 412	153	30	693
More than 1,000 arpents (1,422 acres)	1, 821	63, 592	369, 614	332, 726	1, 204, 296	448	182	2, 033
Total large land holders.....	6, 619	111, 781	594, 005	497, 422	1, 674, 748	838	246	3, 177
Total 1911.....	833, 119	875, 969	2, 001, 159	3, 213, 418	3, 353, 638	34, 964	413	7, 879
Total 1928.....	(¹)	917, 974	1, 811, 647	2, 661, 539	1, 566, 451	29, 836	1, 539	4, 689

1911 calculated from Magyar Statisztikai Évkönyv 1912: 126-137. 1928 from Magyar Statisztikai Szemle Année 6 (7).

¹ Not available.

The advantage of numbers of animals to small holdings is not as great as at first appears because as pointed out by Kenez (*14, p. 24*): "There can be a great difference between animal, and animal and numbers alone should not form the criterion. Our large-estate owners keep heavier, better bred, and better fed animals than the small peasant farmer." The weight of livestock per 100 Jochs on small holdings is estimated at 7,500 kilograms (11,627 pounds per 100 acres), on middle-sized holdings at 5,000 kilograms (7,752 pounds per 100 acres), and on large estates at 6,200 kilograms (9,613 pounds per 100 acres).

MORE DRAFT ANIMALS REQUIRED ON SMALL HOLDINGS

Up to September 16, 1926, the administrators of the land reform had distributed 1,590,000 acres of land from the large estates among more than 390,000 petitioners. The size of the individual plots was consequently small. The practical effect of this transfer has been to remove 1,246,000 acres of land¹⁰ from large-estate cultivation and to place these acres under the control of peasants, who were poorly equipped with implements, capital, and knowledge. In many cases the new owners also lacked proper draft animals and those that did possess horses or oxen did not own animals comparable with those on the large estates. These small parcels of newly acquired land could not be located contiguous to the fields already owned by the poor peasant. At best his new morsel of land was located at a greater or less distance from his home and usually at a distance from his former holdings. Rational cultivation of these newly acquired plots is thus out of the question.

It has been estimated that small owners of 10 to 20 hectares of plowland (24.71 to 49.42 acres) own one horse or ox for each 4 or 5 hectares (9.9 to 12.4 acres). Similarly, there is one horse or ox for each 6 or 7 hectares (14.8 to 17.3 acres) on holdings ranging from 20 to 50 hectares (49.4 to 123.6 acres). One draft animal must work 7.5 to 8 hectares (18.5 to 19.8 acres) on holdings from 50 to 200 hectares (123.6 to 494.2 acres); whereas, on large holdings between 494.2 and 2,471 acres there is only one draft animal for each 22.2 to 24.7 acres.

On the larger estates, with the supplementary use of modern machinery, more than twice as many acres can be cultivated by one animal than is the case on the smaller holdings. Following the parcellation of the land a greater number of horses or oxen have been required to till the soil than was necessary when the land was part of a large estate. In 1925 and 1926, about 680,000 acres of land were transferred to the peasants. It has been estimated that, as parts of estates, it required from 30,000 to 35,000 horses, whereas under present conditions it would need 60,000 to 70,000 horses, or the equivalent of other draft animals to maintain the soil of this acreage in a state of tillage comparable with that common to large-estate agriculture.

As in other countries, so in Hungary, the increased influence of peasant farming upon the agriculture of the country has tended to reduce field-crop production per acre below what would have been harvested had there been no change in the manner of land tenure.

¹⁰ A portion of expropriated land was utilized as building sites, etc.

HANDICAPS TO AGRICULTURAL DEVELOPMENT¹¹

The agricultural development of the present Hungarian State is handicapped by the fact that, although the soil is in general fertile, the climate is capricious and is inclined toward extremes of heat and cold, drought, and torrential rains. Droughts are dreaded most by the small landholders whose plots of land are, as a rule, not large enough to enable them to employ machinery and are usually so situated as to render impossible the employment of proper moisture-conservation methods. During the lapse of the 27 years ended 1900, there were 63 periods of more than two weeks duration in which no precipitation occurred as follows: Three times there was a drought of 15 days duration; droughts from 16 to 20 days occurred 31 times; droughts from 21 to 25 days, 14 times; droughts from 26 to 30 days, 8 times; droughts from 31 to 35 days, 6 times; and once there was a drought continuing 55 days (9, p. 148).

At least twice during the year, there must be expected in Hungary periods of two weeks or more in which no moisture is added to the soil and often this period of drought occurs during the growing season. There is the further danger to production arising from dry winds, which sweep the country in March and April and dry out the newly turned furrows. Dry winds occur during the growing season and, if maximum yields are to be obtained, a constant fight for moisture conservation must be waged. For these reasons, low yields and even partial crop failures must be expected frequently. Nevertheless when climatic conditions are favorable and the soil is properly tilled, very large production is the result.

During the World War, the condition of the soil was depleted, particularly on peasant holdings, because of lack of labor and the essential implements for tillage. The numbers of livestock on feed also dropped below normal during the war period. The indirect importation of fertility through the purchase of feeding stuffs from other regions diminished and, because the customary manure was wanting, field-crop production dropped.

The Magyars settled upon the Alföld more than a thousand years ago and, for more than 10 centuries, they have tilled the soil of the plains and the hill regions of the west. There has been but little migration within the country itself. The peasants are descended through hundreds of years from ancestors, who have lived in the same village groups, who have tilled the same fields, planted the same kinds of crops, and have tended the same kinds of animals for generation after generation. Deep-seated farming traditions have been built up in almost every family concerning the manipulation of each particular field. One of the traditions most deeply seated and most universally inground into the consciousness of the Hungarian peasant is that of manuring his soil to insure to his children at least as good a chance to live as he himself possesses. To this end, he clings to his livestock.¹²

¹¹ For description of physical characteristics of Hungary see (10, p. 7).

¹² A Hungarian peasant is very reluctant to sell his cattle in order that his year's accounting may show a profit. "Better animal husbandry at a loss, than no livestock. He will maintain the soil in as fertile a state, through use of stable manure, as he inherited it from his father." Free translation. (9, p. 165).

INCREASING PRODUCTION

A limited portion of the Hungarian plain could be improved by drainage, and there are other districts that would return greater yields through irrigation. It is no longer possible to graze cattle on the pastures and meadows of Hungary for the profitable production of beef, or even draft animals, without taking into consideration an appreciable return from milk and milk products. The quality of these pastures and meadows can be greatly improved and in the budgets of 1925-26 and 1926-27 the equivalent of half a million gold crowns¹³ or about \$101,000 were assigned for this purpose. But this amount is inadequate to cope with the problems to be solved. There are also about 500,000 Jochs (711,000 acres) of "claypan lands," of which about 200,000 Jochs (284,000 acres) can be improved.

Any improvement in agricultural production through extension and improvement of area is strictly limited. Greater progress can be made in cultural methods and improved seeds. However, as Doctor Leopold has pointed out, after all has been said, domestic animals remain the most pronounced accumulators that respond to agricultural skill. Livestock do not always bring in a cash profit, but they always represent wealth.

FERTILIZERS

The nitrogenous fertility of the soils of residual Hungary, before the World War, was maintained almost entirely by the use of stable manure and the cultivation of leguminous plants. The soil responds to the application of phosphorous of which the pre-war utilization was roughly 12,200 carloads¹⁴ or about 134,000 short tons.

The Hungarian peasant understands the use of natural manure. Doctor Leopold, in *Die Volkswirtschaft Ungarns im Jahre 1926*, estimates that the cattle, horses, swine, and sheep produced enough manure, in 1926, to supply 40 quintals per Joch or 3.1 short tons per acre of plowland. It is not possible to state that stable manure is utilized with equal care in all parts of the country; but, taken as a whole, Hungary does not stand in acute need of nitrogenous manures. In 1925 the Hungarian farmers cultivated 8.45 per cent as much land to leguminous plants as to wheat, rye, barley, oats, and corn, as compared with 0.33 per cent in the old Kingdom of Rumania. In 1927 the Ministry of Agriculture distributed 2,205 short tons of superphosphates among small farmers in some 2,000 localities.

The use of phosphate fertilizers has steadily increased since the World War until 1927, when the use of superphosphates reached 177,470 short tons (Table 7); that is, it was 32 per cent greater than the estimated pre-war use.

The utilization of other fertilizers in 1927, as contrasted with their use in 1926, was as follows: Lime-nitrogen compounds, 3,869 short tons, as compared with 2,194; ammonium sulphate, 2,658 short tons, as compared with 1,720; Chili saltpeter, 1,709 short tons, as compared with 1,113; and potash fertilizers 2,976 short tons in 1927, as compared with 3,516 in 1926.

¹³ One gold crown was equivalent to 20.26 cents.

¹⁴ One carload is 10 metric tons or 22,046 pounds.

TABLE 7.—*Superphosphates: Utilization, importation, and domestic production in Hungary, pre-war, and 1921-1927*

Year	Utilized in agriculture	Importation	Produced in residual Hungary
Pre-war years.....	<i>Short tons</i> 134,481	<i>Short tons</i> (¹)	<i>Short tons</i> (¹)
1921.....	7,165	11	7,154
1922.....	16,534	22	16,512
1923.....	47,950	22	47,928
1924.....	49,604	2,370	47,234
1925.....	93,065	14,473	79,222
1926.....	94,798	22,046	72,752
1927.....	177,470	(¹)	(¹)

(¹, p. 158: 18, p. 69.) Figures converted from carloads at the rate of 10 metric tons = 1 carload.

¹ Not reported.

COMMUNICATION

There are 30.6 miles of wagon roads to each 100 square miles of territory in Hungary, as compared with 97 in Moravia and 124 in Silesia. There are 14.6 miles of railroads to each 100 square miles of territory, as compared with 14.8 miles in France. The main trade routes connecting Rumania, Bulgaria, Yugoslavia, and Turkey converge on Budapest, which is situated at the bend of the Danube as it leaves the hill country of the west and turns to flow south through the great plain (the Alföld), through Yugoslavia and thence east between Rumania and Bulgaria to the Black Sea. There are eight trunk lines radiating from Budapest, which give easy access to all surrounding States, including Poland and the Ukraine. These trunk lines are connected with a network of branch lines, which reach to all of the chief surplus-producing centers. Cheap transportation is afforded by the Danube, now an international waterway, from Budapest into Bavaria upstream and to the Black Sea downstream. There are two other navigable streams. The Tisza River affording transportation for 219 miles from the Czechoslovakian frontier south through the Alföld to Yugoslavia. The Maros River is navigable for about 16 miles from its junction with the Tisza east to the Rumanian frontier.

RELATIVE STATUS OF FIELD CROPS AND LIVESTOCK

The larger numbers of animals on small holdings presupposes a larger percentage of field products fed at home than in the case of the large estates. Before the World War it was estimated that the small peasant fed 48.86 per cent of his barley, as contrasted with 10.08 on the large estates; 70.14 per cent of oats, as compared with 40.76 per cent; and 81.57 per cent of corn, as compared with 62.08 per cent fed on large estates.

The small peasant farmer obtained 52.2 per cent of his income from the sale of animals and animal products, the middle-sized farmer 25.8 per cent, and the large-estate operator 33.9 per cent.

The relatively greater importance of domestic animals on small holdings than on those of larger size would indicate that, following the land reform, there should have been a trend toward an increase in the number of animals on Hungarian farms. However, a com-

parison of the numbers of livestock in 1928 with the numbers of animals in residual Hungary in 1911 (Table 6) does not reveal such an increase except in the cases of horses and mules. The number of cattle in 1928 were 90.5 per cent of the 1911 number; the number of swine, 82.8 per cent; the number of sheep, 66.6 per cent; and the number of goats, 85.3 per cent. This is in sharp contrast to the acreage of cereals, which in 1928, was 104 per cent of the 1909-1913 average, the potato acreage was 105.8 per cent and sugar beets 125.2 per cent of the pre-war averages.

The explanation of this apparent anomaly is that the numbers of animals recorded by the census of 1911 represent not only the cattle, swine, and sheep born and bred on the farms of residual Hungary but include large numbers of animals shipped in from other districts that were being fattened in the feed lots of commercial concerns engaged in the preparation of slaughter stock for the markets of Vienna, Budapest, and other large centers at the time that the census of 1911 was taken. These animals were bred for the most part in Croatia, Slovenia, and Voivodina, now parts of Yugoslavia; in Banat and Crisana, now parts of Rumania; in Slovakia and Ruthenia, now parts of Czechoslovakia; and in Galicia, now part of Poland. Not only were lean animals shipped into Hungary to be fattened for western and northwestern markets, but large quantities of feeding stuffs—hay as well as grain—were shipped to the vicinity of Budapest and the counties as far west of the Danube as the Austrian frontier from the surplus-producing districts of eastern and southeastern districts of the old Kingdom of Hungary. In all this western region the dairy industry was an important branch of farming.

PRODUCTION AND CONSUMPTION

The Hungarian villagers eat more vegetables and less cereals and meat than do the Austrians or the Czechs. The Austrians and the Czechs are strongly addicted to the use of coffee, whereas the Hungarian peasants seldom drink either coffee or tea, consequently the Hungarians use much less sugar than the peoples to the west and north. They employ honey to a large extent as a sweetener in their national cookery. Frugal and abstemious, almost every landholder has some sort of surplus to sell.

The total marketable surplus of each small holding as well as the relative quantity of products marketed is less than on middle-sized or large holdings. It has been estimated that during the course of 1902 the average small peasant farmer used at home 28.6 per cent of all the animal products and 43.4 per cent of all the field crops produced on his holdings; whereas the middle-sized farmers used at home only 3.2 per cent of his animal products and 2.7 per cent of his field crop production (14, p. 23). On small holdings field crops are generally fed at home to a greater extent than on large estates. The marketable surpluses as indicated above are generally in the form of some sort of animal or animal product.¹⁵

¹⁵ It has been determined that the income from the sale of animals and animal products by owners of holdings of 80 Jochs (114 acres) was three and one-half times as great as the income from the sale of cereals, potatoes, hay, and straw. In similar comparison, the animal industry on holdings of 56 Jochs (80 acres) yielded five times as much as the income derived from the sale of field crops, and on holdings of 28 Jochs (40 acres) the cash income from the animal industry was twenty-two times as great as field crop returns (15, p. 264).

The large estates consume as food or as feed for livestock a relatively small percentage of the annual field-crop production and probably a much smaller percentage of the middle-sized holdings, almost the entire crop moving to market shortly after harvesting. The reason for this is that each large estate offers grain of a uniform quality in carload lots—usually several carloads—that can be consigned directly from the railway or river station nearest the estate to some milling center or abroad. Sometimes the middle-sized holdings are large enough to furnish a carload of uniform grain; but usually it is necessary for the buyer to assemble a carload from two or more farmers with some differences as to quality. As regards the product from the small peasant holdings, an inferior and heterogeneous quality is always to be expected.

GRAIN TRADE OF HUNGARY

In ancient times only such acreages of grain were cultivated in Hungary as were required to feed the local population of a district under the jurisdiction of an overlord and to pay the grain tax to the Austrian Empire. There were no railroads. Grain was painfully hauled up the Danube in barges or overland in rude carts to Vienna and other points west and northwest from the Magyar estates.

By the seventeenth century professional grain merchants had begun to handle this mobile surplus and, in 1635, complaints were registered from consumers in Austria (probably Lower Austria), Styria, and Moravia against the charges of these merchants. In 1751, the merchants and producers complained of the exorbitant fees collected by the customhouse agents that absorbed as much as a fourth of the worth of their grain. Some grain was sent to Italy in that century; but there was the complaint that it was not properly cleaned and that it smelled earthy.¹⁶

During the early part of the nineteenth century the grain trade of Hungary was concentrated in Győr and Moson northwest of Budapest and, during the period in which the United States was recuperating from the Civil War and former Russia was fighting the Crimean War, Hungary became the granary of Europe. The acreage and production of grain increased under the stimulus of high prices.

The Suez Canal, which opened in 1869, exposed Hungary to the competition of India and, beginning with 1873, the export of grain from North America cut heavily into the profits of the Hungarian farmers and the milling industry.

During this middle period of the nineteenth century the milling industry of Hungary assumed great proportions accompanied by the development of the roller-process at Budapest. Beginning with 1835 the Hungarian mills were enabled to ship grain from the Balkan States and to obtain a rebate of the tariff paid, provided that the flour equivalent of such grain was exported within a given period.¹⁷

Under this system the Hungarian grain dealers maintained agents or business affiliations in the chief grain-producing centers of the Balkans who bought up the better grades of wheat for shipment up the Danube to Budapest. The mill capacity of the capital and other

¹⁶ Formerly grain was stored in Hungary, as it is to-day in many places in the Union of Socialistic Soviet Republics, by digging a hole in the ground, pouring in the grain, and covering it again with earth. It was easy in this way to hide grain from the tax collector. In 1795 it was recommended that the Hungarians line these holes with straw in order to lessen the earthy smell.

¹⁷ This provision continued until 1889.

centers thus developed far beyond the production capacity of the Kingdom.

With the opening of the ship canal at the Iron Gate,¹⁸ Serbia and northeast Bosnia were enabled to ship grain cheaply down the Danube for reexport to western Europe. However, up to the outbreak of the World War, Hungary continued to purchase wheat from Rumania, Serbia, and Bosnia, for its export-flour industry.

Until 1850 the purchase of grain was not a specialized business. Traders supplied the peasantry with salt, seed, woven goods, and other simple articles, and received in barter grain, wool, hides, and other products—whatever the producer had to offer. There was no price and no grade. There were wholesale merchants in Vienna who conducted trade in export grain with central Europe. In other parts of the Austro-Hungarian Empire the grain trade was almost without exception in the hands of small traders.¹⁹

In the early fifties of the nineteenth century the grain-handling industry of Hungary was organized along the same general lines as in Germany with the main exchange in Budapest and minor exchanges at other important centers. From this time the export-import trade of the Kingdom was conducted more nearly independently of Vienna than had formerly been the case.

There were 51 grain warehouses in the old Kingdom of Hungary, a number of which were maintained by banks, which accepted grain as security for loans much the same as a pawnshop would accept any class of goods. But ordinarily grain is stored in all sorts of temporary warehouses.

The large mills and the warehouses at Budapest are equipped with elevators, but otherwise the grain throughout Hungary is loaded and unloaded in sacks.

There are two general classifications of grain in Hungary: (1) Large-estate grain (*Herrschaftsware*) and (2) peasant grain (*Bauernware*). Estate grain is obtainable in large lots, is uniform, clean, and of good quality; whereas peasant grain is marketed in small lots. There is great variation in the quality offered by different peasants, and the grain is indifferently cleaned.

Several varieties of each of the cereals bear trade names significant of the locality in which they are grown and the general standard of excellence for which they are known.

COMMERCIAL GRAIN

Probably more than half of the grain entering Hungarian commerce is produced on the large estates²⁰ and middle-sized holdings, whereas nearly half (43.4 per cent in 1902) of the field crops of the small holdings does not leave the producers.

¹⁸ The point at which the Danube River breaks through the Transylvanian Alps, on its passage to the Black Sea, is called the Iron Gate (fig. 1) on account of the narrow gatelike defile through which the river flows in a succession of unnavigable rapids. In 1898, a canal accommodating small ships was constructed about these rapids.

¹⁹ A list of the names of these traders shows not only that the products of Hungary were handled by Armenians, Greeks, Jews, and Serbs but that also Magyars engaged in trading "mit Eifer und Verstandnis [with eagerness and understanding]" (4).

²⁰ If it is assumed that the small peasants (holdings less than 100 jochs, 142.2 acres each) and estates (holdings more than 100 jochs each) consumed relatively as much of their products on the farm as they did before the World War the marketable surpluses, in 1926 would have been barley, 7,208,000 bushels produced by the peasants as compared with 7,697,000 bushels produced by the estates; oats, 4,630,000 bushels of peasant grain as compared with 7,295,000 produced by the estates; and corn, 9,875,000 bushels of peasant grain as compared with 9,573,000 bushels produced by the estates. The estates consumed relatively a small quantity of the 33,637,000 bushels of wheat and rye produced in 1926, whereas a very large proportion of the 65,578,000 bushels produced by the small peasants did not leave the farm.

Taking Hungary as an illustration of an exporting country, the ultimate disposition of the Hungarian grain crop during the course of any one crop year (August 1 to July 31) is the result of a long and complicated series of reactions between several groups of factors that may be considered as having operated to produce one of two possible results: (1) To cause the wheat to be exported; or (2) to cause the wheat to disappear in some other manner.

The second group of factors includes all those factors that tend to keep wheat off the market; that is, to reduce the quantity of commercial wheat. In this group of factors is the use of wheat as seed. The quantity of seed used from the crop harvested in the summer of any one year for the crop of the next year fluctuates directly with the acreage of the crop of the succeeding year. The seed requirement has always to be met and, under Hungarian conditions, is almost universally, supplied from grain produced on the farm itself although, exceptionally, it is purchased from domestic or imported wheat. There is always a greater or less quantity of unmarketable grain—if not on every farm at least within the country as a whole. The quantity of such grain that is not used for human food and that is customarily fed to livestock fluctuates from season to season and is generally affected by the price receivable by the farmer. When grain is scarce and prices high, there is a tendency on the part of the seller to crowd as much low-grade grain as possible into the marketable grades. The price of grain, on the other hand, might be so low that the farmer would feed all but the choicest portion of his crop. There are also losses at the farm on account of pests, spoiling, and accidental destruction.

Then there is the food requirement of the farmer's family, the feed for his livestock, and the reserve supply to be held at the farm for use in an emergency. Both the food and feeding stuff requirement, as well as the reserve supply, fluctuate from season to season, depending upon the manner in which the farm population of Hungary reacts to the economic and other conditions determining the prices that affect their daily life. This involves the question as to whether it is more to the farmer's advantage to eat or feed a larger part of his grain than had previously been the general practice of his household, or to sell a greater than normal portion.

The manner in which the Hungarian farmer reacts to changes affecting his daily life is governed largely by his racial characteristics; that is, by the customs and habits of the Hungarian nation, which differ materially, for example, from those of the German farmers on the one hand, and from those of the Rumanian peasants on the other. That is to say, a series of reactions tending to keep wheat off the market will be attended by an end result in Hungary characteristic of the Hungarians, whereas a similar series of reactions would not necessarily produce a similar effect in Rumania, where the end result would be typical of the very different racial characteristics of the Rumanian farmers. As a result of all this class of reactions, a certain portion of the wheat crop of every country, whether an exporting or an importing nation, remains immobile each year in contradistinction to the commercial portion of the crop which moves to market.

The acreage devoted to cereal-crop production in Hungary fluctuates relatively little from year to year, and the seed requirement deviates over a more restricted range than does the food and feed

requirement. The relations between crop production and export are considered to be the relation of net production (gross production of a given year less the seed requirement for the crop of the succeeding year) to the net export (gross exports less imports).

When the commercial portion of the crop begins to move from the farms of Hungary, an army of intermediaries appears to speed the grain along only as rapidly and only as far as it is profitable for them to handle it. Village gristmills and customs mills of county seats offer a strong barrier against the movement of wheat beyond local boundaries. Village and provincial bread requirements in Hungary are governed by food habits that are typical of Hungarian racial characteristics, which are distinctly different from the food habits of the Germans or the Rumanians. To supply the local bread and feed requirements, a large part of the local production is withheld from the large market centers where grain is concentrated in large or wholesale quantities. This grain is for the most part consumed as bread for humans and feeding stuffs for livestock, although there are losses all along the line, and always stocks of grain, meal, and flour of varying magnitude are carried over at the end of each season by local merchants and small customs mills.

In Hungary and in other countries in which large estates still operate, there is a marked difference in the quality of peasant and estate grain. Relatively little grain produced on small holdings, which is of low grade and lacks uniformity,²¹ flows beyond the local grist and customs mills. Only the best grade finds its way to the large market centers because the large buyers can make a profit only by handling the best. On the other hand, very little estate grain is ground locally, because it is of uniform grade and can be purchased in large quantities. The general quality of the grain produced on each estate in Hungary is known to the buyers, who usually contract for the entire crop in advance so that, as soon as threshed, estate grain begins to move to Budapest or some other large concentration center conveniently situated on the Danube or on some trunk line of commerce, for utilization by the large commercial mills or for export.

Before the World War, many of the large grain-handling firms and mills in the western and northwestern districts of the Austrian Empire maintained agents in the various production centers of the old Kingdom of Hungary to buy up the quantities and particular grades of hard wheat (steel wheat) that they required for blending with their softer local varieties. On the average, before the World War, about one-third of Hungary's wheat export was shipped abroad in the form of grain. About two-thirds of the export wheat was shipped abroad as flour by the great exporting mill combines of Budapest and from certain provincial milling centers, which maintained contacts with selling organizations in Vienna and in other cities of the Austrian Empire as well as in central Europe.

Under conditions of unrestricted commerce, the quantity of grain that the merchants and mills of a surplus country attempt to export

²¹ In Hungary, as in most parts of central and southeastern Europe, peasant holdings consist of long narrow strips of land. These strips of land are seeded (broadcast) by hand. If a peasant plants carefully selected seed it is improbable that his neighbors on the right and left will plant seed of equal quality. It is possible that the neighbor on the right will sow an entirely different kind of crop and the one on the left still another kind. The seed sown by each neighbor scatters over onto the field of the peasant lying between so that when this peasant harvests his grain it is usually of three qualities and may be an admixture of three different cereals. Attempts have been made to correct this evil, but to date these attempts have not been followed by a general reform.

does not take into conscious consideration any particular quantity of grain required for domestic utilization. The exporters attempt to buy up and ship from the country the maximum quantity of wheat that, in their opinion, will give them a profit. These operations are conducted in competition with local mills, which buy and grind for local and general domestic consumption the maximum quantity of wheat that, in their opinion, can be sold at a profit to the native population.

The reactions between cost at shipping point, freights, mill expenses, and the multitude of factors involved in transportation, processing, and merchandising interposed between the date of purchase and the date of final sale determine the accuracy of their guess and eventually fix the quantity handled.

There are two groups of agencies in competition in any surplus-producing country:

(1) The exporting organizations with foreign contacts strive to make the greatest possible profit by shipping abroad a maximum quantity of grain from any possible source. This quantity is modified by certain price considerations.

(2) The local organizations with domestic contacts strive to make as great a profit as possible out of the maximum quantity of grain that the domestic population, also governed by price considerations, will utilize.

Both groups, at the end of any one season, carry over within the country itself stocks of grain, meal, and flour, that fluctuate in magnitude from season to season. The quantity of grain that eventually finds its way abroad, as well as the quantity that disappears each year within the country itself, is the end result of several complex reaction series involving a vast number of fluctuating factors.

Before the World War the flow of grain and flour out of the old Kingdom of Hungary was almost exclusively in the direction of some center of demand in the former Austrian Empire. This flow was facilitated by lack of customs restrictions between the two countries, and the tariff regulations of the Dual Monarchy protected both Austrian and Hungarian grain from the sharpness of world competition. For this reason the annual amount of the grain flow depended upon the pressure of the accumulated supply in Hungary against the restraining barriers of the Hungarian domestic demand, as well as upon the pull or suction of the centers of demand in Austria, tending to break down restraining barriers, not only in Hungary, but in the other sources of supply, from which the deficit districts of the old Austrian Empire drew grain to satisfy their food and feed requirements.

CEREALS

In recent years the cash income of the peasant farmers and estate owners of Hungary has been derived more and more from the sale of animals and animal products. As a source of natural manure, the animal industry has been indispensable to the maintenance of soil fertility; nevertheless cereal production is still the chief occupation of the Hungarian farmer. Among cereals, wheat is outstandingly the most important crop produced.

WHEAT

Before the World War (1909-1913) the acreage seeded to wheat in the territory comprised within the present boundary of Hungary averaged 3,712,000 acres. In 1921-22 this acreage had decreased to 2,888,000 acres. The decrease in the wheat acreage, accompanied by drought, lack of fertilizers, lack of labor and farm power, lack of training on the part of the peasants, and lack of capital, all combined to reduce the net production of wheat during 1921-22 at least 18,000,000 bushels below the pre-war normal, and Hungary exported only 9,091,000 bushels of wheat in the form of grain and flour during the crop year. The following year, although net production increased 2,664,000 bushels, exports fell to about 5,000,000 bushels. (Table 8.) From then on exports more nearly assumed their pre-war importance.

TABLE 8.—Wheat: Statistical balances of Hungary, old boundary, 1904-5 to 1913-14; new boundary, average 1909-1913, and annual, 1920-21 to 1928-29

Crop year	Popula- tion ¹	Acreage ²	Seed ³	Production		Disappearance		Net exports ⁴
				Gross ⁵	Net ⁶	Statist- ical	Per capita	
Former boundary:	Number	1,000 acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushels	1,000 bushels
1904-5	19,907,331	9,130	26,349	146,918	120,375	-----	-----	⁷ 8,076
1905-6	20,070,524	9,197	26,543	170,588	143,113	-----	-----	⁸ 17,805
1906-7	20,233,717	9,520	27,475	207,758	182,428	117,205	5.79	65,223
1907-8	20,396,910	8,777	25,330	130,677	103,335	59,533	2.92	43,802
1908-9	20,560,103	9,474	27,342	165,424	140,030	97,489	4.74	42,841
Average 1906-7 to 1908-9	20,396,910	9,257	-----	167,953	141,931	91,409	4.48	50,522
1909-10	20,723,296	8,799	25,394	125,015	97,959	85,579	4.13	12,390
1910-11	20,886,487	9,375	27,056	181,138	154,896	109,650	5.11	48,046
1911-12	21,049,680	9,162	26,442	190,081	162,448	107,524	5.11	54,924
1912-13	21,212,873	9,575	27,633	184,639	160,013	107,496	5.07	52,517
1913-14	21,376,066	8,533	24,626	167,347	141,771	100,131	4.68	41,640
Average 1909-10 to 1913-14	21,049,680	9,089	-----	169,644	143,377	101,476	4.82	41,901
New boundary:	Estimated average 1909-1913	-----	-----	-----	-----	-----	-----	-----
Estimated average 1909-1913	7,606,971	3,712	10,542	71,493	60,951	40,462	5.32	⁹ 20,489
1920-21	7,980,143	2,662	7,560	37,927	29,725	29,731	3.73	¹⁰ -6
1921-22	8,065,537	2,888	8,262	52,715	42,713	33,622	4.17	9,091
1922-23	8,141,465	3,522	10,002	54,729	45,377	40,412	4.96	4,965
1923-24	8,221,149	3,293	9,352	67,705	57,768	41,370	5.03	16,368
1924-25	8,274,940	3,499	9,937	51,568	41,560	28,357	3.43	13,263
1925-26	8,368,273	3,524	10,008	71,675	61,150	41,667	4.69	19,483
1926-27	8,443,957	3,706	10,525	74,908	63,488	41,874	4.96	21,615
1927-28	8,519,641	4,021	11,420	76,933	65,195	43,704	5.12	21,491
1928-29	8,595,325	4,133	11,738	92,037	80,299	-----	-----	-----

¹ Population 1904-1909 estimated by interpolating the increase between 1900 (19,254,559) and 1910 as given in Magyar Statisztikai Evköny. 1915: 7. In 1900 there were 1,994,395 inhabitants in municipalities and 2,338,262 in 1910. 1911-1913 estimated by assuming the increase to be at the same rate as previous years. 1910 population for new boundaries used for 1909-1913 average, and 1920 from Recensement General de la Population de 1920: 28. 1921-1924 estimated by adding births and subtracting deaths as given in Statesman's Year-Book 1926 (3, p. 487)-to 1920 population. 1925 from Internat. Yearbook Agr. Statis. 1926-27: 2. 1926, 1927, and 1928 estimated by assuming that the same average yearly increase had occurred as between 1920 and 1925.

² Acreage and production from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.

³ Old boundary, 2.886 bushels per acre and new boundary 2.84 bushels per acre (10, p. 15).

⁴ Seed for acreages the following year subtracted from production for stated year, except average 1909-1913 and annual 1928-29.

⁵ Years beginning Aug. 1, 1904-5 to 1913-14, old boundary, from Ann. Internat. Statis. Agr. 1913-14: 420-427; 1920-21 from Ann. Internat. Statis. Agr. 1923. 1921-22 to 1927-28 from Internat. Yearbooks Agr. Statis. 1924-25 and 1927-28. Exports include wheat and wheat flour in terms of grain except as noted.

⁶ Does not include wheat flour.

⁷ Surplus.

⁸ Net imports.

INTERNATIONAL TRADE IN WHEAT

The old Kingdom of Hungary exported (net) on the average 41,901,000 bushels of wheat as grain and flour during the 5-year period ended July 31, 1914. During this period, the wheat and flour exports from the territory now constituting Hungary are estimated to have been equivalent to 20,489,000 bushels of wheat. A large portion of the wheat shipped from the outlying territories of the former Kingdom, which, since the World War, have become parts of Rumania and Yugoslavia, was exported up the Danube as grain to present Czechoslovakia and Austria, whereas most of the wheat shipped from the territories now comprising Hungary was exported as flour.

The drought of 1922 discouraged and even prevented the seeding of winter wheat for the crop of the succeeding season so that the total area of wheat in 1923 fell 229,000 acres below that of the previous year. The harvest of 1923 was comparatively favorable, and the net production of wheat nearly reached the pre-war average. In this year, the Government took direct charge of exports and, although a total of 16,398,000 bushels in the form of wheat and wheat flour was shipped abroad, domestic disappearance of wheat exceeded the pre-war normal. Then came the short crop of 1924. Net production was hardly sufficient to meet the food requirements of the nation. Nevertheless, 13,203,000 bushels of wheat were exported, forcing the city populations to go on very short supplies and the entire nation to resort to substitutes. Per capita disappearance dropped to 3.43 bushels. The harvest of 1925 was exceptionally good; but the agricultural industry and the country as a whole was engulfed in a crisis caused by a sharp decline in prices, illustrated by the rapid fall in the price of wheat during the 12 months ended December 31, 1925, according to the monthly quotations on the Budapest market as indicated in Table 9.

TABLE 9.—Wheat: Average price in Budapest, by months, January, 1922–December, 1925, and January, 1927–July, 1928

[See Table 54 for average values of the crown and pengő]

Month	1922		1922-23		1923-24		1924-25		1925-26		1926-27		1927-28	
	Crowns per quintal	Cents per bushel	Crowns per quintal	Cents per bushel	Crowns per quintal	Cents per bushel	Crowns per quintal	Cents per bushel	Crowns per quintal	Cents per bushel	Pengős per quintal	Cents per bushel	Pengős per quintal	Cents per bushel
August.....			6, 853	112	78, 020	212	406, 406	144	381, 677	145	(¹)		30, 58	145
September.....			8, 982	98	91, 216	248	414, 450	147	373, 177	142	(¹)		30, 92	147
October.....			11, 252	122	94, 776	258	449, 263	159	366, 227	140	(¹)		30, 52	145
November.....			10, 398	113	101, 263	276	460, 677	163	359, 200	137	(¹)		30, 33	144
December.....			10, 360	113	108, 198	294	496, 823	176	400, 833	153	(¹)		30, 71	146
January.....	2, 312	94	12, 454	136	133, 568	142	585, 917	215	(¹)		33, 00	157	31, 20	148
February.....	2, 460	100	12, 880	140	227, 877	205	587, 967	224	(¹)		34, 00	162	31, 72	151
March.....	2, 781	98	16, 103	131	310, 808	127	522, 852	199	(¹)		34, 51	164	33, 35	159
April.....	3, 140	111	23, 587	128	315, 469	120	513, 787	196	(¹)		(¹)		33, 94	161
May.....	3, 444	122	25, 955	141	339, 880	120	504, 734	192	(¹)		35, 00	166	34, 15	162
June.....	3, 933	118	33, 288	91	312, 061	102	519, 593	198	(¹)		32, 04	152	34, 20	162
July.....	5, 946	129	51, 275	140	358, 187	117	419, 011	160	(¹)		30, 13	143	29, 41	140

January, 1922, to July, 1928, from Inst. Internat. de Statist.—Bul. mensuel de l'Office Permanent.

¹ Not available.¹ End of month. From 3, p. 71.

In spite of this decline in wheat prices, the 1926 planting showed an increase over the preceding year and was only 6,000 acres below the 1909-1913 average. Production was higher than before the World War, being 74,908,000 bushels as compared with 71,675,000 in 1925 and an average of 71,493,000 during the 5-year period ended 1913. In 1927 there was a further increase in acreage and production, the former was 309,000 acres above the pre-war average, and the latter was 5,440,000 bushels above it.

Yields per acre were below those obtained before the World War, until the year 1925, when 20.3 bushels of wheat per acre were obtained, as compared with the pre-war average of 19.3 bushels. In 1926, the yield was 20.2 bushels per acre and in 1927, 19.1 bushels.

A comparison of the trade for the calendar year 1925 with that of the preceding year shows a marked increase in the export of wheat followed by a still greater increase during 1926. During 1926 Hungary exported 6,719,937 bushels of wheat to Austria, 4,180,726 bushels to Czechoslovakia, 2,915,264 bushels to Italy, 584,083 bushels to Germany, 292,940 bushels to Poland, and 83,823 bushels to Switzerland. The total export for the calendar year was 14,831,013 bushels, as compared with 8,007,875 bushels in 1925. Thus the rise amounted to about 85 per cent, but against this increased export of wheat stands a sharp decrease in wheat flour exports from 2,153,811 barrels in 1925 to 1,654,862 barrels during 1926. The total export figures for 1925 are from Annual International Statistics of Agriculture, 1925-26; the total export figures for 1926 are from Statisztikai Havi Közlemények, October, December, 1926.

TABLE 10.—Wheat and wheat flour:¹ Imports and exports of Hungary, 1904-5 to 1913-14 and 1919-20 to 1927-28

Year	Wheat		Wheat flour	
	Imports	Exports	Imports	Exports
Pre-war years:	<i>Bushels</i>	<i>Bushels</i>	<i>Barrels</i>	<i>Barrels</i>
1904-5.....	5,404,867	13,481,276		
1905-6.....	2,589,755	20,394,898		
1906-7.....	122,938	24,919,611	72,162	9,055,819
1907-8.....	449,533	16,221,568	92,762	6,321,496
1908-9.....	1,903,874	13,572,212	63,371	6,923,951
1909-10.....	22,405,111	7,525,564	139,732	6,197,252
1910-11.....	1,271,092	16,531,244	99,840	7,386,934
1911-12.....	1,331,288	18,609,223	69,938	8,435,784
1912-13.....	703,767	16,685,768	73,824	8,192,771
1913-14.....	7,911,773	16,313,996	159,642	7,545,699
Post-war years:				
1919-20.....	64,966	9,190	105,347	742
1920-21.....		1,775	63,525	51,823
1921-22.....	4,380	710,249	242	1,963,620
1922-23.....	223,455	70,301	141	1,137,580
1923-24.....	3,715	5,904,169	9	2,332,827
1924-25.....	649,787	4,739,111	1,998	2,027,243
1925-26.....	31,467	11,335,947	17	1,817,434
1926-27.....	592	14,471,604	17	1,587,492
1927-28.....	1,487	12,005,733	22	2,108,194

1904-5 to 1913-14 from Ann. Internat. Statist. Agr. 1913-14.
 1919-20 and 1920-21 from Ann. Internat. Statist. Agr. 1922-23.
 1921-22 from Ann. Internat. Statist. Agr. 1924-25.
 1922-23 and 1923-24 from Ann. Internat. Statist. Agr. 1925-26.
 1924-25 to 1927-28 from Ann. Internat. Statist. Agr. 1927-28.
 These data can not be considered comparable owing to frontier alterations during the period under review.

¹ Fiscal year Aug. 1 to July 31.

Trade in wheat was fairly brisk during the first half of 1927. The stagnation which had prevailed toward the end of the previous year,

gave place to an animated inquiry toward the end of January. This is explained by the fact that wheat in storage had been exhausted, and both Austria and Czechoslovakia, as well as the Hungarian mills, found it necessary to replenish their wheat supplies. Wheat was quoted at 33 pengös per quintal (157 cents per bushel) at the end of January; at the end of February, at 34 pengös; at the end of March at 34.50 pengös; and at the end of May, at 35 pengös per quintal, on an average of 164 cents per bushel. The world market however did not keep pace with these advances; the Chicago quotation for wheat, in the middle of January, was 143 cents and fell to 137 cents by the middle of February. For this reason Italy canceled a number of her earlier orders in Hungary. In June, the demand for wheat greatly subsided and, under the effect of favorable harvest prospects, prices fell to an average of 32.04 pengös during the month. (Table 9.)

Trade in wheat began at a slow rate immediately after the harvest of 1927. The farmers considered the market prices too low and were in no hurry to market their wheat; but as they needed money the storage of wheat against advances in cash underwent an unusual development.

Throughout the campaign, western markets evinced only a slight interest in Hungarian wheat, and prices remained low throughout the last six months of the year, fluctuating around 145 cents per bushel. On the other hand, the quotation in Chicago fell from 143 cents, on July 15, to 128½ cents at the end of December; that is, more than 10 per cent. For this reason Hungary was practically excluded from the export trade in wheat, greatly reducing the year's total, which was 23 per cent less than that of 1926, although it exceeded that of 1925. The detailed export data for the year 1927 were as follows: Czechoslovakia, 5,435,805 bushels; Austria, 4,378,361 bushels; Poland, 1,058,902 bushels; Italy, 431,470 bushels; Germany, 107,548 bushels; Switzerland, 12,860 bushels; Yugoslavia, 10,788 bushels; and Rumania, 658 bushels. (3, p. 71-72.)

MILLING

Next after Minneapolis, Budapest is said to be the largest milling center in the world. From the standpoint of capital invested, number of persons employed, ready accessibility of raw material needed, value of products, and general importance to the national economic structure of the State, flour milling easily takes first rank over all other industries in residual Hungary, representing fully 50 per cent of the total industrial activity of the country.

The commercial and export industry is centered at Budapest, where the first roller mill in the world is said to have been put into operation. There were 4 great mill combines at the capital, with a total capacity of 937,000 short tons annually. There were some 300 commercial mills scattered throughout the country districts in 1923. Grist and meal were ground for local consumption at several hundred small village mills driven by power from diverse sources.²²

²² There were 20,726 mills in the old Kingdom of Hungary in 1906. Of this number 2,040 were modern steam mills and 183 combined steam and water mills. There were 562 motor driven (oil and gas) mills. Windmills had decreased to about 700, and primitive animal-driven mills (trocken mühlen) to 651. Most of the mills were driven by water. Of a total of 16,590 such mills, 7,895 were fitted to grind only corn. These mills were found in the mountainous districts of Slovakia, Seven Mountains, Caras Severin, and Croatia. There were 3,747 water mills fitted to grind wheat and 2,278 specialized in rye. (Die ungarische Mühlenindustrie. An article in Magyar Közgazdaság és Kultura, 1913, p. 12.)

The total capacity of all flour mills in Hungary has been placed at 4,400,000 short tons, whereas the pre-war estimated production of bread grains within the present boundaries of the country was approximately 1,828,530 short tons of wheat and 741,692 short tons of rye. That is, before the World War, all of the locally produced wheat and rye in Hungary would, on the average, have supplied grist to keep the mills of the country running at 58.4 per cent of their registered capacity. It would have been necessary to have imported 1,830,000 short tons of grain, equivalent to about 61,000,000 bushels of wheat, to have kept these mills running at full capacity.

The great commercial flour industry of Hungary was the outgrowth of a demand in central Europe for a flour made from the hard wheat developed under the conditions of climate and soil found on the plains of Hungary called *Stahlweizen* or steel wheat, which possesses superior milling and baking qualities. The Austro-Hungarian Monarchical Government fostered the industry by perfecting the access of the Budapest mills to the great grain-surplus regions of Crisana and eastern Banat, now parts of Rumania, and of Voivodina, now part of Yugoslavia. On the other hand, this great milling center was favored by special privileges in the protected markets of Galicia, now part of Poland; in Bukovina, now part of Rumania; in Croatia, Slavonia, Slovenia, Bosnia, and Dalmatia now parts of Yugoslavia; and in the territories now comprising Czechoslovakia and in those constituting the Republic of Austria including the city of Vienna with a population of nearly 2,000,000.

The boundary lines established by the treaty of Trianon set up customs barriers that have cut off a large percentage of the pre-war supply of raw materials that had formerly been shipped from outlying districts to the mills now located in Hungary. In like manner, these mills have been cut off from fully 42,000,000 consuming population who had formerly looked to Hungary to supply flour to supplement their insufficient local production.

Before the World War, the population of Hungary consumed about 1.4 bushels of rye per capita each year. This is equivalent to 45.7 pounds of rye flour. They also consumed 5.32 bushels of wheat, which is equivalent to 231.7 pounds of wheat flour per capita per annum. The application of these norms to the 1926 population of Hungary indicates that had the pre-war normal bread requirement been consumed the national demand would have been for 978,232 short tons of wheat flour and 192,944 short tons of rye flour, representing about 26.6 per cent of the registered grinding capacity of all Hungarian mills.

The 1926 net production of wheat was equivalent to 1,390,000 short tons of flour²³ and that of rye to 431,000 short tons,²³ or 650,000 short tons more than would have been required to supply the Hungarian population with their pre-war per capita rate of consumption. The capacity of the Hungarian flour mills was thus sufficient not only to grind all of the domestic production of wheat and rye but an additional quantity of grain equivalent to 2,579,000 short tons of flour.

On the basis of the pre-war demand for flour in Hungary, the 1926 requirement would be about 26.6 per cent, whereas local production

²³ It is estimated that 4½ bushels of wheat will mill 1 barrel of wheat flour (196 pounds), and that 6 bushels of rye = 1 barrel of rye flour (196 pounds).

in the same year was equivalent to 41.4 per cent of the grinding capacity of the mills located in this territory.

Had Hungarian mills run at full capacity in 1926, they would have been required to import 58.6 per cent of the grain ground and to export at least 73.4 per cent of the flour produced. This is the crux of the present situation.

It is obvious that the economic development of Hungary is closely bound up with the milling industry. The great need of the animal industry of the country is concentrated feeding stuffs, and for this reason alone every pound of grain that can be obtained by the mills should be ground within the country itself, and the resulting bran and other by-products should be fed domestically to increase exportable surpluses of dairy and other animal products and to build up the fertility of the soil. The pursuit of any other policy is practically equivalent to diminishing a chance of future generations having a fair opportunity to earn a livelihood from that soil unless fertility is restored by use of commercial fertilizers.

Instead of pursuing a policy of developing the milling industry and facilitating the exportation of flour, the action taken by the Hungarian Government resulted in forcing the exportation of native wheat and placing the mills in the position where they either had to lie idle or import foreign wheat. Thus, in 1922, the milling industry was stagnated by the imposition of an export tax of 65 quintals of wheat on each 10 metric tons of flour, or 212 bushels for every 100 barrels of flour made from native wheat. Since there was a tax of only 8 quintals (29 bushels) of wheat per 10 metric tons of exported flour made from foreign wheat, the Budapest mills shipped in grain from Manitoba for milling and reexport, leaving domestically produced wheat to be consumed within the country itself or to be exported as grain.

The milling industry had barely adjusted its operation to this tax system when the Government abandoned this plan and levied a tax of 5 per cent on wheat purchased by mills, and an additional tax of 10 per cent was placed on all wheat milled. The foreign exchange obtained from the sale of flour abroad had to be turned over to the central foreign exchange committee at rates less than the regular market quotations. This so discouraged milling that the industry operated at only about one-fourth capacity. Under such conditions the Hungarian mills were unable to hold the markets in central Europe that had formerly been supplied almost exclusively with Hungarian flour, and this product was replaced to a large extent by flour from the United States and other countries. Flour from the United States was sold extensively in Czechoslovakia, Austria, and Dalmatia, where formerly the popular belief had been that no flour was equal to Hungarian for pastry purposes. This belief has been dispelled.

The following year, 1923, the milling industry received a further setback, for, under pressure for funds, the Hungarian Government was forced to take over the export of grain for its own account, greatly to the injury of both the millers and grain merchants of the country.

The Royal Hungarian Ministry for Public Provisioning passed a regulation standardizing flour at a lower grade than formerly was maintained at Budapest, and, thus, practically placed the quality of the flour produced by the Budapest mills on a parity with that produced in the Comitats, to the advantage of the latter. The small mills operate with smaller costs and also buy their grain, for the most

part, in the immediate neighborhood, and therefore at lower prices, and are indeed, in their own districts, the strongest competitors of the great mills. These great mills, at the capital, unable to meet competition in foreign markets on account of being hampered by export taxes in addition to milling taxes, thus found themselves unable to meet home competition on account of freight rates. Severe losses were suffered, both at home and abroad, and the mills became so involved in debts that, in 1925, two great combines went into bankruptcy.

In 1926, the competition of the small mills was carried into Budapest itself. The metropolitan mills worked up 213,053 short tons of wheat and rye, which, including fodder meal, corresponds to about 172,510 short tons of flour. During 1926, a total of 143,078 short tons of wheat flour and rye flour were shipped into Budapest, giving the city a gross supply of 315,588 short tons. Of this amount, 104,215 short tons of flour were exported, of which the Budapest mills supplied 96,215 short tons. This left 211,373 short tons as the net supply of the metropolis, of which only 76,295 short tons were ground by the great mills and 135,078 short tons were shipped in by the smaller, country mills.

The increased difficulty of marketing their products in 1926 reduced the quantity of grain ground by the Budapest mills and more important country mills (that rendered reports) to about 24.3 per cent of their annual grinding capacity.

The following year, two large mills were made over into wood-working plants for house-construction material; two others were transformed into warehouses; and one mill remodeled its machinery to polish rice. Many other mills stood idle during the whole or part of 1927.

The introduction of the 1-phase system of turnover tax—that is, the release of mill products, in traffic outside the mills, from the turnover tax—had also the result that the wholesale trade in flour and mill products, which for the first half of 1927 was almost condemned to inactivity through the still existing 2 per cent turnover tax, began slowly to recover and to share with the mills in the business of trading.

The natural markets for Hungarian flour are those of the two near-by States of Austria and Czechoslovakia, whose production of wheat and rye is insufficient to cover the food requirements of their own populations. Three conflicting sets of interests have developed in each of these countries. The city populations demand cheap bread, the farmers contend for a just compensation for their wheat, and the millers require a margin of profit on their locally produced flour. The sale of flour from the United States and Canada in each of these countries is also firmly established. Thus, in the face of tariffs to protect the farmer and the local miller, as well as the offerings of cheap overseas flour, the Hungarian mills will find it extremely difficult to reestablish themselves in the Alpine Provinces of Austria to the west or in Bohemia, Moravia, and Silesia, where the bulk of the output of the Budapest mills was sold before the World War. It is to the advantage of both Austria and Czechoslovakia, on the west and north, to grind as much wheat as possible within their own frontiers and to import as little flour as possible.

It is to the interest of Yugoslavia, on the south, to export less wheat and to develop its own milling industry sufficiently to supply

the needs of Dalmatia, Bosnia, Herzegovina, Montenegro, Slovenia, and western Croatia. Each of these territories was accustomed, before the World War, to look to Budapest for part of its flour requirement.

The needs of Bukovina, on the east, are now being met by the mills of Rumania, whereas Galicia, to the north, which formerly looked to central Hungary for a portion of its flour requirement, has covered its deficit by purchases at more readily accessible sources of supply, its customs tariffs being prohibitively high for Hungarian products.

The former Hungarian territories of Banat and Crisana, that are now parts of Rumania, possess great mills of their own and under favorable conditions are able to compete with Budapest for western and northern markets.

Hungarian flour has to struggle against high customs protection in nearly every customer country and to meet the competition of flour from 13 or 14 other countries, all of which have to face the fierce competition of the milling industry of the customer country itself.

The Hungarian milling industry will have to find new markets, but whether in Switzerland, Greece, France, or Brazil they will have to meet the competition of the world market. It is improbable that the milling industry of Hungary can recover its former position of importance among the industries of the country. Just as had occurred in Czechoslovakia, it is probable that many mills in Hungary will be abandoned and dismantled. Those mills that survive this crisis will be forced to reorganize their business in the face of strong competition from American flour, which has established a reputation for quality among the bakers and housewives of Europe who formerly held Hungarian flour indispensable to their needs. This reorganization will probably be in the direction of combining the milling interests under fewer administrative units to cut down the costly overhead.

THE RELATION OF PRODUCTION AND DISAPPEARANCE TO THE EXPORT OF WHEAT

In countries of surplus production in southeastern Europe, where the export of cereals is a factor of first importance to the balance sheet of international trade, it is customary for governments to issue, during the summer, statements regarding the probable exportable surplus of wheat, rye, etc., from the crop about to be harvested. These statements are, customarily, calculated from a hypothetical consumption norm based upon averages of past years. Such forecasts may or may not approximate the export that follows the marketing of the crop. Many modifying factors may inject themselves into the situation during the 12 months following the harvest. Among these factors are the price situation as regards wheat and rye in an exporting country in relation to prices in customer and competing countries; fluctuations in exchange rates, shifts in tariffs and trade regulations both at home and abroad; the geographic relation of surplus areas to deficit areas within the country itself and to the consuming centers of customer countries; the relative size of the wheat surplus to the size and price of substitute products such as rye or potatoes. The continual play of changes in these and other factors tends to modify any estimate that may be made regarding the probable domestic requirement and the probable exportable surplus in their relation to the pro-

duction in any given crop year. Nevertheless, there are certain basic principles of relationship existing among production, disappearance, and export that can be expressed mathematically in such a way as to aid in analyzing or at least in visualizing the interplay of factors that affect the movement of farm products across international frontiers.

Production, exportation, and domestic disappearance are quantitative phenomena described by numbers; as, for example, numbers of bushels, barrels, or other units of weight or measure. For that reason, whatever shifts take place in the relationships among these quantities from year to year are reflected by the numerical relationships among the figures that express the quantities of wheat produced, or exported, or that have disappeared. Whenever a distinct or even approximate relationship can be shown, it is a help in analyzing the situation arising out of that relationship if the mathematical expression which describes it is available (11).

Domestic disappearance of wheat is the result chiefly of its utilization as human food or as seed, although a variable quantity is always stored. The quantity of seed used from the crop of any given year depends upon the area planted for the crop of the succeeding season. The quantity consumed as human food depends chiefly upon the number of inhabitants or consuming units within the country during the crop year. Usually there is little or no direct relationship between the annual fluctuations in these two groups of factors affecting disappearance of wheat. It has therefore been deemed expedient to consider the relationships of production, exportation, and disappearance from the viewpoint of net production; that is, production less seed (as noted above), in its relations to net exports and consequently to net disappearance. The human element can, also, be taken into numerical considerations and, therefore, the relation of per capita net production (*P*) to per capita net exports (*E*) and to per capita net disappearance (*D*), will be analyzed, in which $P - E = D$.

The relationships that existed among production, export, and disappearance of wheat in the old Kingdom of Hungary during the five years 1909-10 to 1913-14 will be briefly discussed as a background against which to picture the changes which have taken place in the situation following the World War. The figures representing per capita net production and per capita net disappearance for each year of the pre-war period are given in columns 2 and 3 of Table 11.

TABLE 11.—Wheat: Per capita net production and per capita net disappearance in the old Kingdom of Hungary, 1909-10 to 1913-14

Crop year	Per capita net production	Per capita net disappearance	<i>P</i> <i>D</i>	<i>P</i> ¹	<i>D</i> ¹
	<i>P</i>	<i>D</i>			
	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>
1909-10.....	4.73	4.13	19,5349	22,3729	17,0569
1910-11.....	7.41	5.11	37,8651	54,9081	26,1121
1911-12.....	7.72	5.11	39,4492	59,5984	26,1121
1912-13.....	7.54	5.07	38,2278	56,8516	25,7049
1913-14.....	6.63	4.68	31,0284	43,9569	21,9024
Total (Σ).....	34.03	24.10	166,1054	237,6879	116,8884

A casual inspection of the figures under *P* and *D*, in Table 11, reveals a relationship between these two sets of variables. In general a year of low production (as in 1909) was associated with a 12-month period of low disappearance, and the year of maximum production (1911) was associated with 12 months during which disappearance was also maximum.

These numbers have been plotted in the scatter diagram, Figure 2, each dot representing the relation between per capita net production and per capita net disappearance. It is evident from this diagram that, in general, the crop years in which production was successively greater than in 1909 were associated with 12-month periods during which disappearance was successively greater than that during the 12 months August 1, 1909, to July 31, 1910.

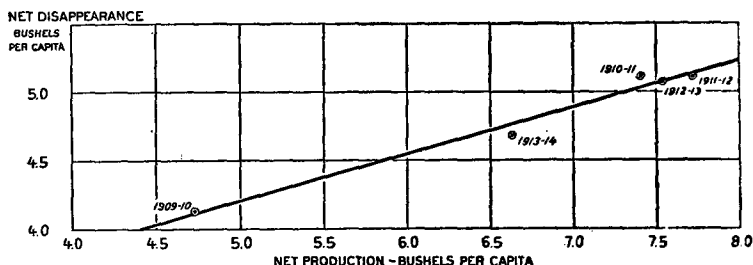


FIGURE 2.—RELATION BETWEEN PER CAPITA NET PRODUCTION AND PER CAPITA NET DISAPPEARANCE OF WHEAT IN THE OLD KINGDOM OF HUNGARY 1909-10 TO 1913-14

Before the World War, the fluctuations in per capita disappearance of wheat in the old Kingdom of Hungary bore a close relationship to fluctuations in production. The trend of this relationship is apparently a straight line.

If the Hungarian people had consumed as food, feed, or seed, or had stored or caused to disappear in some other manner all of the crop each succeeding year so that there was no wheat exported, the ratio of variation between disappearance and production would have been 1 to 1 and every point on a scatter diagram picturing the situation of that year would have been located in a straight line with a slope of 45°. Before the World War, the export organizations of the old Kingdom of Hungary shipped abroad a greater or less quantity of wheat as grain and flour depending upon the availability of the product and the margin of profit involved. This varying export tended to produce a relationship between disappearance and production not in the ratio of 1 to 1 but in the ratio of something less than 1 to 1. During the pre-war period, this relationship was analogous to a trend which apparently (fig. 2) can be represented by a straight line. Such a straight line could be fitted by inspection, but a more accurate result will be obtained if this line is fitted to the points on the scatter diagram by a modification of the method of least squares that brings out the average correlative relationship between the two sets of variables (*P*) and (*D*).

This calls for a solution of the following normal equations, which can be solved by substituting numerical values derived from the data as arranged in Table 11:

$$\begin{aligned}\Sigma (D) &= na + b\Sigma (P) \\ \Sigma (DP) &= a\Sigma (P) + b\Sigma (P^2)^{24}\end{aligned}$$

²⁴ The reader is referred to (11, pp. 366, 400) for the discussion of principles.

Substituting gives

$$24.10 = 5a + 34.03b$$

$$166.1054 = 34.03a + 237.6879b$$

Solving,

$$a = 2.49$$

$$b = 0.342$$

The required equation is

$$D' = bP + a$$

$$D' = 0.342P + 2.49$$

The estimated per capita net disappearance under average conditions (D') associated with the production of each crop year in the old Kingdom of Hungary during the period 1909-10 to 1913-14 is given in column 4 in Table 12. These values for D' all fall in the straight line of average relationship plotted in Figure 2.

TABLE 12.—Wheat: Estimated per capita net disappearance under average conditions contrasted with observed per capita net disappearance in the old Kingdom of Hungary, 1909-10 to 1913-14

Crop year	Per capita net production	Production multiplied by ratio of variation	Estimated per capita net disappearance under average conditions	Observed per capita net disappearance	Difference between estimated and observed	$(D - D')$
	P	bP	$bP + a = D'$	D	$D - D'$	
	Bushels	Bushels	Bushels	Bushels	Bushel	Bushel
1909-10.....	4.73	1.62	4.11	4.13	+0.02	0.0004
1910-11.....	7.41	1.54	5.03	5.11	+ .08	.0064
1911-12.....	7.72	2.64	5.13	5.11	-.02	.0004
1912-13.....	7.54	2.58	5.07	5.07	.00	.0000
1913-14.....	6.63	2.27	4.76	4.68	-.08	.0064
Total (Σ).....						.0136

¹ a is an algebraically negative quantity in this case.

If the relationship had been perfect, the observed disappearance associated with each crop year would also lie on the line of average relationship, and the equation could be used as an accurate instrument for determining the disappearance that would be associated with the production of any given year. But the observed disappearances are scattered or dispersed more or less above and below the line of estimated disappearances or the line of average relationship. Confidence in the accuracy with which the equation describes the relationship between disappearance and production for this particular period of years depends upon the amount of this scattering or dispersion, expressed as an average, which may be called the standard error of estimate, represented by the symbol S .

In computing S , we must know the normal value of D' (as given in column 4 of Table 12), which corresponds with the production of each crop year, P . The difference between the actually observed per capita net disappearance D and the normally to be expected disappearance

under average conditions ($D-D'$) may then be determined. The root-mean-square of these deviations $\pm \sqrt{\frac{\sum(D-D')^2}{n}}$ is the required measure of dispersion.

Substituting gives

$$S = \pm \sqrt{\frac{0.0136}{5}}$$

$$S = \pm 0.052154$$

This means, if the distribution of observed disappearance is normal, that about 68 per cent of all cases will range within a vertical distance equivalent to 0.052 bushel above or below the line of average relationship, about 95 per cent will fall within a range of $\pm 2 S$ (in this case ± 0.104 bushels), and 99 per cent will fall within a range of $\pm 3 S$ (in this case ± 0.156 bushels (11)).

During the pre-war period, the population of the old Kingdom of Hungary averaged 21,050,000, whose wheat requirement, as measured by statistical disappearance, averaged 101,476,000 bushels. If the average relationship, outlined above, had been employed to estimate disappearance this estimate would be expected to approximate the calculated disappearance within a range of $\pm 3,300,000$ bushels more or less or within 3.3 per cent in 99 cases out of 100. In 95 per cent of all cases, the range would probably have been about $\pm 2,200,000$ bushels or 2.2 per cent; whereas, in about two-thirds of all cases, the range would have been about $\pm 1,100,000$ bushels or 1.1 per cent. The maximum difference between estimated and observed pre-war disappearance (Table 12, column 5) was ± 0.08 bushel per capita; which was averagely equivalent to 1,684,000 bushels or 1.7 per cent.

The pre-war export trade in wheat in Hungary was even better organized than the domestic sale of flour and bread, and for that reason, as indicated in Table 13; and in Figure 3, there was a close relationship between production and export. As a rule the Hungarian people consumed more wheat in years of high production than averagely customary; but they also exported more. In years of less than average production they consumed and exported less than an average amount of wheat.

TABLE 13.—Wheat: Per capita net production and per capita net export in the old Kingdom of Hungary, 1909-10 to 1913-14

Crop year	Per capita net production	Per capita net export	EP	P'	E'
	P	E			
	Bushels	Bushels	Bushels	Bushels	Bushels
1909-10.....	4.73	0.60	2,8390	22,3729	0,3600
1910-11.....	7.41	2.30	17,0430	54,9081	5,2900
1911-12.....	7.72	2.61	20,1492	59,5984	6,8121
1912-13.....	7.54	2.47	18,6238	56,8516	6,1009
1913-14.....	6.63	1.95	12,9285	43,9569	3,8025
Total (Σ).....	34.03	9.93	71,5825	237,6879	22,3855

The normal equations descriptive of the relationship of production to export are the same as those pertaining to production and disappearance, except that E is substituted for D , thus:

$$\Sigma(E) = na + b\Sigma(P)$$

$$\Sigma(EP) = a\Sigma(P) + b\Sigma(P^2)$$

Substituting values from Table 13 gives

$$9.93 = 5a + 34.03b$$

$$71.5825 = 34.03a + 237.6879b$$

$$a = -2.49$$

$$b = 0.658$$

$$E' = 0.658P - 2.49$$

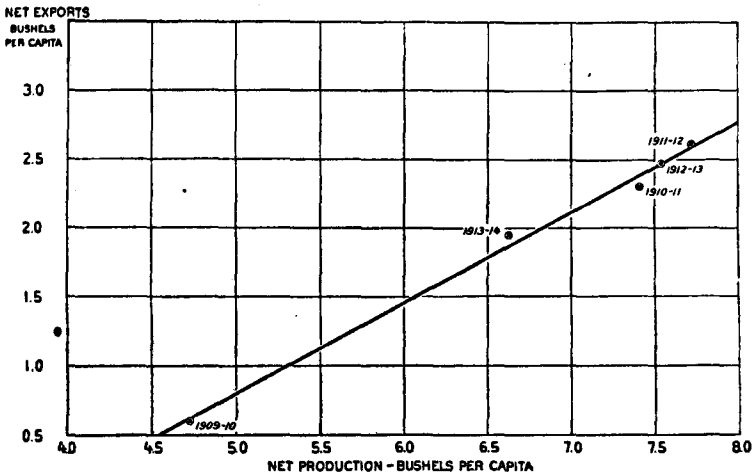


FIGURE 3.—RELATION BETWEEN PER CAPITA NET PRODUCTION AND PER CAPITA NET EXPORTS OF WHEAT IN THE OLD KINGDOM OF HUNGARY 1909-1910 TO 1913-14

Before the World War, fluctuations in per capita net exports from the old Kingdom of Hungary tended to bear as close or casual relationship to fluctuations in production, as did the fluctuations in per capita net disappearance. (Fig. 2)

The estimated per capita net export under average conditions (E') coincident with the production of each crop year in the old Kingdom of Hungary during the period 1909-10 to 1913-14 is given in column 4 in Table 14. These values for E' all fall in the straight line of average relationship plotted in Figure 3.

TABLE 14.—Wheat: Estimated per capita net export under average conditions contrasted with observed per capita net disappearance in the old Kingdom of Hungary, 1909-10 to 1913-14

Crop year	Per capita net production	Production multiplied by ratio of variation	Estimated per capita net export under average conditions	Observed per capita net export	Difference between estimated and observed	$(E-E')$ ¹
	P	δP	$\delta P + a^1 = E'$	E	$E - E'$	
	Bushels	Bushels	Bushels	Bushels	Bushel	Bushel
1909-10.....	4.73	3.11	0.62	0.60	-0.02	0.0004
1910-11.....	7.41	4.87	2.38	2.30	-0.08	.0004
1911-12.....	7.72	5.08	2.59	2.61	+0.02	.0004
1912-13.....	7.54	4.96	2.47	2.47	.00	.0000
1913-14.....	6.63	4.36	1.87	1.95	+0.08	.0004
Total (Σ).....						.0136

¹ a is an algebraically negative quantity in this case.

Substituting in the equation $S = \pm \sqrt{\frac{\Sigma(E-E')^2}{n}}$ gives:

$$S = \pm \sqrt{\frac{0.0136}{5}}$$

$$S = \pm 0.052$$

The standard error of estimate in the case of exports is identical with that in the case of disappearance in the old Kingdom of Hungary before the World War. As in the case of per capita net disappearance, this indicates that in about two-thirds of all cases, under pre-war conditions, per capita net export could be expected to range about 1,100,000 bushels above or below that estimated by the equations here given. Before the World War the old Kingdom exported 41,901,000 bushels of wheat as grain and flour, and the range of 1,100,000 bushels represents 2.6 per cent of the average export. The maximum difference between estimated and observed pre-war exports (Table 14, column 5) was ± 0.08 bushel per capita; which was an equivalent to 1,684,000 bushels, or 4 per cent.

If history repeated itself, this sort of analysis of the relations of production to disappearance and exportation would predict with mathematical precision the disposition of the wheat crop to be expected, on an average, for any current year. Sometimes history does repeat itself, especially during a period of settled food habits and commercial procedure. In such countries as pre-war Hungary, France, and Rumania, conditions of production and disappearance ranged within rather well-defined limits for several years in succession so that during those years an analysis of data pertaining to production, international trade, and disappearance, similar to that outlined above, might give dependable results.

But changed conditions are followed by changes in the relationships of disappearance to production so that these relationships may become strikingly different from those that have been typical of preceding periods. The upheaval of the World War has, naturally, been followed by fundamental changes in the relationships of production to the ultimate disposition of the crop.

In the first place, Hungary was partitioned; then the country passed through a governmental crisis, followed by a series of financial disturbances. The Government even undertook to supervise the grain trade and a Ministry of Public Provisioning undertook to regulate the manner in which the population nourished itself. However, when the averages of per capita production, exportation, and disappearance in Hungary, present boundary, for the five years 1922-23 to 1926-27 (Table 15) are compared with those of the old Kingdom for the 5-year period 1909-10 to 1913-14, the differences are not great. The per capita net production of wheat in the old Kingdom before the World War was 6.81 bushels, as compared with the post-war average for residual Hungary of 6.49 bushels. The pre-war per capita net exports averaged 1.99, as compared with 1.82 for the post-war period. Per capita net disappearance of the old Kingdom averaged 4.82 bushels during 1909-10 to 1913-14, as compared with an average of 4.67 bushels during 1922-23 to 1926-27 in present-day Hungary.

TABLE 15.—Wheat: Per capita net production, export and disappearance, old Kingdom of Hungary, 1909-10 to 1913-14, and Hungary present boundary, 1920-21 to 1926-27

Crop year	Per capita net		
	Production	Export	Disappearance
	<i>P</i>	<i>E</i>	<i>D</i>
Old Kingdom of Hungary:			
1909-10.....	4.73	0.60	4.13
1910-11.....	7.41	2.30	5.11
1911-12.....	7.72	2.61	5.11
1912-13.....	7.54	2.47	5.07
1913-14.....	6.63	1.95	4.68
Average 1909-10 to 1913-14.....	6.81	1.99	4.82
Hungary present boundary:			
1920-21.....	3.72	0.01	3.73
1921-22.....	5.30	1.13	4.17
1922-23.....	5.57	0.61	4.96
1923-24.....	7.03	2.00	5.03
1924-25.....	5.02	1.60	3.42
1925-26.....	7.31	2.33	4.98
1926-27.....	7.52	2.56	4.96
Average 1922-23 to 1926-27.....	6.49	1.82	4.67

A superficial inspection of the figures in Table 15 reveals a close relationship between production (*P*) and export (*E*), in Hungary, present boundary, whereas there is apparently little relationship between (*P*) and (*D*). The crop year 1924-25 is an exception. In 1922, the Hungarian Government took direct charge of exportations, and by 1923 the Government's buying organization was perfected to ship the largest possible quantity of wheat and flour out of the country. Although the crop of the year 1924-25 was very poor, the Government's buying organization purchased and exported nearly the same quantity of wheat and flour that they shipped abroad during 1923-24, leaving the nation to go on short rations, as there had also been a sharp falling off in the production of rye. This created an abnormal situation in the relationships of disappearance and export to the production of that crop year.

Under the conditions prevailing in Hungary during the four seasons 1922-23, 1923-24, 1925-26, and 1926-27 the Government, and those organizations that operated under governmental regulations, tended to leave within the country for domestic utilization about the same minimum quantities of wheat and flour each season and exported as much of the surplus as possible so that this exported quantity was necessarily very nearly proportional to the production.

The postwar trend in disappearance and export is therefore best described by the relationships of this group of variables if the low disappearance under the abnormal conditions of 1924-25 is excluded. The relationships between production and export for the four remaining years are indicated in Table 16.

TABLE 16.—Wheat: Per capita net production and per capita net export in Hungary, present boundary, 1922-23, 1923-24, 1925-26, 1926-27

Crop year	Per capita net production	Per capita net exports	EP	P'	E'
	P	E			
	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>
1922-23.....	5.57	0.61	3.3977	31.0249	0.3721
1923-24.....	7.03	2.00	14.0600	49.4209	4.0000
1925-26.....	7.31	2.33	17.0323	53.4361	5.4269
1926-27.....	7.52	2.56	19.2512	56.5504	6.5506
Total (Σ).....	27.43	7.50	63.7412	190.4323	18.3546

If the totals of the columns in Table 16 are substituted in the normal equations, given on page 37, it is seen that:

$$E' = 0.9909 P - 4.92$$

This means that, during the four crop years 1922-23, 1923-24, 1925-26, and 1926-27, a given per capita net production (P) was accompanied, on an average, by a per capita net export equivalent to 99.09 per cent of (P) minus 4.92 bushels.

The estimated per capita net export of wheat under average conditions (E') coincident with the per capita net production of each of the four crop years under consideration is given in column 4 in Table 17. These values for (E') all fall in the straight line of average relationship plotted in Figure 4.

TABLE 17.—Wheat: Estimated per capita net export under average conditions contrasted with observed per capita net export in Hungary, present boundary, 1922-23, 1923-24, 1925-26, and 1926-27

Crop year	Per capita net production	Production multiplied by ratio of variation	Estimated per capita net export under average conditions	Observed per capita net export	Difference between estimated and observed	$(E - E')$
	P	δP	$\delta P + a' = E'$	E	$E - E'$	
	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushel</i>	<i>Bushel</i>
1922-23.....	5.57	5.52	0.60	0.61	+0.01	0.0001
1923-24.....	7.03	6.97	2.05	2.00	-.05	.0025
1925-26.....	7.31	7.24	2.32	2.33	+ .01	.0001
1926-27.....	7.52	7.45	2.53	2.56	+ .03	.0009
Total (Σ).....						.0036

¹ a is an algebraically negative quantity in this case.

The standard error of estimate is found by substituting in the equation $S = \pm \sqrt{\frac{\Sigma (E - E')^2}{n}}$ gives:

$$S = \pm \sqrt{\frac{0.0036}{4}}$$

$$S = \pm 0.03$$

This means that in about two-thirds of all cases in which the average conditions of these four years prevail, the export, estimated by the equation $E' = 0.9909 P - 4.92$, should approximate the observed export—within a range of 0.03 bushel per capita.

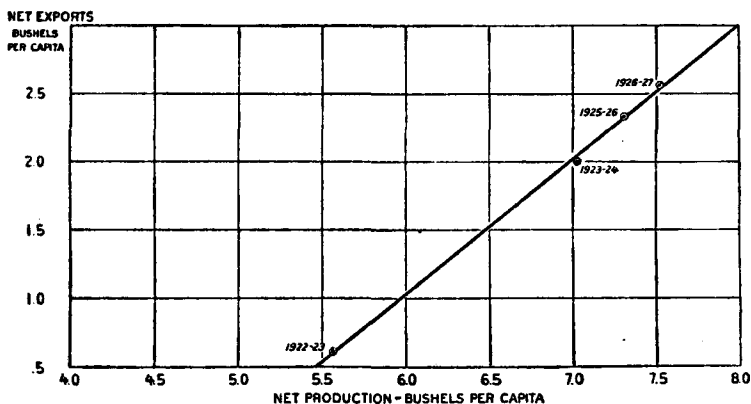


FIGURE 4.—RELATION BETWEEN PER CAPITA NET PRODUCTION AND PER CAPITA NET EXPORTS OF WHEAT IN RESIDUAL HUNGARY, 1922-23, 1923-24, 1925-26, AND 1926-27

During the four years, 1922-23, 1923-24, 1925-26, and 1926-27 per capita net disappearance in residual Hungary tended to remain of a very nearly constant level so that the fluctuations in per capita net exports tended to bear an almost direct proportional relationship to the fluctuations in production.

If the conditions prevailing during the season 1927-28 did not differ materially from the average conditions that prevailed during this 4-year period, there would be a chance of 68 to 100 that the relations between production and exportation during 1927-28 would be similar within the margin of ± 0.03 bushel per capita to the average relations that existed between production and exportation during the period. Any estimate based upon the above probability could be expected to hold true only in so far as actual conditions of the crop year 1927-28 approximated average conditions. A material change in any of the factors involved would produce a change in result, causing the actual per capita net exports to deviate from the calculated net exports or expectancy by a margin greater than the calculated value of $S = \pm 0.03$ bushel per capita, as was the case in 1923-24.

The net production of wheat in Hungary, 1927, was 7.65 bushels per capita. The estimated per capita net export under average

conditions for the crop year 1927-28 is found by substituting in the normal equation above; which gives

$$E' = 7.65 \times 0.9909 - 4.92$$

$$E' = 2.66$$

The probable per capita net export under average conditions for the year 1927-28 is, thus, estimated to be 2.66 bushels. Multiplying 8,520,000, the estimated population of Hungary for 1927-28, by 2.66 bushels gives 22,663,000 bushels as the net export to be expected during 1927-28 if average conditions prevailed.

Preliminary reports for the 12 months ended July 31, 1928, indicate net exports of wheat and flour from residual Hungary, in terms of wheat, to be approximately 21,491,000 bushels or 1,172,000 bushels below the estimated expectancy under average conditions.

Under the average conditions of the four years 1922-23, 1923-24, 1925-26, and 1926-27 there was a probability of about 68 to 100 that the observed export would approximate the estimated export within a range of ± 0.03 bushel per capita or $\pm 256,000$ bushels. There was a probability of 95 to 100 that the range would fall within $\pm 511,000$ bushels and a probability of 99 to 100 that the range would be not greater than $\pm 767,000$ bushels.

The fact that the actual exports from Hungary during 1927-28 fluctuated 405,000 bushels below the lower level of expectancy is associated with the relative price levels in Hungary, Austria, and Czechoslovakia. This downward fluctuation is, also, associated with the shortage of the domestic rye crop and relatively high rye prices, which probably increased the domestic demand for wheat.

During 1926 the average price of domestic wheat in Budapest was equivalent to \$1.51 per bushel, as compared with \$1.57 in Vienna and \$1.77 in Prague; and wheat moved up the Danube to Austria and Czechoslovakia. The average price relationships during 1927 were \$1.52 in Budapest, \$1.57 in Vienna, and \$1.93 in Prague. The margin between the price of wheat in Hungary and that in the upper Danube States narrowed toward the close of the year and wheat moved more slowly toward Czechoslovakia and not at all toward Vienna, where, during the first three months of 1928, the average price was equivalent to \$1.53 per bushel, as compared with \$1.53 in Budapest. The price of wheat improved steadily during April, May, and June, but during these months Czechoslovakia offered a better price for rye on a weight basis than for wheat. Consequently an abnormal situation was created. The exports of rye greatly exceeded expectancy, whereas less wheat was exported than might have been expected from the increased production of 1927. At the same time domestic disappearance of wheat reached the highest point since the World War. Rye and wheat are so intimately associated in the dietary and trade of central Europe that the situations in wheat can not be described without taking into consideration the situation in rye.

TABLE 18.—Wheat: Acreage and production in Hungary, 1877–1928

Year	Hungary (proper)			Croatia and Slavonia			Total Hungary		
	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre
	1,000 acres	1,000 bushels	Bushels	1,000 acres	1,000 bushels	Bushels	1,000 acres	1,000 bushels	Bushels
Pre-war year:									
1877	5,972	176,910	12.88				5,972	76,910	12.88
1878	6,185	108,619	17.56				6,185	108,619	17.56
1879	6,091	52,217	8.57				6,091	52,217	8.57
1880	5,958	179,325	13.21				5,958	79,325	13.21
1881	6,262	188,897	14.20				6,262	88,897	14.20
1882	6,163	131,757	21.38				6,163	131,757	21.38
1883	6,437	190,548	14.07				6,437	90,548	14.07
1884	6,798	107,217	15.77				6,798	107,217	15.77
1885	6,773	114,735	16.94	400	5,324	13.31	7,173	120,059	16.74
1886	6,830	103,701	15.18	400	5,328	13.32	7,230	109,029	15.08
1887	6,862	147,161	21.45	415	5,346	12.88	7,277	152,507	30.96
1888	6,845	136,990	20.01	427	6,015	14.09	7,272	143,005	19.67
1889	7,193	94,313	13.11	445	4,920	11.06	7,638	99,233	12.99
1890	7,361	149,318	20.29	465	6,790	14.60	7,826	156,108	19.95
1891	7,443	140,470	18.87	487	6,662	13.68	7,930	147,132	18.55
1892	7,571	143,773	18.99	616	7,139	13.84	8,087	150,912	18.96
1893	8,100	100,612	19.83	549	8,201	14.94	8,649	168,813	19.52
1894	7,917	145,588	18.39	566	8,837	15.61	8,483	154,425	18.20
1895	7,742	163,291	21.09	561	8,583	15.30	8,303	171,874	20.70
1896	7,724	151,643	19.63	586	9,575	16.34	8,310	161,218	19.40
1897	6,869	81,074	11.80	576	6,140	10.66	7,445	87,214	11.71
1898	7,554	128,227	16.97	605	11,409	18.86	8,159	139,636	17.11
1899	7,803	141,285	18.11	635	9,013	14.19	8,438	150,298	17.81
1900	8,142	141,201	17.34	665	11,034	16.59	8,807	152,235	17.29
1901	8,196	122,935	15.12	670	10,692	15.96	8,866	134,627	15.18
1902	8,263	170,882	20.68	687	12,019	17.49	8,950	182,901	20.44
1903	8,513	161,954	19.02	714	14,664	20.54	9,227	176,618	19.14
1904	8,401	137,078	16.32	729	9,840	13.50	9,130	148,918	16.09
1905	8,443	157,511	18.66	754	13,077	17.34	9,197	170,588	18.55
1906	8,784	197,407	22.47	736	10,351	14.06	9,520	207,758	21.82
1907	8,069	120,507	14.93	708	10,170	14.36	8,777	130,677	14.89
1908	8,715	162,204	17.46	759	13,220	17.42	9,474	165,424	17.46
1909	8,036	113,353	14.11	763	11,662	15.28	8,799	125,015	14.21
1910	8,584	169,703	19.77	791	11,435	14.46	9,375	181,138	19.32
1911	8,354	174,891	20.94	808	15,190	18.80	9,162	190,081	20.75
1912	8,748	173,326	19.81	827	11,313	13.68	9,575	184,639	19.28
1913	7,700	151,849	19.66	833	15,998	19.21	8,533	167,347	19.61
War years:									
1914	8,016	105,240	13.13	846	12,537	14.82	8,862	117,777	13.29
1915	8,081	148,755	18.41	798	8,892	11.14	8,879	157,647	17.76
1916	7,628	112,253	14.72	764	8,209	10.74	8,392	120,462	14.35
1917	7,826	123,231	15.75	(¹)	(¹)		7,826	123,231	15.75
1918	7,678	95,095	12.39	(¹)	(¹)		7,678	95,095	12.39
Post-war years:									
1919	(²)	(²)	(²)	(²)	(²)		(²)	(²)	(²)
1920	2,662	37,927	14.25	(²)	(²)		2,662	37,927	14.25
1921	2,888	52,715	18.25	(²)	(²)		2,888	52,715	18.25
1922	3,522	54,729	15.54	(²)	(²)		3,522	54,729	15.54
1923	3,293	67,705	20.56	(²)	(²)		3,293	67,705	20.56
1924	3,499	51,568	14.74	(²)	(²)		3,499	51,568	14.74
1925	3,524	71,675	20.34	(²)	(²)		3,524	71,675	20.34
1926	3,706	74,908	20.21	(²)	(²)		3,706	74,908	20.21
1927	4,021	76,933	19.13	(²)	(²)		4,021	76,933	19.13
1928	4,133	92,037	22.27	(²)	(²)		4,133	92,037	22.27

Acreage and production:

- 1877–1896 from Das Getreide in Weltverkehr, Austria 1900: 50–53.
- 1897–1904 from Das Getreide in Weltverkehr, Austria 1905: 20–21.
- 1905–1906 from Das Getreide in Weltverkehr, Austria 1909: 16–17.
- 1907–1908 from Magyar Statisztikai Évkön. 1910: 100–101.
- 1909–1912 from Magyar Statisztikai Évkön. 1913: 87–88.
- 1913–1915 from Magyar Statisztikai Évkön. 1915: 86–87.
- 1916–1918 from Ann. Statist. Hongrois 1916, 1917, 1918: 40–44, 47–52.
- 1920 from Ann. Statist. Hongrois 1919–1922: 56, 60.
- 1921–1928 from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.

¹ Winchester bushels converted from hectoliters. ² Ceded to Yugoslavia. ³ Not available.

RYE

Before the World War the territories comprised within the present boundaries of Hungary seeded 1,608,000 acres of rye. In 1921, there were only 1,341,000 acres under rye, since which time acreage increased to 1,729,000 acres in 1926, falling off to 1,641,000 in 1928.

Post-war yields per acre have averaged (1922-1926) about 17.06 bushels, as compared with an average of 19.51 bushels during 1909-1913. The year 1927 was not favorable to rye production, and the yield per acre fell off to 13.5 bushels.

Net production, except for the years 1925 and 1928, have not come up to the pre-war average. On the other hand, per capita disappearance has averaged about one-half bushel greater than was normal before the World War. These varying factors have resulted in a falling off in the exportable surplus. As indicated in Table 19, the exports in 1925-26, the season of post-war maximum production were only 6,950,000 bushels, or about 44 per cent of the surplus estimated to have been available for export before the war. The exportation of rye from Hungary has, however, been somewhat irregular, as evidenced by the fact that although the production of 1926 was somewhat lower than that of 1925 the net exports of 1926-27 were over 3,000,000 bushels greater than those during the preceding season.

TABLE 19.—Rye: Statistical balances of Hungary, old boundary, 1904-5 to 1913-14; new boundary, average 1909-1913, and annual, 1920-21 to 1928-29

Crop year	Acreage ¹	Seed ²	Production		Disappearance		Net exports ³
			Gross ¹	Net ⁴	Statistical	Per capita ⁵	
	1,000 acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushels	1,000 bushels
Former boundary:							
1904-5.....	2,778	8,556	45,918	37,279	-----	-----	⁶ 6,871
1905-6.....	2,805	8,639	53,079	44,403	-----	-----	⁶ 10,909
1906-7.....	2,817	8,676	53,879	45,772	30,500	1.51	15,272
1907-8.....	2,632	8,107	41,581	33,111	21,092	1.03	12,019
1908-9.....	2,750	8,470	47,705	39,518	28,868	1.40	10,650
Average 1906-7 to 1908-9.....	2,756	-----	48,432	40,018	26,820	1.31	12,647
1909-10.....	2,658	8,187	47,246	38,588	27,618	1.33	10,970
1910-11.....	2,810	8,658	51,792	43,374	28,302	1.36	15,072
1911-12.....	2,733	8,418	50,328	40,640	25,532	1.21	16,117
1912-13.....	2,818	8,679	53,194	44,804	32,672	1.54	12,132
1913-14.....	2,724	8,390	52,697	43,891	28,136	1.32	15,755
Average 1909-10 to 1913-14.....	2,749	-----	51,051	42,461	28,452	1.35	14,009
New boundary:							
Estimated average 1909-1913.....	7,1,608	4,888	731,377	26,489	10,063	⁸ 1.40	⁹ 15,826
1920-21.....	1,475	4,484	20,248	16,171	15,324	1.02	¹⁰ 847
1921-22.....	1,341	4,077	23,177	18,121	15,698	1.95	¹⁰ 2,423
1922-23.....	1,063	5,056	25,147	20,222	17,050	2.17	¹⁰ 2,572
1923-24.....	1,630	4,925	31,274	26,294	20,440	2.46	¹⁰ 5,854
1924-25.....	1,638	4,960	22,103	16,638	11,416	1.38	¹¹ 5,522
1925-26.....	1,699	5,165	32,526	27,270	20,320	2.43	¹¹ 6,950
1926-27.....	1,729	5,256	31,416	26,379	16,139	1.91	¹¹ 10,240
1927-28.....	1,657	5,037	22,365	17,376	12,905	1.51	¹¹ 4,471
1928-29.....	1,641	4,969	32,528	27,539	-----	-----	-----

¹ Acreage and production from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.

² 3.08 bushels per acre for old boundary and 3.04 bushels per acre for new boundary (10 p. 16).

³ Seed for acreage the following year subtracted from production for stated year, except average 1909-1913 and annual 1928-29.

⁴ For populations see Table 8.

⁵ Years beginning Aug. 1, 1904-5 to 1913-14 from Ann. Internatl. Statist. Agr. 1913-14: 429-431.

⁶ Does not include rye flour.

⁷ Acreage and production calculated from Magyar Statistikai Évkön. 1909-1913.

⁸ Includes Budapest. The estimated per capita consumption in Budapest was 1.34 bushels per year. The rural population is estimated to have consumed about 1.41 bushels of rye.

⁹ Surplus.

¹⁰ Net exports of rye for years beginning Aug. 1 and net exports of rye flour estimated by taking the average of the two calendar years from Internatl. Yearbook Agr. Statist., 1923, 1924-25 and 1926-27.

¹¹ Net exports of rye for years beginning Aug. 1 and net exports of rye flour for years beginning July 1 from Internatl. Yearbook Agr. Statist., 1927-28.

Although the acreage of rye, since 1922, has been in excess of the pre-war average of 1,608,000 acres, it is improbable that there will be any marked expansion above the 1926 area of 1,729,000 acres. Rye acreage in Hungary has probably been slightly affected by the land reform but probably more by the pressure brought to bear by the Ministry of Public Provisioning to increase the use of rye as a wheat substitute in making bread. It is probable that some of the present rye acreage is marginal so that when governmental stimulus is removed acreage may decrease.

INTERNATIONAL TRADE IN RYE

The old Kingdom of Hungary exported (net) on the average 14,009,000 bushels of rye as grain and flour during the 5-year period ended July 31, 1914. During this period the rye and rye-flour exports from the territory now constituting Hungary are estimated to have been equivalent to 15,826,000 bushels. A part of this surplus produced in the central part of the old Kingdom was shipped to deficit areas of Croatia and Slavonia, and the balance went chiefly to cover the deficits of present-day Austria and the northwestern districts of present day Czechoslovakia.

Both before and since the World War, the export of rye from Hungary fluctuated widely, corresponding with fluctuations in production. By far the greater part of Hungary's rye exports are in the form of grain. (Table 20.)

TABLE 20.—*Rye and rye flour: Imports and exports of Hungary, 1904-5 to 1913-14 and 1919-20 to 1927-28*

Year	Rye		Rye flour	
	Imports	Exports	Imports	Exports
Pre-war years:	<i>Bushels</i>	<i>Bushels</i>	<i>Barrels</i>	<i>Barrels</i>
1904-5	98,172	6,968,018		
1905-6	20,479	10,929,860		
1906-7	12,354	12,427,039	11,354	487,554
1907-8	19,822	9,477,591	9,698	436,540
1908-9	16,058	7,991,006	12,225	458,063
1909-10	24,609	9,112,234	20,069	333,842
1910-11	16,609	12,580,156	20,910	438,909
1911-12	20,637	12,688,504	20,107	595,026
1912-13	18,133	9,259,883	17,689	499,351
1913-14	23,030	11,339,966	20,711	760,445
Post-war years:				
1919-20		5,830		1,792
1920-21				
1921-22	7,118	34,329		
1922-23	1,559	20,983		
1923-24	409	3,804,163		
1924-25	4,295	4,055,885	1,491	1,246,552
1925-26	228	6,079,196	166	145,293
1926-27	921	9,570,224	187	1,111,799
1927-28	1,527	3,870,597	126	1,100,307

1904-5 to 1913-14 from Ann. Internat. Statist. Agr. 1913-14.
 1919-20 and 1920-21 from Ann. Internat. Statist. Agr. 1922-23.
 1921-22 from Ann. Internat. Statist. Agr. 1924-25.
 1922-23 and 1923-24 from Ann. Internat. Statist. Agr. 1925-26.
 1924-25 to 1927-28 from Ann. Internat. Statist. Agr. 1927-28.
 These data can not be considered comparable owing to frontier alterations during the period under review.

1 Fiscal year July 1 to June 30.

During the calendar year 1926, 51 per cent of all rye exports went to Austria, 25 per cent to Czechoslovakia, 13 per cent to Germany,

5 per cent to Italy, and the remaining 6 per cent went to other countries including Poland, Belgium, Holland, France, and Switzerland.

During the calendar year 1927, the following quantities of rye were exported: To Austria, 2,942,000 bushels; to Czechoslovakia, 1,785,000 bushels; to Poland, 348,000 bushels; to Germany, 267,000 bushels; to Italy, 66,000 bushels.

THE RELATION OF PRODUCTION AND DISAPPEARANCE TO THE EXPORT OF RYE

As in the case of the wheat industry, the World War produced profound changes in the relationships of production and disappearance to the export of rye. The treaty of Trianon segregated the eastern and southern districts, in which both production and consumption of rye were low. Hungary produced 3.02 bushels of rye per capita, during the 5-year period 1922-23 to 1926-27, as compared with 2.02 bushels in the old Kingdom before the World War. Disappearance averaged 2.25 bushels per capita during these post-war years, as compared with the pre-war average disappearance of 1.35 bushels. Net exports averaged one-tenth of a bushel per capita greater in Hungary during 1922-23 to 1926-27 than in the old Kingdom during 1909-10 to 1913-14. (Table 21.)

TABLE 21.—*Rye: Per capita net production, export, and disappearance, average old Kingdom of Hungary, 1909-10 to 1913-14 and annual, Hungary present boundary, 1920-21 to 1926-27*

Crop year	Per capita net		
	Production	Export	Disappearance
	<i>P</i>	<i>E</i>	<i>D</i>
Old Kingdom of Hungary:	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>
1909-10.....	1.86	0.53	1.33
1910-11.....	2.08	.72	1.36
1911-12.....	1.96	.77	1.21
1912-13.....	2.11	.57	1.54
1913-14.....	2.05	.73	1.32
Average 1909-10 to 1913-14.....	2.02	.67	1.35
Hungary, present boundary:			
1920-21.....	2.03	.11	1.92
1921-22.....	2.25	.30	1.95
1922-23.....	2.48	.31	2.17
1923-24.....	3.20	.71	2.49
1924-25.....	2.05	.67	1.38
1925-26.....	3.28	.83	2.43
1926-27.....	3.12	1.21	1.91
Average 1922-23 to 1926-27.....	3.02	.77	2.25

A superficial inspection of the postwar figures in Table 21 reveals a closer annual relationship between fluctuations in production (*P*) and export (*E*) than between those of (*P*) and (*D*). In discussing the case of wheat, the data of the very unusual crop-year 1924-25 was eliminated. In the case of rye, disappearance dropped to 1.38 bushels per capita during 1924-25. For this reason and for purposes of comparison with the wheat situation, the postwar trend in disappearance and export is considered to be best described by the relationships of the years 1922-23, 1923-24, 1925-26, and 1926-27 as indicated in Table 22.

TABLE 22.—Rye: Per capita net production and per capita net export in Hungary, present boundary, 1922-23, 1923-24, 1925-26, and 1926-27

Crop year	Per capita net production	Per capita net export	EP	P ¹	E ¹
	P	E			
	Bushels	Bushels	Bushels	Bushels	Bushels
1922-23.....	2.48	0.31	0.7688	6.1504	0.0961
1923-24.....	3.20	.71	2.2720	10.2400	.5041
1925-26.....	3.26	.83	2.7058	10.6276	.6889
1926-27.....	3.12	1.21	3.7752	9.7344	1.4641
Total (Σ).....	12.06	3.06	9.5218	36.7524	2.7532

If the totals of the columns in Table 22 are substituted in the normal equations, given on page 37, it is found that:

$$E' = 0.7556 P - 1.51$$

If this equation is used in estimating the per capita net export of rye under average conditions, the values for E' coincident with the per capita net production of each of the 4-crop years as given in column 4 of Table 23 are obtained. These values for E' all fall in the straight line of average relationship plotted in Figure 5.

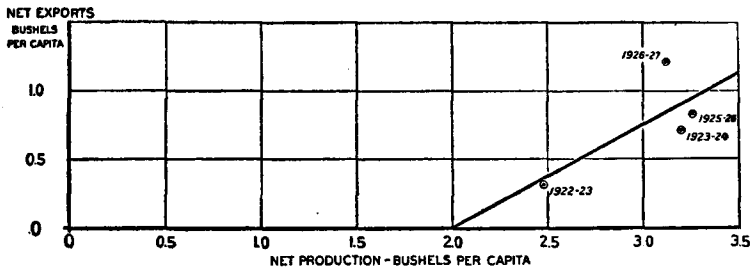


FIGURE 5.—RELATION BETWEEN PER CAPITA NET PRODUCTION AND PER CAPITA NET EXPORTS OF RYE IN RESIDUAL HUNGARY, 1922-23, 1923-24, 1925-26, AND 1926-27

The relationship of per capita net exports of rye from residual Hungary during the years 1922-23, 1923-24, 1925-26, and 1926-27 exhibited a trend relationship to production; but this relationship was not nearly as close as in the case of wheat. (Fig. 4.)

TABLE 23.—Rye: Estimated per capita net export under average conditions contrasted with observed per capita net export in Hungary, present boundary, 1922-23, 1923-24, 1925-26, and 1926-27

Crop year	Per capita net production	Production multiplied by ratio of variation	Estimated per capita net export under average conditions	Observed per capita net export	Difference between estimated and observed	(E - E')
	P	δP	δP + a ¹ = E'	E	E - E'	
	Bushels	Bushels	Bushel	Bushels	Bushel	Bushel
1922-23.....	2.48	1.87	0.36	0.31	-0.05	0.0025
1923-24.....	3.20	2.42	.91	.71	-.20	.0400
1925-26.....	3.26	2.46	.95	.83	-.12	.0144
1926-27.....	3.12	2.36	.85	1.21	+.36	.1296
Total (Σ).....						.1865

¹ a is an algebraically negative quantity in this case.

The domestic disappearance of rye in Hungary has fluctuated more widely than has that of wheat. Consequently the relationship of production to export has not been as close as in the case of the major bread cereal. An inspection of the scatter diagram, Figure 5, shows a much greater dispersion of the annual observed rye exports about the line of average relationship than was the case with observed wheat exports. (Fig. 4.)

It is therefore to be expected that the value of the standard error of estimate, in the case of rye exports, will be greater than in the case of wheat exports.

Substituting in the equation $S = \pm \sqrt{\frac{\sum(E - E')^2}{n}}$ gives

$$S = \pm \sqrt{\frac{0.1865}{4}}$$

$$S = \pm 0.216$$

Another way of putting this is to say that there is not as close a correlation between production and exports of rye as between production and exports of wheat. The measure of correlation (r) between two variables as P and E can be expressed by the equation

$$r = \pm \sqrt{1 - \frac{S^2}{\frac{\sum E^2}{n} - \left(\frac{\sum E}{n}\right)^2}}$$

Substituting in the case of rye gives:

$$r = \pm \sqrt{1 - \frac{0.046625}{0.6883 - 0.585225}}$$

$$r = \pm 0.74$$

Substituting the value of S in the case of wheat (p. 41) and the values of $\frac{\sum E^2}{n}$ and $\left(\frac{\sum E}{n}\right)^2$, derived from Table 16 gives

$$r = \pm \sqrt{1 - \frac{0.0009}{4.08865 - 3.51563}}$$

$$r = \pm 0.999$$

The lower correlation between rye production and rye export indicates that under average conditions each observed annual export (E) will not tend to approximate the corresponding estimated export (E') within as close a range as in the case of wheat.

The net production of rye in Hungary in 1927 was only 17,376,000 bushels, or 2.04 bushels per capita, as compared with a per capita net production of 3.12 bushels the previous season. The estimated per capita net export for the crop year 1927-28 that might have been expected under the average conditions of 1922-23, 1923-24, 1925-26,

and 1926-27, is found by substituting in the normal equation as given on page 47, which gives $E' = 2.04 \times 0.7556 - 1.51$

$$E' = 0.03$$

The value of $S = \pm 0.216$ (the standard error of estimate) is 7.2 times as great as this estimated value $E' = 0.03$ (the probable export under average conditions). Even under average conditions, little dependence could be placed on this estimate of probable export. The situation that developed during 1927-28 was far from average.

The estimated per capita export of 0.03 bushel is equivalent to an estimated total net export of 256,000 bushels.²⁶

Multiplying the error of estimate (± 0.216) by the 1927-28 estimated population indicates a probability of 68 in 100 that the actual export would be 1,840,000 bushels greater or less than the estimated; that is, international trade might range from an export of 2,096,000 bushels to an import of 1,584,000 bushels. The chances were 95 in 100 that international trade might range from an import of 3,425,000 bushels to an export of 3,937,000 bushels. This is a range of 7,300,000 bushels, which is greater than the net export of any crop year, except 1926-27.

Preliminary reports for the 12 months ended July 31, 1928, indicate that net exports of rye from Hungary were approximately 4,471,000 bushels. This export of 4,471,000 bushels of rye during a season when there was a rye shortage in many parts of the country was possible because of the peculiar location of the rye surplus-producing districts.

The chief rye surplus-producing regions in Hungary are the Comitatus of Pest, comprising the light soils along the east bank of the Danube, and the northwestern comitatus along the south bank of the Danube. (Fig. 6.) In years of high production it is very easy to concentrate and ship rye up the Danube to Austria and Czechoslovakia, and the grain-handling organizations of these regions are organized primarily to export grain rather than to cater to the domestic trade. It is also easier in years of generally low production to concentrate the rye of these townships along the Danube for export than to distribute it to the districts of rye shortage in eastern and southeastern Hungary. At such times, these deficit districts generally make up their rye shortage by consuming a greater than normal amount of wheat, particularly if wheat is relatively cheap. It is not customary in Hungary as in Germany to substitute potatoes for rye in making bread.

In April and May, 1927, disastrous frosts reduced the productivity of the rye crop, which was 28.8 per cent below that of 1926. The price situation in Hungary can not be analyzed completely on account of lack of data. However, during the second half of the calendar year 1927 prices rose from 27.52 pengős per quintal (122 cents per bushel) in August to 29.15 pengős (129 cents per bushel) in December. This rise was chiefly in response to home demand since there were relatively favorable harvests in Austria and Czechoslovakia and the foreign demand for Hungarian rye was apathetic. During the

²⁶ The estimated population for 1927-28 was 6,620,000.

early months of 1928 the price of rye in Hungary rapidly approached that of wheat, the price difference amounting to 5 to 6 per cent in

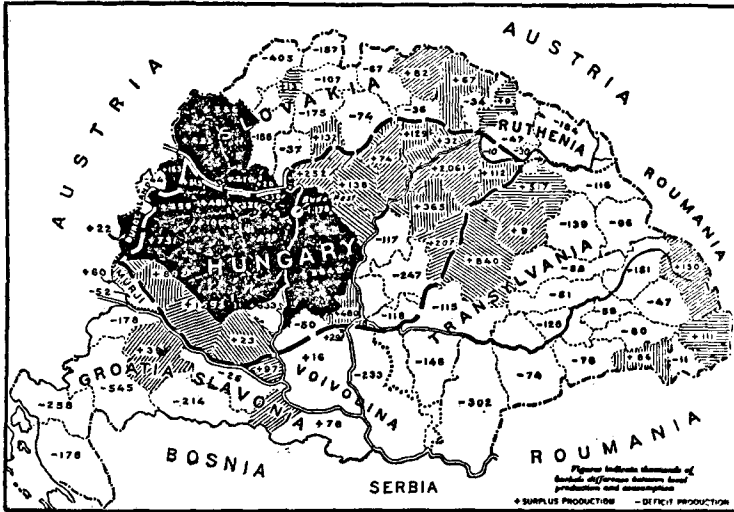


FIGURE 6.—AVERAGE PRODUCTION OF RYE, 1911-1915, BALANCED AGAINST DISAPPEARANCE

The numbers represent thousands of bushels. The solid black areas roughly outline the districts in which most of the export rye was produced. The shaded areas outline those districts whose combined surplus was sufficient to cover the local domestic deficits within the boundary of the old Kingdom of Hungary. The deficit districts are roughly outlined by the unshaded areas. The surplus producing area of residual Hungary is situated in the north-western part of the country.

April. With such a small price difference, it is natural that consumers should prefer wheat flour for bread and that the domestic consumption of rye should be less than normal.

TABLE 24.—Rye: Average price in Budapest, by months, January, 1922–December, 1925, January, 1927–July, 1928

Month	1922		1922-23		1923-24		1924-25		1925-26		1926-27		1927-28	
	Crowns per quintal	Cents per bushel	Crowns per quintal	Cents per bushel	Crowns per quintal	Cents per bushel	Crowns per quintal	Cents per bushel	Crowns per quintal	Cents per bushel	Pengős per quintal	Cents per bushel	Pengős per quintal	Cents per bushel
August.....			5,077	77	50,610	129	344,333	114	282,253	100	(¹)	-----	27.52	122
September.....			6,540	66	62,120	158	358,700	118	266,510	95	(¹)	-----	28.42	126
October.....			7,370	75	63,176	160	428,462	141	247,638	88	(¹)	-----	28.43	126
November.....			6,843	70	69,938	178	413,229	136	227,250	81	(¹)	-----	28.23	125
December.....			7,211	73	81,457	207	419,479	139	255,208	91	(¹)	-----	29.15	129
January.....	1,520	69	8,136	83	109,375	108	478,700	164	(¹)	-----	26.50	118	29.06	129
February.....	1,715	65	8,165	83	184,427	155	491,685	175	(¹)	-----	(¹)	-----	29.35	130
March.....	1,971	68	10,279	78	266,875	102	445,650	158	(¹)	-----	(¹)	-----	31.26	139
April.....	2,370	78	14,531	75	277,554	99	457,717	163	(¹)	-----	29.00	129	32.11	142
May.....	2,925	97	17,057	87	312,115	103	417,200	148	(¹)	-----	(¹)	-----	30.85	137
June.....	3,256	91	24,100	61	267,272	81	411,837	147	(¹)	-----	29.26	130	30.20	134
July.....	4,803	98	35,779	91	316,538	96	358,981	128	(¹)	-----	28.42	117	24.73	110

January, 1922, to July, 1928, from Inst. Internat. Statist. Bul. Mens. Off. Permanent.
See Table 54 for average values of the crown and pengő.

¹ Not available.

² Prices at end of month (3, p. 72).

Monthly prices in Hungary are not available from January, 1926, through December, 1926, but the yearly average quotation for rye in 1926 in Budapest was 20.09 pengös per 100 kilograms (\$0.90 per bushel), as compared with 28.01 schillings per 100 kilograms (\$1 per bushel) in Vienna and 158.6 crowns (\$1.19 per bushel) in Prague. In 1927 the annual average was 27.85 pengös per 100 kilograms (\$1.24 per bushel) in Budapest, as compared with 37.86 schillings per 100 kilograms (\$1.35 per bushel) in Vienna, whereas the Prague quotation reached 223.66 crowns per 100 kilograms (\$1.68 per bushel).

By March, 1928, Prague was offering 236.43 crowns per 100 kilograms (\$1.78 per bushel) and Vienna 42 schillings (\$1.50 per bushel). With the Budapest price at 31.26 pengös per 100 kilograms (\$1.39 per bushel), rye moved up the Danube, although the shortage at home was acute. This relative price relationship among these three countries as regards rye fluctuated somewhat during April, May, and June, but in general there was a strong demand in Czechoslovakia and Austria for Hungarian rye. At the same time, the demand for wheat by these countries was relatively less.

The peculiar geographic position of the rye-surplus districts and the organization of the export trade subjects the rye of Hungary to unusual and wide fluctuations as regards the relationships of production to export and domestic disappearance. Price relationships favoring export will always draw rye out of the country regardless of the usual domestic demand.

TABLE 25.—Rye.¹ Acreage and production in Hungary, 1877-1928

Year	Hungary (proper)			Croatia and Slavonia			Total Hungary		
	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre
Pre-war years:	1,000 acres	1,000 bushels	Bushels	1,000 acres	1,000 bushels	Bushels	1,000 acres	1,000 bushels	Bushels
1877	3,101	28,051	12.27				3,101	28,051	12.27
1878	3,267	52,049	15.93				3,267	52,049	15.93
1879	2,968	24,214	8.16				2,968	24,214	8.16
1880	2,693	34,592	12.85				2,693	34,592	12.85
1881	2,698	40,324	14.95				2,698	40,324	14.95
1882	2,698	50,653	18.77				2,698	50,653	18.77
1883	2,723	40,219	14.77				2,723	40,219	14.77
1884	2,738	43,102	15.74				2,738	43,102	15.74
1885	2,805	41,344	14.74	289	3,079	10.65	3,094	44,423	14.36
1886	2,790	37,100	13.30	287	3,303	11.51	3,077	40,403	13.13
1887	2,782	50,851	18.28	279	2,972	10.65	3,061	53,823	17.58
1888	2,740	41,820	15.26	277	2,992	10.80	3,017	44,812	14.85
1889	2,886	36,466	12.58	277	2,671	9.28	2,963	39,037	13.17
1890	2,691	49,749	18.49	277	2,988	10.79	2,968	52,737	17.77
1891	2,562	37,025	14.45	259	2,874	11.10	2,821	39,899	14.14
1892	2,740	46,092	16.82	257	2,433	9.47	2,997	48,525	16.19
1893	3,049	55,489	18.20	259	2,976	11.49	3,308	58,465	17.67
1894	2,758	54,934	19.92	264	3,338	12.64	3,022	58,272	19.28
1895	2,580	44,887	17.40	242	1,882	7.78	2,822	46,769	16.57
1896	2,585	48,131	18.62	242	2,945	12.17	2,827	51,076	18.07
1897	2,473	33,955	13.73	235	2,264	9.63	2,708	36,219	13.37
1898	2,511	42,797	17.04	225	3,496	15.54	2,736	46,293	16.92
1899	2,599	47,202	18.16	217	2,669	12.30	2,816	49,871	17.71
1900	2,548	40,206	15.78	205	2,287	11.16	2,753	42,493	15.44
1901	2,590	40,894	15.79	205	2,775	13.54	2,795	43,669	15.62
1902	2,597	49,458	19.04	222	3,051	13.74	2,819	52,509	18.63
1903	2,602	47,356	18.20	215	3,266	15.75	2,817	50,742	18.01
1904	2,565	43,879	17.11	213	2,089	9.67	2,778	45,918	16.53
1905	2,602	50,544	19.43	203	2,535	12.49	2,805	53,079	18.92
1906	2,629	51,962	19.76	188	1,917	10.20	2,817	53,879	19.13
1907	2,461	39,445	16.03	171	2,136	12.49	2,632	41,581	15.80
1908	2,575	45,185	17.55	175	2,520	14.40	2,750	47,706	17.35

¹ Includes spelt through 1906; converted to bushels, using rye equivalent.

² Winchester bushels converted from hectoliters.

TABLE 25.—Rye: Acreage and production in Hungary, 1877-1928—Continued

Year	Hungary (proper)			Croatia and Slavonia			Total Hungary		
	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre
	1,000 acres	1,000 bushels	Bushels	1,000 acres	1,000 bushels	Bushels	1,000 acres	1,000 bushels	Bushels
Pre-war years:									
1909	2,486	44,856	18.04	172	2,390	13.90	2,658	47,246	17.78
1910	2,634	49,686	18.86	176	2,106	11.97	2,810	51,792	18.43
1911	2,557	47,785	18.69	176	2,543	14.45	2,733	50,328	18.41
1912	2,654	51,442	19.38	164	1,752	10.68	2,818	53,194	18.88
1913	2,558	50,166	19.61	166	2,531	15.25	2,724	52,697	19.35
War years:									
1914	2,639	42,411	16.07	220	3,027	13.76	2,859	45,438	15.89
1915	2,670	45,682	17.78	205	2,094	10.21	2,775	47,778	17.22
1916	2,526	37,408	14.75	170	1,374	8.08	2,706	38,782	14.33
1917	2,524	39,936	15.82	(¹)	(²)	-----	2,524	39,936	15.82
1918	2,453	32,439	13.22	(¹)	(²)	-----	2,453	32,439	13.22
Post-war years:									
1919	(³)	(³)	-----	(³)	(³)	-----	(³)	(³)	(³)
1920	1,475	20,248	13.73	(³)	(³)	-----	1,475	20,248	13.73
1921	1,341	23,177	17.28	(³)	(³)	-----	1,341	23,177	17.28
1922	1,663	25,147	15.12	(³)	(³)	-----	1,663	25,147	15.12
1923	1,620	31,274	19.30	(³)	(³)	-----	1,620	31,274	19.30
1924	1,638	22,103	13.49	(³)	(³)	-----	1,638	22,103	13.49
1925	1,699	32,526	19.14	(³)	(³)	-----	1,699	32,526	19.14
1926	1,729	31,416	18.17	(³)	(³)	-----	1,729	31,416	18.17
1927	1,657	22,865	13.80	(³)	(³)	-----	1,657	22,865	13.80
1928	1,641	32,528	19.82	(³)	(³)	-----	1,641	32,528	19.82

1877-1896 from Das Getreide im Weltverkehr, Austria 1900: 50-53.
 1897-1904 from Das Getreide im Weltverkehr, Austria 1905: 20-21.
 1905-1906 from Das Getreide im Weltverkehr, Austria 1909: 16-17.
 1907-1908 from Magyar Statisztikai Évkön. 1910: 100-101.
 1909-1912 from Magyar Statisztikai Évkön. 1913: 87-88.
 1913-1915 from Magyar Statisztikai Évkön. 1915: 86-87.
 1916-1918 from Ann. Statist. Hongrois 1916, 1917, 1918: 40-44, 47-52.
 1920 from Ann. Statist. Hongrois 1919-1922: 56, 60.
 1921-1928 from official records of U. S. Department Agriculture, Bureau of Agricultural Economics.

¹ Ceded to Yugoslavia.

² Not available.

BREAD CEREALS

The exports of wheat and rye flour were not stated separately in Hungarian statistics until the season 1906-07 because the use of these two flours was closely related and in a sense interchangeable in the deficit districts of the former Austro-Hungarian Monarchy, to which wheat and rye products were shipped from the old Kingdom of Hungary. In the old Kingdom of Hungary there does not appear to have been a year-to-year inverse relationship between the disappearance of wheat and rye. In some countries, a decrease in wheat disappearance is often associated with an increase in that of rye, but, before the World War, only once (in 1912-13) was a decrease in wheat disappearance in the old Kingdom of Hungary associated with an increased disappearance of rye.

During the eight crop years 1920-21 to 1927-28, there was only one season during which an inverse relationship between the use of wheat and rye was indicated. In 1927-28, a per capita decrease of 0.4 bushel of rye was associated with an increased per capita disappearance of 0.17 bushel of wheat. In other years, the wheat and rye disappearance fluctuated together.

Before the World War it was customary for the officials of the Austro-Hungarian Monarchy to consider the two bread cereals together on a flour basis. An analysis of the postwar bread-cereal situation on a flour basis is therefore not out of place.

THE RELATION OF PRODUCTION AND DISAPPEARANCE TO THE EXPORT OF BREAD CEREAL

Before the World War, the disappearance of bread cereals in Hungary averaged 10,663,000 bushels of rye²⁶ and 40,462,000 bushels of wheat. The pre-war milling coefficients in Austria-Hungary were 72 per cent for rye and 76.2 per cent for wheat; this indicates a pre-war disappearance of 429,932,000 pounds of rye flour and 1,849,923,000 pounds of wheat flour, or a total of 2,279,855,000 pounds of flour. The average per capita disappearance of wheat and rye flour during 1909-10 to 1913-14 averaged 300 pounds.

During the four seasons 1922-23, 1923-24, 1925-26, and 1926-27, the disappearance of bread cereals in Hungary averaged 18,637,000 bushels of rye²⁶ and 41,330,000 bushels of wheat. If the pre-war milling coefficients are employed, these quantities are equivalent to 751,444,000 pounds of rye flour and 1,889,608,000 pounds of wheat flour, or a total of 2,641,052,000 pounds of flour. The average per capita disappearance of wheat and rye flour during these four years was 318 pounds as compared with 300 pounds before the World War.

During the interval between the two periods, population had increased from 7,606,917, before the World War to an average of 8,293,711, during the postwar period. A part of the increased total disappearance of 361,197,000 pounds of flour is associated with increased population. A higher standard of living has also been established as evidenced by an increase of 18 pounds in per capita disappearance.

Before the World War per capita net production of bread cereals in residual Hungary was equivalent to 507 pounds of wheat and rye flour. Production had decreased to an average equivalent to 435 pounds of flour per capita during the four years 1922-23, 1923-24, 1925-26, and 1926-27. Disappearance had increased from 300 pounds to 318 and, consequently, average exports were cut nearly in half. A comparison of the pre-war average with that of the four post-war years shows a drop in net exports of wheat and rye from the equivalent of 207 pounds of flour per capita to 117 pounds. (Table 26.)

TABLE 26.—Wheat and rye: ^a Per capita net production, export and disappearance, average, old Kingdom of Hungary, 1909-10 to 1913-14, and annual Hungary present boundary, 1922-23, 1923-24, 1925-26, and 1926-27

Crop year	Per capita net		
	Production P	Exports E	Disappearance D
Old Kingdom of Hungary: Average 1909-10 to 1913-14.....	Pounds 507	Pounds 207	Pounds 300
Present boundary:			
1922-23.....	355	41	314
1923-24.....	450	120	330
1925-26.....	465	139	326
1926-27.....	470	166	304
Average.....	435	117	318

^a Wheat and wheat flour and rye and rye flour expressed in terms of flour.

²⁶ Includes maslin, which is a mixture of wheat and rye sown together. This mixture is harvested and milled in local gristmills for consumption by the farmer's own family.

The per capita net disappearance of wheat, rye, and maslin flour has remained remarkably uniform during these four years, ranging from 12 pounds above to 14 pounds below the mean of 318 pounds per capita. On the other hand, as production has ranged up or down exports have tended on the average to range in like direction. (Table 27.)

TABLE 27.—Wheat and rye: ¹ Per capita net production and per capita net export in Hungary, present boundary, 1922-23, 1923-24, 1925-26, and 1926-27

Crop year	Per capita net production	Per capita net exports	EP	P ¹	E ¹
	P	E			
	Pounds	Pounds	Pounds	Pounds	Pounds
1922-23.....	355	41	14,555	126,025	1,681
1923-24.....	450	120	54,000	202,500	14,400
1925-26.....	465	139	64,635	216,225	19,321
1926-27.....	470	166	78,020	220,900	27,550 ²
Total (Σ).....	1,740	466	211,210	765,650	62,958

¹ Wheat and wheat flour and rye and rye flour expressed in terms of flour.

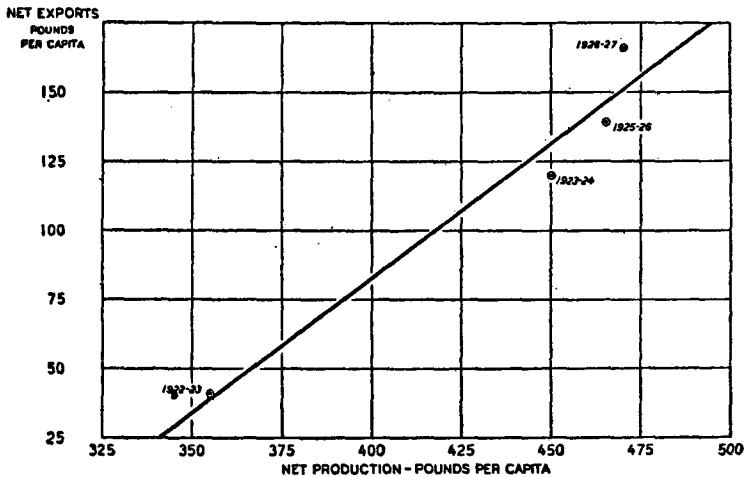


FIGURE 7.—RELATION BETWEEN PER CAPITA NET PRODUCTION OF WHEAT AND RYE, EXPRESSED IN TERMS OF FLOUR, AND PER CAPITA NET EXPORTS OF WHEAT AND RYE, EXPRESSED IN TERMS OF FLOUR IN RESIDUAL HUNGARY, 1922-23, 1923-24, 1925-26, AND 1926-27

Since wheat and rye are interchangeable in making bread in residual Hungary, a description of these bread cereals would not be complete without considering the relationships between the per capita net production of wheat plus rye and the combined per capita net exports of these two cereals.

If the totals in the columns of Table 27 are substituted in the normal equations given on page 37, it is seen that $E' = 0.9715 P - 306$. The values for E' coincident with the per capita net production of each of the crop years are given in column 4 of Table 28. These values for E' all fall in the straight line of average relationship plotted in Figure 7.

TABLE 28.—Wheat and rye: ¹ Estimated equivalent of the per capita net export of bread cereals under average conditions contrasted with that of observed per capita net export in Hungary, present boundary, 1922-23, 1923-24, 1925-26, and 1926-27

Crop year.	Per capita net production	Production multiplied by ratio of variation	Estimated per capita net export under average conditions	Observed per capita net export	Difference between estimated and observed	(E-E')
	P	δP	δP+α ² =E'	E	E-E'	
	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds
1922-23.....	355	345	39	41	+2	4
1923-24.....	450	437	131	120	-11	121
1925-26.....	465	452	146	139	-7	49
1926-27.....	470	457	151	166	+15	225
Total (Σ).....						309

¹ Wheat and wheat flour and rye and rye flour expressed in terms of flour.

² α is an algebraically negative quantity in this case.

The dispersion of the observed values of (E) above and below the line of average relationship is relatively less (fig. 7) than in the case of rye. (Fig. 6.) The value of the standard error of estimate is therefore proportionately smaller.

Substituting in the equation $S = \pm \sqrt{\frac{\Sigma(E-E')^2}{n}}$ gives $S = \pm 10$.

The net production^o of wheat in 1927 was estimated at 65,195,000 bushels, equivalent to 2,980,715,000 pounds of flour. Net production of rye (including maslin) was 17,376,000 bushels, equivalent to 700,600,000 pounds of flour. The total flour equivalent of the bread cereal production in 1927 was thus 3,681,315,000 pounds or 432 pounds per capita.

The per capita net export under average conditions that might be expected to follow a production of 432 pounds is estimated by substituting in the equation

$$E' = 0.9715P - 306$$

$$E' = 114$$

There was the probability that in 68 out of 100 chances the flour equivalent of the exports of wheat and rye would approximate 114 pounds within a range of ± 10 pounds per capita. In 95 cases out of 100, the range should not be greater than ± 20 pounds per capita.

Preliminary reports for the year August 1, 1927, to July 31, 1928, placed the net exports of wheat from residual Hungary at 12,004,246 bushels of grain and 2,108,172 barrels of flour. Employing 76.2 per cent as the factor to convert grain to flour gives a total wheat export equivalent to 962,036,000 pounds of flour. The net rye export during 1927-28 has been placed at 3,869,070 bushels of grain and 100,231 barrels of flour. If 72 per cent is employed as the factor to convert grain to flour, the total rye export was equivalent to 175,656,000 pounds of flour. The total bread cereal export was, thus, equivalent to 1,137,692,000 pounds of flour or 134 pounds per capita or 20 pounds higher than the estimated export of 114 pounds per capita.

The mathematical description of the relations of production to disappearance and exportation outlined above is not a method for accurately forecasting the expectancy in exportation to be associated with the production of any given year. It does, however, accurately describe past performance and furnishes a descriptive basis for forecasting probably future performance under the average conditions of the group of variables employed to obtain that average.

At the beginning of the season of 1927-28, wheat moved with difficulty because of relatively unprofitable quotations in Vienna and Prague. Although there was a greater crop in Hungary than during the previous season, exports were light during the first few months following the harvest, and it is probable that grain and flour were accumulated in warehouses. This is exactly the reverse of the rye situation. The shortage of the rye crop was sufficient to warrant an import, if average disappearance were to be maintained, and yet the price pull from Vienna and Prague was great enough to make it profitable to export. Merchants bought and exported rye wherever possible. As the surplus rye in the northwestern districts was shipped out of the country, prices rose to nearly a parity with wheat and rye movement slackened. The unavailability of rye probably tended to release stored wheat and flour, but toward the close of the crop year the exports of rye, as compared with those of the first part of 1927-28, tended to be relatively greater than the exports of wheat.

During the last four months of the crop year Hungary exported the equivalent of 4,561,000 bushels of wheat or 21.2 per cent as much as the total gross exports of 1927-28. At the same time 1,264,000 bushels of rye, or 32.7 per cent of the year's total, was shipped up the Danube. The proximity of surplus-producing regions to demand centers and the relative price pull of the domestic and foreign markets are highly important factors in determining the manner in which the production of an exporting country is utilized. Abnormal conditions in price relationships create widely fluctuating results. In years of abnormal production, under stress of price fluctuations, the substitution of one cereal for another may create a wide departure from the average relationships that might have been expected under normal conditions.

BARLEY

Before the World War residual Hungary seeded 1,322,000 acres of barley annually. By 1927 barley acreage had decreased more than 300,000 acres. Yields per acre had also fallen off to such an extent that the 1923-1927 average was 2.1 bushels per acre below that of 1909-1913. Net production, during the 5-year period ended 1927, was thus reduced to an average of 20,367,200 bushels, as compared with 28,535,000 bushels before the World War. (Table 29.)

TABLE 29.—*Barley: Statistical balances of present Hungary, average 1909-1913, and annual 1921-22 to 1928-29*

Crop year	Acreage	Seed ¹	Production		Disappearance		Exportable surplus
			Gross	Net ²	Total	Per capita ³	
	1,000 acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushels	1,000 bushels
Pre-war average: ⁴							
1909-1913.....	1,322	3,834	32,369	28,535	19,928	2.62	8,609
Post-war years: ⁵							
1921-22.....	1,184	3,434	21,408	18,088	17,908	2.22	180
1923-23.....	1,145	3,320	22,169	18,872	18,871	2.32	1
1923-24.....	1,137	3,287	27,271	24,348	24,018	2.92	1,335
1924-25.....	1,008	2,923	14,712	11,757	11,525	1.39	1,232
1925-26.....	1,019	2,955	25,430	22,385	20,115	2.40	2,270
1926-27.....	1,050	3,045	25,509	22,603	20,261	2.40	2,242
1927-28.....	1,062	2,906	23,684	20,743	18,559	2.18	2,184
1928-29.....	1,014	2,941	27,871	24,930			

¹ 2.9 bushels per acre (10, p. 22).² Production for stated year, minus seed for the following year except for average 1909-1913 and annual 1928-29.³ See Table 8 for populations.⁴ Acreage and production calculated from Magyar Statisztikai Évköny. 1909-1913.⁵ From 10, p. 22.—Barley fed to swine plus estimate for that used industrially.⁶ Acreage and production 1921-1928 from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.⁷ Net exports for years beginning August 1, from Internat. Yearbook Agr. Statis. 1924-25, and 1927-28.

As indicated in Table 1, the large estates seeded 13.2 per cent of their cereal acreage to barley in 1926, whereas the small farmers seeded about 10.3 per cent. The transfer of 1,246,000 acres of plowlands from the management of the estates into the hands of small peasant farmers accounts for the general reduction in barley acreage throughout Hungary. It is probable that the new level of barley acreage fluctuating about the 1923-1927 average of 1,043,000 acres indicates the future level of Hungary's barley production.

The malt industry of Hungary depends entirely upon the export possibilities for its prosperity. The domestic breweries produce more malt than they need for their own consumption; the factories exclusively engaged in producing malt are dependent upon foreign countries for their market. The sale of malt abroad, however, is accompanied by many difficulties, among which are the customs barriers of surrounding countries and the unfavorable position of Hungarian malt in respect to freight tariffs, as compared with its great competitor, the malt of Czechoslovakia. In spite of these difficulties, the export of malt increased from 7,083 short tons in 1926 to 7,841 short tons in 1927. The greatest quantity, 2,358 short tons, was exported to Austria. Switzerland took 1,923 short tons; Yugoslavia, 1,129; Holland, 1,100; Italy, 892; Germany, 372; and Portugal, 67 short tons. The import amounted to 4 short tons. (Commerce and Industry of Hungary in the year 1927, 1928, p. 107.)

If the poor crop season of 1924-25 is excluded, the per capita net disappearance of barley since the World War has averaged 2.41 bushels, or nearly the same as during 1909-1913, 2.62 bushels. As a result, the surplus available for export was reduced to negligible proportions until 1925-26. Before the World War, the territories within the present boundaries of Hungary produced a surplus of approximately 8,609,000 bushels, whereas actual average exports during 1921-1924 amounted to only 187,000 bushels. However,

beginning with the season 1925-26, exports rose to more than 2,200,000 bushels.

TABLE 30.—Barley: Acreage and production in Hungary, 1877-1928

Year	Hungary (proper)			Croatia and Slavonia			Total Hungary		
	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre
	1,000 acres	1,000 bushels	Bushels	1,000 acres	1,000 bushels	Bushels	1,000 acres	1,000 bushels	Bushels
Pre-war years:									
1877	2,301	34,458	14.98				2,301	34,458	14.98
1878	2,471	47,415	19.19				2,471	47,415	19.19
1879	2,429	26,200	10.79				2,429	26,200	10.79
1880	2,417	50,917	21.07				2,417	50,917	21.07
1881	2,251	39,912	17.73				2,251	39,912	17.73
1882	2,399	57,566	24.00				2,399	57,566	24.00
1883	2,402	39,299	16.36				2,402	39,299	16.36
1884	2,459	46,816	19.04				2,459	46,816	19.04
1885	2,585	56,690	21.93	173	2,544	14.71	2,758	59,234	21.48
1886	2,680	39,517	15.32	170	2,453	14.43	2,750	41,970	15.26
1887	2,481	58,151	23.44	168	2,191	13.04	2,649	60,342	22.78
1888	2,424	47,054	19.41	166	2,131	12.84	2,590	49,185	18.99
1889	2,488	36,008	14.47	158	1,782	11.28	2,646	37,790	14.28
1890	2,488	55,198	22.19	166	2,370	14.28	2,654	57,568	21.69
1891	2,577	57,159	22.18	161	2,044	12.70	2,738	59,203	21.62
1892	2,577	54,146	21.01	168	2,182	12.99	2,745	56,328	20.52
1893	2,585	64,756	25.05	166	2,420	14.58	2,751	67,176	24.42
1894	2,609	60,227	23.08	170	2,838	16.69	2,779	63,065	22.69
1895	2,496	54,495	21.83	163	2,356	14.45	2,659	56,851	21.38
1896	2,496	61,012	24.44	170	2,990	17.59	2,666	64,002	24.01
1897	2,338	42,025	17.97	156	2,081	13.34	2,494	44,106	17.68
1898	2,409	57,833	23.80	175	3,541	20.23	2,584	60,374	23.56
1899	2,511	61,586	24.53	170	2,733	16.08	2,681	64,319	23.99
1900	2,486	53,875	21.67	183	2,905	15.86	2,669	56,778	21.27
1901	2,503	59,072	23.60	178	3,050	17.13	2,681	53,122	19.81
1902	2,523	62,349	24.71	173	3,261	18.85	2,696	65,610	24.34
1903	2,567	64,576	25.16	178	3,840	21.57	2,745	68,416	24.92
1904	2,520	49,916	19.81	173	2,283	13.20	2,693	52,199	19.38
1905	2,550	62,454	24.49	170	2,866	16.86	2,720	65,320	24.01
1906	2,602	69,748	26.81	166	2,756	16.60	2,768	72,504	26.19
1907	2,725	63,077	23.15	161	2,064	12.82	2,886	65,141	22.57
1908	2,647	56,323	21.28	160	2,552	15.95	2,807	58,875	20.97
1909	2,858	71,870	25.15	157	2,347	14.95	3,015	74,217	24.62
1910	3,716	53,827	19.74	158	2,104	13.32	2,874	55,731	19.39
1911	2,736	73,697	26.90	158	2,641	16.72	2,894	76,338	26.34
1912	2,603	70,143	26.95	156	1,975	12.66	2,759	72,118	26.14
1913	2,887	79,825	27.65	158	3,123	19.77	3,045	82,948	27.24
War years:									
1914	2,705	65,265	24.13	154	2,342	15.21	2,859	67,607	23.65
1915	2,786	58,302	20.93	151	1,690	11.19	2,937	59,992	20.43
1916	2,648	51,891	19.60	148	1,605	10.84	2,796	53,496	19.13
1917	2,506	36,947	14.74	(¹)	(¹)		2,506	36,947	14.74
1918	2,321	40,365	17.39	(¹)	(¹)		2,321	40,365	17.39
Post-war years:									
1919	(²)	(²)	(²)	(²)	(²)		(²)	(²)	(²)
1920	1,266	21,672	17.12	(²)	(²)		1,266	21,672	17.12
1921	1,184	21,408	18.08	(²)	(²)		1,184	21,508	18.08
1922	1,145	22,169	19.36	(²)	(²)		1,145	22,169	19.36
1923	1,137	27,271	23.99	(²)	(²)		1,137	27,271	23.99
1924	1,008	14,712	14.60	(²)	(²)		1,008	14,712	14.60
1925	1,019	25,430	24.96	(²)	(²)		1,019	25,430	24.96
1926	1,050	25,509	24.29	(²)	(²)		1,050	25,509	24.29
1927	1,002	23,684	23.64	(²)	(²)		1,002	23,684	23.64
1928	1,014	27,871	27.49	(²)	(²)		1,014	27,871	27.49

1877-1896 from Das Getreide im Weltverkehr, Austria 1900: 50-53.
 1897-1904 from Das Getreide im Weltverkehr, Austria 1905: 20-21.
 1905-1906 from Das Getreide im Weltverkehr, Austria 1909: 16-17.
 1907-1908 from Magyar Statisztikai Évkön. 1910: 100-101.
 1909-1912 from Magyar Statisztikai Évkön. 1913: 87-88.
 1913-1916 from Magyar Statisztikai Évkön. 1913: 86-87.
 1916-1918 from Ann. Statis. Hongrois 1918, 1917, 1918: 40-44, 47-52.
 1920 from Ann. Statis. Hongrois 1919-1922: 56, 60.
 1921-1928 from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.

¹ Winchester bushels converted from hectoliters.
² Ceded to Yugoslavia.
³ Not available.

The barley crop of 1927 was very good as regards quality although far below the pre-war average production and smaller than the previous year. The breweries, both domestic and foreign, took an interest in Hungarian barley soon after it began to come on the market. Thanks to the superior quality of the 1927 crop, new markets were obtained in Great Britain (137,000 bushels), and in Poland (10,000 bushels brewer's barley, and 4,000 bushels fodder barley). Switzerland, which is very fastidious with respect to the quality of its imported brewer's barley, took 113,000 bushels. The bulk of barley exports went to Austria—936,000 bushels of brewer's barley and 377,000 bushels of fodder barley. The quantities taken by other customer countries were as follows: Germany, 420,000 bushels; Yugoslavia, 281,000 bushels. A total of 2,278,000 bushels was exported during the calendar year 1927. This is about one-fourth of the pre-war performance, and it is probable that this low volume of barley exports will not be greatly exceeded in future years. In the first place, the greater peasant influence in Hungarian agriculture that has followed the land reform has tended toward lower yields per acre. There will probably be a greater demand for barley as a feeding stuff for livestock within the country itself.

OATS

Before the World War, residual Hungary seeded 849,000 acres of oats annually. In 1927, only 643,000 acres were planted. The average yield per acre during the 5-year period ended in 1927 was 32.6 bushels, as compared with the 1909-1913 average of 33.5 bushels. This indicates a general trend, since the war toward slightly lower yields. Average net production has decreased (Table 31) from 24,771,000 bushels during 1909-1913 to 20,248,000 bushels for the 5-year period ended 1927.

TABLE 31.—Oats: Statistical balances of present Hungary, average 1909-1913, and annual 1921-22 to 1928-29

Crop year	Acreage	Seed ¹	Production		Disappearance		Exportable surplus
			Gross	Net	Statistical	Per horse ²	
	1,000 acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushels	1,000 bushels
Pre-war averages: ³							
1909-1913.....	849	3,693	26,464	24,771	22,189	* 25.19	2,582
Post-war years: ⁴							
1921-22.....	885	3,850	21,964	* 18,436	17,870	25.49	⁷ 566
1922-23.....	811	3,528	22,553	19,034	17,479	24.39	⁷ 1,555
1923-24.....	809	3,519	27,458	24,378	20,952	25.71	⁷ 3,429
1924-25.....	708	3,080	15,713	12,594	12,428	14.62	⁷ 168
1925-26.....	717	3,119	25,532	22,578	18,702	21.35	⁷ 3,878
1926-27.....	679	2,954	24,802	22,005	19,637	22.19	⁷ 2,368
1927-28.....	643	2,797	22,513	19,684	18,548	20.54	⁷ 1,136
1928-29.....	650	2,829	23,725	20,696	.....	.....	.....

¹ 4.35 bushels per acre (10, p. 25).

² See Table 50 for number of horses.

³ Acreage and production calculated from Magyar Statisztikai Évkön. 1909-1913.

⁴ Disappearance per horse as indicated (10, p. 25).

⁵ Acreage and production 1921-1927 from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.

⁶ Seed for following year subtracted from production for stated year, except average 1909-13, annual 1926-29.

⁷ Net exports for years beginning Aug. 1, from Internatl. Yearbook Agr. Statis. 1924-25 and 1927-28.

The peasants seeded only 5.4 per cent of their cereal land to oats, as compared with 10.5 per cent seeded on the large estates during 1926. (Table 1.) The land reform probably has created a permanently depressing influence upon the areas planted to oats. The increased use of motor cars has conspicuously decreased the use of horses in cities. The army has been reduced and is employing motor vehicles in place of horses to a considerable extent. Demand for oats has fallen off, and as a consequence acreage has steadily decreased to a proportion more in keeping with domestic requirements.

Disappearance of oats in recent years has been somewhat less than before the World War. If the poor crop year 1924-25 is excluded, the disappearance of oats between 1922-23 and 1926-27 has averaged 19,192,000 bushels, as compared with 22,189,000 bushels during 1909-1913. During the seasons 1923-24 and 1925-26, net exports of oats were considerably higher than the estimated surplus produced before the World War. During the calendar year 1926, Austria absorbed 77 per cent of the oats exported from Hungary. Czechoslovakia took 13 per cent and Italy 9 per cent. The remaining 1 per cent was divided among Yugoslavia, Switzerland, and Rumania.

The peasants of Hungary do not feed oats to livestock to the extent that this cereal is utilized in central and northwestern Europe. More corn is employed on the small land holdings; therefore, following the land reform, the area seeded to oats in Hungary will probably tend to remain below what was normal before the World War.

The quality of the 1927 crop was excellent; but net production was 2,321,000 bushels below that of 1926. There was thus a tendency to increase domestic prices, which was enhanced by the improvement in the building trade both in Budapest and in the Comitats and by an expansion in road building. Net exports during 1927-28 declined 1,232,000 bushels below those of the season 1926-27. The decline in exports was also affected by favorable harvests in the neighboring States to the west and north. During the greater part of the year, oats were cheaper in Vienna than in Budapest. During the first half of the calendar year 1927 Hungary took a considerable part in supplying the oats required by the Italian Army; but later prices in Hungary rendered this trade unprofitable.

During the calendar year 1927 Hungary exported altogether 1,794,000 bushels of oats. This was apportioned among the various countries as follows: Austria, 1,324,000 bushels; Italy, 249,000 bushels; Czechoslovakia, 198,000 bushels; other countries, 23,000 bushels.

Domestic utilization of oats in Hungary will probably tend to remain below the pre-war average; the result will probably be that net exports, which will fluctuate with seasonal fluctuations in production, will tend to average about the same as before the World War.

TABLE 32.—Oats: Acreage and production in Hungary, 1877-1928

Year	Hungary (proper)			Croatia and Slavonia			Total Hungary		
	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre
	1,000 acres	1,000 bushels	Bushels	1,000 acres	1,000 bushels	Bushels	1,000 acres	1,000 bushels	Bushels
Pre-war years:									
1877	2,686	40,114	14.93				2,686	40,114	14.93
1878	2,854	60,108	21.08				2,854	60,108	21.08
1879	2,691	38,252	14.21				2,691	38,252	14.21
1880	2,515	61,660	24.52				2,515	61,660	24.52
1881	2,362	47,810	20.24				2,362	47,810	20.24
1882	2,469	67,500	27.34				2,469	67,500	27.34
1883	2,454	51,161	20.85				2,454	51,161	20.85
1884	2,459	57,089	23.22				2,459	57,089	23.22
1885	2,565	57,774	22.52	277	5,305	19.15	2,842	63,079	22.20
1886	2,602	58,346	22.42	274	5,312	19.39	2,876	63,658	22.13
1887	2,585	65,249	25.24	274	4,650	16.97	2,859	69,899	24.45
1888	2,582	59,965	23.22	264	4,092	15.50	2,846	64,057	22.61
1889	2,515	46,297	18.41	242	2,666	11.02	2,757	48,963	17.78
1890	2,454	56,527	23.03	240	3,899	16.25	2,694	60,426	22.43
1891	2,488	68,859	27.68	235	4,051	17.24	2,723	72,910	26.78
1892	2,481	66,228	26.69	235	3,810	16.21	2,716	70,038	25.79
1893	2,397	72,704	30.33	230	3,879	16.87	2,627	76,583	28.15
1894	2,436	74,400	30.76	230	5,353	23.27	2,666	80,289	30.12
1895	2,377	72,400	30.46	215	4,478	20.83	2,592	78,878	29.66
1896	2,318	74,688	32.22	227	5,346	23.55	2,545	80,034	31.45
1897	2,216	55,060	24.85	235	4,402	18.73	2,451	59,462	24.26
1898	2,340	78,704	33.63	247	7,020	28.42	2,587	85,724	33.14
1899	2,382	81,219	34.10	245	6,318	25.79	2,627	87,537	33.32
1900	2,424	70,637	29.14	247	5,567	22.54	2,671	76,204	28.53
1901	2,427	68,081	28.05	247	5,815	23.54	2,674	73,896	27.64
1902	2,434	82,803	34.02	245	6,304	25.73	2,679	89,107	33.26
1903	2,528	87,330	34.55	250	7,330	29.32	2,778	94,660	34.07
1904	2,456	62,776	25.56	247	4,905	19.86	2,703	67,681	25.04
1905	2,513	78,008	31.04	247	6,076	24.60	2,760	84,084	30.47
1906	2,562	87,729	34.24	252	5,539	21.98	2,814	93,268	33.14
1907	2,653	79,484	29.96	249	4,174	16.76	2,902	83,658	28.83
1908	2,612	70,168	26.86	247	4,253	17.22	2,859	74,421	26.03
1909	2,685	92,269	34.24	247	5,608	22.70	2,942	97,877	33.27
1910	2,640	70,699	26.78	241	4,017	16.67	2,881	74,716	25.93
1911	2,653	89,858	33.79	247	5,553	22.48	2,900	95,211	32.83
1912	2,473	76,768	31.04	237	3,534	14.91	2,710	80,302	29.63
1913	2,884	99,806	34.61	271	6,566	24.23	3,155	106,372	33.72
War years:									
1914	2,603	86,537	33.25	255	5,766	22.61	2,858	92,303	32.30
1915	2,631	80,861	30.73	267	5,367	20.10	2,898	86,228	29.75
1916	2,652	84,591	31.90	281	6,300	22.42	2,933	90,891	30.99
1917	2,586	53,362	20.63	(¹)	(¹)		2,586	53,362	20.63
1918	2,398	45,928	19.15	(¹)	(¹)		2,398	45,928	19.15
Post-war years:									
1919	(²)	(²)	(²)	(²)	(²)		(²)	(²)	(²)
1920	802	22,307	27.81	(²)	(²)		802	22,307	27.81
1921	885	21,964	24.82	(²)	(²)		885	21,964	24.82
1922	811	22,553	27.81	(²)	(²)		811	22,553	27.81
1923	809	27,458	33.94	(²)	(²)		809	27,458	33.94
1924	708	15,713	22.19	(²)	(²)		708	15,713	22.19
1925	717	25,532	35.61	(²)	(²)		717	25,532	35.61
1926	679	24,802	36.53	(²)	(²)		679	24,802	36.53
1927	643	22,513	35.01	(²)	(²)		643	22,513	35.01
1928	650	23,725	36.50	(²)	(²)		650	23,725	36.50

1877-1896 from Das Getreide im Weltverkehr, Austria 1900: 50-53.

1897-1904 from Das Getreide im Weltverkehr, Austria 1905: 20-21.

1905-1906 from Das Getreide im Weltverkehr, Austria 1909: 16-17.

1907-1908 from Magyar Statistikal Évkön. 1910: 100-101.

1909-1912 from Magyar Statistikal Évkön. 1913: 87-88.

1913-1915 from Magyar Statistikal Évkön. 1915: 86-87.

1916-1918 from Ann. Statis. Hongrois 1916, 1917, 1918: 40-44, 47-52.

1920 from Ann. Statis. Hongrois 1919-1922: 56-60.

1921-1928 from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.

¹ Winchester bushels converted from hectoliters.² Ceded to Yugoslavia.³ Not available.

CORN

From 1921 the area planted to corn steadily increased in Hungary until 1926. The pre-war average approximated 2,192,000 acres, whereas in 1926 the acreage was 2,631,000 acres. It fell off slightly

to 2,625,000 acres in 1927. Between 1921 and 1923 climatic conditions were unfavorable, and yields per acre were low. Between 1924 and 1926 conditions were more favorable, and net production was relatively high. There was not enough corn produced in 1921 and 1922 to meet the domestic Hungarian requirements (Table 33), and a small net importation was made during each of the calendar years 1922 and 1923.

TABLE 33.—Corn: Statistical balances of present Hungary average 1909–1913, and annual 1921–22 to 1928–29

Crop year	Acreage	Seed ¹	Production		Disappearance		Exportable surplus (+) or deficit (-)
			Gross	Net	Statistical	Per capita ²	
	1000, acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushels	1,000 bushels
Pre-war average: ³							
1909-1913	2,192	1,228	60,813	59,585	58,389	7.68	+ 1,196
Post-war years: ⁴							
1921-22	2,167	1,214	31,703	30,334	30,554	3.79	- 220
1922-23	2,445	1,369	48,725	47,348	47,426	5.83	- 78
1923-24	2,459	1,377	49,247	47,870	46,657	5.68	+ 1,213
1924-25	2,459	1,377	74,122	72,635	65,813	7.95	+ 6,822
1925-26	2,655	1,487	87,969	86,496	80,929	9.67	+ 5,567
1926-27	2,631	1,473	76,544	75,074	74,717	8.85	+ 357
1927-28	2,625	1,470	68,847	66,870			
1928-29	2,637	1,477	43,324	41,874			

¹ 0.56 bushel per acre (10, p. 19).
² For populations see Table 8.
³ Acreage and production calculated from Magyar Statisztikai Évkön, 1909-1913.
⁴ Total corn requirement considered to be equivalent to the average disappearance during 1911-1915 (10, p. 19).
⁵ Acreage and production 1921-1928 from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.
⁶ Seed for following year subtracted from production for stated year, except for average 1909-1913 and annual 1928-29.
⁷ Net imports indicated by (-) and net exports by (+) for calendar years following the crop year from Internat. Yearbook Agr. Statis. 1925-26 and 1927-28.

Climatical conditions in 1924 brought net production to 13,000,000 bushels above the pre-war normal, all but 6,822,000 bushels of which were absorbed within the country itself. The following year, another bumper crop followed increased acreage and favorable climatical conditions. Only 5,567,000 bushels were exported against 81,000,000 bushels domestic disappearance. It is estimated that about 62,595,000 bushels of corn were fed to hogs and fowls in 1925. Some corn was fed to cattle, horses, and sheep, and some was utilized industrially but, unlike the custom of Rumania and Yugoslavia, almost no corn was employed as human food.

Although, in 1926, the area planted was 2,631,000 acres (only 24,000 acres below the area of the previous year) the net production was 11,422,000 bushels less. The quality of the crop was good; but on account of smaller production, domestic prices rose, and net exports fell off.

Most of the corn exported during the calendar year 1926, about 3,721,000 bushels went to Czechoslovakia. Austria took 1,522,000 bushels. The balance went to other countries, including Germany, Italy, and Switzerland.

The corn crop of 1927 was adversely affected by frosts in May. Rains in September and subsequent warm weather greatly improved the injured crop; but the final net production was 8,204,000 bushels

below that of the previous year. Prices rose, and export stagnated. During the first part of the calendar year 1927 some old corn of the previous crop was shipped abroad; but during the second half, corn was imported. The gross exports reached 1,352,000 bushels, which was scarcely a quarter of the exports of the preceding year (5,569,000 bushels). The leading customers were Czechoslovakia, which took 818,000 bushels, and Austria, which took 486,000 bushels.

The depressed state of the Vienna livestock market, as compared with the great numbers of cattle and swine in demand before the World War, has had a profound effect upon the feed-lot industry in the territories now comprising Hungary. In pre-war days thousands of lean animals, as well as large quantities of feeding stuffs, were shipped to the feed lots near Budapest and in the western Comitats where fat stock was prepared for the Vienna market. It is probable that as Vienna recovers its purchasing power the feed-lot industry of Hungary will be revived and that not only will all domestically produced corn be fed at home but further quantities may be imported from Rumania and Yugoslavia.

Late in 1927, the Ministry of Agriculture allowed the duty-free import of 995,000 bushels of corn, principally from Yugoslavia and Rumania, for use in the transit-fattening business. Under these provisions, commercial feeding organizations are allowed to import corn for reexport in the form of pork and lard.

Increased acreage and production of corn in Hungary is probably an after effect of the land reform. It is probable, also, that the disappearance of corn will increase in Hungary since the general trend of peasant agriculture will be to raise more corn and hogs in proportion to the area of plowland than was customary on the large estates where oat production in connection with horse breeding was preferred to corn and swine.

TABLE 34.—*Corn: Acreage and production in Hungary, 1877-1928*

Year	Hungary (proper)			Croatia and Slavonia			Total Hungary		
	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre
	1,000 acres	1,000 bushels	Bushels	1,000 acres	1,000 bushels	Bushels	1,000 acres	1,000 bushels	Bushels
Pre-war years:									
1877	4,346	154,200	12.47				4,346	54,200	12.47
1878	4,680	1,102,864	21.98				4,680	102,864	21.98
1879	4,633	165,957	14.24				4,633	65,957	14.24
1880	4,611	198,769	21.42				4,611	98,769	21.42
1881	4,438	181,913	18.46				4,438	81,913	18.46
1882	4,680	1,107,523	22.98				4,680	107,523	22.98
1883	4,507	187,231	19.35				4,507	87,231	19.35
1884	4,586	190,341	19.70				4,586	90,341	19.70
1885	4,633	111,399	24.04	761	11,725	15.41	5,394	123,123	22.83
1886	4,729	86,251	18.24	773	13,653	17.66	5,502	99,904	18.16
1887	4,517	75,271	16.66	773	11,149	14.42	5,290	86,420	16.34
1888	4,608	97,392	21.14	791	13,662	17.15	5,399	110,954	20.55
1889	4,769	104,549	21.83	798	12,944	16.22	5,567	117,493	21.03
1890	4,774	91,412	19.15	815	13,354	16.39	5,589	104,766	18.75
1891	4,972	149,011	29.97	857	16,247	18.96	5,829	165,258	28.35
1892	5,162	118,954	23.04	867	16,231	18.72	6,029	135,185	22.42
1893	5,063	137,134	27.09	877	15,861	18.09	5,940	152,995	25.76
1894	4,936	70,091	14.03	902	12,610	13.98	5,838	82,701	14.02
1895	5,308	146,031	27.51	902	18,735	20.77	6,210	164,766	26.53
1896	5,145	131,248	25.51	904	18,298	20.24	6,049	149,546	24.72
1897	4,912	103,904	21.15	882	14,609	16.56	5,794	118,513	20.45
1898	5,224	127,383	24.38	966	20,463	21.18	6,190	147,846	23.88
1899	5,261	115,982	22.05	909	14,680	16.15	6,170	130,662	21.18

1 Winchester bushels converted from hectoliters.

TABLE 34.—*Corn: Acreage and production in Hungary, 1877-1928—Continued*

Year	Hungary (proper)			Croatia and Slavonia			Total Hungary		
	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre
Pre-war years—Contd.	<i>1,000 acres</i>	<i>1,000 bushels</i>	<i>Bushels</i>	<i>1,000 acres</i>	<i>1,000 bushels</i>	<i>Bushels</i>	<i>1,000 acres</i>	<i>1,000 bushels</i>	<i>Bushels</i>
1900.....	5,478	127,654	23.20	917	18,692	20.39	6,395	146,346	22.88
1901.....	5,434	127,387	23.44	959	20,467	21.34	6,393	147,854	23.13
1902.....	5,352	104,546	19.63	937	15,255	16.28	6,289	119,800	19.05
1903.....	5,604	135,748	24.22	974	23,774	24.41	6,578	159,522	24.25
1904.....	4,853	59,398	12.24	976	11,366	11.65	5,829	70,764	12.14
1905.....	5,246	94,046	17.93	988	18,385	18.61	6,234	112,431	18.04
1906.....	5,715	162,924	28.51	1,006	20,471	20.35	6,721	183,395	27.29
1907.....	6,032	155,617	25.80	988	17,934	18.15	7,020	173,551	24.72
1908.....	5,831	146,122	25.06	1,004	20,278	20.20	6,835	166,400	24.35
1909.....	6,001	161,861	26.71	1,001	21,751	21.73	7,002	183,612	26.00
1910.....	5,938	137,733	31.30	996	25,753	25.86	6,934	163,486	30.52
1911.....	6,080	137,421	22.67	1,024	24,007	23.44	7,104	161,428	22.69
1912.....	6,022	178,665	29.34	1,045	24,066	23.03	7,067	200,761	28.41
1913.....	6,129	182,068	29.71	1,077	28,955	26.88	7,206	211,023	29.28
War years:									
1914.....	6,015	172,309	28.65	1,057	25,865	24.47	7,002	198,174	28.30
1915.....	6,084	160,160	26.32	1,043	15,495	14.86	7,127	175,655	24.65
1916.....	5,829	93,316	16.01	1,082	12,267	11.34	6,911	105,583	15.28
1917.....	5,778	103,618	17.93	(?)	(?)	(?)	5,778	103,618	17.93
1918.....	5,569	94,378	16.95	(?)	(?)	(?)	5,569	94,378	16.95
Post-war years:									
1919.....	(?)	(?)	(?)	(?)	(?)	(?)	(?)	(?)	(?)
1920.....	2,017	50,163	24.87	(?)	(?)	(?)	2,017	50,163	24.87
1921.....	2,167	31,703	14.63	(?)	(?)	(?)	2,167	31,703	14.63
1922.....	2,445	48,725	19.93	(?)	(?)	(?)	2,445	48,725	19.93
1923.....	2,459	49,247	20.03	(?)	(?)	(?)	2,459	49,247	20.03
1924.....	2,459	74,122	30.14	(?)	(?)	(?)	2,459	74,122	30.14
1925.....	2,655	87,969	33.13	(?)	(?)	(?)	2,655	87,969	33.13
1926.....	2,631	76,544	29.09	(?)	(?)	(?)	2,631	76,544	29.09
1927.....	2,625	68,347	26.04	(?)	(?)	(?)	2,625	68,347	26.04
1928.....	2,637	43,324	16.43	(?)	(?)	(?)	2,637	43,324	16.43

1877-1896 from *Das Getreide im Weltverkehr*, Austria, 1900: 50-53.
 1897-1904 from *Das Getreide im Weltverkehr*, Austria, 1905: 20-21.
 1905-6 from *Das Getreide im Weltverkehr*, Austria, 1909: 16-17.
 1907-1908 from *Magyar Statisztikai Évkön*, 1910: 100-101.
 1909-1912 from *Magyar Statisztikai Évkön*, 1913: 87-88.
 1913-1915 from *Magyar Statisztikai Évkön*, 1915: 85-86.
 1916-1918 from *Ann. Statis. Hongrois*, 1916, 1917, 1918: 40-44, 47-52.
 1920 from *Ann. Statis. Hongrois*, 1920-1922: 56, 60.
 1921-1928 from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.

1 Ceded to Yugoslavia.

1 Not available.

POTATOES

The territories comprising residual Hungary were just about self-sufficient before the World War, as far as potatoes were concerned. In the spring new potatoes were shipped into Budapest from the southern Comitats now part of Yugoslavia. Later in the season the central Comitats, now constituting Hungary, shipped potatoes to Vienna and Prague. But this trade was unimportant. Only small quantities of potatoes were used industrially, as compared with the quantities in regions like Slovakia, Bohemia, and Galicia, where abundant rainfall makes potatoes a crop of primary agricultural importance. Relatively small quantities of potatoes are fed to swine in Hungary, where pork production, as in the United States, is associated with corn production and is not dependent upon the potato crop, as is the case in Germany and Poland.

The Austrian Government has published estimates of the potato requirements of each of the districts of the old Austro-Hungarian Monarchy (*l*, p. 515), placing the per capita human consumption in the old Kingdom of Hungary at 1.17 quintals or 4.30 bushels per

capita. Conditions in the Comitats comprising residual Hungary were about average for the old Kingdom, and this figure may be accepted as representing the pre-war human food requirements of Budapest and the Comitats now comprising the Hungarian State.

The pre-war quantity of potatoes utilized industrially or fed to livestock has been estimated at about 30 per cent of the net production; that is, gross production, less seed, less 10 per cent for decay and for potatoes that have otherwise become unavailable for utilization. The pre-war potato situation in residual Hungary which has been based upon Austrian governmental estimates, may be considered to be approximated by the data in Table 35. The area planted averaged 619,000 acres; which produced 71,118,000 bushels gross, or 48,005,000 bushels net. Of this amount, 32,710,000 bushels were consumed annually as human food, and 14,401,500 bushels were fed to livestock or utilized industrially. The resulting small statistical surplus during 1909-1913 averaged 893,000 bushels per year.

TABLE 35.—Potatoes: Statistical balances of present Hungary, average 1909-1913, and annual 1921-22 to 1928-29

Crop year	Acreage	Seed ¹	Production		Disappearance		Exportable surplus (+) or deficit (-)
			Gross	Net ²	Total	Per capita ³	
	1,000 acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushels	1,000 bushels
Pre-war average: ⁴ 1909-1913.....	619	16,001	71,118	48,005	47,112	6.19	+893
Post-war years: ⁵							
1921-22.....	665	17,190	45,868	24,868	24,138	2.99	+755
1922-23.....	635	16,415	48,490	26,942	27,343	3.36	-401
1923-24.....	646	16,699	49,024	28,302	27,372	3.33	+930
1924-25.....	612	15,820	56,466	34,118	33,509	4.06	+909
1925-26.....	644	16,647	84,859	60,372	59,250	7.08	+1,122
1926-27.....	619	16,001	68,880	45,396	40,491	4.80	+4,905
1927-28.....	642	16,596	73,666	49,367	46,916	5.51	+2,451
1928-29.....	655	16,932	47,280	25,620			

¹ 25.85 bushels per acre (10, p. 27).

² 10 per cent of gross production deducted for decay and other losses and seed for following year subtracted from production for stated year, except average for 1909-1913, and annual 1928-29.

³ For populations, see Table 8.

⁴ Acreage and production calculated from Magyar Statistikal Évkön. 1909-1913.

⁵ Human consumption, 4.3 bushels per capita (1, p. 615). Industrial and livestock consumption, 30 per cent of net production, or 14,401,500 bushels.

⁶ Acreage and production 1921-1928 from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.

⁷ Net imports indicated by (-) and net exports by (+) for calendar years from Internat'l. Yearbook Agr. Statis. 1924-25 and 1927-28.

The acreage of potatoes was increased during 1921, 1922, and 1923; yet net production was only about half of the pre-war normal because of climatic conditions and the low quality of seed potatoes employed. Before the World War it had been customary to renew seed potatoes every two or three years with importations from Germany or Slovakia; but after the war this practice was discontinued until 1922. In this year and in 1923, the Government distributed seed potatoes from Germany and Poland, gratis, on the condition that the growers would turn over to the Government for further distribution a quantity of potatoes from the new crop equal to one and one-half times the quantity of seed potatoes received.

It is probable that the yields from 1924 to 1927, which were higher than those of the three preceding years, were somewhat benefited by this improvement in seed. However, these four seasons were favorable to the development of potatoes, and the 1925 and 1927 net production exceeded the pre-war average. Up through 1924 dis-

appearance of potatoes was far below the pre-war average; nevertheless, with the exception of 1922, potatoes were exported each year.

There are seven starch factories and five large distilleries in Hungary. These factories, which use wheat, corn, and rice as well as potatoes, worked only part time in 1924. The starch factories worked at about one-third capacity and the distilleries at about one-tenth capacity. It is probable that few potatoes were fed to stock during these years and that human consumption was also reduced.

In 1925 the use of potatoes was probably a little above the pre-war normal, and 1,122,000 bushels (net) were exported abroad. The crop was of record proportions, reaching 60,372,000 bushels (net), as compared with an average of 48,005,000 bushels during 1909-1913. The cheap price of Hungarian potatoes in the fall and winter of 1925-26 stimulated demand from foreign countries, and 4,987,000 bushels gross were exported during the calendar year 1926. This remarkable rise in exports followed heavy purchases (2,737,000 bushels) by Austrian distilleries. Czechoslovakia took 1,246,000 bushels; Greece, 501,000 bushels; Switzerland, 171,000 bushels; Yugoslavia, 127,000 bushels; Italy, 108,000 bushels; Germany, 79,000 bushels; and other countries, 18,000 bushels.

Hungary imported 81,915 bushels during 1926 from Austria and Yugoslavia.

The crop of 1927 exceeded that of 1926 by 3,971,000 bushels (net); yet the exports were less than those of the previous season, totaling 2,662,000 bushels gross. The greatest part of these exports, 893,000 bushels, went to Austria. Exports to other countries were as follows: To Greece, 496,000 bushels; to Czechoslovakia, 486,000 bushels; to Yugoslavia, 466,000 bushels; to Italy, 173,000 bushels; to Germany, 142,000 bushels; and to other countries, 6,000 bushels.

Hungary imported 211,000 bushels of potatoes in 1927 from Yugoslavia, Rumania, and Italy.

Domestic trade in potatoes was slack throughout 1927, and it is remarked as a new phenomenon by experts that the consumption of potatoes, in recent years, has diminished considerably (3).

SUGAR BEETS AND BEET SUGAR

Just as the beet-sugar industry of the Austrian Empire was financed and controlled largely from Vienna, so in the former Kingdom of Hungary this industry was controlled by a few banks in Budapest and one or two financially powerful families. The 31st factories and refineries located in the old Kingdom of Hungary were closely affiliated with the 192nd factories located in the old Empire of Austria. Most of the former Hungarian factories were situated outside the present frontiers of Hungary. Hence, when the country was partitioned, following the treaty of Trianon, 8 factories in Slovakia went to Czechoslovakia, 2 in Transylvania went to Rumania, 4 in Voivodina and 1 in Croatia and Slavonia went to Yugoslavia, and 3 in Burgenland went to Austria. Hungary retained 11 factories, producing both raw and refined sugar, and 2 refineries.

During the five sugar seasons September 1, 1909, to August 31, 1914, the 11 factories²⁸ now located in Hungary worked on the average

²⁸ The number of factories in operation during any one year varied considerably before the World War. During the sugar season 1913-14 there were 31 factories reported to be in operation in Hungary and 187 in operation in Austria, where 5 factories did not report operations during that season.

²⁹ Two factories, one at Sarkad in the Comitatus of Bihar and one at Ercsi in Fijer Comitatus, operated only the last two seasons of this period, as is noted in Table 36.

1,607,914 short tons of beets and produced 222,306 short tons of raw sugar, as is indicated in Table 36.

TABLE 36.—*Sugar beets worked and sugar produced at factories in operation in Hungary, present boundary, average 1909-10 to 1913-14*

Comitat and site of factory	Sugar beets worked at factory		Sugar produced in terms of raw sugar
	Short tons		Short tons
Bihar, Sarkad.....	139,537		18,436
Csanad, Mezohegyes.....	175,077		23,549
Fijer, Ercsi.....	91,789		11,857
Heves, Hatvan.....	301,005		44,499
Komaron, Acs.....	134,447		19,248
Nograd, Selyp.....	121,924		16,434
Somogy, Kaposvar.....	147,648		20,299
Sopron, Nagycenk.....	68,201		10,003
Sopron, Petobaza.....	69,838		9,942
Vas, Sarvar.....	184,051		23,763
Zemplen, Szerencs.....	173,797		25,336
Total.....	1,607,914		222,306

From Magyar Statisztikai Évkön. 1910 to 1914 Tables on "Fabrication du sucre".

¹ 2-year average 1912-13 and 1913-14.

² 3-year average 1909-10 to 1911-12. Not separately stated for the last 2 years.

³ One-half of the beets worked and sugar produced at 2 factories reported to be in operation in Zemplen in 1912-13 and 1913-14 averaged with the separate data for the Szerencs plant for 1909-10 to 1911-12.

It has been estimated that during 1909-1913 the area planted to sugar beets within the territories now constituting Hungary averaged 131,000 acres and produced annually 1,513,000 short tons of sugar beets. The 11 sugar factories thus worked up annually about 95,000 tons of beets produced in territories outside the frontiers of present-day Hungary. It required on an average 7.233 tons of beets to produce 1 ton of raw sugar during this period, so that had the 1,513,000 short tons of domestically produced beets been put through the sugar factories, they would have yielded the equivalent of 209,000 short tons of raw sugar.

TABLE 37.—*Acreage and production of sugar beets and production of sugar in Hungary, present boundary, average 1909-10 to 1913-14, and annual 1921-22 to 1927-28*

Year beginning September 1	Sugar beets		Raw sugar
	Acreage	Production	Production
	1,000 acres	Short tons	Short tons
Pre-war average:			
1909-10-1913-14.....	131	1,513,000	222,306
Post-war years: ¹			
1921-22.....	103	598,488	67,096
1922-23.....	103	783,896	90,259
1923-24.....	128	951,934	136,073
1924-25.....	168	1,404,554	222,838
1925-26.....	163	1,683,665	183,128
1926-27.....	156	1,592,400	192,968
1927-28.....	159	1,604,311	205,779
1928-29 ²	164	1,212,761	220,000

Pre-war acreage and production of sugar beets from U. S. Dept. Agr. Yearbook 1926: 1008. Sugar produced; see Table 36.

Post-war acreage and production of sugar beets and production of sugar from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.

¹ An additional 95,000 short tons of beets imported from present Rumania, Yugoslavia, and Austrian territory were worked up at the factories of residual Hungary.

² Includes the sugar produced from the 95,000 short tons of beets indicated in footnote 1. Using the same yield of sugar per ton of beets as indicated in Table 36 to estimate the total sugar produced from the pre-war production of sugar beets in present Hungary, would be equivalent to 209,000 short tons.

³ The post-war sugar production figures include sugar produced at a factory in Szolnok built during the war, with a daily capacity of 1,500 short tons, and after 1923 includes a factory established in Budapest in 1923, with a daily capacity of 66 carloads, or 728 short tons of beets daily.

⁴ Preliminary.

Aside from the citizens of Budapest and of a few large centers, the rank and file of Hungarians use very little sugar. Unlike the Austrian peasants, who include coffee in their diet, the Hungarian peasants seldom use either tea or coffee. Furthermore, honey is widely employed as the sweetening agent in the ordinary household cooking rather than sugar. The total statistical disappearance of raw sugar in the old Kingdom of Hungary, including Croatia and Slavonia, averaged 15.86 pounds per capita during the sugar season 1909-10; whereas in 1913-14 per capital disappearance reached 24.38 pounds.²⁹

During the five sugar seasons ended 1913-14, the average statistical disappearance of raw sugar in the old Kingdom of Hungary was 211,203 short tons. Assuming that the annual per capita consumption of sugar in Budapest was at least equivalent to the household consumption in Vienna (47 pounds per capita) and employing the 1910 population of 880,371, the annual pre-war requirement of the Hungarian capital would have amounted to practically 20,689 short tons. This would indicate that 190,514 short tons were consumed in provincial Hungary, which prorated over the 20,006,116 provincial population gives a rough approximation of about 19 pounds per capita.

The 1910 population of the area comprised within the boundaries of the present Kingdom of Hungary has been estimated at 7,606,971. Assuming that the 6,726,600 provincial inhabitants consumed at least as much sugar as the average of the old Kingdom, the provincial pre-war requirement of residual Hungary would have been approximately 63,903 short tons. Adding the requirement of Budapest, or 20,689 short tons,³⁰ gives 84,592 short tons, or 22.2 pounds per capita as the average pre-war sugar disappearance of Hungary, present boundaries.

During the season 1921-22, when sugar production decreased to 67,096 short tons, about 10,965 short tons of sugar were imported, and the citizens of Budapest were reported to have resorted to the use of saccharine. After adding the visible supply at the beginning of the season and deducting the visible supply at the end of the season as well as exports during the 12 months, the resultant statistical disappearance was about 74,630 short tons. (Table 38.) Prorating this amount over the 1921 estimated population of 8,065,537 gives an average per capita disappearance of 18.5 pounds.

²⁹ This latter figure is only a little more than half of the average pre-war household disappearance of sugar in the territories comprising the present Republic of Austria and including the high consumption center of Vienna, which in 1912-13 was approximately 43.6 pounds per capita.

³⁰ During the sugar season Sept. 1, 1924, to Aug. 31, 1925, cheap sugar brought provincial consumption up to 51,981 short tons, whereas Budapest consumed 43,684 short tons in terms of raw sugar. (MORCAG, J. H. Cons. Rpt. Aug. 23, 1926.) [Typewritten copy on file in Bureau Agricultural Economics Library.]

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TABLE 38.—*Sugar in terms of raw: Approximate supply and distribution of present Hungary, average 1909-10 to 1913-14, and annual 1921-22 to 1927-28*

Item	Average 1909-10 to 1913-14	1921-22	1922-23	1923-24	1924-25	1925-26	1926-27	1927-28
Visible supply on Sept. 1	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons	Short tons
Net production	222,306	13,857	17,088	136,073	222,838	19,671	4,834	8,270
Importation		67,096	90,259	1,623		183,128	192,998	205,799
Total	222,306	81,718	98,375	136,235	222,838	202,799	197,832	214,069
Exportation			55,417	90,145	108,492	95,332	78,599	84,309
Visible supply on Aug. 31		17,088			19,671	4,834	8,270	10,506
Total export and on hand at end of year	137,714	7,088	55,417	90,145	128,164	100,166	86,869	94,815
Disappearance	84,592	74,630	42,958	46,090	94,674	102,633	110,963	119,254

Refined: raw :: 1:1.14.

¹ Report of Vice Consul Digby A. Willson, Oct. 25, 1922, Budapest.² See Table 37.³ Ann. Internat. Inst. 1922: 48-49.⁴ Magyar Statisztikai Szemle January, 1924: 38.⁵ Magyar Statisztikai Szemle November-December, 1924.⁶ Report of Consul Walter S. Reineck, Dec. 6, 1924.⁷ Hungarian Commerce and Industry in the year 1926 (2, p. 98).⁸ From report of Vice Consul John H. Morgan dated Nov. 21, 1927, Budapest.⁹ By difference.¹⁰ From report of Vice Consul John H. Morgan dated Oct. 20, 1927, Budapest.¹¹ From official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.¹² From Commerce and Industry of Hungary in the year 1927 (3, p. 126).¹³ From report of Vice Consul John H. Morgan dated Sept. 20, 1928, Budapest.¹⁴ Disappearance discussed in text.

It is comparatively easy to keep the production, distribution, and retail sale of sugar under the inspection of Government officials. Also, sugar has a relatively high taxable value in proportion to its bulk, and each of the succession States has fostered its production as a means of building up national income. About January 1, 1921, the Hungarian Government fixed the domestic sales price of sugar and decreed that 47.8 per cent of this price should accrue to the account of the State. At the same time, the Government pledged its sugar revenues thus obtained as security for a reconstruction loan for which Hungary was negotiating abroad.

Thus an indirect tax was levied by the Government on all consumers of sugar through what it designated as Treasury participation.³¹ This participation so raised the price of sugar that consumption decreased during the season of 1922-23 to about 43,000 short tons. During the season 1923-24, consumption continued far below normal, and saccharine was widely employed as a substitute. During these years the cost of sugar to the foreign buyer in Hungary was less than that in Czechoslovakia because of the lower exchange rate of the Hungarian crown in terms of foreign currency, and in 1924 the entire surplus of the factories of Hungary is reported to have been bought up by foreign buyers. The equivalent of more than 90,000 short tons of raw sugar was sent abroad during the season 1923-24, the greater portion going to Italy.

³¹ Treasury participation amounted to 35.61 per cent of the sales price on Jan. 1, 1923, and rose to 53.5 per cent by December, 1924. Reineck, W. S., Cons. Rpt. Dec. 6, 1924, Bowman, T. D., Cons. Rpt. July 13, 1926. [Typewritten copies on file in Bureau Agricultural Economics Library.]

By December, 1925, the degree of Treasury participation was decreased to 41.4 per cent of the purchase price. Prices remained fairly stable during 1925, and domestic consumption increased rapidly to about 102,600 short tons during 1925-26. As a result, the income to the State was greater than when the higher rate of participation was levied.

On account of the importance of domestic sugar sales as a source of internal revenue and the exports of sugar as a means of reducing the adverse trade balance of the country, the Government has taken every means of increasing sugar-beet production.

Sugar-beet production in Europe has always been an industry essentially associated with large-estate farming. As indicated in Table 1, 89.1 per cent of the sugar-beet acreage in 1926 was planted by farmers operating 142.2 acres or more. Small peasants are not equipped to grow beets as well as are the large operators and do not obtain such large returns per acre. The beets produced by large operators in 1926 represented about 90 per cent of the total crop.

The acreage of sugar beets has increased rapidly since the World War. The 1921-22 crop was produced on 103,000 acres, whereas for 1924-25 a total of 168,000 acres was planted, as compared with an average of 131,000 acres before the war. (Table 37.) The large acreage in 1924 followed material support given to the producers by the manufacturers in the way of loans on favorable terms, enabling the farmers to purchase much-needed implements. There was a falling off in 1925 of 5,000 acres, and in the following year about 7,000 additional acres went out of cultivation. This was the consequence of world overproduction in sugar, the slump in the price of sugar in foreign markets being reflected in a decrease in the prices paid for beets to the growers in Hungary.

The low price of sugar in Hungary during 1925-26 resulted in an increase in domestic consumption. The amount of sugar taxed for home use during the season was equivalent to 102,633 short tons of raw sugar. About 95,000 short tons were exported. The quantity of sugar taxed for home use in Hungary during the season 1925-26 is considerably larger than the estimated pre-war disappearance, but is still only 24.6 pounds per capita, as compared with 36.7 pounds in Austria and 61.2 pounds in Czechoslovakia.

Production of sugar in 1926-27 was reported by the International Institute of Agriculture in Rome at 193,000 short tons. The following year, 1927-28, unofficial estimates placed production at 206,000 short tons, an increase of 6.7 per cent. Exports of sugar in terms of raw sugar amounted to 83,199 short tons in the calendar year 1926, as compared with 84,309 short tons in 1927. This is an increase of only 1.3 per cent.

The export of 1927 did not respond more nearly to the increased production of that year over 1926 because, in the first place, the conditions of the world market were unfavorable, also because domestic consumption increased, so that there remained a relatively smaller proportion of the production available for export than in 1926 (3).

In all of the other succession States the acreage of sugar beets shows a tendency to fluctuate with conditions of the world market and the price paid to growers. Particularly is this so in Hungary, because such a large percentage of the area grown is on large-estate lands,

whose management is more sensitive to economic changes than is that of peasant lands.

Table 39 indicates the sugar trade of Hungary in terms of raw sugar by countries during the calendar years 1925 to 1927.

TABLE 39.—*Sugar in terms of raw: ¹ Exports from Hungary by countries, calendar years 1925-1927*

Country	1925	1926	1927
	Short tons	Short tons	Short tons
Fiume.....	78,467	44,599	55,717
British India and Straits Settlements.....	4,015	22,619	2,834
Austria.....	10,290	9,583	9,970
Bulgaria.....	2,965	38	333
Switzerland.....	0	1,377	2,256
Italy.....	1,268	0	0
Trieste.....	5,240	1,137	5,574
Egypt.....	(²)	848	3,437
Greece.....	(²)	785	270
European Turkey.....	(²)	647	748
Other countries.....	5,773	1,506	3,370
Total.....	106,018	83,199	84,309

1925 and 1926 from Statisztikai Havi Közlemények October-December, 1925, and October-December, 1926. 1927 from Commerce and Industry of Hungary in the Year 1927 (3).

¹ Refined converted to raw on the basis, raw::refined:1.14:1.

² If any, included in other countries.

According to Vice Consul John H. Morgan,³² an expansion of the sugar industry of Hungary is not to be expected, as difficulties have been experienced in finding markets in foreign countries. On the contrary, if the difficulties in meeting foreign competition abroad continues, Hungarian manufacturers may be compelled to reduce production.

TOBACCO

Under the Austro-Hungarian Monarchy, the entire tobacco industry from planting to the manufacture of the cured leaf was under the control of the Royal Hungarian Tobacco Monopoly. Naturally, after the segregation of Hungary from the territories ceded to the surrounding succession States, the tobacco industry has continued to be handled as a Government monopoly. The districts included within the boundaries of the present State planted 93,000 acres to tobacco yearly before the World War and produced an average of 111,883,000 pounds during 1909-1913. (Table 40.)

³² MORGAN, J. H. THE HUNGARIAN SUGAR INDUSTRY. Cons. Rpt. Nov. 26, 1927, 8 p. 1927. [Type-written copy on file in Bureau Agricultural Economics Library.]

TABLE 40.—*Tobacco: Statistical balance of Hungary, present boundary, average 1909-1913, and annual 1921-1927*

Year	Acreage	Production	Disappearance		Exportable surplus (+) or deficit (-)
			Total	Per capita ¹	
Pre-war average:					
1909-1913.....	93	111,883	19,244	* 2.53	+92,639
Post-war years:					
1921.....	49	40,705	40,684	5.04	* +21
1922.....	44	34,392	32,334	3.97	+2,058
1923.....	38	29,762	26,838	3.26	+2,924
1924.....	38	38,045	33,800	4.08	+4,345
1925.....	38	37,699	37,637	4.50	+62
1926.....	* 59	* 57,823	65,016	7.70	-7,193
1927.....	58	69,095	68,224	8.01	+871

1921-1925 acreage and production from U. S. Dept. Agr. Yearbook 1924: 825-826; 1925: 1025-1027; 1926: 1029.

1927 International Yearbook of Agricultural Statistics 1927-28.

¹ For populations see Table 8.

* Average 1909-1913 per capita amount of tobacco sold in the old Kingdom of Hungary from Magyar Statisztikai Évkön. 1911: 194; 1914: 132.

² Net exports (+) and net imports (-) 1921 to 1927 from Statisztikai Havi Közlemények 1921-1927.

³ Commerce and Industry of Hungary in the Year 1927 (3).

Two types of tobacco are grown in Hungary—a heavy-leaf tobacco and a small-leaf variety used for cigarettes and smoking tobacco. The latter variety is not of outstanding importance. Only 271 acres, which produced 193,000 pounds, were planted in 1926. There were seven local varieties of broadleaf tobaccos of commercial importance. These varieties and their acreage and production in 1926 were as follows: Debrecen, 30,419.4 acres, producing 30,911,000 pounds; Tisza, 17,039 acres, producing 15,857,000 pounds; Erti, 4,425 acres, producing 5,595,000 pounds; Szeged, 2,529 acres, producing 2,111,000 pounds; Szolnok, 1,897 acres, producing 1,149,000 pounds; Szentandras muscat, 380 acres, producing 260,000 pounds; and Kapa, 1,871 acres, producing 1,746,000 pounds. The last-named variety is a coarse, low-grade tobacco. It is called kapa (Hungarian for hoe) because it is smoked chiefly by farm laborers. Some of this tobacco is used for making cigars, but most of it goes into cigarettes and pipe tobacco. One sort of tobacco, Debrö, was grown experimentally, only 1.4 acres were planted, which produced 1,000 pounds.

In all, 58,833 acres of tobacco produced 57,823,000 pounds of leaf in 1926. The acreage planted to tobacco is regulated by the monopoly to meet domestic requirements and to afford only such surplus as can be exported profitably.

During the fiscal year 1926-27 the monopoly manufactured 26,577,000 pounds of tobacco, as compared with 26,949,000 pounds in 1925-26. The native tobacco employed was 20,627,000 pounds in 1926-27 as compared with 21,068,000 pounds during the preceding year. In 1926-27 the monopoly used 5,950,000 pounds of imported tobacco as compared with 5,881,000 pounds in 1925-26.

The manufactured products included 10,667,000 pounds of common pipe tobacco, 7,820,000 pounds of fine pipe and cigarette tobacco, 252,000 pounds special pipe and cigarette tobacco, and 1,532 pounds of snuff. They also made 35,071,000 special and 2,154,602,000

common cigarettes, as well as 3,344,000 special and 91,279,000 common cigars.

INTERNATIONAL TRADE IN TOBACCO

Tobacco is imported into Hungary only by the Royal Hungarian Tobacco Monopoly. Leaves for cigar binders and wrappers are purchased exclusively at the auctions of Amsterdam and Rotterdam. Fillers (Havana, Brazil, Cuba, Java, etc.) are purchased chiefly on the basis of offers submitted to the Regie (monopoly) through German agents. * * * Tobacco for the manufacture of pipe and cigarette tobacco (Turkish, Bulgarian, Greek, and Russian) are purchased by agents of the monopoly who are sent out after offers have been received from producers or middlemen in these countries.²³

This trade does not affect the farmers of North America directly because no Hungarian tobacco is sold in the United States and very little tobacco from the United States has been purchased by the Hungarian Tobacco Monopoly since the World War. A small quantity of Virginia and Kentucky tobacco was purchased in 1922. This supply was sufficient to meet the needs of the monopoly until 1925, when the last of these purchases was worked up into pipe tobacco. Because the quantity of United States grown tobacco used in Hungary is very small, it is probable that the depleted stock will be replenished by purchases in European markets rather than by purchase from the United States direct.

During 1927 Hungary imported 7,886,075 pounds of raw tobacco, as compared with 10,433,270 pounds the previous year, and 253,309 pounds of manufactured tobacco during 1927, as compared with 22,266 pounds in 1926. The countries of origin are indicated in Table 41.

TABLE 41.—*Tobacco: Imports and exports of Hungary by countries, calendar years 1926 and 1927*

Country	1926		1927	
	Imports	Exports	Imports	Exports
Raw:	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Bulgaria.....	5,024,064	.....	4,972,035	.....
Asiatic Turkey.....	3,465,190	.....	1,592,162	.....
Greece.....	1,118,394	.....	146,366	.....
Italy.....	513,672	.....	345,240	.....
Holland.....	197,311	253,750	.....	.....
Germany.....	114,639	276,015	224,869	334,647
Austria.....	.....	1,247,142	.....	3,253,990
Poland.....	.....	783,956	.....	2,667,125
Belgium.....	.....	435,406	.....	322,538
France.....	.....	188,433	.....	113,757
Czechoslovakia.....	.....	55,115	.....	1,064,372
Netherlands.....	.....	.....	605,383	45,078
Egypt.....	.....	.....	.....	60,406
Total.....	10,433,270	3,239,880	7,886,075	8,756,992
Manufactured:				
Great Britain.....	15,658	.....	74,925	220
Egypt.....	3,307	.....	115,301	.....
Belgium.....	2,645	.....	.....	.....
Denmark.....	.....	220	.....	882
European Turkey.....	(*)	(*)	55,335	.....
Switzerland.....	(*)	(*)	.....	2,807
Other countries.....	661	.....	3,748	220
Total.....	22,266	220	253,309	4,189

From Statistikal Havi Közlemények, October-December, 1926, and October-December, 1927.

* If any, included in other countries.

²³ HORTON, G. REPORT CONCERNING THE CULTURE, PRODUCTION, AND TRADE ON TOBACCO. Cons. Gen. Rpt. Jan. 23, 1924, 10 p. 1924. [Typewritten copy on file in Bureau Agricultural Economics Library.]

The imports of manufactured tobacco were more than ten times as great in 1927 as in the previous year, chiefly on account of the ease of purchasing special products abroad. In 1928, 300 carloads (about 6,613,800 pounds) were sold in Amsterdam. Several carloads of cigarette and pipe tobacco are reported to have been sold in China, Formosa, and Japan.

COTTON

Since the World War, 43 new textile plants have been put into operation in Hungary. Most of these were cotton mills in small country centers. From 1918 to 1924 the number of spindles had increased five times. It was reported that there were about 93,000 spindles in 1924. During that year 8,240 looms were reported to be in operation. According to Vice Consul Morgan,³⁴ the National Association of Textile Manufacturers reports the number of cotton spindles as 120,000 and the number of looms as approximately 10,000 in 1926. Production increased considerably during the year, enabling the mills to supply about 50 per cent of the domestic demand, as compared with 44 per cent during the previous year.

The bulk of the cotton employed in the Hungarian textile industry is supplied directly by the United States. (Table 42.)

TABLE 42.—Cotton, raw, including waste: Imports and exports of Hungary by countries, 1926 and 1927

[In thousand pounds—i. e., 000 omitted]

Country	1926		1927	
	Im-ports	Ex-ports	Im-ports	Ex-ports
United States.....	10, 147	.....	12, 667	.....
Germany.....	552	77	1, 027	301
Austria.....	515	670	920	912
British India and Straits Settlements.....	359	.....	1, 568	.....
Czechoslovakia.....	115	107	285	211
Egypt.....	96	.....	.....	.....
Switzerland.....	82	2	152	.....
Holland.....	75	.....	.....	.....
Brazil.....	67	.....	.....	9
Netherlands.....	(?)	(?)	73	39
Other countries.....	33	64	48	.....
Total.....	12, 040	920	16, 770	1, 472

From Statisztikai Havi Közlemények, October-December, 1926, and October-December, 1927.

¹ If any included in other countries.

FODDER PLANTS

The farmers of western Hungary, who were within easy rail and water communication with Vienna and Budapest and who were not far removed from Prague, Munich, and central Europe, were accustomed, before the World War, to buy up lean, grass-fed cattle and other livestock in the eastern part of the old Kingdom and stall feed these animals preparatory to slaughter. They had free access not only to the districts producing the animals to be fed but, also, to districts producing surpluses of feeding stuffs with which to do the

³⁴ MORGAN, J. H. COTTON SURVEY IN HUNGARY FOR THE 12 MONTHS ENDING JULY 31, 1927. Cons. Rpt. Sept. 10, 1927, 4 p. 1927. [Typewritten copy on file in Bureau of Agricultural Economics Library.]

feeding—corn from Voivodina, Banat, and Crisana, hay from the Seven Mountain region, and potatoes from Slovakia.³⁵

When Hungary was set off as a segregated State by the treaty of Trianon, the feeding centers about Budapest and in western Hungary were cut off not only from feeders but also from supplemental feeds. In fact the feed supply for such animals as would normally be carried on the farms of central Hungary was placed in jeopardy. There has been a tendency, even before the World War, to constrict the acreage of natural meadows and pastures and to depend upon cultivated field crops for feeding stuffs. In 1868, meadows and pastures constituted 28.3 per cent of the farm lands of the old Kingdom of Hungary. This proportion had dropped to 25 per cent by 1885; to 22.67 per cent by 1895; and, by 1911, to 21.93 per cent. (14, p. 17.)

The percentage of all lands under meadows and pastures in 1911 in the districts comprising present-day Hungary has been estimated at 18.4 per cent. In 1921, out of a total area of 22,921,000 acres, 4,147,000 acres or 18.1 per cent was under meadows and pastures. By 1927, adjustments of boundaries brought the total area up to 22,970,000 acres, but the percentage of meadows and pastures remained unchanged, totaling 4,154,000 acres. (See Table 2.)

It has been suggested that the land reform would probably have a tendency to decrease the area of meadows and pastures because, as is indicated in Table 43, the proportion of grazing lands to total acreage was much less on small peasant holdings than on the large estates.

TABLE 43.—Percentage of farm acreage in plowland and in pastures in 1895

Utilization of land	Percentage of farm land classified by—			
	Very small holdings	Small holdings	Middle-sized holdings	Large estates
Plowland.....	Per cent 63.6	Per cent 78.1	Per cent 57.6	Per cent 33.3
Pastures.....	3.2	5.3	12.0	13.6

Die Boden Reform und ihre Wirkung auf die Entwicklung der Ungarischen Landwirtschaft. (14' p. 18.)

Between 1921 and 1927 there was no indication of a diminution of meadows and pastures. The meadows and pastures of Hungary in 1923 covered about 18 per cent of the total area of the country, as compared with 18.4 per cent in Czechoslovakia (1925) and 28.2 per cent in Austria (1923). The grazing on the pastures and meadows of Hungary is always problematical and subject to wide fluctuations on account of drought and flood.

It has been necessary to increase the areas under artificial forage crops to maintain the flocks and herds of Hungary at their pre-war level or at the level requisite to the highest possible development of the animal industry.

³⁵ Voivodina and the western part of Banat are now incorporated in Yugoslavia. The eastern part of Banat, Crisana, and the Seven Mountain region are now parts of the administrative district of Transylvania in Rumania. Slovakia is part of Czechoslovakia.

According to Ludwig Leopold (*9, p. 152*) the area of clover in Hungary in 1926 was 34 per cent above the pre-war normal; that of alfalfa 39 per cent above normal; that of sanfoin 92 per cent; and that of hirsengrass (millet grass) 39 per cent above normal.

The Hungarian peasants value forage plants not only because they supply feed for livestock whose manure is indispensable in maintaining the fertility of the soil but because they understand that such crops as clover improve soil conditions chemically and such crops as roots and potatoes improve them physically. The number of farm animals that Hungary can maintain is limited to the carrying capacity of the meadows and pastures as supplemented by cultivated forage and fodder plants and grains or by the importation of such feeding stuffs. Eastern Hungary is a plains country (the Alföld) and with the improvement of the pastures and meadows could carry considerably more livestock than is now found in this part of the country. However, the improvement in the livestock industry of Hungary may follow the trend begun before the World War and express itself in greater weight and production per animal—in an increase in quality rather than in numbers.

Hungary exported 12,769 short tons of hay in 1927, as compared with 10,078 in 1926. In both years the bulk of the export went to Czechoslovakia and Austria.

TABLE 44.—*Forage and fodder plants: Acreage and production in Hungary, 1924-1927*

Classification	1924		1925		1926		1927	
	Acreage	Production	Acreage	Production	Acreage	Production	Acreage	Production
	<i>Acres</i>	<i>Short tons</i>	<i>Acres</i>	<i>Short tons</i>	<i>Acres</i>	<i>Short tons</i>	<i>Acres</i>	<i>Short tons</i>
Forage beets.....	237,485	1,957,704	254,041	2,849,204	243,994	2,680,892	249,591	2,709,996
Forage beets (mixed crop).....	5,436	42,658	5,755	61,250	6,719	66,474	8,426	88,365
Forage pumpkins.....	15,965	113,033	16,940	172,811	16,279	165,178	16,674	169,442
Sanfoin.....	88,071	98,492	92,252	117,121	82,685	119,307	84,244	96,311
Alfalfa.....	459,932	778,059	453,540	804,234	434,118	787,877	422,773	689,709
Alfalfa (mixed crop).....	6,395	11,110	6,516	12,176	8,999	16,310	10,213	17,066
Corn fodder.....	194,065	2,224,064	192,466	2,279,231	193,178	2,605,841	185,799	2,209,065
Moha ¹	61,429	72,137	63,638	86,089	78,269	101,367	72,642	95,197
Winter peas and fodder rye.....	30,986	45,723	30,907	47,007	27,070	47,339	23,581	38,991
Clover.....	314,195	431,450	367,499	544,680	364,707	594,060	393,065	569,199
Vetches.....	113,728	139,639	115,237	142,954	96,915	127,519	99,957	124,429
Vetches and oats.....	358,162	461,987	383,507	526,308	365,075	526,529	365,029	512,371
Total sown grasses and other forage.....	1,874,048	6,376,076	1,969,727	7,643,071	1,896,290	7,838,693	1,913,355	7,318,031
Permanent meadows and pastures.....	4,150,292		4,133,847		4,153,856		4,151,332	

From Internat. Yearbook Agr. Statis. 1925-26: 48-49; 1926-27: 48-49; 1927-28: 48-49.

¹ A variety of Italian millet.

LIVESTOCK

The scientific breeding and feeding of livestock in the Kingdom of Hungary was almost exclusively an industry developed by the initiative of the large landed proprietors until 1880. The Government offered assistance and encouragement by paying the freight and subsistence of breeding animals en route, by advancing noninterest-bearing loans to breeders, and by giving advice as to breeds and methods. Later, the Government took active steps to foster the animal industry of the Kingdom. In 1894 a law of the rural police instituted a technical section in animal husbandry in the Ministry of Agriculture and undertook to regulate the following: (1) The number of animals to be grazed on village pastures; (2) the adaptation of breeds to each locality; (3) the number of sows bred to a single male; (4) the quality of the male as to breed characteristics. It also issued certificates to owners of sires that were to be employed by the public. Advances in animal industry were more easily effected among the Magyar nobles and peasantry in the counties west of the Danube and on the Alföld, than among the subject peoples: Slovaks, Rumanians, Croats, and others who had been crowded back into the surrounding foothills when the nomadic hordes from the steppes of Russia invaded the upper Danube Basin.

The Avars, the Franks, the Huns, the Slavs, and the Germans during their migrations had each brought their own particular native breeds of livestock with them from western Europe, or Russia or Asia to the Alföld of the Danube, and these had intermingled with the domestic animals of the aboriginal Celts. The Rumanians, during the early centuries of the Christian Era, had acquired several breeds from the Mediterranean Basin and Asia, including water buffaloes from India, so that when the Magyars arrived on their fast ponylike horses, followed more deliberately by their wagon trains of slowly plodding oxen, they found a variety of flocks and herds on the Danube steppes. These primitive breeds of farm animals persisted in Hungary until well toward the close of the last century, and vestiges of them are still to be found in the foothills and mountains of the surrounding succession States. But on the plains now comprised within the frontiers of Hungary the general-purpose low-grade breeds had been rapidly giving place to the purebred specialized strains of livestock introduced from the west.

These changes were accelerated by the direct participation of the Hungarian Government, after 1880, and from then until the outbreak of the World War the systematic upbuilding of the animals found not only on large estates but also on small peasant land holdings in the Comitats now constituting Hungary was more intensely organized, perhaps, than in any other part of Europe. Animal industry rivaled crop production, and the value of the export of live animals, meat, fat sides, hides, and other animal products practically equaled the export value of field-crop products.

In the counties west of the Danube animal husbandry is intensive. Animals are stall-fed, and large areas are cultivated to forage and fodder crops. This is in sharp contrast to the extensive cattle grazing on the plains of the Alföld east of the Danube, where, on account of the lack of moisture or the sterility of the soil (soda soils), whole regions are unsuited to field-crop production. Here

are found large herds of cattle, horses, and sheep, which on the whole afford a source of profit but which suffer severely in dry years.

At the outbreak of the World War the animal industry of Hungary was at its height. Breeders and feeders of the central plain had easy access to the large surpluses of corn produced in Banat and Crisana, now parts of Yugoslavia and Rumania, and to the supplies of hay produced in the Seven Mountain region, now incorporated into Rumania, and to the supplies of potatoes grown in Slovakia.

Hungary is cut off from its former sources of feeding-stuff supplies by the frontiers of three newly formed succession States—Czechoslovakia, Yugoslavia, and Rumania—and is thus handicapped by customs barriers from obtaining feeds to which it had free access before the World War, to supplement the production of the meadows and pastures found in the Alföld.

There were 6,722,000 (10, p. 8) acres of meadows and 8,327,000 acres of pastures in the old Kingdom in 1911, as contrasted with 1,706,000 acres of meadows and 2,523,000 acres of pastures within the present boundary of Hungary. There were, on the average, in 1911 throughout the old Kingdom of Hungary 51 sheep, 43 swine, 41 cattle, and 13 horses to each 100 acres of grassland or 1.5 animals per acre. This is in contrast to the conditions in the counties now comprising Hungary, in which in 1911 were found 56 sheep, 76 swine, 47 cattle, and 21 horses per 100 acres of meadows and pastures or an average of 2 animals per acre.

Even before the World War (in 1911), it was not possible to maintain the numbers of livestock found within the Comitats now comprising Hungary without recourse to supplementary feeding on an extensive scale and the purchase of corn, hay, and potatoes in other parts of the former Kingdom. Since the war, although the numbers of livestock has been considerably below the 1911 level and although the areas under forage and fodder plants have been increased, it has been a grave problem to obtain feedingstuffs sufficient to maintain the animals on Hungarian farms in proper condition.

In 1923 there was such a shortage of forage for livestock that the Minister of Agriculture took into serious consideration the question of increasing the area of pasture lands in connection with the land reform. Many farmers were reported to have sold their surplus cattle to butchers, retaining only such animals as were required for breeding and spring work. The total number of horses, cattle, sheep, and swine carried over at the end of that year was 6,354,000, or about 1.5 per acre of meadows and pastures. A small quantity of corn had to be imported during the year to carry even this number through the summer.

The crop and pasture lands are limited and these in turn limit the numbers of live animals that can be maintained. It is probable that in good years Hungary could produce many more animals than were carried over at the end of 1911. However, on account of the capriciousness of the climate, there would be considerable danger in carrying the maximum number of live animals the country's forage supply would support. The peasant farmer would always be in danger of having to dump his animals upon the market at a possible loss whenever there was a drought or a shortage from any other cause.

The pre-war numbers of livestock in the Comitats now comprising Hungary, as indicated by the census of 1911, had not been reached by the spring of 1928. It must, however, be borne in mind that the census of 1911 included many animals on feed (young stock and lean animals) that were bred in territories outside the boundaries of present Hungary and that had been shipped to the farms about Budapest and near Vienna for finishing before final marketing for slaughter. On the other hand, the 1911 numbers do not represent the maximum number of animals that can be carried on Hungarian farms. If the utilization of forage and fodder can be sufficiently increased these numbers may represent only a fair average about which livestock numbers in Hungary may probably fluctuate. This is more than sufficient for the country's domestic needs and admits of a considerable export of horses, cattle, sheep, hogs, meats, and other animal products to western and northern markets.

In ancient times, no animal was in such high favor in eyes of the Magyars as the horse; later, on account of the high price of wool, the sheep "walked on feet of gold." At the outbreak of the World War, the modern Hungarian farmers kept pace with the Americans and valued their farm animals in the following order: Swine, cattle, horses, and sheep.

Only 15.5 per cent of the swine were found on large holdings of 284.5 acres or more. These large farms specialized in the production of wool and mutton and possessed 71.2 per cent of the sheep. As indicated in Table 6, 552,620 small landowners owned 679,343 horses, averaging more than 1 horse to the farm, as well as 1,200,110 cattle, or more than 2 to the farm. The production of animals and animal products in Hungary was outstandingly an industry of the small farmer.

SWINE

It is probable that the aboriginal dwellers in the Alföld as well as those of the hill country west of the Danube possessed half-wild swine at the time of the advent of the Magyars. It is also probable that the thrifty Magyars brought with them swamp and mountain swine plundered from the villagers of the Carpathians and the lowlands to the east. In any case, two well-defined breeds of hogs were found in Hungary at the beginning of the nineteenth century. One of these called Bakony was found west of the Danube, where hogs were grazed in herds in the oak and beech forests as far west as Styria in Austria and as far south as the Sava River on the Bosnian frontier. The other breed, known as Szalonta, was found on the Alföld east of the Danube as far as the region of Seven Mountains. (See footnote 35.) Both of these breeds were rangy, razorback, meat hogs—late maturing and not very prolific.

The modern swine industry of Hungary dates from 1838, at which time one of the leading Hungarian agriculturists, Prince-Palatin Joseph, brought to his estates in Kisjeno 2 boars and 10 sows of a breed called Angolica (Mangolica)³⁶ which he obtained from the Topschider domains of the Serbian Prince Milos. This breed was prolific, and the rapidity with which it laid on fat was astounding to the Hungarians. At 1 year of age, boars weighed from 154 to 187

³⁶ The name suggests that this breed was of Mongolian origin.

pounds and sows 143 to 176 pounds. The Mangolicas were so well adapted to the conditions found in the wooded hills west of the Danube that, 17 years after their introduction into Hungary, the Bakony breed had disappeared. During the next 20 years, Mangolicas had practically replaced the Szalontas on the Alföld east of the Danube.

Such an impetus was given to hog production that between 1857 and 1895 swine numbers in Hungary (not including Croatia and Slavonia) increased from 3,572,000 to 6,447,000. During the next 16 years there was little change, the census of 1911 showing 6,415,000 swine in the old Kingdom.

About half the swine in the old Kingdom were found within the Comitats now comprising Hungary. (Table 45.)

TABLE 45.—Swine: Trend of numbers on hand in the old Kingdom of Hungary for specified years, 1857–1911, and in Hungary, present boundaries, 1911 and 1920–1928

Territory	Year	Total swine	Per 1,000 acres ¹	Per 1,000 inhabitants ²
			Number	Number
		<i>Thousands</i>		
Old Kingdom of Hungary (excluding Croatia and Slavonia).....	1857	3,572	51.1	362.0
	1870	3,072	43.9	226.2
	1884	4,804	68.7	334.5
	1895	6,447	92.2	404.4
	1911	6,415	91.8	351.2
	1911	3,213	139.8	422.4
	1920	2,653	115.4	333.9
	1921	2,563	111.5	319.1
	1922	2,473	107.6	305.0
	1923	2,133	92.8	290.5
Hungary, present boundary.....	1924	2,458	166.9	266.3
	1925	2,633	114.6	314.6
	1926	2,520	109.6	296.4
	1927	2,387	103.9	280.2
	1928	2,662	115.8	309.7

1857, from *Le Porc en Hongrie* 1900: 45.

1870–1911, from Magyar Statisztikai Évkön. 1872: 120; 1900: 100; 1913: 96.

1911, new boundaries calculated from Magyar Statisztikai Évkön. 1912: 131, 137.

1920, furnished by the Royal Hungarian Ministry of Agriculture.

1921, estimated by interpolating the decrease between 1920 and 1922.

1922–1926, from Magyar Statisztikai Szemle, May–June, 1925, January, 1926, and January, 1927.

1927, from *International Crop Rpt. and Agr. Statis.* November, 1927. (n. s.) 18: 614.

1928, from report of Vice Consul J. H. Morgan, Oct. 24, 1928, Budapest.

¹ Pre-war area=69,898,000 acres from Magyar Statisztikai Évkön. 1913: 11, and post-war area=22,983,000 acres from Statesman's Yearbook, 1926.

² Populations=1870, 13,579,129 from *Statis. Jahrb. Ungar.* 1873: 22.

1884, 14,363,012 from *Statis. Jahrb. Ungar.* 1884: 5.

1895, 15,940,327 from Magyar Statisztikai Évkön. 1895: 65.

1910, 18,264,533 from Magyar Statisztikai Évkön. 1912: 19.

1910–1928, new boundaries, see Table 8.

From *Le Porc en Hongrie* 1900: 45.

Before the World War, 90.2 per cent of the swine in the Comitats now comprising Hungary were Mangolicas. Out of a total of 3,213,000 hogs in 1911 only 314,000, or 9.8 per cent were Yorkshires or other western-European breeds of the bacon type. Aboriginal types of hogs are not to be found in Hungary, although such primitive types still persist in the highlands of Austria, Czechoslovakia, Rumania, Bulgaria, and south Yugoslavia.

The production of pork and lard in Hungary is of special interest to the farmers of the United States because of the competition of these products with American pork and pork products on the markets of central Europe.

FEEDING AND MARKETING

The swine owned by small farmers run around the farmyards and act as scavengers. The 552,620 owners possessing farms up to 284.4 acres held 1,819,921 swine in 1911, or an average of 3 to 4 hogs each. (Table 6.) When grain is cheap the peasant turns his cereals into pork, and markets his produce in this form. When pork is cheap or cereals dear, the peasant lets his swine shift for themselves and markets his product in very lean condition. There is thus no uniformity in the character of hogs produced by the peasants under such conditions, and for this reason there is great variation in size and quality from year to year and from household to household.

In 1911 there were 273,880 landless owners of swine who maintained 896,075 hogs. Most of these owners were householders who fed 1 or 2 hogs for home use, but many owned small establishments for fattening pigs with purchased feed. Most of these establishments were in the vicinity of Budapest or in western Hungary between Budapest and Vienna or Prague. But there were several large establishments that handled thousands of hogs each year.

The commercial fattening of swine in the Comitats now comprising Hungary is an ancient industry. During the early years of the eighteenth century, the Serbs drove large herds of swine on foot along well-defined trails through the woods west of the Danube in the direction of Vienna, selling a few here and a few there along the route. They also brought hogs in boats up the Danube. The animals not sold in Hungary eventually found their way into Styria, lower Austria, Bohemia, or even as far up the Danube as Bavaria.

The cultivation of Indian corn during this century increased rapidly, particularly in the lowlands of the Alföld in the southeast, where pork production on a commercial scale was firmly established at the beginning of the nineteenth century. The Serbs, who also produced corn in great quantities and who had swine of superior quality, were practically the sole competitors of the Hungarians until the middle of the last century. At that time, pork and lard from the United States began to appear upon the German markets to the detriment of the corn and hog farmers in both Serbia and Hungary.

From 1870 to 1890, the main business of pork production was conducted at Kőbánya, a large establishment near Budapest where, during 1890, more than 640,000 hogs were on feed. Another important establishment was located at Győr, on the Danube between Budapest and Vienna. This establishment was equipped to handle more than 40,000 hogs. During the next 10 years, 8 other establishments, equipped to fatten from 15,000 to 40,000 hogs each came into prominence, and the significance of Kőbánya diminished so that by 1900 only 170,000 hogs were under feed at this plant.

Kőbánya handled about 90,000 native hogs and 80,000 Serbian hogs in 1900, Rumania having dropped out as a source of lean swine. When the Austria-Hungarian agricultural protective tariff went into effect in 1906, Serbia was shut out of the Hungarian market, and from then on Kőbánya handled only native stock. After the loss of Serbian lean swine Kőbánya was unable to obtain sufficient native hogs and until the outbreak of the World War the number of hogs handled during any one year never exceeded 92,300 (Table 46), although the total number of swine commercially slaughtered or exported from the old Kingdom of Hungary during 1909-1913 averaged about 2,191,000.

TABLE 46.—*Swine: Numbers received at the feeding institution in Kőbánya from specified countries, 1870, 1880, 1890, and 1900–1913*

Year	Hungary	Serbia	Rumania (old Kingdom)	Gallia	Total
	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
1870.....	318,700	216,160	54,000	.....	588,860
1880.....	416,440	30,050	26,573	.....	473,063
1890.....	502,764	136,787	1,879	.....	641,430
1900.....	87,977	82,295	.....	.....	170,272
1901.....	88,210	108,306	.....	.....	196,516
1902.....	81,398	148,857	.....	.....	230,255
1903.....	62,069	139,865	.....	.....	199,054
1904.....	48,923	151,928	.....	.....	200,852
1905.....	64,124	114,020	.....	.....	178,144
1906.....	81,008	162,181	.....	.....	143,189
1907.....	83,702	.....	.....	.....	83,702
1908.....	89,006	.....	.....	.....	89,006
1909.....	90,732	.....	.....	.....	90,732
1910.....	86,957	.....	.....	.....	86,957
1911.....	67,700	.....	.....	350	68,050
1912.....	88,374	.....	.....	.....	88,374
1913.....	92,272	.....	.....	.....	92,272

1870–1890 from *Le Porc en Hongrie* 1900: 84.

1900–1913 from *Magyar Statisztikai Évkön*, 1900 to 1908 and 1913.

¹⁷ months only. There were no shipments of hogs from Serbia to Hungary after July, 1906, at which time the agricultural protective tariff of the Austro-Hungarian Monarchy went into effect. The bitter feeling engendered in Serbia at the abrupt exclusion of Serbian hogs from the Austria-Hungarian markets continued until the World War.

During the 5-year period ended in 1913, the slaughterhouses of the old Kingdom of Hungary including Croatia and Slavonia dressed an average of 1,597,586 hogs, in addition to which 593,635³⁷ live hogs were shipped abroad each year. The yearly commercial turnover of hogs before the World War thus averaged about 2,191,000 head or about 29 per cent of the numbers of swine reported on Hungarian farms including Croatia and Slavonia in 1911. This does not include animals slaughtered for home use, of which there is no record.

Before the World War the hog-feeding industry was concentrated in two general districts: (1) In the counties of west Hungary between the Danube and the Austrian frontier, and (2) in the southeastern corn belt comprising eastern Croatia and Slavonia and Voivodina (now in Yugoslavia), and Banat and Crisana (now parts of Rumania). Since the war, it has been difficult for the commercial feeding establishments to obtain lean hogs from their former sources of supply, from which they have been shut off by Rumanian and Yugoslavian customs barriers. The Comitats comprising Hungary were dependent upon former outlying districts not only for lean hogs but for corn and other feeds as well. Free trade in the former markets of Vienna, Prague, and many other cities to the west and north is a thing of the past. Sales of hogs and pork products in the Provinces now comprising Austria and Czechoslovakia are hampered by tariff restrictions and questions of the fluctuating value of the currencies of these countries. Therefore, it will be very difficult, if indeed it is possible, for the former swine-fattening industry of Hungary to be reestablished upon a plane of its pre-war magnitude.

³⁷ During this period Austrian records show that 436,168 live hogs received at Vienna originated in Hungary and Croatia Slavonia. Gallia, now a part of Poland, shipped 373,439 hogs to Vienna each year during these 5 years.

In 1920 there were 2,653,000 swine in Hungary, as compared with 3,213,000 in 1911, a decrease of 560,000 head. But a large part of this decrease is accounted for by the fact that there were not such large numbers of swine from the east and southeast in the feed lots about Budapest and west of the Danube as has been normally the case before the World War. The 1920 census figures represent more nearly the swine bred and raised within Hungary than do those of 1911.

During the next three years swine numbers decreased, reaching their postwar minimum of 2,133,000 in 1923. During 1922 and 1923, not enough corn was produced in Hungary to carry the livestock of the country through these two seasons, and 220,000 bushels had to be imported in 1922 and 78,000 bushels in 1923.

In 1924 and 1925, corn production increased to 72,635,000 and 86,496,000 (net) bushels respectively. Swine numbers similarly increased to 2,458,000 in 1924 and to 2,633,000 in 1925. The following year, corn production fell off to 75,074,000 bushels (net), and the number of swine decreased to 2,520,000. In 1927, there was a further decrease in corn to 66,870,000 bushels, accompanied by a decrease in swine to 2,387,000.

There is a general relation between the numbers of hogs carried on farms in Hungary and the production of corn, and the decrease in the corn crop in 1926 was accompanied by heavier marketing of hogs. (Table 47.)

TABLE 47.—Hogs sold in Budapest, 1924-1927

Year	Sold in open market	Other reported sales	Total
	Number	Number	Number
1924.....	199,423	28,870	228,293
1925.....	248,358	37,239	385,597
1926.....	532,691	152,771	685,462
1927.....	421,574	23,450	445,024

Ludwig Leopold (9), Commerce and Industry of Hungary in the year 1927 (3).

† Estimated.

In the beginning of 1926 more and more hogs were placed on feed at commercial establishments in the hope of the development of trade with Germany. Corn of the 1925 crop was cheap at first; but, during the season, it became evident that the 1926 crop would be short, and prices rose sharply while the hogs were still on feed. In the meantime the price of fat hogs fell below the price the farmers were asking for lean pigs.

The packing houses of Czechoslovakia took advantage of this situation and bought up 40,427 hogs weighing over 154 pounds each from the estates of Hungarian nobles for conversion into hams and bacon. Austria took 105,579 heavy hogs, and 30 went to other countries.

Hungary exported 753 suckling pigs to Austria in 1926 and 15 to Yugoslavia. A total of 10,890 pigs weighing from 66 to 154 pounds was exported to various countries, as follows: Austria, 9,564; Czechoslovakia, 1,208; Yugoslavia, 105; and Rumania, 13.

The total export for 1926 was 157,694, as compared with 893,192 exported from the old Kingdom of Hungary in 1913. (Table 48.)

TABLE 48.—Swine: Exports from the old Kingdom of Hungary by principal countries, 1906-1913, and from Hungary, present boundary, 1921-1927

Year	Austria	Germany	Switzerland	Italy	Czechoslovakia	Other countries	Total
Old Kingdom:	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
1906.....	424, 122	244	633	10	(¹)	130	425, 159
1907.....	378, 354	114	5, 344	8, 624	(¹)	33	392, 499
1908.....	482, 740	1, 446	3, 156	17, 128	(¹)	61	504, 520
1909.....	669, 827	863	798	3, 034	(¹)	59	674, 581
1910.....	550, 298	45	164	255	(¹)	120	550, 882
1911.....	300, 559	16	800	289	(¹)	149	301, 813
1912.....	546, 071	141	461	895	(¹)	139	547, 707
1913.....	891, 066	447	379	1, 213	(¹)	87	893, 192
Hungary, present boundary:							
1921.....	9, 751	730				89	10, 570
1922.....	40, 957	9, 643			19, 820	182	70, 602
1923.....	22, 904	511			27, 792	1	51, 208
1924.....	30, 113	3, 547			11, 373	983	46, 016
1925.....	81, 350	1			24, 602	3, 547	109, 500
1926.....	115, 896				41, 635	163	157, 694
1927.....	59, 701				55, 050	1, 756	116, 507

1906-1913 total exports from Hungary from Magyar Statisztikai Évkön. 1909: 206; 1912: 227; and 1923: 154.

1906-1913 exports from Austria-Hungary from Statis. Auswärtigen Handels des Vertragszollgebrets der Beiden Staaten der Österr.-Ungar Monarchie 1906-1913.

1906-1913 exports from Hungary were larger than those from the dual monarchy, so the difference is assumed to be exported to Austria from Hungary.

1921-1926 from Statisztikai Havi Közlemények, October-December, 1921-1926.

1927 Commerce and industry of Hungary in the year 1927 (3, p. 118).

¹ Czechoslovakia was part of Austria-Hungary prior to the World War.

The situation in the hog-feeding industry, which was critical in 1926, became alarming in 1927 in view of the shortage of the 1927 corn crop, which necessitated the import of corn toward the end of the year. The cost of feeding hogs in Hungary was relatively higher than in Rumania and even in Yugoslavia, although there was also a corn shortage in the latter country. The competition of Rumania was strengthened by the abolition of the export fee which had hampered the hog industry of that kingdom in former years. The hog industry of Hungary is suffering from the after effects of the prohibition that was placed upon the export of pork and pork products immediately following the World War and the succeeding system of export permits. During this period, lard and bacon from the United States gained possession of the markets of Austria and Czechoslovakia, and since 1924 it has been extremely difficult for Hungary to combat this competition.

INTERNATIONAL TRADE IN SWINE

Austria, particularly Vienna, is the primary market for the surplus hogs produced in Hungary. Czechoslovakia, on account of the ham and bacon factories in Prague, ranks second. The Austrian and Czechoslovak duty tariffs are so made as to favor the imports of live swine and to hinder the import of bacon, lard, and other pork products. The export of hogs declined sharply in 1927, decreasing to 116,507 as compared with the postwar maximum of 157,694 in 1926. Of the hogs exported in 1927, 59,701 went to Austria, 55,050 to Czechoslovakia, 109 to Yugoslavia, and 104 to Rumania. In addition to hogs, 1,543 pigs weighing up to 30 kilograms (66 pounds) apiece were shipped to Austria and other countries. This decline in hog exports is important to Hungary because Rumanian, Polish, and Yugoslavian competitors have gained ground in the northwestern markets.

Hungary imported 691 hogs from Germany and Yugoslavia, which were to be employed, for the most part, as breeding animals.

FATS AND BACON

Hungary felt the competition of the United States in fats and bacon very keenly during 1926 and could successfully compete only on those markets where consumers were prejudiced in favor of the Hungarian products and were willing to pay higher prices than those asked for the American products.

The export of smoked bacon was restricted because many localities that had purchased Hungarian bacon in former years had equipped themselves during the World War for curing their own pork. The export of lard was facilitated during the year by making up packages of 25 kilograms (55 pounds) each. This is reported to have made selling in foreign markets easier.

The total export of pork and pork products in 1927 fell to 20,147,000 pounds, as compared with 38,131,000 pounds in 1926. This situation is all the more unsatisfactory because Hungarian lard had enjoyed an excellent reputation for many decades.

Lard exports to various countries in 1927 were as follows: To Czechoslovakia, 7,122,000 pounds as compared with 16,370,000 pounds in 1926; to Austria, 2,019,000 pounds as compared with 5,488,000 pounds; to Germany, 538,000 pounds as compared with 757,000 pounds; and to other countries, 253,000 pounds as compared with 29,000 pounds.

The following exports of salt fat sides were made to various countries: Czechoslovakia, 6,550,000 pounds in 1927 as compared with 9,967,000 pounds in 1926; Germany, 563,000 pounds as compared with 2,437,000 pounds; Poland, 1,029,000 pounds as compared with 348,000 pounds; Austria, 151,000 pounds in 1927 as compared with 511,000 pounds to Austria, Italy, and France in 1926.

There were 345,000 pounds of smoked bacon shipped to Austria and Czechoslovakia in 1927 as compared with 305,000 pounds in 1926; 5,000 pounds to Germany, as compared with 24,000 pounds in 1926; whereas other countries took 11,000 pounds in 1927 as compared with 4,000 pounds shipped in 1926.

Hungary exported 1,561,000 pounds of salame sausage in 1927, as compared with 1,891,000 pounds in 1926. Austria absorbed 1,268,000 pounds of the 1927 export.

CATTLE

As in most European countries, the mainstay in farm power in Hungary is the ox; but with the view of building up a dual-purpose industry, milk production as well as work, cattle were introduced from Switzerland and other countries of western Europe. These breeds had, by 1913, crowded most of the native gray steppe cattle back across the Danube and were found in large numbers in the eastern part of the Alföld.

This improvement in the cattle had a stimulating influence upon horse breeding. There are perhaps no better draft oxen in the world than the rangy gray steppe cattle; the steers of dairy breeds are not so well adapted to the plow. Consequently almost every-

where in Hungary it has been necessary to augment the traction power of a yoke of oxen of these dairy breeds by hitching a horse to the plow or load when any particularly heavy work was in hand. As in north Bulgaria, so also in western Hungary, the use of cattle in farm work has given place more and more to horses.

The silver-gray cattle of Hungary are descended from the steppe cattle of Asia and Russia and so are particularly well adapted to the extreme heat and droughts of summer and the rigors of the severe winters experienced upon the great Hungarian plain. These animals are closely related to the Podolian gray cattle of Rumania and southern Russia and probably account for part of the ancestry of the gray cattle of Yugoslavia. They are large boned and rangy, heavy in the forequarters and slight behind, being particularly well adapted to work at the plow under severest conditions, and as J. V. Pirkner (12) states: "After 8 to 10 years of uninterrupted labor they can always be fattened for slaughter."

The gray steppe cattle give little milk; their primary function is that of traction animals. For this reason, among the Rumanian and Serbian populations of the old Kingdom of Hungary, cows were yoked into the teams with oxen so that in 1911 fully 530,000 cows were classed as work animals. The Magyar peasants, on the other hand, seldom work their cows in the field, chiefly because they had substituted dairy breeds of cattle for the single-purpose steppe animals, which for 30 years before the World War had occupied a diminishing place of importance among Hungarian herds. In 1884, fully 80.2 per cent of all cattle in the old Kingdom of Hungary were gray Hungarian, Podolian, or similar primitive breeds. In 1895 the percentage had decreased to 65.9; in 1905, to 51.6 per cent; and in 1911, to 31.1 per cent. In 1926, there were only 16.6 per cent of these cattle to be found among the herds of Hungary.

The place of the gray steppe cattle is being taken by the red-mottled dairy cattle of Triburg and the brown Simmenthals and gray Swiss from Switzerland and western Austria.

The numbers of cattle in Hungary had fallen 60,000 below the pre-war average, by 1920. (Table 49.) For the next three years, cattle continued to decrease, reaching the low point of 1,819,000 in 1923 as compared with 2,001,000 before the World War. During the following two years, cattle numbers increased to 1,920,000 or nearly to the 1920 level, but by 1927 fell to 1,805,000, the lowest point since the World War.

TABLE 49.—Cattle, including water buffaloes: Numbers in the old Kingdom of Hungary for specified years and in Hungary, present boundary, 1911 and 1920-1928

Territory	Year	Total cattle	Per 1,000 acres ¹	Per 1,000 inhabitants ²
		Thou- sands	Number	Number
Old Kingdom of Hungary, excluding Croatia and Slavonia.....	1870	3,569	51.1	262.8
	1884	4,879	69.6	339.7
	1895	5,830	83.4	365.7
	1911	6,184	88.5	336.2
	1911	2,001	87.1	261.2
	1920	1,941	84.5	243.2
	1921	1,894	82.0	233.6
	1922	1,828	79.5	224.5
	1923	1,819	79.1	221.3
	1924	1,806	82.5	229.1
Hungary, present boundary.....	1925	1,920	83.5	229.4
	1926	1,847	80.4	218.7
	1927	1,805	78.5	211.9
	1927	1,812	78.8	210.8

1870-1911 from Magyar Statisztikai Évkön. 1872: 120; 1900: 100; and 1913: 96.

1911 new boundaries calculated from same source 1912: 131, 137.

1920 furnished by the Royal Hungarian Ministry of Agriculture.

1921 estimated by interpolating the decrease between 1920 and 1922.

1922-1926 from Magyar Statisztikai Ezemle, May-June 1925, January 1926-27

1927 from Internat. Crop Rpt. and Agr. Statis. (n. s.) 18: 614.

1928 from report of Vice Consul J. H. Morgan, October 24, 1928, Budapest.

¹ For areas pre-war and post-war see footnote 1, Table 45.

² For populations 1870-1928 see Tables 8 and 45.

INTERNATIONAL TRADE IN CATTLE

During the 5-year period ended 1913, the old Kingdom of Hungary, including Croatia and Slavonia, shipped to Austria (that is, to the Vienna market) an annual average of 186,760 mature cattle or 68.7 per cent of the beef animals slaughtered in the capital of the former Empire. In addition, 531,182 mature cattle and 211,946 young stock were slaughtered at Budapest and at country centers. This indicates an annual commercial turnover of 929,888 cattle.

An annual average of 634,782 pounds of beef slaughtered in Hungary was shipped to Vienna each year. During this period, Hungary sent to Vienna 24,083 calves and 40,331 pounds of veal. The number of calves slaughtered in Budapest and country centers averaged 574,916 heads each year. An average of 1,553 calves were shipped yearly from Vienna to Hungarian points.

The cattle trade of Hungary can not be compared with that of the old Kingdom during pre-war days. The only point of similarity is that most of the export goes to Austria.

Hungary exported 73,835 cattle of all classes, in 1927, as compared with 91,074 in 1926. Cattle production, as reflected by these international-trade figures, is in the most critical position of any branch of the animal industry. Recovery of cattle numbers in Hungary is retarded by several factors: (1) Reparations payments; (2) the high price of fodder and the high cost of fodder production; (3) more careful selection of individual animals, particularly dairy cows; (4) replacement of oxen by horses in farm work; (5) weakened purchasing capacity of customer countries; and (6) decreased domestic consumption of and, consequently, decreased demand for beef. All these factors have tended to retard production and to decrease the numbers of cattle available for export.

In 1927 Austria was the chief purchaser of Hungarian cattle, absorbing 49,913. Italy took 13,549; Switzerland, 7,975; Czechoslovakia, 2,306; whereas other specified countries took 50 head and the destination of 42 head was not specified.

Hungary imported 1,003 cattle in 1926, of which 165 were purebred stock, chiefly from Switzerland and Holland. The 1927 imports of 2,302 head were not classified.

BEEF PRODUCTION

The number of cattle driven into the Budapest cattle market was reported to be 50,687 in 1927, as compared with 54,810 in 1926. Average weights, except in the case of water buffaloes, were greater than during the previous year. Pasturage is too restricted and the cost of fodder too high in Hungary to render it feasible to raise cattle without obtaining an income from milk or work in addition to the meat produced.

A relatively small number of animals are fattened at distilleries, the breweries, and at sugar factories. Some of the peasants and large landowners stall-feed a few animals each year; but the majority of cows and steers are marketed in whatever condition they happen to be in when they are discarded from the plow or the dairy.

There is no breed of cattle in Hungary specifically adapted to meat production. In the first place, there is little demand for prime beef in the American sense. The peasantry eat very little beef, and the standard of living in the cities is much lower than in western Europe. Steaks are seldom if ever used in the native households. Beef is ground up and mixed with bread crumbs and fried in little pattes called *coutlettes*, or it is cut up into small morsels and stewed with vegetables in the highly seasoned concoction called *goulash*. More rarely it is roasted. Fried or broiled beef is restricted usually to the fillet, which is removed from the carcass and sold separately. The greater portion of the beef animal is classed as soup meat, which is boiled both with and without vegetables.

DAIRYING

The old Kingdom of Hungary exported to the former Empire of Austria an average of 147,176,000 pounds of milk, 6,633,000 pounds of butter, and 4,635,000 pounds of cheese during the 5-year period 1909-1913. The greater part of these products was shipped from the western comitats of present Hungary between the Danube River and the Austrian frontier, where the cattle are almost exclusively of the Swiss dairy type.

There were 541 dairy associations that reported in 1909 in the old Kingdom of Hungary. Of this number, 328 societies, located in the districts west of the Danube River, reported 54,398 cows, from which 104,991,800 pounds of milk were delivered to the plants. The associations manufactured 3,450,199 pounds of butter. There is no record of the quantities of milk used at home or of transactions in liquid milk.

There were 72 societies that reported 12,247 cows producing 16,589,000 pounds of commercial milk and 688,000 pounds of butter

in the Seven Mountain region, which is now part of the administrative district of Transylvania, in greater Rumania.

At the time of the census enumeration in 1911, there were 921,000 cows in the comitats now comprising Hungary. Doctor Leopold (9, p. 211), in commenting on the situation in 1926, placed the number of cows at 900,000. Since the World War, special attention has been given to improving the quality of the cows held on Hungarian farms. Between November 1, 1925, and October 31, 1926, a controlled test of production was made with 420 cows in different parts of Hungary. The cows under test weighed from 1,069 to 1,437 pounds each. The average lactation period was 308 days. The highest group, comprising 39 cows, averaged 9,354 pounds of milk, equivalent to 344 pounds of butterfat, each. The lowest group comprised 62 cows and averaged 7,145 pounds of milk, equivalent to 258 pounds of butterfat. One of the animals tested was the famous Augusta 26, with a record of 28,014 pounds of milk, equivalent to 1,692 pounds of butterfat.

Budapest is the leading market for liquid milk and other dairy products. The daily officially inspected milk supply of Budapest in 1925 was 551,000 pounds, of which 30 per cent was supplied by small peasant farms and 70 per cent by large-estate owners. It is estimated that fully 110,000 pounds of milk produced by uninspected cows is sold illegally in Budapest each day. In 1926, Budapest milk consumption officially had increased to 251,404,000 pounds, or 689,000 pounds each day.

The milk situation in 1927 was characterized by an overproduction which appeared suddenly, increasing the milk supply 30 to 40 per cent above that of 1926, with no compensating increase in the possibilities of sales. Throughout the year the Budapest dairies worked with a surplus varying from 68,000 to 227,000 pounds per day above that which they had been accustomed to handle. There was a small increase in consumption of milk in Budapest during the year. The officially reported sales for 1927 have been placed at 268,191,000 pounds, or 735,000 pounds per day, an increase of 2 per cent over the sales reported the previous year (15). It is estimated that the average consumption of milk rose to 0.3 quart per person per day and that home consumption of butter and cheese also showed a tendency to increase. The turnover tax, which burdened the milk industry, was abolished on August 8, 1927, and the price of milk was cheapened, and consumption was, accordingly, stimulated. Nevertheless, there were 551,000 pounds of butter and 1,300,000 to 1,500,000 pounds of curds in cold storage in Budapest at the end of the year. In the opinion of experts, the tendency is toward increased production (3).

Development of the dairy industry in Hungary depends upon the feeding-stuff supply which is precarious under the climatic conditions of the great plain (Alföld). Great improvement could be made though better selection of high-producing cows. It is probable that the reduction in numbers of cattle (Table 49) has been partially compensated for by the higher quality of the animals retained.

INTERNATIONAL TRADE IN DAIRY PRODUCTS

In 1926, Hungary exported 6,946,033 pounds of liquid milk, as compared with 10,387,634 pounds in 1925. The 1926 export went

chiefly to Austria (6,900,339 pounds), and 38,580 pounds went to Czechoslovakia. Imports, in 1926, were 2,474,223 pounds, as compared with 2,376,559 the previous year. Of this quantity, 2,438,729 pounds came from Czechoslovakia in 1926, as compared with 2,235,244 pounds in 1925.

Hungary exported 441,000 pounds of butter in 1927, as compared with 71,000 pounds in 1926 and 233,000 pounds in 1925. In the summer of 1927 a small amount of butter was imported, probably because of lack of uniformity in production and storage. In 1926, imports of butter, chiefly from Denmark, reached 463,000 pounds, as compared with 437,000 in 1925.

There was no appreciable import of cheese in 1927, and no export. In 1926, Hungary exported 9,000 pounds of hard cheese and 411,000 pounds of soft cheese, for the most part to Austria. The imports of hard cheese (560,000 pounds) and 275,000 pounds of soft cheese were chiefly from Switzerland.

HORSES

The breeding and handling of horses among the Magyars was the special prerogative of the head of the household, whereas, the care of cattle, swine, and sheep among the peasants was left more to the women, old men, and children. The reason for this was that the horse was part of the fighting equipment of the Magyar warrior, and he was responsible to his chieftan for its condition and breed characteristics of speed and endurance. The support of the family devolved upon the nonwarriors. Although somewhat modified by the passing of time, the custom has still persisted in many localities.

The foundation stock of the Hungarian horse-breeding industry is the same small Asiatic breed, scarcely larger than a pony, that carried the hordes of Attila across Russia and swept westward across central Europe to the Rhine in an unbelievably short time. These staunch animals that, as stated by Johann V. Pirkner, "besides the rider often bore a fat ram or even a nobler, two-legged booty thrown across the saddle" are the basis for the world-famous Hungarian horses of modern times. The characteristics of both horse and peasant in Hungary have clung tenaciously to the past. The horses are resistant to extremes of heat and cold and to hard usage. The peasants are unusually loyal to their leaders and have cooperated with the State in improving their horses. In addition to the native Hungarian breed of horse, which varies somewhat with the locality, excellent examples of all the best European and Arabian breeds, are found in Government stables and on large estates.³⁸

³⁸ In 1911 the Government breeding stables reported 187 English thoroughbreds, 1,502 English half bloods 41 Arabian full bloods, 298 Arabian half bloods, 614 Nonius, 203 Gidran, 176 Lipizza, and 142 Norik.

TABLE 50.—Horses: Numbers in the old Kingdom of Hungary for specified years, and in Hungary, present boundary, 1911 and 1920-1928

Territory	Year	Horses	Per 1,000 acres ¹	Per 1,000 inhabitants ²
		Thou- sands	Number	Number
Old Kingdom of Hungary, excluding Croatia and Slavonia.....	1870	1,631	23.3	120.1
	1884	1,749	25.0	121.8
	1895	1,997	28.6	125.3
	1911	1,974	28.2	107.3
	1911	876	38.1	114.4
	1920	685	29.8	85.8
	1921	701	30.5	86.9
Hungary, present boundary.....	1922	717	31.2	88.1
	1923	815	35.5	99.1
	1924	850	37.0	102.7
	1925	876	38.1	104.8
	1926	885	38.5	104.8
	1927	903	39.3	106.0
	1928	918	39.9	106.8

1870-1911 from Magyar Statisztikai Évkön. 1872: 120; 1900: 100; and 1913: 96.
 1911 new boundaries calculated from same source 1912 p. 131 and 137.
 1920 furnished by the Royal Hungarian Ministry of Agriculture.
 1921 estimated by interpolating the increase between 1920 and 1922.
 1922-1926 from Magyar Statisztikai Szemle May-June, 1925, January, 1926-27.
 1927 from Internat. Crop Rpt. and Agr. Statis. (n. s.) 18: 614.
 1928 from report of Vice Consul J. H. Morgan, Oct. 24, 1928, Budapest.

¹ For areas see footnote 1, Table 45.
² For populations 1870-1928 see Tables 8 and 45.

Hungarian horses are almost universally of the warm-blooded breeds and although well suited to cavalry and other military purposes are nevertheless adapted to light farm work. In Hungary, as in Rumania, Yugoslavia, and Bulgaria, the primary source of farm power is the ox. In recent years, the quality of the oxen has been decreasing, and everywhere horses have been hitched to the plow to supplement the ox team. Although the average weight of horses in Hungary is light, they are being used more and more for farm work. There is need of a heavier draft horse in Hungary and the attention of breeders is being turned in this direction.

In 1911 there were 876,000 horses in the Comitats now comprising Hungary. (Table 50.) The inroads made on Hungarian livestock during the World War decimated the numbers of horses in the country. In 1920 there were 191,000 fewer horses than before the war. During the Rumanian invasion many horses were sequestered permanently. Since 1920 considerable numbers of horses have been sent to Yugoslavia and Czechoslovakia in payment of reparations. In spite of these drafts upon the nation's resources, the numbers of horses on Hungarian farms have increased to such an extent that by 1925 they had reached the 1911 estimated number, and in 1928 were 42,000 above that estimate.

INTERNATIONAL TRADE IN HORSES

During 1927, Hungary exported 1,011 colts, as compared with 765 in 1926, most of which went to Austria. The number of horses more than 2 years old shipped to Austria, in 1927, was 15,315, as compared with 18,330 in 1926. Shipments to various other countries were as follows: To Czechoslovakia, 4,034 in 1927, as compared with 4,208 in 1926; to Italy, 3,760, as compared with 4,981 in 1926; to Switzerland, 1,384, as compared with 691 in 1926; to Rumania, 868, as compared with 464; to Turkey, 486, as compared with 204 in 1926; to Yugoslavia, 54, as compared with 64 in 1926; to Union of Socialistic Soviet

Republics, 2,947; and to other countries 51 in 1927, as compared with 109 in 1926.

Horse breeding and the export of horses are capable of development, and the data of Table 50 indicate that this branch of the animal industry of Hungary is receiving closer attention than is any other.

SHEEP AND GOATS

As in other European countries, the sheep industry of the old Kingdom of Hungary had been on the decline since 1870. The low point was reached in 1895. After that year, there was a slight recovery. The census of 1911 showed 7,698,000, of which number, 2,354,000 sheep were found in the Comitats comprising residual Hungary.

The most usual breed of sheep in Hungary is the Spanish merino, introduced by Queen Maria Theresia and Kaiser Joseph II. There were 1,546,000 merinos or crosses containing merino blood in 1911 in the Comitats constituting residual Hungary or about 65.7 per cent of total number.

The native milk sheep bearing long, coarse wool numbered 521,000 or 22.1 per cent of total number, before the World War. The most common of these long-wool sheep was the Raczka breed, which was brought by the Magyars from the north Ural regions in Asia, and which exhibit characteristics that are the result of thousands of years of breeding without intermixture from other breeds. Another long-wool, milk sheep is the Czigaja that probably found its way to the Hungarian plains from Rumania and South Russia, but this or a similar breed may have been in possession of the Celtic aborigines before the arrival of the Magyars.

English and other mutton types made up the remaining 12.2 per cent.

In 1920 there were only 1,339,000 sheep in Hungary. There had been an appreciable increase in the number of sheep between 1920 and 1925, in which year 1,891,000 were reported. The next year, 1926, there was a decrease in the number, which continued through 1927 to the spring of 1928, when 1,566,000 sheep were reported on Hungarian farms. (Table 51.)

TABLE 51.—*Sheep: Number in the old Kingdom of Hungary for specified years and in Hungary, present boundary, 1911 and 1920-1928*

Territory	Year	Total sheep	Per 1,000 acres ¹	Per 1,000 inhabitants ²
		Thousands	Number	Number
Old Kingdom of Hungary, excluding Croatia and Slavonia.....	1870	11,920	170.5	877.8
	1884	10,595	151.6	737.7
	1895	7,527	107.7	472.2
	1911	7,698	110.1	418.5
	1911	2,354	102.4	307.3
	1920	1,339	58.2	167.8
	1921	1,346	58.6	166.9
	1922	1,352	58.8	166.1
	1923	1,587	69.1	193.0
	1924	1,814	78.9	219.2
Hungary, present boundary.....	1925	1,891	82.3	226.0
	1926	1,804	78.5	213.6
	1927	1,611	70.1	189.1
	1928	1,566	68.1	182.2

1870-1911 from Magyar Statisztikai Évkön. 1872: 120; 1900: 100; 1913: 96.

1911 new boundaries calculated from same source 1912: 131, 137.

1920 furnished by the Royal Hungarian Ministry of Agriculture.

1921 estimated by interpolating the increase between 1920 and 1922.

1922-1928 from Magyar Statisztikai Szemle, May-June, 1925, January, 1926-27.

1927 from Internat. Crop Rpt. and Agr. Statis. (n. s.) 18: 614.

1928 from report of Vice Consul, J. H. Morgan, Oct., 1928, Budapest.

¹ For areas see footnote 1, Table 45.

² For populations, 1870-1928, see Tables 8 and 45.

There were 34,964 goats in Hungary before the World War. During the unsettled conditions following the war numbers tended to increase, until in 1925 there were 59,831 goats in the country. With improvement in conditions goat numbers have tended to decrease and in 1928 had reached the low point of 29,836. (Table 52.) It is probable that goats (as well as mules and donkeys) will not be important factors in the agriculture of Hungary.

TABLE 52.—Goats, mules, and donkeys: Number in present Hungary, 1911 and 1922-1928

Year	Goats	Mules	Donkeys
	Number	Number	Number
Pre-war year: 1911.....	34,964	413	7,879
Post-war years: ¹			
1922.....	48,241	2,232	5,386
1923.....	45,016	1,991	5,013
1924.....	55,400	1,963	4,907
1925.....	59,831	1,787	5,039
1926.....	48,633	1,747	4,954
1927.....	36,418	1,657	4,784
1928.....	29,836	(²)	(²)

1911, calculated from Magyar Statisztikai Évkön. 1912: 126, 137.

1922-1926 from Magyar Statisztikai Bizetise, May-June, 1925, January, 1926, and January, 1927.

1927 from Internat. Crop Rpt. and Agr. Statis. (n. s.) 18: 614.

1928 from report of Vice Consul J. H. Morgan, Oct. 24, 1928, Budapest.

¹ 1920 and 1921 not available.

² Not available.

INTERNATIONAL TRADE IN SHEEP AND GOATS

The export of sheep, lambs, and goats from Hungary dropped from 46,741 in 1925 to 38,918 in 1926 and to 24,570 in 1927. The decline in exports was the result of weakened demand in customer countries and to increased competition in the markets of central and western Europe. Switzerland took 13,349 sheep in 1927 as compared with 24,463 in 1926. Exports to various other countries were as follows: To Czechoslovakia, 6,502 in 1927, as compared with 8,370 in 1926; to Austria, 3,384 as compared with 4,051; to France, 1,292 as compared with 1,931; to other countries 43 in 1927, as compared with 103 sheep in 1926.

A small amount, 467,000 pounds of fresh mutton, lamb, and goat meat was exported in 1927 as compared with 498,000 pounds in 1926.

WOOL

Under the Austro-Hungarian Monarchy the textile industry was little developed in the Comitats now comprising Hungary. Most of the commercial wool produced was shipped to the mills in Bohemia, Moravia, and Silesia, or to Germany and other countries. Since the treaty of Trianon, the Hungarian woolen industry has recovered very slowly. In 1922 the production of domestic mills covered about 10 per cent of the requirement; in 1923, about 25 per cent; and, in 1924, about 40 per cent. In 1924, there were 25,000 spindles and 1,100 looms in operation.

In 1926 the wool clip was estimated at 16,534,500 to 17,636,800 pounds, most of which was shipped abroad. The total export was 13,934,174 pounds, or about 8.5 per cent less than the 15,234,006 pounds exported in 1925. Of this export, 6,233,727 pounds went to

Germany, 5,002,899 pounds went to Czechoslovakia, and 1,017,643 pounds went to Italy.

The production of wool, in 1927 was about the same in quantity as in the previous year, but the quality was, according to test washings, 1 to 2 per cent better.²⁹ In recent years the smaller farmers have devoted greater care to sheep breeding and have taken better care of the wool than before the World War.

The home industry in 1927 bought 6,600,000 pounds, and the remainder, for the most part, was exported. The various leading countries to which wool was exported and the quantities taken were as follows: To Germany, 5,054,000 pounds; to Czechoslovakia, 2,791,000 pounds; to Rumania, 736,000 pounds; to Austria, 575,000 pounds; to Poland, 485,000 pounds; to Belgium, 323,000 pounds.

Hungary imported 4,511,000 pounds of wool in 1927, as compared with 2,325,633 pounds in 1926.

At the present time, Hungarian wool is not known on the European market. There are no associations to bring the farmers and the export buyers together. According to United States Commercial Attaché W. A. Hodgman, about 75 per cent of German wool, 90 per cent of Australian, and 90 per cent of South American wool is of first quality. Only a very small proportion of Hungarian wool comes up to the quality produced in these countries. The Hungarian farmer knows nothing about modern preparation of wool for marketing and usually packs the wool without airing, which gives the product a yellow color.

MEAT PRODUCTION AND CONSUMPTION

No data are available relative to home slaughterings in Hungary before or since the World War, but the numbers of animals reported to have been slaughtered in officially recognized slaughterhouses in the former Kingdom had been gradually increasing with the exception of sheep and goats from 1893 until 1913.

During the 20-year period ended 1913, there had been a continuously steady increase in the numbers of cattle and swine slaughtered for each 100 inhabitants. (Table 53.)

Unofficial figures (15, p. 44-45) indicate that there has been an increase in meat consumption in Hungary between 1924 and 1926. The numbers of animals killed in slaughterhouses in 1924, showed an increase of 9.9 per cent over 1923. The following year, the increase reached 39.2 per cent and, in 1926, was 59.7 per cent greater than in 1923.

Comparing the data for 1926 with the 1909-1913 average given in Table 53 indicates that the supply of meat from slaughterhouses per 100 inhabitants in Hungary was greater than it was in the old Kingdom, about half of whose inhabitants ate meat not more than 10 times during the year. The treaty of Trianon segregated from Hungary the districts of lowest meat consumption—Slovakia, Ruthenia, Transylvania, Voivodina, Croatia, and Slavonia. It is to be expected that the statistical disappearance of meat in Hungary, including Budapest, would be greater than in the old Kingdom, including the

²⁹ The wool department of the Hungarian General Credit Bank estimated the 1927 clip at approximately 16,500,000 pounds of wool. MORGAN, J. H., PRODUCTION OF WOOL AND NUMBER OF SHEEP IN HUNGARY. Cons. Rpt. Jan. 14, 1928, 2 p. 1928. [Typewritten copy on file in Bureau Agricultural Economics Library.]

TABLE 53.—Animals slaughtered for general consumption in the old Kingdom of Hungary, for specified years

Year	Public slaugh-ter-houses	Bulls	Steers	Cows	Young cattle	Water Buffa-loes	Calves	Sheep	Lambs	Goats	Kids	Swine	Horses
Average:	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number
1893-1895.....	2,065	9,806	172,443	237,384	111,356	6,826	432,274	974,740	649,094	26,026	31,404	753,244	(1)
1896-1900.....	2,105	12,010	183,089	296,787	131,500	9,063	465,391	747,869	570,286	24,109	30,893	831,763	(1)
1901-1905.....	2,224	16,191	181,294	305,349	169,250	9,554	502,136	717,848	537,088	18,768	15,855	1,011,722	2,682
1906-1910.....	2,174	26,078	183,699	307,977	195,025	14,102	561,185	758,404	584,229	20,783	18,293	1,239,844	7,740
1909-1912.....	2,244	31,417	156,633	343,132	* 211,946	12,470	* 574,916	840,403	593,840	27,090	22,461	1,473,666	12,500
1909.....	2,139	32,950	189,658	402,956	* 279,773	27,562	* 743,687	900,496	605,508	24,762	18,227	1,379,720	8,149
1910.....	2,359	27,433	174,207	401,209	* 220,193	13,825	* 635,737	834,050	641,098	21,674	23,884	1,301,805	11,194
1911.....	2,341	28,642	150,956	307,220	* 164,796	8,293	* 524,114	787,374	572,803	27,636	20,843	1,312,974	15,296
1912.....	2,298	32,161	141,503	283,946	* 169,639	6,463	* 554,189	808,991	597,531	31,714	32,193	1,564,517	14,551
1913.....	2,083	35,999	126,841	320,327	* 225,329	6,209	* 416,853	871,104	552,261	29,707	17,159	1,810,315	13,311

PER 100 INHABITANTS

Average:													
1893-1895.....	0.012		3.43			0.04	2.79	10.49		0.37		4.89	(1)
1896-1900.....	.013		3.82			.06	2.85	7.87		.34		5.08	(1)
1901-1905.....	.012		3.87			.06	2.89	7.22		.20		5.82	0.02
1906-1910.....	.012		3.92			.08	3.09	7.39		.22		6.82	.04
1909-1912 ¹.....	.012	0.17	0.96	1.88	1.16	.07	3.15	4.60	3.25	.27		8.07	.07
1926 ⁴.....		.23	.47	1.54			4.69	4.37				14.17	.20

From Magyar Statisztikai Évkön. 1896: 148; 1900: 104; 1912: 140; 1913: 99.

¹ No report.² The young cattle that were slaughtered in Budapest are included with calves.³ Population 1910 excluding Croatia and Slavonia=18,264,533.⁴ Die Volkswirtschaft Ungarns im Jahre 1927. (16, p. 46.)

outlying districts of low consumption. Nevertheless, if the meat produced by the animals killed in the slaughterhouses of Hungary, in 1926, be compared with that produced by the same slaughterhouses before the World War, an increase of 29.5 per cent is indicated (15, p. 45). It appears that more calves, but less mature cattle, are being slaughtered than before the war. The numbers of swine passing through slaughterhouses of Hungary in 1926, was 75.6 per cent greater than the official slaughterings of the old Kingdom before the war. It must be remembered, in this connection, that the pork produced in slaughterhouses represents only a small portion of the pork consumed in the country as a whole. Large numbers of swine, lambs, goats, fowls, and hares are slaughtered at home whereas cattle and horses, without exception, are killed in official slaughterhouses.

It has been noted, in recent years, that householders in Budapest and other large centers show a tendency to keep pigs and fowls at home for family use. The numbers of such animals that are consumed at home do not appear in public records. However, the number of licenses issued to city householders to slaughter swine at home increased from 355, in 1923, to 1,624, in 1926. Many more than this number slaughter without license.

Hungary is undoubtedly eating more pork, fowls, and horse meat than before the war. Less numbers of cattle have been slaughtered but, on the other hand, the weights of cattle slaughtered during the first six months of 1927 averaged greater than during the last six months of 1926. Bulls weighed 1,230 pounds in 1927 as compared with 1,202 pounds in 1926; steers 1,380 pounds as compared with 1,349 pounds; and cows 1,089 pounds in 1927 as compared with 1,056 pounds in 1926. It may be that decreased numbers of cattle slaughtered may in a measure be compensated for by the increased average weight of the animals sent to the block.

SUMMARY

Hungary is an agricultural country in which the manufacturing industries are of secondary importance. Hungary produces exportable surpluses of practically all farm products. In 1927, plowlands reached 60.3 per cent of the total area; meadows and pastures, 18.1 per cent; forests, 11.7 per cent; gardens and vineyards, 3.4 per cent; and 6.5 per cent was in reeds or was unproductive.

The people of Hungary are Magyars—of Asiatic origin similar to the Finns. They are highly intelligent and traditionally patriotic. They are a home-loving folk deeply attached to the soil of their ancestors.

The soil of Hungary is generally a fertile black loam except for sandy stretches, particularly along the eastern banks of the Danube River. The great handicap to agriculture is the precarious climate. Droughts are common during the growing season and short crops must be expected occasionally, as in 1924.

There was a land reform in Hungary as in other succession States, during which 1,590,000 acres changed hands. The scope of this land reform was not as sweeping as in Russia and Rumania, but its effects are perceptible.

Hungary had nearly 500,000 more acres under plow in 1927 than before the World War, at the expense of meadows, pastures, and forests. In 1928 cereal acreage was 104 per cent of the pre-war

average; potatoes, 105.8 per cent and sugar beets, 125.2 per cent. On the other hand, cattle were 90.5 per cent of the 1911 census numbers, swine, 82.8 per cent, and sheep 66.6 per cent. Horses alone show several thousand more head than before the World War. It is probable that the locally bred livestock have practically recovered their pre-war status but that this number is considerably less than reported in 1911 because at that time thousands of lean animals shipped in from outlying districts were being fattened in the feed lots about Budapest and in the western counties between Budapest and Vienna.

Hungary is primarily a wheat-producing country, 41 per cent of the cereal acreage being under wheat in 1928. Wheaten bread forms the basis of the peasant diet whereas in Austria, Czechoslovakia, Germany, Poland, and eastern Europe the common bread is rye. Excepting the poor crop season of 1924-25, wheat production in Hungary in recent years has been greater than before the World War. During 1927-28, Hungary exported (net) 21,491,000 bushels of wheat and flour in terms of grain as compared with an estimated average surplus of 20,489,000 bushels during 1909-1913.

Budapest, next after Minneapolis, was the largest milling center in the world before the World War. Since the war, on account of governmental regulation and heavy taxation, the flour-milling industry has been permanently crippled, and some of the large mills have been dismantled. In 1913 the total wheat and wheat-flour exports (in terms of grain) of the entire Kingdom of Hungary amounted to 55,233,000 bushels, 18,433,000 bushels of which were exported as grain and 36,800,000 bushels as flour. In 1927-28 Hungary exported (net) 21,491,000 bushels of wheat, 12,004,000 bushels as grain, and 9,487,000 bushels as flour.

Just before the World War, the acreage of wheat in Hungary had become practically static although production fluctuated with the fluctuating changes in climate. In good seasons the people of Hungary used more wheat, but, also, the merchants and mills exported more wheat than was, on the average, customary. On the other hand, during poor crop seasons a less-than-average quantity of wheat was eaten and exported. Since the World War, Hungary has been exporting the maximum volume of wheat possible and has left within the country only the smallest quantity that would maintain the population. The Government has encouraged the use of rye as a wheat substitute. As a result, the per capita net disappearance of wheat during 1922-23, 1923-24, 1925-26, and 1926-27 appears to have been nearly static, varying only slightly above or below the mean level of 4.98 bushels. This has resulted in a high correlation of 0.999 between per capita net production and per capita net exports.

This indicates that under the conditions that prevailed during these four years there was an average tendency for the per capita net production of any given year to be associated with per capita net export equivalent to 4.92 bushels less than 0.9909 times the production or $E' = 0.9909 P - 4.92$.

There was 68 per cent tendency for observed per capita net exports to approximate the calculated exports within a range of $\pm \sqrt{\frac{\sum(E - E')^2}{n}}$; which, in this case was ± 0.03 and a 99 per cent tendency that under average conditions the range would approximate ± 0.09 bushel per capita.

In 1927, per capita net production of wheat was 7.65 bushels. Under the average conditions that prevailed during the four years 1922-23, 1923-24, 1925-26, and 1926-27, there were 68 chances in 100 that per capita net exports during the season 1927-28 would approximate $(0.9909 \times 7.65) - 4.92$ or 2.66 bushels within a range of ± 0.03 bushel, 95 chances that the range would be ± 0.06 bushel, and 99 chances that the range would be ± 0.09 bushel per capita. That is to say, that in 99 per cent of cases the export could be expected to range from 2.57 to 2.75 bushels per capita, if conditions remained average. The actual net export during the season 1927-28 was 2.52 bushels per capita or 0.05 bushel below the lower limit of range.

The price relationships of wheat in Hungary and in near-by importing countries was not sufficiently wide to exercise an average pull on Hungarian wheat during the crop year 1927-28. On the other hand, rye prices abroad were relatively high and rye moved abroad in spite of a short crop at home, resulting in the greater use of wheat and the lesser use of rye in domestic bread making than was the case the previous season. Domestic disappearance of wheat rose to the post-war maximum of 5.13 bushels per capita.

The production of rye in Hungary is of third-rate importance, being superseded by wheat and corn. Before the World War, the Comitats now comprising Hungary produced an estimated rye surplus of about 15,826,000 bushels. Since the war, rye acreage has increased; but even excluding the poor crop season of 1924-25, the average production of recent years has been somewhat less than that of pre-war.

Per capita disappearance, however, has averaged about 2.25 bushels during 1922-23, 1923-24, 1925-26, and 1926-27, as compared with 1.4 bushels before the World War. This has resulted in decreased net exports ranging from 2,572,000 bushels in 1922-23 to 10,240,000 bushels in 1926-27. During these four years there was a correlation between per capita net production and per capita net exports of ± 0.74 . On the average, the calculated per capita net export of rye associated with the production of any one year was found by the equation $E' = 0.7556P - 1.51$.

There was a 68 per cent tendency for observed per capita net exports to approximate the calculated exports within a range of ± 0.216 bushel, a 95 per cent tendency toward a range of ± 0.432 bushel, and a 99 per cent tendency toward a range of ± 0.648 bushel.

In 1927, per capita net production of rye was 2.04 bushels. The calculated per capita net export that could be expected to be associated with a production of 2.04 bushels would (under the average conditions that prevailed during 1922-23, 1923-24, 1925-26, and 1926-27) be approximately $(0.7556 \times 2.04) - 1.51$ or 0.03 bushel. That is to say, in 99 per cent of cases the crop-year's balance would range from an import of 0.618 bushel to an export of 0.678 bushel per capita.

The actual net export during the crop year 1927-28 was 0.525 bushel per capita or 0.123 bushel below the upper limit of range.

The surplus rye-producing Comitats lie in the northwestern part of Hungary along the Danube, easily accessible to the importers of Austria and Czechoslovakia, but not easily accessible to the merchants of the deficit Comitats of the interior of Hungary. These interior Comitats are near to the southern surplus wheat-producing Comitats. The price differences between rye in Hungary and in the near-by importing countries was greater than average and exerted such a strong pull

that, in spite of a rye shortage at home, a very considerable quantity of rye was shipped abroad.

The export situation as regards wheat and rye should be considered from the collective viewpoint of bread cereals rather than from that of either cereal taken separately. Not only is rye employed as a substitute for wheat in Hungarian bread, but merchants show a preference for exporting whichever cereal offers the greatest margin of profit, so that wheat and rye, as export commodities, are, in a sense, interchangeable depending upon the relative price relationships of either cereal in Hungary as compared with the prices offered in importing countries.

The decreases in both acreage and production of barley in Hungary are probably aftereffects of the land reform. The years of highest post-war export show that shipments abroad have been about one-fourth of the estimated pre-war average. It is probable that a growing animal industry will make increasing demands upon domestic production so that barley exports will probably not in future reach their pre-war magnitude of 8,609,000 bushels.

Acreage and production of oats in Hungary seem to be on the decline. The increasing use of automobiles has reduced the city demand. The influence of peasant farming is now greater than formerly on account of the land reform. The peasants of Hungary do not utilize oats to the extent that they are fed in northwestern Europe. More corn is fed on small holdings and therefore, following the land reform, the area seeded to oats will probably tend to remain below the pre-war average.

Horse breeding will probably not expand greatly and domestic utilization will probably tend to remain about 19,000,000 bushels annually. Exports will probably tend to fluctuate with fluctuations in production.

Corn is, next to wheat, the most important field crop in Hungary. The increased preponderance of peasant farming in Hungarian agriculture has tended to stimulate corn production but on account of the precarious climate yields fluctuate widely. (Table 34.) There is a correlation between corn and hog production in Hungary similar to that in the United States and therefore exports fluctuate in response to the influence of domestic and foreign demand upon production. It is probable that disappearance of corn in Hungary will tend to increase in response to the demands of a growing animal industry, but as indicated during the seasons 1924-25 and 1925-26 exports will tend to range far above the pre-war average of 1,196,000 bushels.

The acreage of potatoes takes sixth place among Hungarian field crops and does not occupy such an important position in the farm life of the nation as in Czechoslovakia, Germany, or Poland. Since the World War, acreage has tended to range above, and with the exception of the crop year 1927-28, production below the pre-war levels. Disappearance has also been less with the exception of 1925-26 than before the World War and in recent years exports have been higher than the pre-war average of 893,000 bushels.

Between 1924 and 1928, acreage of sugar beets has been greater and production has averaged about the same as the period 1909-1913. Production of sugar, however, has only once (in 1924-25) reached the pre-war level of 222,306 short tons and exports since 1923-24 have averaged about 90,000 short tons or about one-tenth as much sugar as

is shipped annually from Czechoslovakia. The industry of Hungary has been hampered by so-called governmental participation and although exports may increase somewhat they will probably not tend to materially affect the markets of western Europe.

As in all countries in which the tobacco industry is conducted as a Government monopoly, acreage and production of tobacco in Hungary are regulated to return a profit to the State. Both acreage and production in recent years have ranged below the pre-war levels, but the situation is of little interest to American growers as the consumption of American tobacco in Hungary is negligible and Hungarian tobacco does not compete on European markets with that grown in the United States.

Hungary produces no cotton. In 1927, the spinning industry utilized 16,770,000 pounds, more than 75 per cent of which originated in the United States. The industry is slowly developing.

Whereas meadows and pastures and fodder plants have changed but little in acreage in recent years, fodder production in Hungary appears to have increased during the four years ended 1927. The development of the livestock industry depends upon cultivated forage production, because the area of meadows and pastures which are almost universally common village property, is strictly limited. Future improvement in the forage situation will probably follow the lines of better varieties and seed rather than changes in acreage as the area can not be increased to any material extent without decreasing that of cereals, potatoes, or sugar beets.

During the centuries, as life has changed from one of warfare to that of farming, the preferences of Hungarian peasants have shifted from horse breeding as their main occupation to swine and cattle production. In this direction the Hungarians have made great progress so that the number of animals to be grazed on village pastures, the adaption of breeds to given localities, the number of sows bred to a single male, the qualities of males as to breed characteristics, and other questions are under the observation of the rural police. To a great extent, the primitive breeds of cattle, sheep, and swine common to southeastern Europe have been replaced by improved breeds from the northwest and the native strains of horses have been bred up to a standard of excellency of world-wide recognition.

Hungary is a corn-growing country and a potential producer of pork and pork products that may compete with the United States in south central Europe at least. At present, lard from the United States has penetrated into Austria, Czechoslovakia, and western Yugoslavia, all of which countries border on Hungary. Up to 1926, Hungary has not been able to compete with fats and bacon from the United States except on those markets where the consumers were prejudiced in favor of the Hungarian product. But when the political and economic situation has reached greater stability in Europe, Hungary will undoubtedly offer American pork and pork products sharp competition in central Europe. In 1927, Hungary exported 116,507 hogs, 9,900,000 pounds of lard, and 8,700,000 pounds of fat sides and bacon.

Dairying has been rapidly replacing the breeding of cattle for draft purposes in Hungary, since 1926, since 1926, fully 83.4 per cent of all cattle were of improved stock. There is, in the American acceptance of the term, no beef breed in Hungary. Dairying will probably, at no future

time, reach proportions greater than required to cover local needs and to supply a part of Vienna's milk and meat requirement. The quality of meat exported to Austria is very poor according to American standards. In 1927, Hungary exported 74,000 cattle of all classes, and 2,302 were imported.

The foundation stock of Hungarian horse breeding is the small Asiatic breed that carried the Magyar hordes across Russia and part of Europe in an unbelievably short time. These wiry little horses of the light cavalry type are in demand in surrounding countries. Nearly 30,000 colts and horses were exported in 1927.

The most usual sheep of residual Hungary is the Spanish merino, constituting about two-thirds of all herds. About 12 per cent of all sheep are English meat types, whereas about 22 per cent are aboriginal coarse wool, milk sheep. Hungary exported approximately 10,000,000 pounds of wool in 1927 and imported about 4,500,000 pounds.

Hungary is an agricultural country in which industries are relatively little developed. It is not possible to expand the agriculture of this country to any marked degree except by improved breeds of plants and animals and by improved methods.

The aim of the Hungarian peasant is a peaceful existence. He is slow to change his agricultural habits. It is probable that the animal industry will be given a place of greater importance in the future than in the past; but any changes in this direction will be effected gradually. Unless marked improvement is made in production methods, the long-time competition of Hungary with the farmers of the United States will be marked by decreased exports of cereals and increased shipments of animals and animal products up the Danube River.

AVERAGE VALUES OF THE HUNGARIAN CROWN AND PENGŐ

The monthly average values of the Hungarian crown, July, 1921, to December, 1925, and the Hungarian pengő, January, 1926, to December, 1928 are given in Table 54.

TABLE 54.—*Monthly average values of the Hungarian crown, July, 1921, to December, 1925, and of the Hungarian pengő, January, 1926, to December, 1928*

Month	Cents per crown					Cents per pengő		
	1921	1922	1923	1924	1925	1926	1927	1928
January.....		0.15	0.04	0.0039	0.00135	17.55	17.53	17.47
February.....		.15	.04	.0033	.0014	17.56	17.53	17.47
March.....		.13	.03	.0015	.0014	17.56	17.51	17.47
April.....		.13	.02	.0014	.0014	17.56	17.48	17.46
May.....		.13	.02	.0013	.0014	17.56	17.46	17.46
June.....		.11	.01	.0012	.0014	17.56	17.44	17.45
July.....	0.33	.08	.01	.0012	.0014	17.57	17.44	17.44
August.....	.28	.06	.01	.0013	.0014	17.56	17.44	17.43
September.....	.19	.04	.01	.0013	.0014	17.56	17.47	17.43
October.....	.14	.04	.01	.0013	.0014	17.56	17.46	17.43
November.....	.11	.04	.01	.0013	.0014	17.56	17.47	17.42
December.....	.13	.04	.01	.0013	.0014	17.57	17.48	17.42
Average yearly value.....		.09	.016	.00169	.0014	17.56	17.48	17.46

From Federal Reserve Board:
 Par value of the gold crown = 20.36 cents.
 Par value of the pengő = 17.49 cents.
 One pengő = 12,500 paper crowns.

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UNITED STATES DEPARTMENT OF AGRICULTURE



DEPARTMENT BULLETIN No. 1234



Washington, D. C.



April, 1924

AGRICULTURAL SURVEY OF EUROPE: THE DANUBE BASIN—Part I.

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THE AGRICULTURAL SURVEY OF THE WORLD.

The farmers of the United States need to know the world demand for the commodities which they produce for the world markets and the conditions under which their competitors are producing in order that they may adjust their production to demands and successfully compete with the farmers of other countries. From a national point of view all have a vital interest in maintaining in the United States a prosperous agricultural industry and therefore have a vital interest in the foreign demand for agricultural products and the competition of foreign producers in the world markets.

When the United States Department of Agriculture began its survey of the agriculture of the world it undertook to determine, as far as possible, the changes in agriculture, the changes in the character and amount of the competition which our farmers must meet, and the changes in the nature and quantity of the demand for our agricultural products that have taken place and are still taking place throughout Europe and the world's other great centers of production and consumption. Many countries that have not undergone changes of boundaries have been affected by the changed economic status in which the world now finds itself; while those countries that have been affected by a shifting of frontiers consequent upon the breaking up of the Central Powers and Russia have had many complexities added to an already aggravated situation.

The production of certain commodities has been increased in the effort of a consuming nation to become self-supporting or of the producers of certain regions to meet unusual markets; while the production of certain other commodities has been restricted on account of changes in land tenure and for many other reasons, that are numerous and varied and which will be taken up in detail as they affect the production or consumption, the supply or demand of each country considered.

The problem of meeting the demand of the world for food and raw materials is primarily the problem of supplying the needs of a few great cities and industrial centers, although no sharp line of distinction can be drawn. So far as this is true within each country that absorbs our products the surplus producing districts are competing with our farmers to obtain a profitable outlet for their own products just as surely as the surplus producing nations which send their rival cargoes over sea and land. We must know every phase of foreign agricultural conditions which will enlighten us with regard to the nature and extent of both kinds of competition. We must be able to gauge the market conditions and requirements of the great consuming centers more accurately than we have done in the past.

The following report of the agricultural situation in the Upper Danube Basin is the first of the series of reports on the agriculture of those regions of the world that compete with our agricultural products in the foreign field and of those regions that look to us as a source of their supplies of foodstuffs and raw materials to be used in their industrial development.

In taking up this general subject in each country the plan has been to show what is the present agricultural situation with reference to those commodities that are of vital concern to our farmers as contrasted with the agriculture of the same territory during the period immediately preceding the World War. This has required, in several cases, a recalculation of pre-war statistics to adjust the data published by former governments to present-day boundaries.

THE DANUBE STATES DEFINED.

The Danube River, flowing through one of the world's most important grain-surplus producing regions, has been made a great international waterway since the World War. This waterway

extends from Pyret on the Austro-German frontier to Sulina on the Black Sea. Its chief ports are Vienna in Austria, Pressburg (Bratislava) and Komorn in Czechoslovakia, Budapest in Hungary, Belgrade in Yugoslavia, Rustchuk in Bulgaria, and Braïla, Galatz, and Sulina in Rumania. These six countries with ports upon the Danube River are called the Danube States.

The Danube has forced a passage called the "Iron Gate" between the ranges of the Transylvania Mountains in Rumania and the Mirotch Mountains (a continuation of the same general system) in Yugoslavia at Novo Orsova. At this point the current is very swift and a canal accomodating smaller boats has been constructed

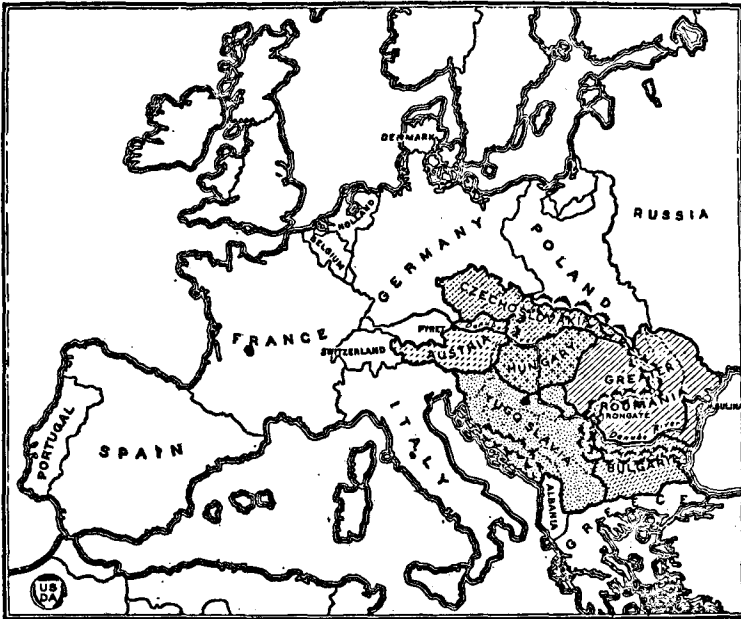


FIG. 1.—Map of the Danube States.

around these rapids. The "Iron Gate" thus divides the river traffic for large steamers into upper and lower Danube shipping.

The general mountain ranges of the Carpathians, terminating at the north bank of the Danube, together with the Balkan Ranges beginning at the south bank of the Danube and stretching away south and east throughout the Balkan Peninsula, constitute an extended watershed that separates the Danube States into the Upper Danube Basin and the Lower Danube Basin. To a certain extent these mountain ranges differentiate the climate of the upper and lower basins.

The Lower Danube Basin includes much of Rumania and northern Bulgaria. The Upper Danube Basin includes northern Yugoslavia, Hungary, Rumanian Transylvania, eastern Czechoslovakia and Austria.

AGRICULTURAL SURPLUSES AND DEFICITS.

Before the war the Lower Danube was a region which produced a surplus of agricultural products. The pre-war exports of the old kingdom of Rumania, Bessarabia, and Bulgaria, were as follows:

TABLE 1.—Pre-war grain exports from the Lower Danube Basin.

District.	Wheat.	Rye.	Barley.	Oats.	Corn.
	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>
Old kingdom of Rumania ¹	52,080	3,519	18,114	10,732	38,727
Bessarabia ²	9,355	3,521	8,839	1,334	15,578
Bulgaria ³	8,224	1,656	1,975	1,165	6,019
Total.....	69,659	8,696	26,928	13,231	60,324

¹ Average 1909-1913.² Average 1902-1911.³ Average 1906-1910.

Great changes of boundaries have taken place in the Upper Danube Basin, and therefore data relative to the exact amount of the international agricultural trade of the territories now comprised within the frontiers of Austria, Czechoslovakia, Hungary, and Yugoslavia are not available. However, as brought out in the following pages, it is possible to make a fair approximation of the exportable surpluses or the import requirements of each of these countries. Nevertheless, it must be kept in mind that the following table of surpluses and deficits is only approximately correct:

TABLE 2.—Approximate pre-war surpluses and deficits¹ of the Upper Danube Basin.

District.	Wheat.	Rye.	Barley.	Oats.	Corn.
	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>
Surplus districts:					
Czechoslovakia.....	2,128	12,000	12,840		
Hungary.....	20,206	15,015	10,322	3,840	1,186
Transylvania.....	2,403	67		2,430	
Yugoslavia ¹	2,223	508	2,753	2,200	20,374
Total surplus.....	24,832	17,718	25,075	11,310	21,560
Deficit districts:					
Austria ²	9,728	12,513	4,605	11,209	3,700
Czechoslovakia.....	12,872				5,553
Transylvania.....			1,829		1,257
Total deficit.....	22,600	12,513	6,434	11,209	10,519
Net surplus.....	2,232	5,205	18,641	101	11,041

¹ Preliminary approximations.² Corrected for the estimated deficit (about 1,200,000 bushels) of the Dalmatian territory occupied by Italian troops.³ The estimated pre-war surplus of Burgenland has been deducted from the normal pre-war deficit within the present boundaries of Austria.

The entire Danube Basin produced a net surplus of each of the five chief cereals, approximately as follows:

	Bushels.
Wheat.....	71,891,000
Rye.....	13,901,000
Barley.....	45,569,000
Oats.....	13,332,000
Corn.....	71,365,000
Total.....	216,058,000

TRADE ROUTES.

The greater part of the surplus agricultural products of the Lower Danube Basin (that is of the regions below the "Iron Gate") went down the river and was exported from the Black Sea ports of Sulina and Constantza in Rumania, and from Varna and Burgas in Bulgaria to southern and western Europe. Some products were transported directly by rail from Rumania to Germany.

Much of the agricultural surplus of the Upper Danube Basin (located above the "Iron Gate") produced in northeastern Yugoslavia, central and western Hungary, western Slovakia, and southwestern Transylvania moved up the Danube to central Europe, including present Austria and western Czechoslovakia; thence by rail to southern Poland and Germany. Some agricultural products were moved directly by rail from these surplus-producing centers to Austria, Germany, Poland, Bosnia, Dalmatia, Montenegro, and other points.

The dismemberment of the Austro-Hungarian monarchy and the subsequent formation of several independent States threw the economic balance of all this region, as established during the pre-war days, out of adjustment, on account of the disruption of trade channels, the dissolution of official credit systems, and the establishment of artificial customs barriers. Simultaneously, governments came into being that were more or less experimental, and legislation was enacted vitally affecting agricultural production.

From the point of view of agriculture the most important legislation in the years following the war was the land reform; that is to say, the splitting up of the large estates and the redistribution of the land among small peasant farmers. Other pertinent legislation has been enacted, such as the regulation of prices on certain agricultural products, wheat, for example; also export restrictions on wheat and rye flour and on other agricultural products.

These and other various factors have resulted in a general slowing down of agricultural production, and great areas have gone out of cultivation. Farming has undergone a change in some sections from large-estate agriculture, characterized by the exclusive production of special cash crops, usually wheat, to peasant small farming in which the crops are more diversified. Many strange situations have resulted from the prevailing economic maladjustment in the Danube Basin; for example, Hungary is reported to be importing American wheat for reexport as flour, while flour from native wheat remains stored within the country because of the high export tax on native flour.

As each country emerges from the confusion into which its affairs have been thrown conditions will more or less approach a normal basis. More and more of the abandoned area will come back under the plow and agricultural practices will become more nearly what they were before the war and the disruption of the influences that followed.

Changes, mostly for the better, are to be noted from year to year, but we are interested also in the long-time trend that the agriculture of each nation is taking. In the following pages an attempt has been made to throw light upon the problem of the long-time trend within

a country, while at the same time showing the changes from year to year.

Each country within the Danube Basin presents a somewhat different problem, according to the different situations that have developed. Each of these countries will therefore be discussed separately in the following pages. In logical order Hungary comes first, because the solution of the agricultural problems of Austria, Czechoslovakia, Rumania, and Yugoslavia depends upon the nature of the agriculture of the districts that were ceded by Hungary to each of these surrounding countries.

THE AGRICULTURAL SITUATION IN HUNGARY.

When the old kingdom of Hungary was split up, the territories of Slovakia and Ruthenia on the north were incorporated in the Republic of Czechoslovakia; Burgenland on the west was ceded to the Republic of Austria; Murji, Croatia Slavonia, and Voivodina on the south were incorporated in the Kingdom of Yugoslavia, and Transylvania on the east was ceded to Rumania. Hungary as constituted by the peace treaties comprises the territory occupied by the Magyar peoples in the central part of what was the old Kingdom.

GENERAL CHARACTER OF COUNTRY.

Hungary, as constituted by the treaty of Trianon in June 1920, consists of what remained of the old Kingdom of Hungary after

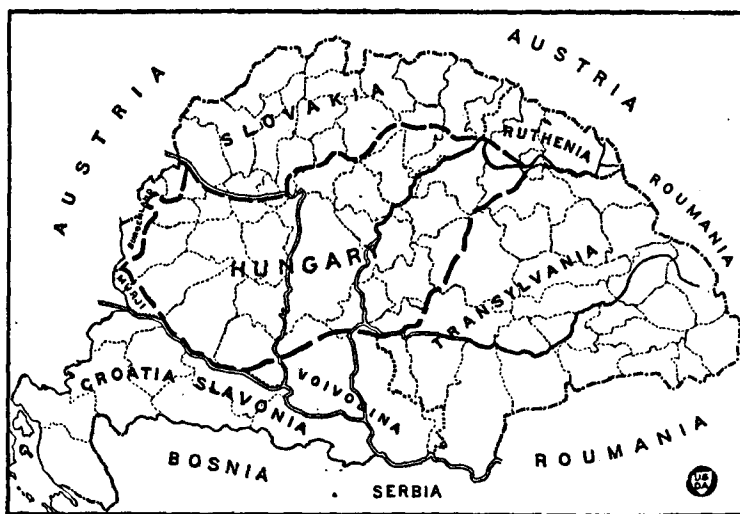


FIG. 2.—Map of old Hungary.

segregating from it the territories that were ceded to Rumania on the east, to Yugoslavia on the south, to Austria on the west, and to Czechoslovakia on the north. The present total area is 36,887 square miles. It has a population (1920) of 7,945,878, or 215 per square mile. Its capital, the dual city of Buda-Pest, Buda on the west bank, Pest on the east bank of the Danube River, lies on the parallel passing between Seattle and Tacoma, Wash. It has a population of about a million.

The country occupies the great Hungarian plain through which two navigable rivers, the Danube and the Tisza, flow from north to south. Of the people occupying this plain, 88.4 per cent are of Magyar descent; that is, direct descendants of the Huns who conquered this territory in the ninth century and who have continuously occupied it for over 1,000 years. Of the inhabitants 7 per cent are of German blood and 2 per cent are Slavs.

The western portion of Hungary is rolling to hilly and very fertile. The rainfall over most of this region averages from 24 to 40 inches. To the east, between the valleys of the Danube and the Tisza, the country is level to rolling, with marshes along the rivers. On the east bank for many miles back from the Danube the soil is light and not suitable for wheat culture, so that the left bank of the Danube is famous for its rye known as Pest-rye after the county of that name. Rainfall in eastern Hungary ranges from 20 to 28 inches with areas averaging only from 16 to 20 inches.

While all of Hungary is suited to agriculture, the western portion is the region in which most of the exportable surpluses of wheat, rye, barley, and oats are produced.

In 1910, 4,190,527, or 55.1 per cent, of the population of the area now included in Hungary, depended upon agriculture as the source of their livelihood; 3,409,890, or 44.9 per cent, were engaged in other occupations: 1,506,000 were engaged in industry, 345,000 in commerce and banking, and 1,559,000 in traffic, public service, administration, etc.

The area of productive land in 1921, including forests, was 21,500,000 acres, or 93.8 per cent. The area of unproductive land was 1,421,000 acres, or 6.2 per cent.

UTILIZATION OF LAND.

Hungary is primarily an agricultural country, both by nature of her soil and climate, as well as by the percentage of her people occupied in tilling the soil.

The manner in which the land of Hungary is now utilized, contrasted with the manner in which the same area was utilized in 1911, is given in Table 3.

TABLE 3.—Utilization of land in Hungary.

Classification.	Old Kingdom of Hungary.		Present Hungarian Territory.			
	1911		1911		1921	
	1,000 acres.	Per cent.	1,000 acres.	Per cent.	1,000 acres.	Per cent.
Cereals.....	23,084	74.3	9,778	73.2	8,188	59.2
Leguminous plants.....	72	.2	24	.2	68	.5
Industrial plants ¹	355	1.1	177	1.3	145	1.1
Tubers, roots, etc.....	2,417	7.8	1,045	7.8	1,116	8.1
Vegetables.....						
Forage plants.....	2,985	9.6	1,415	10.6	1,219	8.8
Other plants.....	337	1.1	172	1.3	520	3.8
Untilled (fallow land).....	1,824	5.9	740	5.6	2,548	18.5
Plow land.....	31,074	100.0	13,351	100.0	13,784	100.0
ALL LAND.						
Plow lands.....	31,074	44.5	13,351	58.2	13,784	60.1
Meadows.....	6,722	9.7	1,708	7.4	1,646	7.2
Pastures.....	8,327	11.9	2,523	11.0	2,501	10.9
Gardens.....	927	1.3	246	1.1	246	1.1
Vineyards.....	701	1.0	499	2.2	539	2.4
Forests.....	18,249	26.2	3,094	13.5	2,714	11.8
Reeds.....	153	.2	81	.4	69	.3
Unproductive.....	3,632	5.2	1,422	6.2	1,422	6.2
Total.....	69,785	100.0	22,922	100.0	22,921	100.0

¹ Includes flax, hemp, etc.

NOTE.—Increase in crop lands over pre-war, 433,000 acres; increase in fallow land, 1,808,000 acres; decrease in land under crops, 1,375,000 acres.

These data show that the present territory of Hungary was the heart of the agricultural section of the old Kingdom, but was poor in forests. The relative area occupied by agricultural land which was 44.5 per cent of the total area in 1911 is 60.1 per cent of the area included in the Hungary of 1921.

The reason for this is that the outlying portions of the old Kingdom ceded to Rumania and Czechoslovakia were heavily timbered, while the portion that forms the present Hungary embraced the treeless lands that lay toward the center of the old Kingdom. The proportion of forest lands which was 26.2 per cent under the old Monarchy was 11.8 per cent under 1921 boundaries. In the old Monarchy there were 152 acres of plow land per 100 inhabitants; in present Hungary there are 176 acres. Little change has occurred on the Hungarian plain between the years 1911 and 1921 except that 1.7 per cent of the forests have disappeared and the plow lands have increased 1.9 per cent. This does not mean that more lands have actually been put under the plow, because much land is being left unplowed. This means that the land that may be plowed has slightly increased in about the same proportion that forests have dwindled.

The areas seeded to the leading agricultural products within the present boundaries of Hungary, contrasting the pre-war period 1911-1915 with the latest years for which statistics are available, are given in Table 4.

TABLE 4.—Hungary: Area seeded, 1911-1922 (1921 boundaries).

Crop.	Pre-war, 1911-15.		1920	1921		1922
	1,000 acres.	Per cent.	1,000 acres.	1,000 acres.	Per cent.	1,000 acres.
Wheat.....	3,745	38.3	2,662	2,888	34.1	2,854
Rye ¹	1,676	17.2	1,475	1,341	15.9	1,340
Bread cereals.....	5,421	55.5	4,137	4,229	50.0	4,194
Barley.....	1,288	13.2	1,266	1,184	14.0	1,129
Oats.....	862	8.8	802	885	10.5	1,818
Corn.....	2,197	22.5	2,017	2,167	25.5	² 1,716
Total cereals.....	9,768	100.0	8,222	8,465	100.0	7,857
Decrease below pre-war average.....	.....	.....	1,546	1,303	.....	1,911
Per cent of decrease.....	.....	.....	15.8	13.3	.....	19.6
Potatoes.....	621	.....	626	665	.....	447
Sugar beets.....	146	.....	77	103	.....	89
Fodder beets.....	287	.....	.....	322	.....	.....

¹ Includes maslin.

² Preliminary estimate reported by the Hungarian Ministry of Agriculture; but there is probably some error in reporting this figure as there is no reason for decreased acreage in corn. Indeed, in western Hungary, the price for corn was higher than for wheat in 1921, due to a bad season. Compare 1920 with 1921 as to wheat and corn yields in Table 5.

The average production for the pre-war period 1911-1915 contrasted with that of the years 1920, 1921, and 1922 is given in Table 5.

TABLE 5.—Crop production in Hungary, 1911–1922 (1921 boundaries).

Crop.	Pre-war, 1911–15.	1920	1921	1922
	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.
Wheat.....	71,308	38,294	52,715	54,711
Rye ¹	30,825	20,564	23,177	25,156
Barley.....	31,892	22,585	21,408	20,876
Oats.....	29,863	22,307	21,964	22,298
Corn.....	60,800	50,158	31,703	32,480
Total cereals.....	224,688	153,906	150,967	155,504
Potatoes.....	82,345	75,967	45,898	33,850
	1,000 tons. ²	1,000 tons. ²	1,000 tons. ²	1,000 tons. ²
Sugar beets.....	1,598	703	598	632
Fodder beets.....	3,915	.....	2,005	.....

¹ Includes maslin.² Short tons.

TABLE 6.—Crop yields per acre in Hungary, 1911–1922 (1921 boundaries).

Crop.	Pre-war 1911–15.	1920	1921	1922
	Bushels.	Bushels.	Bushels.	Bushels.
Wheat.....	19.0	14.4	18.3	19.2
Rye ¹	18.4	13.9	17.3	18.8
Barley.....	24.8	17.8	18.1	18.5
Oats.....	34.6	27.8	24.8	27.2
Corn.....	27.7	24.9	14.6	18.9
Total cereals.....	23.0	18.7	17.8	19.8
Potatoes.....	148.7	121.4	69.0	75.7
	Tons. ²	Tons. ²	Tons. ²	Tons. ²
Sugar beets.....	10.9	9.1	5.8	7.1
Fodder beets.....	13.6	.....	6.2	.....

¹ Includes maslin.² Short tons.

The low yields during 1920 and 1921 were due largely to seasonal causes, and to a lesser extent to lack of fertilizers and poorer cultural methods than employed before the war.

From Tables 4 and 5 we have the following distribution per 100 inhabitants of areas seeded and production of the chief agricultural crops:

TABLE 7.—Area and production per 100 inhabitants in Hungary (1921 boundaries).

	Pre-war. ¹		1920. ²		1921. ²		1922. ²	
	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.
Wheat.....	49.3	938.2	33.5	481.9	38.3	663.4	35.9	654.5
Rye.....	22.1	405.6	18.6	258.8	16.9	291.7	16.9	316.9
Barley.....	16.9	419.6	15.9	284.2	14.9	269.4	14.2	262.7
Oats.....	11.3	392.9	10.1	230.7	11.1	278.4	10.3	250.2
Corn.....	28.9	800.0	25.4	631.2	27.3	399.0	21.6	408.9
Total cereals.....	128.5	2,956.3	103.5	1,936.8	106.5	1,899.9	98.9	1,956.9
Potatoes.....	8.2	1,215.0	7.9	956.1	8.4	677.6	5.6	426.1
		Short tons.		Short tons.		Short tons.		Short tons.
Sugar beets.....	1.9	21.0	1.0	8.8	1.3	7.5	1.1	8.0
Fodder beets.....	3.8	51.5	.....	.....	4.1	25.2	.....	.....

¹ Population of 1910, 7,600,417.² Population of 1920, 7,945,878.

Referring to Table 4, it is seen that there was a relative decrease in the bread cereals, wheat and rye, from 55.5 per cent to 50 per cent. The great reduction in surplus wheat was due, however, chiefly to decreased production per acre, as shown in Tables 5 and 6. The yield per acre of all cereals has been materially below the average during the last three years. The average pre-war yield per acre of the five chief cereals was 23 bushels against 17.8 bushels in 1921 and 19.8 bushels in 1922.

The decrease in cereal acreage in 1920 was 15.8 per cent below pre-war (1911-1915); while according to the livestock census of 1920 there were also heavy decreases in the numbers of cattle, horses, sheep, and swine, as compared with the enumeration of 1911. The greatest decrease was in sheep, a reduction of more than two-fifths in nine years. In other classes of livestock, as shown in Table 8, reductions are roughly in proportion to the reduction in cereal acreage, as shown above.

TABLE 8.—*Livestock in Hungary, 1911 and 1920 (1921 boundaries).*

Livestock.	Number in—		Decrease.	Per cent decrease.	Number per 1,000 inhabitants.	
	1911	1920			1911 ¹	1920 ²
Cattle.....	2,194,474	1,940,516	253,958	11.6	289	244
Horses.....	883,832	685,345	198,487	22.5	116	86
Sheep.....	2,299,463	1,339,389	960,074	41.8	302	169
Swine.....	3,191,868	2,652,744	539,124	16.9	420	334

¹ Population of 1910, 7,600,417.

² Population of 1920, 7,945,878.

Before discussing the significance of these decreases, both in field crop farming and in animal industry, it is well to examine briefly the difference between farming on large and small holdings.

LARGE ESTATE VERSUS PEASANT FARMING.

There does not appear to be any marked influence of the size of the farm (whether peasant or estate) upon the decrease in wheat and rye acreage, according to the unpublished data furnished by the Hungarian Central Statistical Bureau (Tables 9 and 10). By means of these data we are able to contrast the seeding of cereals on both large and small farms in 1914 with 1921.

TABLE 9.—*Area seeded to cereals on large estates in Hungary, 1914 and 1921 (1921 boundaries).*

Crop.	1914		1921	
	Acre.	Per cent.	Acre.	Per cent.
Wheat.....	1,282,259	39.4	881,064	33.2
Rye.....	563,813	17.3	452,667	17.1
Bread cereals.....	1,846,072	56.7	1,333,751	50.3
Barley.....	403,618	12.4	379,506	14.3
Oats.....	382,666	11.8	350,998	13.2
Corn.....	620,028	19.1	568,745	22.2
Total.....	3,252,384	100.0	2,652,998	100.0

Decrease below pre-war average, 599,386 acres; per cent of decrease, 18.4.

TABLE 10.—Area seeded to cereals by the Peasants in Hungary, 1914 and 1921 (1921 boundaries).

Crop.	1914		1921	
	Acres.	Per cent.	Acres.	Per cent.
Wheat.....	2,310,642	87.6	1,815,459	33.6
Rye.....	1,114,584	18.2	917,613	16.9
Bread cereals.....	3,425,226	55.8	2,733,072	50.4
Barley.....	865,628	14.1	807,636	14.9
Oats.....	461,469	7.5	455,489	8.4
Corn.....	1,390,323	22.6	1,428,574	28.3
Total.....	6,142,646	100.0	5,424,771	100.0

Decrease from pre-war average, 717,875 acres; per cent of decrease, 11.7.

Referring to Table 4, in 1921 the total decrease in cereal area in Hungary was 13.3 per cent below the pre-war average. The general agricultural crisis following the period of Bolshevism in 1918, which in turn was followed by the Rumanian invasion, is one of the prime causes of this decrease in the area under cereals. The estates responded to this and other influences to a greater degree than the peasants, the former decreasing 18.4 per cent while the latter seeded only 11.7 per cent less than pre-war. The relative decrease in wheat and rye on both large and small holdings was about the same; from 56.7 per cent to 50.3 per cent in the one case and from 55.8 to 50.4 per cent in the other. Both estates and peasants increased the relative rate at which they seeded their fodder cereals—barley, oats, and corn. There appears to be a slight preference for oats on the estates where horse breeding is a specialty and for corn on the peasant holdings where hog feeding is popular.

The heavy decreases in both cereal acreage and livestock indicates a general depression in agriculture affecting barley, oats, sheep, and horses on the estates, and corn, cattle, and hogs among the peasants, while wheat and rye have decreased about equally in each case.

So many causes have united to influence the Hungarian agricultural depression that it is difficult to place an exact interpretation on the situation, or to venture an opinion as to how long it will continue in its present critical state.

The depreciation of the currency has caused the farmers to withhold stocks of grain from the market, excepting such as were absolutely necessary to sell for current expenses and taxes. They preferred to hold their wealth in a form that was stable rather than to exchange it for a constantly depreciating currency. This has accentuated the other factors tending to decrease areas seeded to wheat and rye and has affected estates and peasants in about the same manner. The estates are not seeding their extensive areas formerly under wheat and the peasants are not renting land to plant to crops that they formerly sold for cash. United States Consul Edwin C. Kemp, of Budapest, referring to the agricultural depression states:

This situation may be attributed, in part, to the land reform law which has caused certain areas, usually sown, to remain uncultivated in view of the attempt made by the Government to divide the estates among inexperienced persons, with the result that very little land was leased to those peasants qualified to receive it under the law. * * * Well informed members of Hungarian agricultural circles believe that the land reform law, if put into operation as intended by the Government, will cause a very large amount of land to go out of production for some years to come.

(See Appendix I for a full discussion of the land reform act by Digby A. Willson, United States Consul at Budapest.)

It is probable, however, that when the financial crisis through which the country is passing has been weathered, the cereal areas will slowly swing back toward normal and that the present territory of Hungary will produce about the same exportable surplus of wheat, rye, and other cereals that it produced before the war. We can not determine absolutely what that surplus was, but we can make an approximation that more or less approaches the actual facts.

PRE-WAR WHEAT BALANCE: OLD KINGDOM OF HUNGARY.

In estimating the exportable surplus of wheat from year to year for the old Kingdom of Hungary, as a whole, an average consumption factor of 292.6 pounds per capita per year was employed. The inhabitants of different districts of old Hungary varied greatly in religion, race, and dietary habits, so that in discussing the surplus or deficit of any particular district, a norm typical of the conditions of consumption of that district must be employed. The manner in which these norms are obtained is discussed on p. 37 and following.

In Table 11, the approximate average surplus or deficit of wheat for each of the land divisions into which the old Hungary was split is given separately:

TABLE 11.—Average approximate wheat balance in the different districts that comprised the old Hungarian monarchy, 1911-1915.

District.	Population.	Area sown.	Seed.	Pro-duction.	Net produc-tion.	Food require-ment.	Sur-plus or deficit.	Per capita consumption per year.
		1,000 acres.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	Bushels.
Hungary (1921 boundaries).....	7,606,224	3,745	10,640	71,308	60,668	40,463	+20,206	15.32
Transylvania (ceded to Rumania)..	5,191,494	2,324	6,912	36,020	29,108	26,705	+2,403	5.14
Slovakia (ceded to Czechoslovakia)..	2,950,802	761	2,264	13,758	11,494	9,758	+1,736	3.31
Ruthenia (ceded to Czechoslovakia)..	574,385	106	316	1,330	1,004	1,688	-684	2.94
Burgenland (ceded to Austria).....	296,891	126	357	2,513	2,156	1,255	+901	4.23
Croatia Slavonia (ceded to Yugo-slavia).....	2,621,954	827	2,348	12,787	10,439	12,813	-2,374	4.89
Murji (ceded to Yugoslavia).....	183,122	49	138	914	776	774	+3	4.23
Volvodina (ceded to Yugoslavia)...	1,411,809	1,329	3,774	24,879	21,105	7,262	+13,843	5.14
Total.....	20,836,681	9,267	26,749	163,499	136,750	100,717	+36,033	4.83

¹ Includes Budapest. The estimated per capita consumption of the 880,371 inhabitants of Budapest is 6.1 bushels of wheat and 1.34 bushels of rye per year. The rural population is estimated to consume about 5.23 bushels of wheat and about 1.41 bushels of rye.

NOTE.—The populations in Table 11 are the sum of the populations of the counties of each district according to the 1911 census. When a county was divided between Hungary and one of the surrounding countries, the population accredited in Table 11 to the segregated territory is the total population less the population in the portion of the county remaining to Hungary as published in "Statistikai Havi Közlemenyek," October-December, 1921. Where counties were divided between Rumania and another country the population of the Rumanian territory as given in "Dictionarul Transilvaniei, Banatului si Celorlalte Tinuturi Alipite," Cluj 1921, is taken as final. These figures differ from those published by Czechoslovakia and Yugoslavia; but only by this procedure can an approximate balance be struck. For further discussion of the wheat and rye consumption norms of Hungary see note on page 37 and following.

Table 11 indicates that more than half of the wheat surplus produced by the old Kingdom of Hungary before the war originated within the confines of present Hungary. More than one-third of the wheat surplus originated in the Voivodina, now a district of Yugoslavia, lying in the valleys of the Danube and the Tisza rivers. These rivers afford cheap water transportation to Austria and Bohemia.

The surpluses of Transylvania, ceded to Rumania, and of Slovakia, ceded to Czechoslovakia, ranged from about 9 to 15 per cent of the net

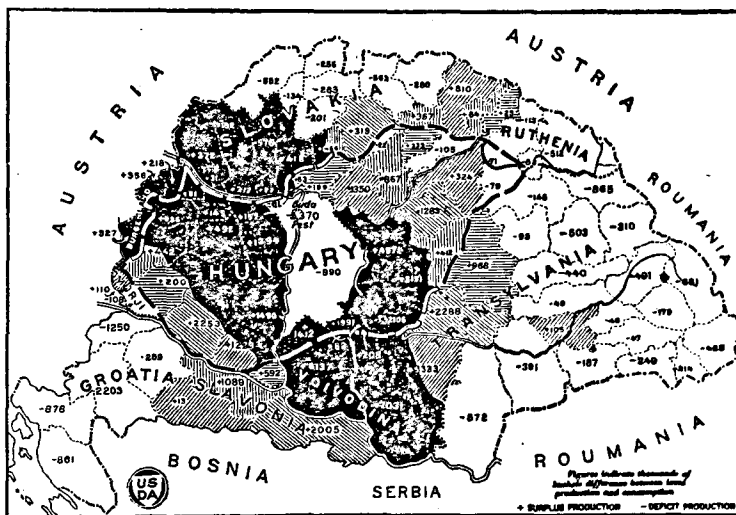


FIG. 3.—Average production of wheat, 1911-1915, balanced against consumption. The numbers represent thousands of bushels. The amount of the deficit or the exportable surplus of each district is the algebraic sum of the plus and minus numbers within the boundaries of that district. The solid black areas roughly outline the regions in which most of the export wheat originated. The shaded areas outline those regions whose combined surplus was sufficient to cover the local domestic deficits within the frontiers of the old Kingdom of Hungary. These deficit regions are roughly outlined by the unshaded areas. This map accompanies Table 11.

production of each of these districts. These surpluses were commercially significant, but small compared with central Hungary or the Voivodina district.

The actual amount of the surplus of 36,033,000 bushels is statistical and is based upon an average consumption norm of 4.83 bushels per capita per year (compare 4.88 as the average for the period 1909-1913, page 38). During the period 1911-1915 covered by Table 11, the foreign agricultural trade of the old Kingdom of Hungary was as follows:

TABLE 12.—Foreign trade in wheat, Hungary, average 1911-1915.

Country.	Imports (+).	Exports (-).	Net.
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
Austria.....	378,383	89,766,137	-89,387,754
Bosnia.....	221,243	1,491,206	-1,269,963
France.....		28,913	-28,913
Germany.....	26,966	155,443	-128,477
Netherlands.....		22,909	-22,909
Italy.....		15,384	-15,384
England.....	23,865	177,652	-153,787
Rumania.....	1,794,261		+1,794,261
Serbia.....	151,992	149,994	+1,998
Bulgaria.....	110,348	54,788	+55,560
Russia.....	19,783		+19,783
Montenegro.....		49,394	-49,394
Brazil.....		38,242	-38,242
Other countries.....	897	39,609	-38,712
Total.....	+2,727,738	-41,989,871	-39,262,133

DESTINATION OF THE EXPORTED WHEAT SURPLUS ORIGINATING WITHIN THE PRESENT BOUNDARIES OF HUNGARY.

Some of the surplus produced in Voivodina and Transylvania was milled locally at the great roller mills of Arad, Temesvar, and Czabadka, and the best grades of flour were exported to Austria, Germany, and England, taking advantage of the long cheap haul by water via the Danube River. However, most of the domestic rail and water transportation was organized to concentrate grain at Budapest, which is Hungary's greatest milling center. It is estimated that the capacity of the mills at Budapest, where the first roller-process mill in the world was installed, is greater than the wheat surplus producing capacity of the territory of present Hungary.

Before the war the western counties of present-day Hungary shipped an average of 1,490,000 bushels of wheat to Bosnia, 2,375,000 bushels to Croatia, and 50,000 bushels to Montenegro. Seven hundred and five thousand bushels of wheat were shipped annually to Ruthenia from adjacent counties in the northeast of present Hungary. These shipments to the southwest and northeast were by rail. About 15,557,000 bushels of wheat (flour and grain) originating within the borders of present Hungary were shipped by rail and water to various districts of the old Kingdom of Austria: Galicia, Bucovina, Bohemia, Dalmatia, and German Austria. In all, approximately 20,206,000 bushels of wheat as grain and flour were shipped out of the territory now comprised within the present boundaries of Hungary.

Statistical wheat balance of Hungary for crop of 1921.

Area sown.....		<i>Acres.</i>
		2,887,821
Production.....		<i>Bushels.</i>
		52,715,454
Seed.....		8,201,803
Net production.....		44,513,651
Food requirement of—	<i>Bushels.</i>	
Budapest, 925,724 × 6.10.....	5,646,916	
Provincial Hungary, 7,020,154 × 5.22.....	36,645,204	
		42,292,120
Indicated statistical surplus available for export, based on pre-war consumption norms.....		2,221,531

ACTUAL WHEAT EXPORTS DURING THE SEASON OF 1921-22.

During the season of 1921-22 Hungary exported wheat and flour (calculated to a grain basis) to the following countries in the amounts indicated:

Wheat exports and imports of Hungary, July 1, 1921 to June 30, 1922.

	Bushels.
Exported to:	
Austria.....	5,425,017
Czechoslovakia.....	2,727,142
Switzerland.....	122,293
Yugoslavia.....	37,416
Italy.....	29,277
Fiume.....	25,952
Germany.....	24,133
Other countries.....	6,753
Total.....	8,397,983
Imports from Rumania and other countries.....	5,431
Net exports.....	8,392,552

From the foregoing data it is evident that Hungary exported 6,171,021 bushels more wheat than the statistical balance, based upon pre-war consumption rates, indicates available for export in 1921. It is probable that the city populations were on much shorter rations during this period than normally before the war and were using substitutes. As indicated by the following paragraph, the Hungarians are eating relatively more rye than before the war, thus proportionately more wheat should be available for export.¹

PRE-WAR RYE BALANCE OF THE DIFFERENT DISTRICTS OF THE OLD KINGDOM OF HUNGARY.

The following table gives the average production, consumption, and statistical exportable surplus during the period 1911-1915:

TABLE 13.—Average approximate rye balance in the different districts that comprised the old Kingdom of Hungary, 1911-1915.

District.	Area sown.	Seed.	Pro-duction.	Net pro-duction.	Con-sump-tion.	Sur-plus (+) or deficit (-).	Per capita con-sump-tion per year.
	1,000 acres.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	Bushels.
Hungary (1921 boundaries).....	1,676	5,099	30,825	25,726	10,711	+15,015	1.41
Transylvania (ceded to Rumania).....	313	952	5,107	4,155	4,088	+87	.79
Slovakia (ceded to Czechoslovakia).....	510	1,627	9,073	7,447	6,970	+477	2.36
Ruthenia (ceded to Czechoslovakia).....	41	130	556	426	678	-252	1.18
Burgenland (Ceded to Austria).....	85	272	1,552	1,310	1,169	+141	3.94
Croatia-Slavonia (ceded to Yugoslavia).....	219	665	3,099	2,434	3,716	-1,282	1.42
Murji (ceded to Yugoslavia).....	33	121	634	513	505	+8	2.76
Voivodina (ceded to Yugoslavia).....	56	170	1,191	1,021	1,112	-91	.79
Total.....	2,938	9,036	52,068	43,032	28,949	+14,083	1.39

^a Of this amount 73,669 bushels were used for industrial purposes.

¹ See page 18 for a discussion of the wheat and rye situation in 1922.

It is probable that in former Hungarian territory outside of the present boundaries most of the rye produced was consumed locally. Both Ruthenia and Croatia imported rye in addition to that produced locally; the former balanced its deficit from the northeastern counties of Hungary proper and the latter from the southwestern counties.

The pre-war surplus produced within the present confines of Hungary was about 15,015,000 bushels and the per capita consumption was approximately 1.41 bushels per year. Hungary's foreign trade in rye during this period of 1911-1915 (Table 14) showed

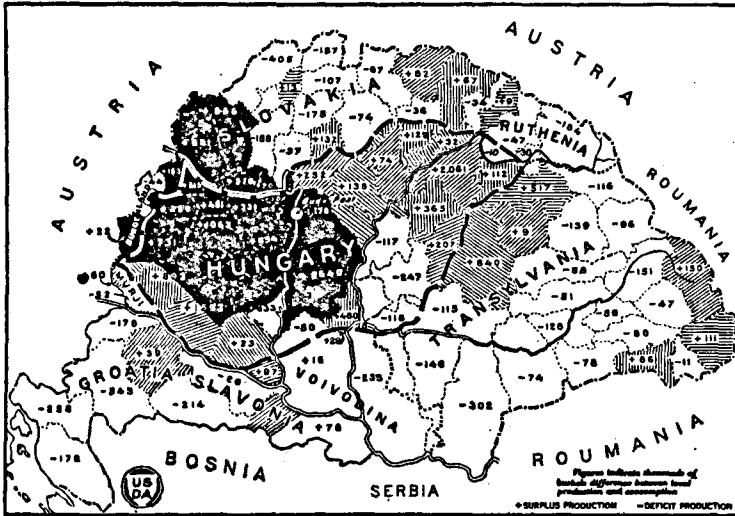


FIG. 4.—Average production of rye, 1911-1915, balanced against consumption. The numbers represent thousands of bushels. The amount of the deficit or the exportable surplus of each district is the algebraic sum of the plus and minus numbers within the boundaries of that district. The solid black areas roughly outline the regions in which most of the export rye originated. The shaded areas outline those regions whose combined surplus was sufficient to cover the local domestic deficits within the frontiers of the old kingdom of Hungary. These deficit regions are roughly outlined by the unshaded areas. This map accompanies Table 13.

a net export of 10,797,000 bushels, which is 3,286,000 bushels less than the available statistical surplus indicated in Table 13.

TABLE 14.—Foreign trade in rye, Hungary, average 1911-1915.

Country.	Imports (+).	Exports (-).	Net.
Austria.....	Bushels. 86,420	Bushels. 10,796,316	Bushels. -10,709,896
Bosnia.....		128,843	-128,843
France.....		5,071	-5,071
Roumania.....	45,218		+45,218
Other countries.....	2,527	1,078	+1,449
Total.....	+134,165	-10,931,308	-10,797,143

Employing the same consumption norm as in the foregoing estimates, we have the following balance in 1921:

Statistical rye balance for crop of 1921.

Area sown.....	Acres.	1,340,967
	Bushels.	
Production.....		23,176,594
Seed.....		4,059,204
Net production.....		19,117,390
Food requirement: 7,945,878×1.41.....		11,203,688
Indicated statistical surplus available for export based on pre-war consumption norms.....		7,913,702

During the period from July 1, 1921 to June 30, 1922, Hungary exported the following:

Exports and imports of rye, Hungary, July 1, 1921 to June 30, 1922.

Exported to:	Bushels.
Austria.....	2,555,742
Czechoslovakia.....	718,495
Yugoslavia.....	20,471
Switzerland.....	7,822
Other countries.....	5,307
Total exports.....	3,307,837
Imported from Rumania and other countries.....	7,106
Net exports.....	3,300,731

Thus Hungary had a statistical surplus of 4,612,971 bushels more rye for export from the crop of 1921 than was exported during the period July 1, 1921 to June 30, 1922. This is 75 per cent of the shortage in exportable wheat, so that it is probable that Hungary has been substituting rye for wheat and so entered the 1922-23 crop year with low stocks of bread cereals.

WHEAT AND RYE SITUATION IN 1922.

The production of wheat and rye reported for 1922 was 4,000,000 bushels more than for 1921; with an estimated exportable surplus of about 4,000,000 bushels greater than the preceding season or 14,313,000 as shown in Table 15.

TABLE 15.—*Preliminary wheat and rye balance, Hungary, 1922.*

Cereal.	Area sown.	Production.	Seed.	Net production.	Food requirement.	Deficit or surplus.
	1,000 acres.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.
Wheat.....	2,854	54,711	8,066	46,645	42,152	+4,493
Rye.....	1,340	25,156	4,053	21,103	11,283	+9,820
Net statistical surplus.....						+14,313

No report on Hungary's foreign trade in wheat and rye for the year 1922-23 is available at this time.

NOTE.—The consumption norms employed in the above balances are approximately the same as those that have been employed by the Hungarian and Austrian Governments; but these balances as applied to the conditions of any one year must be very broadly interpreted, as brought out in Table 48, page 38.

PROSPECTS FOR 1923.

The International Institute of Agriculture gives a preliminary approximation of Hungary's 1923 production of wheat at 64,705,000 bushels and rye at 30,904,000 bushels. This is an increase of 9,994,000 bushels of wheat and 5,748,000 bushels of rye over the final figures received for the crop of 1922.

CORN (MAIZE).

In the preceding sections when a balance was struck between the production and consumption of such cereals as wheat and rye through the use of the empirical average norm, such an approximate balance was a fairly good estimate. However, when we calculate such a balance between the production and consumption of the fodder grains—corn, barley, and oats—and other crops, the statistical surplus or deficit thus obtained is a far less accurate estimate than in the case of the bread cereals. The number of animals on feed and the average ration fed to each varies more from year to year than does the consumption requirements of the human population.

The Hungarian Ministry of Agriculture has worked out such balances for the old Kingdom of Hungary and the data relative to local production and consumption appearing in the following pages are based upon unpublished statistics that have been furnished to the United States Department of Agriculture by Dr. Ivan Nagy, Councillor of the Hungarian Royal Ministry of Agriculture. In calculating the local consumption in each county the general average norm for the entire Kingdom has been modified so as to give a relatively true picture in the case of each district according to the reports of grain dealers and of local agricultural organizations.

TABLE 16.—Average approximate corn balance in the different districts that comprised the old Kingdom of Hungary, 1911-1915.

District.	Area planted.	Production.	Seeds.	Net production.	Corn fed to—			Food requirement of peasants of Rumanian blood. ¹	Total domestic corn requirement.	Surplus or deficit.
					Total number of cattle.	Two-thirds of total number of swine.	One-fourth of total number of sheep.			
	1,000 acres.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	
Hungary (1921 boundaries).....	2,197	60,800	1,225	59,575	23,671	30,577	4,141	.....	58,389	+1,186
Transylvania (ceded to Rumania).....	2,435	53,174	1,353	51,816	22,056	14,463	6,356	10,198	53,073	-1,257
Slovakia (ceded to Czechoslovakia)....	212	5,518	118	5,400	3,020	6,893	.....	.....	9,913	-4,513
Ruthenia (ceded to Czechoslovakia)....	135	1,981	75	1,856	617	818	333	1,128	2,696	-1,040
Burgenland (ceded to Austria).....	42	1,123	24	1,099	1,548	1,160	53	.....	2,761	-1,662
Croatia - Slavonia (ceded to Yugoslavia).....	1,057	23,677	590	23,087	12,241	11,151	1,532	.....	24,924	-1,837
Murjl (ceded to Yugoslavia).....	22	585	12	573	691	589	42	.....	1,322	-749
Vojvodina (ceded to Yugoslavia).....	1,229	42,599	685	41,914	* 8,602	* 10,736	* 2,202	.....	21,540	+20,374
Total Hungarian Kingdom.....	7,329	189,407	4,087	185,320	72,446	76,387	14,659	11,326	174,818	+10,502

¹ 110 pounds per capita per year for total population. ² 14.4 bushels per head per year.
³ 3.4 pounds per head per day.

In Table 16 it is assumed that on the average the cattle of Hungary consumed yearly about 10.8 bushels of corn per head except in Slovakia and Ruthenia, where cattle and sheep are fed barley in lieu of corn, and Voivodina, where more corn is fed than in other districts. The ration fed to swine was reckoned at about 14.4 bushels per head per year (about 2.2 pounds per day) and presumes that two-thirds of the swine in the country are permanently on feed except in Voivodina where larger amounts of corn are fed swine and sheep. Sheep are reckoned to eat 7.2 bushels of corn per head per year, assuming that one-fourth of the sheep of the country are continuously on grain feed.

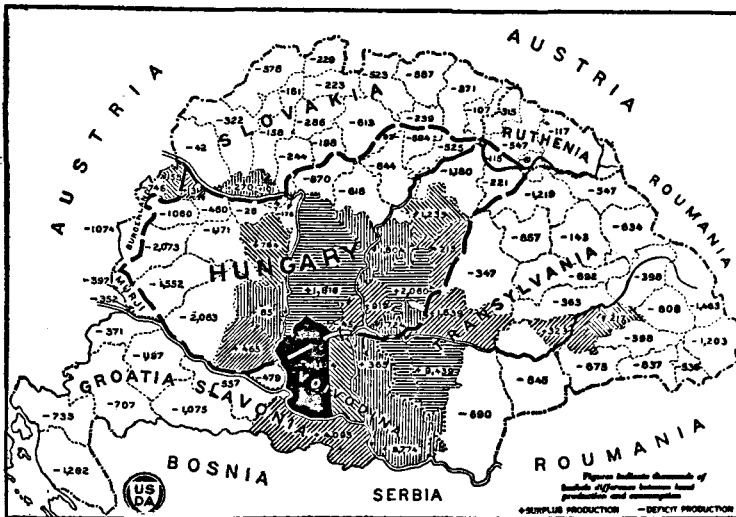


FIG. 5.—Average production of corn, 1911-1915, balanced against consumption. The numbers represent thousands of bushels. The amount of the deficit or the exportable surplus of each district is the algebraic sum of the plus and minus numbers within the boundaries of that district. The solid black areas roughly outline the regions in which most of the export corn originated. The shaded areas outline those regions whose combined surplus was sufficient to cover the local domestic deficits within the frontiers of the old Kingdom of Hungary. These deficit regions are roughly outlined by the unshaded areas. This map accompanies Table 16.

It is probable that less corn was fed to livestock in Slovakia and that more was fed in Voivodina than the calculated amounts given above would indicate. That is to say, in Slovakia barley is a more usual hog feed than corn. These are the best figures available, and although only rough approximations, they are given for what they are worth. The same holds true in the balances for barley, oats, beets and potatoes.

In the districts other than Slovakia and Voivodina the surpluses and deficits are probably fair approximations of the facts. In addition to the above amounts of corn fed to livestock, about 5,151,000 bushels were used for industrial purposes. Thus we have a total of 5,351,000 bushels of corn as the average statistical net surplus during the period 1911-1915. During this period the actual foreign trade of Hungary in corn was as follows:

TABLE 17.—Foreign trade in corn, Hungary, average 1911–1915.

Country.	Imports (+).	Exports (-).	Net.
	Bushels.	Bushels.	Bushels.
Argentina.....	486, 111		+486, 111
Austria.....	184, 873	11, 073, 289	-10, 888, 415
Boemia.....	208, 075	862, 185	-654, 110
Bulgaria.....	376, 337		+376, 337
European Turkey.....	32, 711		+32, 711
Germany.....		142, 079	-142, 079
Italy.....		7, 960	-7, 960
Montenegro.....		14, 995	-14, 995
Rumania.....	3, 710, 023		+3, 710, 023
Russia.....	53, 367		+53, 367
Serbia.....	150, 066		+150, 066
Other countries.....	1, 764	9, 271	-7, 507
Total.....	+5, 163, 327	-12, 109, 788	-6, 946, 461

Comparing the total net export of 6,946,000 bushels with the total net statistical surplus of 5,351,000 bushels a margin of difference of 1,595,000 bushels is obtained.

CORN SITUATION IN HUNGARY, 1921-1922.

Before the war (1911–1915) the statistical surplus produced within the 1921 boundaries of Hungary was about 1,186,000 bushels.

The statistical corn surpluses produced in the years 1921, 1922, and in the same area in 1911–1915 are compared in the following statement:

TABLE 18.—Statistical corn balance, Hungary, 1921-22, compared with pre-war, 1911-1915.

	1911-1915	1921	1922
Area planted.....	1,000 acres. 2, 197	1,000 acres. 2, 167	1,000 acres. 1, 716
Total production.....	1,000 bushels. 60, 800	1,000 bushels. 31, 702	1,000 bushels. 32, 493
Seed requirement.....	1, 225	1, 208	936
Net production.....	59, 575	30, 494	31, 537
Total domestic consumption.....	58, 389	1 30, 259	1 30, 259
Statistical surplus.....	1, 186	235	1, 278

¹ Consumption is as reported by Hungarian Department of Agriculture in 1921. Feed for stock, 29,133,246 bushels; used industrially, 1,125,921 bushels.

The actual import-export balance for the crop year 1921–22 was:

Exported from the crop of 1921 to—	Bushels.
Austria.....	104, 293
Czechoslovakia.....	38, 604
Germany.....	41, 210
Other countries.....	201
Total exports.....	184, 308
Imported from—	Bushels.
Rumania.....	31, 774
Yugoslavia.....	26, 376
Total imports.....	58, 150
Net exports.....	126, 158

The net exports of corn in 1921 was 126,158 bushels, or about half of the statistically indicated surplus. The surplus indicated for 1922 is five times as large as that of the preceding year, but the amount employed as the average requirement fed to stock in 1922 is the same as was calculated for 1921, and does not take into account the possible increases in livestock during the period July 1, 1922 to June 30, 1923. It is well to note that the amount of corn fed to livestock in 1921 was very much below the pre-war average.

Corn fed to livestock within the present boundaries of Hungary in 1911-1915.....	Bushels.	58,389,000
Estimated quantity fed in 1921.....		29,133,246

Difference due probably to fewer animals on feed..... 29,255,754

The area under corn in 1921 was nearly equal to that of 1911-1915, but in 1922 there was a decrease of 21 per cent over the previous year. This falling off was counterbalanced by an increase in yield. But even though the indicated statistical surplus of 1,278,000 bushels in 1922 is more than the pre-war average of 1,186,000 bushels (see Table 16), it is no indication that the corn balance has reached normal. It is reported that the number of animals on feed has been increased, and the most recent consular report from Budapest states that the peasants are marketing their cattle on account of insufficient fodder and forage. The tendency has been to hold too many animals on feed.

PRE-WAR BARLEY BALANCE OF THE DIFFERENT DISTRICTS OF OLD KINGDOM OF HUNGARY.

Table 19, giving the average production, consumption, and surplus or deficit balance for barley for the period of 1911-1915, is based upon the amounts of barley fed to swine in all districts except Voivodina, where corn is used for feeding livestock.

TABLE 19.—Average approximate barley balance in the different districts that comprised the old Kingdom of Hungary, 1911-1915.

District.	Area.	Production.	Seed.	Net production.	Barley fed to one-third of swine.	Surplus (+) or deficit (-).
	1,000 acres.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.
Hungary (1921 boundaries).....	1,288	31,892	3,734	28,158	17,836	+10,322
Transylvania (ceded to Rumania).....	341	7,596	958	6,608	8,437	-1,829
Slovakia (ceded to Czechoslovakia).....	931	23,842	2,700	21,142	16,983	+4,059
Ruthenia (ceded to Czechoslovakia).....	15	394	43	351	734	-383
Burgenland (ceded to Austria).....	80	2,276	233	2,043	677	+1,366
Croatia-Slavonia (ceded to Yugoslavia).....	156	2,355	452	1,908	1,908	(¹)
Murji (ceded to Yugoslavia).....	14	338	40	298	344	-46
Voivodina (ceded to Yugoslavia).....	115	3,087	334	2,753	.....	+2,753
Total.....	2,940	71,780	8,524	63,256	46,014	+17,242

¹ Total production used industrially or fed within the district.

It is assumed that 16.72 bushels of barley per head per year for one-third the total number of swine is consumed in the country, except in Slovakia where barley is fed to all classes of livestock in lieu of corn. In Croatia-Slavonia and Voivodina little or no barley is fed

to cattle, swine, or sheep, which receive a ration of corn in addition to hay or pasturage.

In addition to the barley fed to livestock, it is estimated that 5,726,000 bushels were used yearly for industrial purposes. Thus we have a total of 11,516,000 bushels of barley as the average statistical net surplus during the period 1911-1915.

During the period 1911-1915, Hungary's actual foreign trade in barley was as follows:



FIG. 6.—Average production of barley, 1911-1915, balanced against consumption. The numbers represent thousands of bushels. The amount of the deficit or the exportable surplus of each district is the algebraic sum of the plus and minus numbers within the boundaries of that district. The solid black areas roughly outline the regions in which most of the export barley originated. The shaded areas outline those regions whose combined surplus was sufficient to cover the local domestic deficits within the frontiers of the old Kingdom of Hungary. These deficit regions are roughly outlined by the unshaded areas. This map accompanies Table 18.

TABLE 20.—Foreign trade in barley, Hungary, average 1911-1915.

Country.	Imports (+).	Exports (-).	Net.
Austria.....	Bushels. 342,512	Bushels. 9,227,555	Bushels. -8,885,043
Bosnia.....		166,406	-166,406
Bulgaria.....	59,694		+59,694
Brazil.....		21,660	-21,660
England.....		272,052	-272,052
France.....		24,058	-24,058
Germany.....		1,393,955	-1,393,955
Netherlands.....		82,457	-82,457
Italy.....		122,769	-122,769
Rumania.....	135,794	30,051	+105,743
Serbia.....	33,436	39,298	-5,852
Switzerland.....		181,498	-181,498
Other countries.....	2,894	79,568	-76,674
Total.....	+574,320	-11,641,317	-11,066,997

The best brewing barley was produced in the northern provinces, Pozsony, Nyitra, Bars, and Hont, about one-third of Hungary's export barley coming from this region. Some of the barley grown

in Voivodina and Burgenland also entered into foreign trade. The surplus produced within the present confines of Hungary entered into domestic trade with Transylvania and was exported to Austria.

THE BARLEY SITUATION IN HUNGARY, 1921-22.

Before the war (1911-1915) the statistical surplus produced within the present (1921) frontiers of Hungary was about 10,000,000 bushels.

The statistical surpluses produced in the years 1921, 1922, and for the corresponding area in 1911-1915 are compared in Table 21:

TABLE 21.—*Hungary: Statistical barley balance 1921-22, compared with pre-war, 1911-1915.*

	1911-1915	1921	1922
Area seeded.....	1,000 acres. 1,288	1,000 acres. 1,184	1,000 acres. 1,129
Total production.....	1,000 bushels. 31,892	1,000 bushels. 21,408	1,000 bushels. 20,875
Seed requirement.....	3,734	3,434	3,274
Net production.....	28,158	17,974	17,602
Total domestic consumption.....	17,836	16,082	16,082
Statistical surplus.....	10,322	1,892	1,520

¹ Feed for stock, 14,824,000 bushels; used industrially, 1,258,000 bushels.

The actual net import-export balance for 1921 was:

Net export to:	Bushels.
Austria.....	591,710
Czechoslovakia.....	23,566
France.....	34,153
Germany.....	66,776
Italy.....	156,545
Poland.....	12,438
Yugoslavia.....	86,861
Switzerland.....	13,026
Other countries.....	23,084
Total.....	1,008,159

The net exports of barley in 1921 was about 1,000,000 bushels or about two-thirds of the statistical surplus. The surplus indicated for 1922 is a little less than for 1921 and only one-seventh of the pre-war average surplus within the 1921 boundaries of Hungary.

PRE-WAR OATS BALANCE OF THE DIFFERENT DISTRICTS OF THE OLD KINGDOM OF HUNGARY.

Table 22 of production balanced against consumption of oats (assumed to be fed to horses except as noted) shows the approximate average surplus or deficit by districts for the period 1911-1915.

TABLE 22.—Average approximate oats balances in the different districts that comprised the old Kingdom of Hungary, 1911-1915.

District.	Area.	Production.	Seed.	Net production.	Oats fed to horses and other livestock.	Surplus (+) or deficit (-).
	1,000 acres.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.
Hungary (1921 boundaries).....	862	29,863	3,751	26,112	22,272	+3,840
Transylvania (ceded to Rumania).....	770	22,622	3,347	19,275	16,845	+2,430
Slovakia (ceded to Czechoslovakia).....	552	15,407	2,400	13,007	11,426	+1,581
Ruthenia (ceded to Czechoslovakia).....	96	1,887	417	1,570	1,311	+259
Burgundland (ceded to Austria).....	50	1,940	220	1,720	804	+916
Croatia-Slavonia (ceded to Yugoslavia).....	257	5,359	1,117	4,242	4,376	-134
Murj (ceded to Yugoslavia).....	16	578	71	507	332	+175
Voivodina (ceded to Yugoslavia).....	362	14,328	1,573	12,755	10,555	+2,200
Total.....	2,965	92,064	12,896	79,188	67,921	+11,267

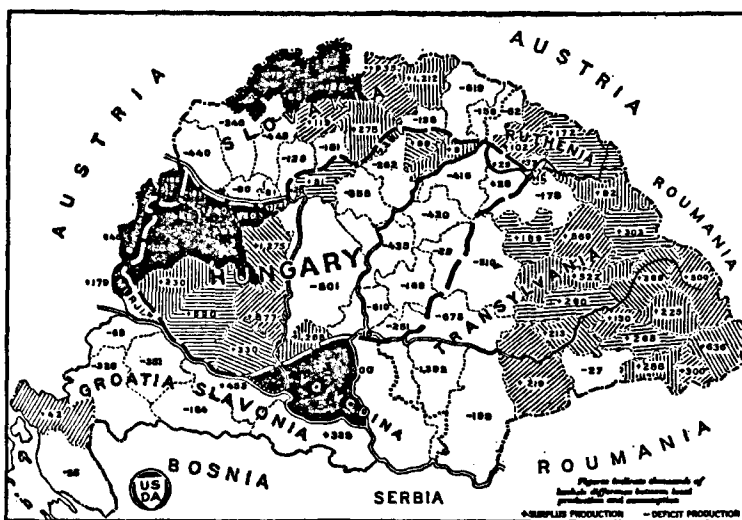


FIG. 7.—Average production of oats, 1911-1915, balanced against consumption. The numbers represent thousands of bushels. The amount of the deficit or the exportable surplus of each district is the algebraic sum of the plus and minus numbers within the boundaries of that district. The solid black areas roughly outline the regions in which most of the export oats originated. The shaded areas outline those regions whose combined surplus was sufficient to cover the local domestic deficits within the frontiers of the old Kingdom of Hungary. These deficit regions are roughly outlined by the unshaded areas. This map accompanies Table 22.

In estimating oats consumption for horses the Hungarian Government employed the norm of 2.2 pounds per day per head except in Slovakia where oats were fed to other animals.

It is evident that in oats-deficit districts, as Croatia-Slavonia and the Banat, that oats are fed only to horses and that corn and barley are used as substitutes for oats as horse feed to as great an extent as possible. Also it is probable that in oats-excess producing districts the locally produced oats are fed to animals other than horses rather than corn and barley should be imported as stock feed from other districts. For example, the Rumanian Government estimates that the consumption of oats in Transylvania is about 105 pounds per capita of population per year; this would be equivalent to 33 bushels

per head of horses per year, or a total of 16,845,000 bushels for the district. Employing the Hungarian norm of 2.2 pounds per head per day, which is the average for the old Kingdom as a whole, gives a total oats consumption of 6,439,000 bushels for the district of Transylvania, which is obviously too low, since before the war Transylvania imported oats from the old Kingdom of Rumania (see Table 23). In striking the oats balance in Table 23 it has been assumed that the average amount of oats fed annually to stock in the territory now comprised within the boundaries of Hungary was 25.2 bushels per head, the norm now used by the Hungarian Government, (number of horses as in Table 45), but in other parts of Hungary 33 bushels as estimated for Transylvania by the Rumanian Government, except in Voivodina where the norm used is 36.5; in Slovakia it is 47, and in Croatia-Slavonia it is 12.5 bushels. Even this consumption per head is somewhat low, as will be seen by comparing the statistical surplus indicated in Table 23 with the actual average exports during the 5-year period 1911-1915.

During this period the actual foreign trade in oats was as follows:

TABLE 23.—Foreign trade in oats, Hungary, average 1911-1915.

Country.	Imports (+).	Exports (-)	Net.
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
Argentina.....	13, 166		+13, 166
Austria.....	317, 332	8, 689, 832	-8, 371, 500
Bosnia.....	524, 495	239, 218	+285, 277
Bulgaria.....	5, 050	13, 372	-8, 322
European Turkey.....	15, 350		+15, 350
Germany.....	16, 858		+16, 858
Italy.....		12, 559	-12, 559
Rumania.....	273, 329		+273, 329
Russia.....	14, 585		+14, 585
Serbia.....	55, 377	36, 569	+18, 808
Other countries.....	152	18, 202	-18, 050
Total.....	1, 235, 694	9, 007, 782	-7, 772, 088

Comparing the statistical average surplus with the actual average net exports we have:

Statistical average surplus 1911-1915.....	1,000 bushels.	11, 267
Average net export 1911-1915.....		7, 772
Difference.....		3, 495

Oats were grown everywhere in the old Kingdom of Hungary. In only four regions, however, were they produced in sufficient quantity and of sufficiently high quality to be recognized by distinct trade names abroad. These districts were:

Batchka (now, in part, a district of Voivodina).—The acreage seeded to oats in Batchka was very great, fully twice that of all Croatia-Slavonia.

The west Danube counties.

Upper Hungary, now Slovakia. Oats from this district were considered inferior to those from the other regions.

The uplands of Transylvania called "Seven-Mountains." The oats from this district entered largely into domestic trade under the name of "Sebenberger."

OATS SITUATION IN THE REPUBLIC OF HUNGARY, 1921-22.

The statistical surplus of oats during the years 1921 and 1922 with the corresponding figures for 1911-1915, are shown in Table 24:

TABLE 24.—Statistical oats balance of Hungary, 1921-22, compared with pre-war, 1911-1915.

	1911-1915	1921	1922
Area seeded.....	1,000 acres. 862	1,000 acres. 885	1,000 acres. 818
Total production.....	1,000 bushels. 29,863	1,000 bushels. 21,964	1,000 bushels. 22,268
Seed requirement.....	3,751	3,849	3,558
Net production.....	26,112	18,115	18,710
Feed for stock.....	22,272	17,234	17,234
Statistical surplus.....	3,840	881	1,476

The actual net import-export balance for the season of 1921-22 was as follows:

Exported to:	Bushels.
Austria.....	604,701
Czechoslovakia.....	35,019
Switzerland.....	1,378
Other countries.....	1,798
Total exports.....	642,896
Imported from:	
Germany.....	5,560
Other countries.....	248
Total imports.....	5,808
Net exports.....	637,088

It is probable that the number of animals on feed have been materially increased during the past year so that the above surplus from the 1922 crop, which is based upon the same consumption rate as 1921, will probably be less than indicated and the export up to July, 1923, will not vary much from that of the preceding crop year.

PRE-WAR POTATO BALANCE OF THE DIFFERENT DISTRICTS OF THE OLD KINGDOM OF HUNGARY.

Table 25 shows the balance of production against consumption of potatoes for human food during the 5-year average 1911-1915.

TABLE 25.—Average approximate potato balance: In the different districts that comprised the old Kingdom of Hungary, 1911-1915.

District.	Area.	Production.	Seed.	Net production.	Required for home consumption.	Surplus (+) or deficit (-).
	1,000 acres.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.
Hungary (1921 boundaries).....	621	72,726	16,053	56,673	55,014	+1,659
Transylvania (ceded to Rumania).....	195	21,401	5,043	16,358	37,423	-21,070
Slovakia (ceded to Czechoslovakia).....	572	76,292	14,780	61,512	21,808	+39,704
Ruthenia (ceded to Czechoslovakia).....	73	6,763	1,886	4,877	4,292	+585
Burgenland (ceded to Austria).....	35	4,540	893	3,647	2,177	+1,470
Croatia-Slavonia (ceded to Yugoslavia).....	199	19,769	5,139	14,630	19,979	-4,349
Murj (ceded to Yugoslavia).....	13	1,564	349	1,215	978	+237
Voivodina (ceded to Yugoslavia).....	49	6,254	1,254	5,000	10,149	-5,149
Total.....	1,757	209,309	45,397	163,912	150,825	+13,087

The Hungarian Ministry of Agriculture estimates that the average yearly consumption of potatoes as food throughout the old Kingdom was about 7.3 bushels per capita, or 150,800,000 bushels. In addition, 10,100,000 bushels were used for industrial purposes—starch, alcohol, etc. This left a statistical surplus of about 2,985,000 bushels that was available for shipment abroad, the greater part being exported to Austria.

From Table 26 it will be seen that the actual net potato exports during this 5-year period, 1911–1915, amounted to 3,161,000 bushels.

During this pre-war period the actual foreign trade in potatoes was as shown in Table 26.

TABLE 26.—Foreign trade in potatoes, Hungary, average 1911–1915.

Country.	Imports (+).	Exports (-).	Net.
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
Austria.....	225, 226	3, 031, 237	-2, 806, 011
Bosnia.....		114, 608	-114, 608
England.....	3, 887		+3, 887
France.....		45, 907	-45, 907
Germany.....	151, 629	201, 583	-109, 954
Greece.....	2, 660		+2, 660
Italy.....	58, 697	23, 762	+34, 935
Rumania.....		35, 983	-35, 983
Russia.....	13, 558	24, 600	-11, 042
Serbia.....		20, 936	-20, 936
Tunis.....		6, 684	-6, 684
Other countries.....	3, 689	54, 435	-50, 746
Total.....	459, 346	3, 619, 935	-3, 160, 589

POTATO SITUATION, 1921–1922.

The statistical surpluses produced during the years 1921–1922 and for the corresponding area in 1911–1915 are compared in Table 27:

TABLE 27.—Statistical potato balance of Hungary, 1921–1922, compared with pre-war, 1911–1915.

	1911–1915	1921	1922
Area seeded.....	1,000 acres. 621	1,000 acres. 665	1,000 acres. 447
Total production.....	1,000 bushels. 72, 726	1,000 bushels. 45, 898	1,000 bushels. 33, 859
Seed requirement.....	16, 063	17, 175	11, 550
Net production.....	56, 673	28, 723	22, 309
Domestic consumption.....	55, 014	1 25, 100	* 21, 021
Statistical surplus.....	1, 659	3, 623	1, 288

¹ Food and stock feed, 21,021,000 bushels. Industrial uses, 4,079,000 bushels.

*No allowance made for potatoes used industrially in 1922.

The actual net import-export balance for the season of 1921–1922 was as follows:

Exported to:	Bushels.
Austria.....	160,903
Switzerland.....	5,879
Czechoslovakia.....	1,143
Total exports.....	167,925
Imported from:	
Italy.....	20,540
Germany.....	709
Total imports.....	21,249
Net exports.....	146,676

SUGAR BEETS.

TABLE 28.—Average balance between production and factory run of sugar beets in the different districts that comprised the old Kingdom of Hungary, 1911-1915.

District.	Area.	Production.	Seed.	Net production.	Sugar beets worked up by factories.	Surplus (+) or deficit (-).
	<i>Aces.</i>	<i>Short tons.</i>	<i>Short tons.</i>	<i>Short tons.</i>	<i>Short tons.</i>	<i>Short tons.</i>
Hungary (1921 boundaries).....	145,515	1,598,282	1,813	1,596,469	1,364,576	+231,893
Transylvania (ceded to Rumania).....	32,809	366,790	410	366,380	200,613	+165,767
Slovakia (ceded to Czechoslovakia).....	165,226	1,693,094	2,066	1,691,028	1,593,375	+97,653
Ruthenia (ceded to Czechoslovakia).....	467	3,012	8	3,004	.....	+3,004
Burgenland (ceded to Austria).....	18,846	227,984	236	227,748	229,196	-1,448
Croatia-Slavonia (ceded to Yugoslavia).....	11,811	88,768	147	88,621	110,995	-22,374
Murjk (ceded to Yugoslavia).....	1,488	16,791	20	16,771	.....	+16,771
Voivodina (ceded to Yugoslavia).....	24,013	295,751	300	295,451	154,712	+140,739
Total Hungarian Kingdom.....	400,175	4,290,472	5,000	4,285,472	3,653,467	632,005

The former frontier between old Hungary and old Austria was no barrier against the farmers of one country producing beets for factories located in the other. About 56,000 tons of beets were sent annually by Austrian farmers to Hungarian sugar factories near which they were located, while Hungarian farmers sent about 189,000 tons to Austrian sugar factories because they were nearer to these than to factories on Hungarian territory. About 7,000 tons were shipped annually to Bosnia and 133,000 tons were used industrially for purposes other than sugar manufacture, and some beets were fed to livestock.

When the present (1921) frontiers of Hungary were finally determined these frontiers did not follow old state or county lines but cut across bordering counties and towns irregularly. In some cases a farmer found himself living in one country and his fields located in another. The railroads were also uneconomically cut up. It is probable that the beet-sugar industry has been injured. Factories are cut off from their former sources of supply and farmers find a customs barrier between themselves and their former market.

It is too early to judge the extent of the effect that these changes of frontiers will have upon the beet-sugar industry. However, the post-war situation in Hungary is indicated in Table 29.

TABLE 29.—*Production of sugar beets in Hungary, average 1911–1915 and 1921.*

	Area.	Production.	Seed.	Net production.	Yield per acre.
	<i>Acres.</i>	<i>Short tons.</i>	<i>Short tons.</i>	<i>Short tons.</i>	<i>Short tons.</i>
Average, 1911–1915.....	145,515	1,598,282	1,813	1,596,469	10.99
1921.....	102,917	598,488	1,286	597,202	5.82
Difference.....	42,598	999,794	.....	.....	5.16
Per cent of decrease compared with pre-war.	29.3	62.6	.....	.....	47.0

Comparing 1921 with the pre-war period there has been a drop of 29.3 per cent in acreage due, for the most part, to the general economic situation. The great reduction of 62.6 per cent in production is due largely to climatic and other factors. There is no record of the factory run in 1921.

SUGAR BEET SITUATION IN HUNGARY, 1922.

In 1922 the acreage under sugar beets dropped from 102,917 to 64,303; but the yield increased from 5.82 to about 9.2 short tons per acre. This brought the total yield up to 589,274 short tons, or about what it was the previous year.

FODDER BEETS IN HUNGARY.

The average consumption of fodder beets per head of livestock has been calculated for the old Kingdom of Hungary as a whole; but it is improbable that any great amount of these beets entered into domestic or foreign trade. For the most part they were fed locally, the number of livestock fed varying with the supply of beets. A relatively small amount of beets were used industrially, averaging about 237,000 tons per year, and about 10,000 tons were exported each year. However, most of the product did not leave the farm upon which it was grown.

TABLE 30.—*Average balance between production and estimated consumption of fodder beets in different districts that comprised the old Kingdom of Hungary, 1911–1915.*

District.	Area.	Production.	Seed.	Net production or estimated consumption.
	<i>Acres.</i>	<i>Short tons.</i>	<i>Short tons.</i>	<i>Short tons.</i>
Hungary (1921 boundaries).....	296,735	3,915,302	3,071	3,912,231
Transylvania (ceded to Rumania).....	76,468	1,082,891	822	1,082,069
Slovakia (ceded to Czechoslovakia).....	77,737	985,412	834	984,578
Ruthenia (ceded to Czechoslovakia).....	5,426	53,956	60	53,896
Burgenland (ceded to Austria).....	17,685	251,599	190	251,409
Croatia-Slavonia (ceded to Yugoslavia).....	19,370	116,921	206	116,715
Murji (ceded to Yugoslavia).....	4,571	62,082	49	62,033
Voivodina (ceded to Yugoslavia).....	18,918	316,577	202	316,375
Total.....	506,910	6,784,740	5,434	6,779,306

In 1921 there was an increase over the pre-war (1911–1915) average acreage under fodder beets amounting to about 12.2 per cent. The total yield of fodder beets in 1921, due to a decrease of 54.7 per cent in yield per acre, was 48.8 per cent below the 1911–1915 average, as shown in Table 31:

TABLE 31.—*Fodder-beet production in Hungary in 1921 as compared with pre-war, 1911-1915.*

	Area.	Production.	Production per acre.
	<i>Acres.</i>	<i>Short tons.</i>	<i>Short tons.</i>
Average 1911-15.....	286,735	3,915,302	13.7
1921.....	321,721	2,005,231	6.2
Increase (+) or decrease (-).....	+34,986	-1,910,071	-7.5
Per cent of increase (+) or decrease (-) compared with pre-war.....	+12.2	-48.8	-54.7

There is no available information relative to the crop of 1922.

ANIMAL INDUSTRY IN HUNGARY.

Before the war animal industry centered about sheep, swine, cattle, and horses, in the order named, if we base the importance of each on the number of animals per each 1,000 inhabitants.

TABLE 32.—*Live animals in the old Kingdom of Hungary.*

	Total number, 1911.	Per 1,000 inhabitants.
Sheep.....	8,548,172	410
Swine.....	7,579,833	364
Cattle.....	7,318,776	351
Horses.....	2,350,780	113

Since the various districts of the old Kingdom of Hungary were inhabited by peoples of diverse racial characteristics and with different agricultural customs, and since, due to soil and climatic variations, the nature of the field crops grown also varied, it is not surprising that the kinds and breeds of livestock produced in different regions should also differ.

Sheep herding was the leading animal industry in Transylvania; horses and swine were relatively more important in the territory of Hungary proper and in eastern Croatia-Slavonia and Voivodina; the corn belt of old Hungary, while the leading districts for cattle were Ruthenia, Burgenland, and Croatia-Slavonia. The distribution of livestock throughout the old Kingdom of Hungary is shown in Table 33.

TABLE 33.—*Classification of livestock in different districts that comprised the old Kingdom of Hungary, 1911.*

District.	Number of cattle.		Number of horses.		Number of swine.		Number of sheep.		Rank of districts in relative importance of livestock holdings.			
	1,000.	Per 1,000 inhabitants.	1,000.	Per 1,000 inhabitants.	1,000.	Per 1,000 inhabitants.	1,000.	Per 1,000 inhabitants.	Cattle.	Horses.	Swine.	Sheep.
Hungary (1921 boundaries).....	2,194	288	884	116	3,192	420	2,299	302	7	3	3	6
Transylvania (ceded to Rumania).....	2,045	394	511	98	1,510	291	3,529	680	4	4	6	1
Slovakia (ceded to Czechoslovakia).....	1,120	380	243	82	720	244	1,021	346	5	5	7	3
Ruthenia (ceded to Czechoslovakia).....	229	399	40	70	85	148	185	323	3	7	8	5
Burgenland (ceded to Austria).....	144	485	24	81	121	408	29	98	1	6	4	8
Croatia-Slavonia (ceded to Yugoslavia).....	1,135	433	350	133	1,164	444	851	325	2	2	2	4
Murji (ceded to Yugoslavia).....	64	349	10	55	61	333	23	126	6	8	5	7
Voivodina (ceded to Yugoslavia).....	*398	275	289	205	727	515	611	433	8	1	1	2
Total.....	7,319	351	2,351	113	7,580	364	8,548	410	.....	.....	.....	.....

CATTLE IN HUNGARY.

The number of cattle of different classes that were found in the old Kingdom of Hungary are given in Table 34:

TABLE 34.—Classification and number of cattle¹ in different districts that comprised the old Kingdom of Hungary, 1911.

District.	Bulls.	Cows.	Oxen.	Heifers.	Calves.	Total.
	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>
Hungary (1921 boundaries).....	78,615	920,842	672,484	410,502	112,031	2,194,474
Transylvania (ceded to Rumania).....	37,753	850,993	687,294	291,417	177,223	2,044,685
Slovakia (ceded to Czechoslovakia).....	23,308	526,790	302,651	200,635	66,711	1,120,095
Ruthenia (ceded to Czechoslovakia).....	2,592	100,840	68,025	36,118	20,508	228,983
Burgenland (ceded to Austria).....	5,975	64,953	36,814	29,823	5,947	143,512
Croatia-Slavonia (ceded to Yugoslavia).....	27,170	512,221	294,001	196,366	105,069	1,134,857
Murji (ceded to Yugoslavia).....	3,363	29,299	15,475	12,751	3,187	64,075
Voivodina (ceded to Yugoslavia).....	14,471	173,661	97,645	84,207	18,111	388,095
Total.....	193,247	3,179,599	2,175,289	1,261,819	568,822	7,318,776

¹ Not including buffaloes.

The red mottled cattle of the Triburg type are the most prevalent although the Grey Swiss and Simmenthal types are also well established. These improved breeds have in recent years been crowding out the native Hungarian breed, which, although making excellent yoke oxen, admitting of no comparison with the others, develop slowly, are difficult to fatten and yield relatively little first-class meat. East of the Danube are found large numbers of buffaloes in increasing ratio until in Transylvania among the primitive Rumanian peasantry they form 6.78 per cent of the horned cattle. Of the cattle in the old Kingdom of Hungary, 56.5 per cent were of the Swiss breeds.

TABLE 35.—Breeds and number of cattle and buffaloes in the different districts that comprised the old Kingdom of Hungary, 1911.

Districts.	Breed and per cent of total cattle, including buffaloes.								
	Hungarian.		Swiss.		Buffaloes.		Other cattle.		Total.
	<i>Number.</i>	<i>Per Cent.</i>	<i>Number.</i>	<i>Per Cent.</i>	<i>Number.</i>	<i>Per Cent.</i>	<i>Number.</i>	<i>Per Cent.</i>	<i>Number.</i>
Hungary (1921 boundaries).....	619,288	28.1	1,395,398	63.2	12,374	0.6	179,788	8.1	2,206,848
Transylvania (ceded to Rumania).....	942,648	43.2	823,606	37.7	138,870	6.4	278,431	12.7	2,183,555
Slovakia (ceded to Czechoslovakia).....	84,068	7.5	941,910	84.0	737	.1	94,117	8.4	1,120,832
Ruthenia (ceded to Czechoslovakia).....	67,453	29.3	36,851	16.0	1,418	.6	124,679	54.1	230,401
Burgenland (ceded to Austria).....	4,787	3.3	130,934	91.0	337	.3	7,791	5.4	143,849
Croatia-Slavonia (ceded to Yugoslavia).....	162,085	14.3	628,143	55.3	195	(¹)	344,629	30.4	1,135,052
Murji (ceded to Yugoslavia).....	2,334	3.6	59,611	92.9	101	.2	2,130	3.3	64,176
Voivodina (ceded to Yugoslavia).....	152,343	39.1	203,030	52.1	1,356	.4	32,722	8.4	389,451
Total.....	2,035,006	27.2	4,219,483	56.5	155,388	2.1	1,064,287	14.2	7,474,164

¹ Less than 0.05 of 1 per cent.

With the improvement of meadow land, the cultivation of upland pastures, and the increased seeding of forage crops, animal industry was increasing very rapidly before the war. During the war period the herds were greatly depleted.

The number of cattle within the 1921 boundaries of Hungary in 1920 as compared with 1911 is shown in table 36:

TABLE 36.—Classification and number of cattle in Hungary (1921 boundaries) in 1920 as compared with 1911.

Cattle.	1911	1920
Bulls.....	78, 615	100, 907
Cows.....	920, 842	849, 946
Heifers and oxen.....	1, 082, 986	939, 663
Calves.....	112, 031	.....
Total.....	2, 194, 474	1, 940, 516
Difference.....	.....	253, 958
Per cent of difference.....	.....	11.6

In 1920 there were 11.6 per cent fewer cattle in Hungary than in the same territory in 1911; while the decrease in cereal acreage below pre-war (1911-1915) was 15.8 per cent in 1920, 13.3 per cent in 1921, and 19.6 per cent in 1922. While there has been some increase in the production of forage, there has not been in Hungary an increase in pastures and meadows (see Table 3) such as we find in all other countries of southeastern Europe. A report under date of April 5, 1923, of United States Consul Edwin C. Kemp from Budapest states:

A shortage of forage for stock is reported to be of sufficient importance to move the Minister of Agriculture to occupy himself with the increase of pasture land in connection with the agrarian reform. Many farmers are reported to have sold their stock to butchers, retaining only such as are necessary for the spring cultivation.

This indicates that the increase of cattle during 1921 was in excess of forage production possibilities and that the upper limit was approached if not reached in 1922-23. Actual numbers are not available.

The pre-war foreign trade in cattle of the old Hungarian Kingdom is shown in Table 37:

TABLE 37.—Foreign trade in cattle, Hungary, average 1911-1915.

Country.	Imports +.	Exports -.	Net.
Austria.....	19, 012	275, 460	-256, 448
Bosnia.....	2, 838	4, 786	-1, 948
Denmark.....	3, 943	.....	+3, 943
Germany.....	835	11, 844	-11, 009
Netherlands.....	1, 554	.....	+1, 554
Rumania.....	5, 164	166	+4, 998
Sweden.....	120	214	+120
Switzerland.....	886	.....	+872
Other countries.....	137	131	+6
Total.....	34, 489	292, 601	-258, 112

From a total of 7,318,776 head of cattle, as shown by the census of 1911, the average net export during the 5-year period 1911-1915 was 258,112, or 3.5 per cent.

TABLE 38.—*Foreign trade in cattle, Hungary, 1921.*

Country.	Imports +.	Exports -.	Net.
Austria.....		22, 197	-22, 197
Czechoslovakia.....	139		+139
Germany.....		5, 848	-5, 848
Netherlands.....		1, 077	-1, 077
Rumania.....	17, 835		+17, 835
Switzerland.....	156	1, 075	-919
Other countries.....	4	6, 573	-6, 569
Total.....	18, 134	36, 770	-18, 636

SWINE IN HUNGARY.

Of the swine in the old Kingdom of Hungary over 80 per cent were of a type peculiar to Hungary, called "Mangalica," a breed which has wool-like bristles and yields lard and fat bacon. In recent years before the war the Hungarian Government had imported large numbers of Yorkshires and factories were established "concerned in the working-up of the flesh of porkers and with the placing upon the market of the finer streaky bacon so widely consumed in England."

The improved English breeds even before the war had become popular in Slovakia, Burgenland, Murji, and Croatia-Slavonia; but in most of the old Kingdom the native Hungarian type of swine prevailed, as indicated in Table 39:

TABLE 39.—*Classification and number of swine in the different districts that comprised the old Kingdom of Hungary, 1911.*

District.	Total swine.		Bacon type. ¹		Other types.	
	Number.	Number.	Per cent.	Number.	Per cent.	
Hungary (1921 boundaries).....	3, 191, 868	2, 878, 322	90.2	313, 546	9.8	
Transylvania (ceded to Rumania).....	1, 509, 821	1, 265, 222	83.8	244, 599	16.2	
Slovakia (ceded to Czechoslovakia).....	719, 528	443, 121	61.6	276, 407	38.4	
Ruthenia (ceded to Czechoslovakia).....	85, 339	79, 278	92.9	6, 061	7.1	
Burgenland (ceded to Austria).....	121, 154	72, 919	60.2	48, 235	39.8	
Croatia-Slavonia (ceded to Yugoslavia).....	1, 164, 022	623, 237	53.5	540, 785	46.5	
Murji (ceded to Yugoslavia).....	61, 524	41, 271	67.1	20, 253	32.9	
Voivodina (ceded to Yugoslavia).....	726, 577	687, 653	94.6	38, 924	5.4	
Total.....	7, 579, 833	6, 091, 023	80.4	1, 488, 810	19.6	

¹ Mangalica type of fat hog.

Most of old Hungary's pork surplus was shipped to Austria, including Bohemia, Moravia, Silesia, and Galicia. The detailed foreign trade in swine is shown in Table 40.

TABLE 40.—*Foreign trade in swine, Hungary, average 1911-1915.*

Country.	Imports +.		Exports -.		Net.
	Number.	Number.	Number.	Number.	Number.
Austria.....	8, 171	612, 548			-604, 377
Bosnia.....	643	308			+335
Germany.....	275				+275
Italy.....				49	-49
Rumania.....	572	38			+534
Other countries.....	42	26			+16
Total.....	9, 703	612, 969			-603, 266

SWINE SITUATION IN 1921.

According to the census of 1920 there were 2,652,744 swine in Hungary as compared with 3,191,868 within the same territory in 1911, a decrease of 16.9 per cent. In 1921 there was a net import of swine into Hungary, mostly from Rumania as indicated in Table 41:

TABLE 41.—Foreign trade in swine, Hungary, 1921.

Country.	Imports +.		Exports -.	Net.
	Number.	Number.		
Austria.....			9,751	-9,751
Germany.....			730	-730
Rumania.....	16,285			+16,285
Other countries.....			89	-89
Total.....	16,285		10,570	+5,725

It is probable that cheap pigs from Transylvania are beginning to penetrate eastern Hungary.

SHEEP IN HUNGARY.

The fine wool sheep, Merinos, are found for the most part on the Hungarian plains, chiefly on the large estates in the districts that are now known as present Hungary, Burgenland, and Murji. These sheep were raised for their wool, and when pasture was plentiful, as on the broad fields of the estates after the grain had been cut, it was profitable to graze sheep for wool or meat. But on the small peasant holdings a profit could be made only by turning the milk to account, and for that reason the primitive coarse-wool milk breeds Raczka and Czigaja were found among the peasants. The wool of these breeds is coarse, but still marketable. The young males are usually killed for their pelts when four or five days old. These pelts are similar to the well-known Karakul or to Persian lamb. However, the main source of revenue is derived from the milk chiefly manufactured into cheese.

These milk sheep were popular in Croatia-Slavonia, Transylvania, and Voivodina and to a lesser extent in Ruthenia and Slovakia. The greatest numbers of sheep in proportion to the population were found in Transylvania (680 sheep per 1,000 inhabitants) and in Voivodina, where there were 433 sheep per 1,000 inhabitants. (See Table 42.)

TABLE 42.—Classification and number of sheep in different districts that comprised the old Kingdom of Hungary, 1911.

District.	Total.	Sheep.						Per 1,000 inhabitants.
		Merino.		Raczka and Czigaja. ¹		English and other types.		
		Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	
Hungary (1921 boundaries).....	2,299,463	1,545,835	67.2	521,273	22.7	232,355	10.1	302
Transylvania (ceded to Rumania).	3,528,766	424,549	12.0	2,905,075	82.3	199,142	5.7	680
Slovakia (ceded to Czechoslovakia).....	1,020,855	298,735	29.3	542,514	53.1	179,606	17.6	346
Ruthenia (ceded to Czechoslovakia).....	184,832	50,312	27.2	114,715	62.1	19,805	10.7	322
Burgenland (ceded to Austria).....	29,381	18,312	62.3	3,545	12.1	7,524	25.6	99
Croatia-Slavonia (ceded to Yugoslavia).....	850,485	33,018	3.9	801,472	94.2	15,995	1.9	324
Murji (ceded to Yugoslavia).....	23,113	17,137	74.2	3,982	17.2	1,994	8.6	126
Voivodina (ceded to Yugoslavia).....	611,277	104,571	17.1	477,486	78.1	29,220	4.8	433
Total.....	8,542,172	2,492,469	29.2	5,370,062	62.8	685,641	8.0	410

¹ Includes "Fat-tail sheep" and Persian lamb of low grade.

The pre-war foreign trade in sheep of the old Kingdom of Hungary is shown in Table 43:

TABLE 43.—*Foreign trade in sheep, Hungary, average 1911-1915.*

Country.	Imports +.	Exports -.	Net.
	<i>Number.</i>	<i>Number.</i>	<i>Number.</i>
Austria.....	2,661	88,857	-86,196
Bosnia.....	149	1,945	-1,796
Germany.....	.....	5,681	-5,681
Rumania.....	6,005	.....	+6,005
Switzerland.....	.....	4,038	-4,038
Other countries.....	67	238	-171
Total.....	8,902	100,757	-91,855

From a total number of 8,548,172 sheep before the war the old Kingdom of Hungary exported only 91,855 or 1.1 per cent of the number recorded in the 1911 census.

SHEEP SITUATION IN HUNGARY, 1920-21.

According to the census of 1911 there were 2,299,463 sheep in the territory now comprised within the present boundaries of Hungary, or 302 per 1,000 inhabitants. In 1920 there were 1,339,389 sheep or 169 per 1,000 inhabitants. This is a decrease of 41.8 per cent.

The foreign trade in sheep in 1921 is shown in Table 44:

TABLE 44.—*Foreign trade in sheep, Hungary, 1921.*

Country.	Imports +.	Exports -.	Net.
Austria.....	.....	4,406	-4,406
Germany.....	14	6,016	-6,002
Netherlands.....	.....	455	-455
Switzerland.....	.....	390	-390
Total.....	14	11,267	-11,253

This net export is 0.8 per cent of the number of sheep enumerated in the 1920 census.

HORSES IN HUNGARY.

For centuries horse breeding has been one of the leading agricultural industries of Hungary. In the west, southwest, and southeast (Voivodina) the larger, stronger, and more energetic horses of a type suitable for carriage work were developed. In the northern and northeastern districts along the ranges of the Carpathians and among the mountain districts of Transylvania smaller, tougher horses were found. On the central plains between the Danube and the Tisza Rivers within the present boundaries of Hungary the popular types were light, medium-sized saddle and coach horses.

The whole horse-breeding industry of the old Kingdom centered about government stables, but there were many private establishments. The favorite breeds of horses were English thoroughbreds, English half-bloods, Arabs, American trotters, and to a less degree fast native breeds.

The manner in which the stallions, mares, and geldings were distributed throughout the old Kingdom is shown in Table 45. The districts where breeding is most intensified is indicated by a higher ratio of mares.

TABLE 45.—Classification and number of horses in different districts that comprised the old Kingdom of Hungary, 1911.

District.	Stallions.		Mares.		Geldings.		Total.	Per 1,000 inhabitants.
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.		
Hungary (1921 boundaries).....	69,834	7.9	531,494	60.1	282,504	32.0	883,832	116
Transylvania (ceded to Rumania).....	31,583	6.2	270,830	53.1	208,053	40.8	510,466	98
Slovakia (ceded to Czechoslovakia).....	9,736	4.0	110,094	45.5	122,671	50.5	243,101	82
Ruthenia (ceded to Czechoslovakia).....	839	2.1	19,752	49.7	19,124	48.2	39,715	69
Burgundia (ceded to Austria).....	1,232	5.1	13,544	55.6	9,590	39.4	24,366	82
Croatia-Slavonia (ceded to Yugoslavia).....	20,296	5.8	205,054	58.6	124,700	35.6	350,050	134
Murjl (ceded to Yugoslavia).....	509	5.1	7,555	75.0	2,006	19.9	10,070	55
Volvodina (ceded to Yugoslavia).....	29,934	10.4	169,295	58.5	89,951	31.1	289,180	205
Total.....	163,963	7.0	1,323,218	56.5	858,599	36.5	2,350,780	113

Most of the horses exported from Hungary were for military or breeding purposes. As was usual with other products of the agricultural industry in the old Kingdom of Hungary, almost the entire export of horses went to Austria, as shown in Table 46.

TABLE 46.—Foreign trade in horses, Hungary, average 1911-1915.

Country.	Imports +.	Exports -.	Net.
	Number.	Number.	Number.
Austria.....	911	37,329	-36,418
Belgium.....	36		+36
Bulgaria.....		559	-559
European Turkey.....		1,187	-1,187
France.....	73	650	-578
Germany.....	34	2,179	-2,145
Greece.....		496	-496
Italy.....		7,088	-7,088
Rumania.....	77	4,173	-4,096
Russia.....	32		-445
Serbia.....		695	-695
Other countries.....	36	173	-137
Total.....	1,198	55,006	-53,808

HORSE SITUATION IN 1920-1921.

According to the census of 1911 there were 883,832 horses in the territory now comprised within the present boundaries of Hungary, or 116 per 1,000 inhabitants. In 1920 there were 685,345, or 86 horses per 1,000 inhabitants. This is a decrease of 22.5 per cent. In 1921 the foreign trade in horses was as indicated in Table 47.

TABLE 47.—Foreign trade in horses, Hungary, 1921.

Country.	Imports +.	Exports -.	Net.
	Number.	Number.	Number.
Austria.....		3,150	-3,150
Germany.....		3,532	-3,532
Italy.....		2,357	-2,357
Rumania.....	155		+155
Yugoslavia.....	1,795		+1,795
Other countries.....	2	524	-522
Total.....	1,952	9,563	-7,611

CONSUMPTION NORMS OF HUNGARY.

The old Kingdom of Hungary produced a wheat and rye surplus that was almost completely absorbed by the old Kingdom of Austria. The domestic Hungarian production and consumption balanced

against net exports is given in "Das Österreichische Ernährungsproblem" prepared by the Austrian Food Ministry, based upon the records for 1909-13, is as follows:

Average wheat and rye balance in terms of flour.

	Short tons.
Net production (harvest less seed).....	4, 112, 771
Received through customs houses (net).....	89, 931
Total	4, 202, 702
Shipped to old Kingdom of Austria.....	1, 349, 566
Total Hungarian consumption	2, 853, 136
Average yearly per capita consumption of wheat and rye flour in Hungary. Population 20,886,487.....	lbs. 273. 2
Consumption per capita per day.....	ozs. 12

The Hungarian Department of Agriculture calculated their yearly per capita consumption to be:

Wheat 292.6 pounds $\times 0.75 = 219.4$ pounds wheat flour.
Rye 79.2 pounds $\times .75 = 59.4$ pounds rye flour.

Total..... 278.8 pounds wheat and rye flour.

The average difference between Austrian and Hungarian estimates is 6 pounds per capita per year. However, the yearly variation in consumption (includes hold-over stocks) was very marked as brought out in Table 48 from Austrian sources:

TABLE 48.—*Résumé of the old Hungarian Kingdom: Production, import, and export of wheat, rye, and flour, 1909-1913.*

Item.	1909	1910	1911	1912	1913	Average, 1909-13.
(a) Area seeded:	1,000 acres.	1,000 acres.	1,000 acres.	1,000 acres.	1,000 acres.	1,000 acres.
Wheat.....	8,799	9,375	9,162	9,576	8,533	9,040
Rye.....	2,658	2,811	2,733	2,818	2,723	2,749
(b) Production:	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.
Wheat.....	125,014	181,135	190,077	184,642	167,349	169,643
Rye.....	47,250	51,789	50,323	53,194	52,700	51,051
(c) Seed:	26,168	27,881	27,217	28,477	25,377	27,030
Wheat.....	8,469	8,957	8,708	8,978	8,677	8,754
(d) Net production of both wheat and rye.....	137,627	196,086	204,445	200,381	185,995	184,908
(e) Excess of imports (+) or exports (-) of grain trade with:						
Countries other than Austria—						
Wheat.....	+16,781	+5,372	+2,018	+111	-40	+4,848
Rye.....	+2		+3	+3		+2
Austria—						
Wheat.....	-8,770	-12,751	-16,837	-17,251	-18,413	-14,804
Rye.....	-8,262	-11,421	-12,206	-11,928	-9,863	-10,740
(f) Excess exports of grain: Wheat and rye.....	-270	-18,800	-27,022	-29,065	-28,316	-20,694
(g) Net production of grain minus the net export of grain.....	137,357	177,286	177,423	171,316	157,679	164,212
(h) Net surplus grain calculated to flour: Wheat 76.2 per cent, rye 72 per cent.....	1,000 short tons.	1,000 short tons.	1,000 short tons.	1,000 short tons.	1,000 short tons.	1,000 short tons.
Wheat 76.2 per cent, rye 72 per cent.....	3,058	3,968	3,976	3,829	3,512	3,669
(i) Exported to:						
Countries other than Austria.....	22	21	12	14	36	21
Austria.....	714	699	809	906	845	795
Total	736	720	821	920	881	816
(j) Surplus remaining in Hungary for consumption and as trade and mill stocks: Wheat and rye.....	2,322 Pounds.	3,248 Pounds.	3,155 Pounds.	2,909 Pounds.	2,631 Pounds.	2,858 Pounds.
(k) Per capita consumption of wheat and rye flour (=j divided by 20,886,487).....	222.3	311.0	302.1	278.6	252.0	273.2

NOTE.—Above table is a translation of page 67 "Das Österreichische Ernährungsproblem."

As stated above the norm of flour consumption that was employed by the Hungarian Ministry of Agriculture is 278.9 pounds of flour. This is equivalent to 292.6 pounds of wheat and 79.2 pounds of rye. These amounts are assumed to have been the average consumption of grain for the entire old Kingdom.

APPENDIX I—THE LAND REFORM IN HUNGARY.

From a report by Digby A. Willson, United States vice consul, Budapest, Hungary. Dated June 22, 1923. Published by permission of the Department of State.

DIVISION OF ARABLE LAND.

According to the Royal Hungarian Ministry of Agriculture the present reported arable land area of 14,055,532 acres could permit the use of 6,213,000 cadastral yokes or 9,008,850 acres for the four most important products in the following ratio:

Product.	Area available.
	<i>Acres.</i>
Wheat.....	3,807,700
Rye.....	1,713,900
Barley.....	1,322,400
Maize.....	2,164,850

However, according to the final estimates given out for the past year only 4,950,709 cadastral yokes or 7,178,528 acres were utilized for the production of these four products. This total is divided as follows:

Product.	Area actually sown.	Difference in available area and that actually sown.
	<i>Acres.</i>	<i>Acres.</i>
Wheat.....	2,910,698	897,002
Rye.....	1,366,494	347,406
Barley.....	1,151,684	170,716
Maize.....	1,749,652	415,198

The condition above reported is one of the greatest problems with which the Ministry of Agriculture must cope, but it has been of recent years only that the producers have been made to appreciate the need of modern agricultural machinery if increased cultivation of the arable land area is to be made possible. However, the Ministry of Agriculture, fully appreciating the value of modern farm operating equipment, claims the need of foreign moral and financial assistance before any real increase in the country's cultivation of agricultural products can be guaranteed. The majority of the farmers are not in a position to purchase automotive agricultural implements and it is further claimed that a greater production at the present time would only result in a demand by the neighboring States for an immediate payment in kind to cover reparations.

DISTRIBUTION OF CULTIVATED LAND.

According to the figures obtained from the Ministry of Agriculture and the taxation bureau of the Ministry of Finance, the cultivated area of Hungary on April 1, 1923, amounted to 16,118,899 cadastral yokes or 23,372,403 acres. In order to illustrate the distribution of this area Table 49 has been prepared in this consulate from official figures just received:

TABLE 49.—*Distribution of cultivated land according to class of estates in Hungary, April, 1923.*

Class of estates.	Number of estates.	Per cent.	Area in cadastral yokes.	Per cent.
Entailed estates.....	3,258	0.4	3,850,070	23.9
Estates fee simple.....	782,523	99.6	12,268,829	76.1
Total.....	785,781	100.0	16,118,899	100.0

It is of importance to observe that the entailed estates amounting to only 0.4 per cent of the total number of estates registered in Hungary actually form 23.9 per cent of the cultivated area of the country.

The number of estates given in Table 49 are divided, according to size, in the following manner:

TABLE 50.—*Distribution of cultivated land in Hungary according to size of estates, April, 1923.*

Size of estates.	Number.	Per cent.	Area in cadastral yokes.	Per cent.
Under 100 yokes.....	775,000	98.60	7,474,287	46.4
100 to 500 yokes.....	7,848	1.00	1,695,744	10.5
500 to 1,000 yokes.....	1,417	0.20	970,272	6.0
1,000 to 5,000 yokes.....	1,213	0.18	2,383,691	14.8
5,000 yokes and over.....	303	0.02	3,594,905	22.3
Total.....	785,781	100.00	16,118,899	100.0

Although the so-called estates under 100 yokes amount to 98.6 per cent of the total number of estates claimed by the Ministry of Agriculture to be in present Hungary, the area totals only 46.4 per cent, or less than half of the cultivated area of the country.

The land reform act aims to diminish the abnormal difference shown in the above comparison by distributing the larger estates among "war heroes," agricultural laborers, pensioned public employees, honorably discharged soldiers and public employees, graduate agriculturists, and others. An attempt has been made already to divide the land in accordance with the reform, but reports claim that the land actually given out was only leased because of the combined protest of the large landowners against a definite distribution without reimbursement.

According to the statistical bureau the large landowners who control the majority of the cultivated area of the country form only 1.4 per cent of the total population of the country.

Table 51 illustrates the distribution of the estates in fee simple according to their size:

TABLE 51.—Distribution of cultivated land in estates in fee simple according to size in Hungary, April, 1923.

Size of estates.	Number.	Per cent.	Area in cadastral yokes.	Per cent.
Under 100 yokes.....	775,000	99.10	7,474,267	60.9
100 to 500 yokes.....	5,442	0.70	1,145,413	9.3
500 to 1,000 yokes.....	1,005	0.10	1,684,802	5.6
1,000 to 5,000 yokes.....	938	0.09	1,815,354	14.8
5,000 and over.....	138	0.01	1,148,973	9.4
Total.....	782,523	100.00	12,268,829	100.0

According to the taxation bureau of the Ministry of Finance there are some entailed estates included in the above figures showing the estates in fee simple under 100 yokes in size, but no survey has been made which would clearly differentiate these.

The figures given in Table 52 have been secured from the taxation bureau of the Ministry of Finance in order to illustrate clearly the distribution of the estates according to the division of the cultivated area.

TABLE 52.—Utilization of land on large estates and small holdings in Hungary, April 1, 1923.

Estates.	Number of estates.	Arable land.	Gardens.	Meadows and pastures.	Vineyards.	Forests.	Cane.	Not under taxation.	Total.
Entailed estates.....	3,258	1,000 acres. 1,749	1,000 acres. 15	1,000 acres. 1,604	1,000 acres. 19	1,000 acres. 1,444	1,000 acres. 31	1,000 acres. 613	1,000 acres. 5,475
Government lands.....	21	78	1	30	1	128	(¹)	14	250
Municipal lands.....	1,024	248	3	323	6	179	8	259	1,031
Foundation lands.....	51	128	1	77	1	70	3	34	314
Educational fund lands.....	29	27	(¹)	13	(¹)	21	(¹)	8	69
Ecclesiastical lands.....	359	504	3	289	3	359	9	101	1,268
Private hereditary.....	92	625	5	299	3	425	7	80	1,444
Commonwealth lands.....	1,452	27	(¹)	519	1	208	3	81	839
Corporation lands.....	230	112	2	49	4	56	1	36	260
Entailed estates according to size:									
100 to 500 yokes.....	2,406	132	3	339	4	145	2	157	782
500 to 1,000 yokes.....	412	72	1	183	2	78	2	69	407
1,000 to 5,000 yokes.....	275	275	2	230	3	176	4	118	808
Over 5,000 yokes.....	165	1,270	9	652	10	1,045	23	269	3,478
Estates in fee simple.....	782,523	12,035	230	2,543	521	1,271	38	808	17,446
According to size:									
Under 100 yokes.....	775,000	7,826	196	1,243	478	300	16	569	10,628
100 to 500 yokes.....	5,442	1,142	9	320	19	88	8	42	1,628
500 to 1,000 yokes.....	1,005	642	6	190	8	94	4	29	973
1,000 to 5,000 yokes.....	938	1,368	13	481	11	417	6	86	2,582
Over 5,000 yokes.....	138	657	6	309	5	372	4	82	1,635
Total estates.....	785,781	13,784	245	4,147	540	2,715	69	1,421	22,921

SUMMARY.

Total estates according to size:									
Under 100 yokes.....	775,000	7,826	196	1,243	478	300	16	569	10,628
100 to 500 yokes.....	7,848	1,274	12	659	23	233	10	199	2,410
500 to 1,000 yokes.....	1,417	714	7	373	10	172	6	88	1,380
1,000 to 5,000 yokes.....	1,213	1,343	15	711	14	583	10	204	3,390
Over 5,000 yokes.....	308	2,127	15	1,161	15	1,417	27	351	5,113
Total.....	785,781	13,784	245	4,147	540	2,715	69	1,421	22,921

¹ Less than 500 acres.

1 cadastral yoke=1.422 acres. The equivalent used by Consul Willson in the foregoing pages is only approximately correct.

The survey shown in Table 52 illustrates that on April 1, 1923, there were 785,781 estates in Hungary with a total cultivated area of 16,118,899 yokes, or 23,372,403 acres. The officials of the Ministry of Finance state that a total of 11,402,566 yokes, or 16,533,721 acres, of the cultivated area of the country is in a recognized improved condition and that the value of this area, including farm buildings, has been estimated at 5,625,000,000,000 Hungarian crowns. This declaration of the finance ministry officials is based on the values obtained from real-estate dealers and the National Law Reform Tribunal.

PRODUCTION.

The 1922 production of the most important agricultural products and by-products are summarized in Table 53. This information was obtained from the ministries of agriculture and commerce on special request of the consulate.

TABLE 53.—*Production and estimated value of specified agricultural products and by-products in Hungary, 1922.*

Product.	Production.	Estimated value.
	<i>Bushels.</i>	<i>Million crowns.</i>
Wheat.....	45,073,508	215,343
Rye.....	21,442,412	76,234
Barley.....	20,878,138	49,998
Oats.....	22,268,111	45,251
Maize.....	32,493,402	90,792
Potatoes.....	33,858,577	36,860
Beans.....	1,175,787	4,440
Peas.....	220,460	1,080
	<i>Short tons.</i>	
Sugar beets.....	632,005	8,027
Alfalfa.....	826,725	22,540
Clover.....	440,920	13,750
Broom corn.....	8,618	4,500
Sugar (beet).....	74,565	70,000
	<i>Gallons.</i>	
Wine.....	115,470,805	6,774
Alcohol.....	3,800,931	12,000
Total.....		687,609

In the last half of 1922 the exchange value of the Hungarian crown varied between \$0.000390 and \$0.000978.

The ministry of agriculture has been endeavoring to educate the farming community of Hungary in the benefits which usually result from modern methods in agriculture. The majority of the farmers, however, still continue to follow the primitive methods of their ancestors, although the soil chemists at the various experimental stations have proved their arguments in favor of modern scientific farming.

At the experimental station in Kalocsa, about 170 miles from Budapest, the wheat which has been scientifically planted this year will amount to 16 quintals to each yoke (40 bushels to the acre). The farmers have been invited to the station for the purpose of learning the methods employed in scientific farming, but they have refused thus far to accept the object lesson given by the Government soil chemists. Therefore, it is expected that the general production this year will remain around 9 to 10 quintals to each yoke (22.75 to 25.34 bushels to the acre) providing there is no drought.

Although Hungary is essentially an agricultural country, it has been in recent years only, that attempts have been made by the ministry of agriculture, through the establishment of experimental stations in various sections of the country, to study the possibilities of increased production, etc.

As an example of recent developments it will be sufficient to remark that for the first time in the history of the country's agriculture the Government experts have experimented with autumn oats, and the results this year are reported to be far beyond all expectation.

The chief soil chemist of the Kalocsa station has become a very strong advocate of the system of dry farming adopted in the United States. His experiments with various grades of paprika are extremely satisfactory, but he states that it will take some years before the farmers will ever attempt dry farming methods in the production of paprika or any other product.

THE AGRICULTURAL SITUATION IN AUSTRIA.

GENERAL CHARACTER OF THE COUNTRY.

The Austrian Republic consists of what is left of the old Austrian Kingdom after segregating from it the territories that were ceded to Rumania, Poland, Czechoslovakia, Yugoslavia, and Italy. To this residuary part of the old Kingdom 1,660 square miles have been added, by the recent cession of Burgenland, to Austria by Hungary. In all, the republic comprises 32,432 square miles and has a population of nearly 6,500,000 people.

As seen from the accompanying map (fig. 8), the present Republic of Austria is about one-fourth the size of the old Kingdom of Austria



FIG. 8.—When the Austro-Hungarian Empire was split up, the territory of Bucovina to the northeast was ceded to Rumania; the territory of Galicia to the north was incorporated into the Republic of Poland; the districts of Bohemia, Moravia, and Silesia to the northwest were incorporated into the Republic of Czechoslovakia; part of the Tirol and the Istrian Peninsula were ceded to Italy, while Slovenia was incorporated into the Kingdom of Yugoslavia. The Republic of Austria is comprised of the districts about Vienna and the mountainous districts to the west occupied by the German Austrians.

and about one-eighth the size of the former Austro-Hungarian Monarchy.

Vienna, the capital city, with a population of about 2,000,000 is situated on the Danube River. There is river navigation to the west far into Germany and to the east and south through Hungary, through the Voivodina of Yugoslavia, and on through the "Iron Gate" into Bulgaria and Rumania to the Black Sea. Railways radiate from Vienna through Czechoslovakia to Germany and Poland on the north, through Germany to Switzerland and France on the west, through Hungary to Rumania and Russia on the east, and on the south direct lines to Italy and through Yugoslavia to Bulgaria and Greece. Besides being a manufacturing center, Vienna is the gateway of commerce in food and raw materials between the western industrial Europe and eastern Europe.

A comparison in area and population between the Austrian Republic and several of the other small European countries in 1920-21 is given in Table 54.

TABLE 54.—Area and population of Austria, compared with Bavaria, Belgium, Netherlands, and Switzerland, 1920-1921.

Country.	Area.	Population.	
		Total.	Per square mile.
	<i>Square miles.</i>	<i>Number.</i>	<i>Number.</i>
Austria.....	32,432	6,423,000	198
Bavaria.....	30,562	7,140,340	234
Belgium.....	11,752	7,462,455	635
Netherlands.....	12,582	6,885,314	546
Switzerland.....	15,975	3,880,320	243

Source: Statesman's Yearbook, 1923, except for Austria, for which area and population are obtained directly from official sources.

Austria's situation is similar to that of Switzerland. Lying in the center of Europe, the country is distinctly mountainous in character and its agricultural production is not sufficient to meet the domestic consumption requirements of the population. It has always been necessary for Austria to import large quantities of foodstuffs and to cover the balance of trade by industrial and commercial activities.

The place of agriculture among the other activities of Austria is indicated in Table 55. In this table the statistics for Burgenland (recently ceded to Austria by Hungary) are recorded separately.

TABLE 55.—Population of Austria, 1910 and 1920, and occupations of the inhabitants in 1910.

POPULATION.

Country.	1910		1920		Loss.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Austria (without Burgenland).....	6,354,919	95.5	6,131,445	95.4	223,474	3.5
Burgenland.....	1,296,891	4.5	1,296,787	4.6	104	.....
Total.....	6,651,810	100.0	6,428,232	100.0	223,578	3.4

OCCUPATIONS OF THE INHABITANTS, 1910.¹

Country.	Agriculture, garden- ing, etc.		Lumbering, forestry, fishing, hunting, etc.		All other callings.	
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.
Austria (without Burgenland).....	1,532,410	23.5	76,425	1.2	4,446,084	70.0
Burgenland.....	175,618	59.2	1,523	0.5	119,750	40.3
Total.....	2,008,028	30.2	77,948	1.2	4,565,834	68.6

¹ Provisional figures.

² At the extraordinary census of 1920 the occupation of the inhabitants was not taken.

NOTE.—The statistics in Tables 55 and 56 are the latest revised figures. These figures, like most of the numerical data in this report, were specially prepared for the Bureau of Agricultural Economics by Court-Councilor Dr. W. Thalmayer, Chief of the Bureau of Statistics, Ministry of Agriculture of the Republic of Austria.

Table 56 compares Austria's farming populations (contrasted to those engaged in other pursuits) with four of the Danube countries and the United States:

TABLE 56.—Agricultural and nonagricultural population of Austria.

Country.	Population in 1910 of present or 1921 boundaries.			
	On farms.		Not on farms.	
	Number.	Per cent.	Number.	Per cent.
Austria.....	2,008,028	30.2	4,643,782	69.8
Bulgaria.....	3,190,816	78.8	878,759	21.2
Czechoslovakia.....	5,848,523	41.3	8,300,144	58.7
Hungary.....	4,190,527	55.1	3,409,690	44.9
Rumania.....	12,913,317	79.4	3,348,840	20.6
United States (1920).....	31,614,269	29.9	74,086,351	70.1

From these tables it is seen that with only 30 per cent of her population tilling the soil, Austria is not primarily an agricultural country; one of her first efforts must be to develop her crop and livestock production to the maximum in order to cut down the balance in trade forced against her under the necessity of feeding her industrial and commercial population.

TABLE 57.—Utilization of the land in Austria, 1920 and 1921, compared with the pre-war normal year 1913.

Classification.	Austria without Burgenland.		
	Pre-war (1913).	1920	1921
	Acres.	Acres.	Acres.
Cereals.....	2,823,110	2,080,691	2,204,687
Legumes.....	37,852	21,463	18,362
Industrial plants.....	20,353	21,745	23,536
Tubers, roots, etc.....	599,615	415,541	457,894
Vegetables.....	45,861	45,536	48,390
Forage plants.....	827,181	781,093	856,113
Other crops.....		¹ 193,025	¹ 224,080
Fallow.....	160,320	521,544	319,006
Total plow land.....	4,514,292	4,080,638	4,152,068
Decrease from pre-war.....		433,654	362,224
Increase in fallow land.....		361,224	158,686
Decrease in land under crops.....		794,878	520,910
Plow land.....	4,514,292		4,152,068
Natural meadows.....	2,195,308		2,433,021
Vegetable gardens.....	190,672		177,645
Fruit gardens.....			
Vineyards.....	108,998		89,991
Pastures.....	3,137,762		3,282,116
Forests.....	7,512,385		7,557,106
Lakes, marshes, reeds, etc.....			
Unproductive.....	2,025,523		1,992,958
Total statistical area.....	19,684,940		19,684,940

¹ Green manure, etc.
Source: Anbauflächen und Ernteergebnisse, im Gebiete der Republik. Österreich, 1913, 1920, and 1921.

Comparing 1921 with pre-war areas there has been a great decrease in cereals (600,000 acres), and a 142,000 acre decrease in tubers and roots. There has been an increase in fallow land and in crops

sown for green manure with a net loss of 362,000 acres of plow land and, due to the increase of fallow land, a loss in areas under crops of more than 500,000 acres.

As in most other regions of southeastern Europe there has been an increase in meadows and pastures, indicating increased activity in animal industry.

The great differences between pre-war agriculture and that of 1921 is the 362,000-acre decrease in tilled land and the 382,000-acre increase in meadows and pastures.

AUSTRIA'S POST-WAR DECREASE IN PRODUCTION.

AREA UNDER CULTIVATION.

Not taking into consideration the territory of Burgenland, of which statistics were not yet included in published reports with those of other parts of Austria in 1921, we have a distinct decrease in the area of land under plow during the post-war period as compared with the last pre-war year, 1913—

	Acres plowed.
1913.....	4, 514, 292
1918.....	4, 165, 213
1919.....	4, 084, 121
1920.....	4, 080, 638
1921.....	4, 152, 068

This decrease reached its low point in 1920, and the country is now on the gain. The causes attending the passing out of cultivation of more than 400,000 acres were purely economic. That is, they were not the results of any land reform movement similar to that taking place in Rumania, since only about 6.1 per cent of Austria's till land is in estates of more than 247 acres,¹ 93.9 per cent of the land being in small holdings. The great depreciation of the currency of the country, the resulting high cost of labor, the fixing of the price of bread to the city dweller so low that the peasant could not compete with America or even cover cost of production, shortage of draft animals, and inability to purchase commercial fertilizers² were all causes tending to discourage agriculture involving labor operations.

TABLE 58.—*Shortage of Commercial Fertilizers in Austria, 1921.*

Item.	Carloads of 10 tons.	
	Required.	Delivered.
Potash salts.....	4, 250	650
Superphosphate and Thomas meal.....	14, 500	1, 800
Nitrogen fertilizers.....	4, 000	700

¹ However, more than 50 per cent of the forests are held as large estates, 1,236 acres and over.

² Table 58 (taken from "Die Wirtschaftskräfte Österreichs" by Dr. Karl Hudocsek, Wien 1921) gives an idea of the fertilizer shortage.

TABLE 59.—Area of crops in Austria, in 1919, 1920, 1921, and 1922 compared with the average of 1904-1913.

[Not including Burgenland.]

Crop.	1904-1913 average ¹	1919 ²	1920 ²	1921 ²	1922 ²
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Wheat.....	463,312	370,776	371,250	377,742	390,231
Spelt.....	(*)	457	452	445	
Rye.....	1,010,700	710,679	714,084	758,350	758,117
Wheat and rye mixed.....	(*)	14,757	14,618	15,293	
Barley.....	351,114	232,573	239,979	266,401	231,451
Oats.....	805,546	606,050	627,866	664,188	659,572
Corn.....	113,666	103,957	102,265	112,250	112,130
Total cereals.....	2,724,338	2,045,249	2,070,514	2,194,669	
Decrease below pre-war.....		679,089	633,824	529,699	
Percentage of decrease.....		24.9	24.0	19.4	
Potatoes.....	336,056	239,351	291,168	327,220	357,999
Sugar beets.....	32,123	13,279	18,090	18,993	22,063
Fodder roots.....	185,325	82,045	101,827	106,705	
Clover.....	442,309	423,077	394,680	424,367	416,522
Natural meadows.....	2,113,940	2,400,090	2,377,104	2,417,565	2,740,905
Artificial meadows.....	247,100	337,944	321,435	319,006	2,740,905
Total forage.....	2,988,674	3,243,126	3,195,046	3,267,643	
Increase above pre-war.....		254,452	206,372	278,969	
Percentage of increase.....		8.5	6.9	9.3	

¹ Furnished by Austrian Ministry of Agriculture through Court Councillor Doctor Thalmayer.

² Anbauflächen und Ernteergebnisse im Gebiete der Republik Österreich, published 1920, 1921, and 1922.

³ Report of United States Consul C. H. Foster, Vienna, June 11, 1923.

⁴ Not separately stated.

In most cases the low point of production was reached in 1920, while 1921 shows a turn for the better.

It is significant that as the acreage of cereals has decreased (19.4 per cent in 1921) the areas under forage and fodder crops have increased 9.3 per cent. It is natural that the Austrian farmer soon learned the futility of saving the currency that he received in exchange for his farm products since the purchasing power of the Austrian crown was continually dropping. He began to diminish the seeding of crops to be sold for spot cash and to increase his wealth in other ways.

TABLE 60.—Production of crops in Austria in 1919, 1920, 1921, and 1922 compared with the average of 1904-1913.

[Not including Burgenland.]

Crop.	1904-1913 average. ¹	1919 final. ²	1920 final. ²	1921 ² pre- liminary.	1922 ² pre- liminary.
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
Wheat.....	9,321,784	5,113,610	5,434,218	6,529,853	6,363,177
Spelt.....	(*)	16,143	12,550	17,839	
Rye.....	21,756,615	9,035,065	10,097,903	13,161,096	12,610,856
Wheat and rye, mixed.....	(*)	159,845	165,041	210,250	
Barley.....	7,729,879	3,821,647	4,423,750	5,481,187	4,738,363
Oats.....	25,173,776	13,581,197	16,008,097	19,000,056	17,133,786
Corn.....	2,708,509	2,115,455	2,128,608	2,520,748	2,680,727
Total cereals.....	66,692,563	33,842,962	38,270,167	46,921,025	
Potatoes.....	44,529,245	20,021,593	24,707,015	30,606,649	47,260,003
Sugar beets.....		<i>Short tons.</i>	<i>Short tons.</i>	<i>Short tons.</i>	<i>Short tons.</i>
	276,236	82,883	143,779	103,391	134,282
Fodder roots.....	1,233,804	460,258	646,532	584,786	
Hay, clover, etc.....	768,744	603,867	562,045	520,107	469,434
Natural meadows.....	3,400,044	2,463,599	3,128,386	2,762,347	2,554,066
Artificial meadows.....	356,263	345,275			
Total forage.....	5,758,855	3,872,999	4,336,963	3,867,240	

¹ Furnished by Austrian Ministry of Agriculture through Court Councillor Doctor Thalmayer.

² Anbauflächen und Ernteergebnisse im Gebiete der Republik Österreich, published 1920, 1921, and 1922.

³ Report of United States Consul C. H. Foster, Vienna, June 11, 1923.

⁴ Not separately stated.

The logical way for the Austrian farmer to increase his wealth was by building up his flocks and herds. Consequently he extended his animal breeding, let more land go to pasture, put in more grass for forage, and planted more fodder.

The extent of the decrease in cereal production and the increase in forage area is brought out in Table 59, on page 48, in which the pre-war average 1904-1913 is contrasted with the post-war average 1919-1921. From this table we have the following:

	Acres.
Acreeage under five cereals, 1904-1913.....	2, 724, 338
Acreeage under five cereals, 1919-1921.....	2, 103, 026
Loss.....	<u>621, 312</u>
Acreeage under forage crops, 1904-1913.....	2, 988, 674
Acreeage under forage crops, 1919-1921.....	3, 235, 272
Gain.....	<u>246, 598</u>

The acreage lost to cereals will be recovered in the future to just the extent that the production of wheat and other grains prove more profitable than the production of meat. The Austrian Government is even looking forward to an increase of 25 per cent in the area under cereals.

TABLE 61.—Yield per acre of crops in Austria, 1919, 1920, 1921, and 1922, compared with the average of 1904-1913.

[Not including Burgenland.]

Crop.	1904-1913 average.	1919 final.	1920 final.	1921 preliminary.	1922 preliminary.
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
Wheat.....	20.1	13.8	14.6	17.3	16.7
Spelt.....	.....	35.3	27.8	40.1	.....
Rye.....	21.5	12.6	14.1	17.4	16.6
Maslin ¹.....	.....	10.8	11.3	13.7	.....
Barley.....	23.3	16.4	18.4	20.6	18.1
Oats.....	31.3	22.4	25.5	28.6	26.1
Corn.....	23.8	20.3	20.8	22.5	23.9
Total cereals.....	24.5	16.5	18.5	21.4	.....
Potatoes.....	132.5	83.6	84.9	93.5	132.1
	<i>Short tons.</i>	<i>Short tons.</i>	<i>Short tons.</i>	<i>Short tons.</i>	<i>Short tons.</i>
Sugar beets.....	8.6	6.2	8.0	5.4	6.1
Fodder beets.....	6.7	5.6	6.3	5.5	.....
Hay, clover, etc.....	1.7	1.4	1.4	1.2	1.1
Natural meadows.....	1.6	1.0	1.2	1.0	.9
Artificial meadows.....	1.4	1.0	.....	.....	.....
Total forage.....	1.9	1.2	1.4	1.2	.....

¹ Wheat and rye mixed.

The decreases in yield per acre are due for the most part to lack of fertilizers (see page 56) and to insufficient tillage resulting from scarcity of labor.

TABLE 62.—Area and production in Austria per 100 inhabitants, 1920, 1921, and 1922.

[Not including Burgenland.]

Crop.	Pre-war. ¹		1920 ²		1921 ²		1922 ²	
	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.	Acres.	Bushels.
Wheat.....	7.3	146.7	6.1	88.6	6.2	106.5	6.2	103.8
Rye.....	15.9	342.4	11.6	164.7	12.4	214.8	12.4	205.7
Barley.....	5.2	121.6	3.9	72.1	4.3	80.4	4.3	77.2
Oats.....	12.7	396.1	10.2	281.1	10.8	309.9	10.7	279.4
Corn.....	1.8	42.6	1.7	34.7	1.8	41.1	1.8	43.7
Total.....	42.9	1,049.5	33.5	621.2	35.5	761.5	35.4	709.8
Potatoes.....	5.3	700.7	4.7	403.0	5.3	499.2	5.8	771.3
Sugar beets.....	0.5	4.3	0.3	2.3	0.3	1.7	0.4	2.2
Fodder beets.....	2.9	19.4	1.7	10.5	1.7	9.5	.....	.....

¹ Population of 1910, 6,354,919 without Burgenland.² Population of 1920, 6,131,445 without Burgenland.

BURGENLAND.

Burgenland is a strip of rich agricultural land ceded to the Republic of Austria by Hungary. According to the frontiers set in 1921 the total area of the district is 1,014,917 acres. It has a population of 296,787 of which 59.2 per cent are engaged in agriculture. The published statistics of Burgenland were not included in the crop reports of the Austrian Department of Agriculture until 1922. In the preliminary reports of that year the increase in the areas seeded to cereals is largely due to the inclusion of Burgenland statistics.

TABLE 63.—Area, production, and consumption of cereals in Burgenland, average, 1911–1915.

Crop.	Area seeded.	Per cent of total.	Production.	Seed.	Net production.	Consumed.	Surplus (+) or deficit (-).
	1,000 acres.		1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.
Wheat.....	126	32.9	2,513	357	2,156	1,255	+901
Rye.....	85	22.2	1,582	272	1,310	1,169	+141
Total bread cereals.....	211	55.1	4,095	629	3,466	2,424	+1,042
Barley.....	80	20.9	2,276	233	2,043	677	+1,366
Oats.....	50	13.0	1,940	220	1,720	804	+916
Corn.....	42	11.0	1,123	24	1,099	2,761	-1,662
Total fodder cereals.....	172	44.9	5,339	477	4,862	4,242	+620
Total, 5 cereals.....	383	100.0	9,434	1,106	8,328	6,666	+1,662

This district of Burgenland produced a surplus of all cereals with the exception of corn which was imported in relatively large quantities for fattening steers and swine for the Austrian and German markets.

The 1922 statistics given in Tables 59 and 60 as reported by United States Consul Foster do not include Burgenland; but the figures in areas seeded in 1922 as reported by the International Institute of Agriculture at Rome do include Burgenland and so we can obtain a preliminary idea of the general effect that the inclusion of this territory will have on Austria's agricultural situation. As indicated above, from the pre-war average surpluses and deficits it is evident that the acquisition of Burgenland is a distinct gain for Austria.

In comparing the statistics of crop years 1920 and 1921 with the pre-war period in Austria (without Burgenland), it is seen, from Table 64, that in 1921 there was considerable improvement over 1920:

TABLE 64.—Area seeded in Austria in 1920 and 1921 compared with pre-war period, 1904-1913.

[Not including Burgenland.]

Crop.	Average 1904-1913.	1920 ¹	Decrease 1920 compared with average, 1904-1913.		1921 ¹	Decrease 1921 compared with average, 1904-1913.	
			Area.	Per cent.		Area.	Per cent.
	1,000 acres.	1,000 acres.	1,000 acres.		1,000 acres.	1,000 acres.	
Wheat.....	463	371	92	19.9	378	85	18.4
Rye ²	1,011	729	282	27.9	773	238	23.5
Total bread cereals.....	1,474	1,100	374	25.4	1,151	323	21.9
Barley.....	331	240	91	27.5	267	64	19.3
Oats.....	805	628	177	22.0	664	141	17.5
Corn.....	114	102	12	10.5	112	2	1.8
Total fodder cereals.....	1,250	970	280	22.4	1,043	207	16.6
Total, 5 cereals.....	2,724	2,070	654	24.0	2,194	530	19.5

¹ Burgenland not included, as at the time of collecting these statistics the frontiers of this district were not fully determined.

² Probably includes maslin.

Above data furnished by Court Councilor Thalmayer.

From a comparison of the 1922 areas given in Table 65 with the 1921 areas, directly it appears that in 1922 this district of Burgenland produced a surplus of cereals with the exception of corn which was imported in relatively large quantities for fattening steers and swine for the Austrian and German markets.

The 1922 statistics of Austria, as reported by the International Institute of Agriculture, can not be compared directly with those of 1921 because in 1922 the areas seeded to cereals in Burgenland were included with those of the rest of Austria for the first time. If we add to the Austrian pre-war average in Table 64 the Hungarian pre-war average for the territory comprised within the present boundaries of Burgenland we can compare the 1922 records to this combined pre-war average and thus get an approximate percentage of the decrease below pre-war which is comparable with the 1921 drop. Thus we have:

TABLE 65.—Cereal crop area in Austria, including Burgenland, in 1922, compared with pre-war average.

Crop.	Area seeded.			
	Pre-war average. ¹	1922	Decrease 1922 below pre-war average.	
	1,000 acres.	1,000 acres.	1,000 acres.	Per cent.
Wheat.....	589	460	129	21.9
Rye.....	1,096	834	262	23.9
Total bread cereals.....	1,685	1,294	391	23.2
Barley.....	411	313	98	23.8
Oats.....	856	704	152	17.8
Corn.....	155	148	7	4.5
Total fodder cereals.....	1,422	1,165	257	18.1
Total, 5 cereals.....	3,107	2,459	648	20.9

¹ Austria without Burgenland, 1904-13. Burgenland, 1911-1915.

Source: Unpublished data supplied by Court Councilor Thalmayer and Magyar Statisztikai Evkonyo; 1922 data from International Institute of Agriculture, 1922 Yearbook.

Comparing 1922 with 1921 directly it appears that in 1922 Austria improved her seeding of cereals by 265,000 acres. This was due to the added areas seeded in Burgenland.

A falling off in cereal areas for the crop of 1922 was quite universal through the Danube Basin.

PRE-WAR WHEAT AND RYE BALANCE OF THE OLD MONARCHY.

The bread-grain deficit of the old Kingdom of Austria was just about covered by Hungary's surplus so that practically the entire Hungarian wheat and rye crop was disposed of within the confines of the old Monarchy. The data in the following balance represents the average wheat and rye figures for the years 1909-1913:

Average wheat and rye in terms of flour,³ 1909-1913.

Old Kingdom of Hungary:	Barrels.
Net yield (harvest less seed).....	41,967,051
Received through customshouses (net).....	917,663
Total.....	42,884,714
Shipped to old Kingdom of Austria.....	13,771,082
Total consumption.....	29,113,632
Average yearly consumption by each of Hungary's	barrels... 1.39
20,886,487 inhabitants.....	pounds... 273
Consumption per capita per day.....	ounces... 12
NOTE.—In making up this bread balance, wheat and rye are considered together. In Czechoslovakia it is estimated that the per capita consumption of wheat (grain) is 198 pounds and rye 220 pounds per year.	
Old Kingdom of Austria:	Barrels.
Net yield (harvest less seed).....	31,587,847
Received through customshouses other than Hungarian (net)...	1,240,602
Total.....	32,828,449
Shipped from old Kingdom of Hungary.....	13,771,082
Total consumption.....	46,599,531
Average yearly consumption by each of Austria's	barrels... 1.63
28,571,934 inhabitants.....	pounds... 320
Consumed per day.....	ounces... 14

The peoples within the old Kingdom of Hungary ate less bread than the Austrians, making up their ration by greater use of Indian corn and vegetables.

The territory of the Republic of Austria contains the city of Vienna and the ratio of flour consumption within this territory was considerably greater than was calculated for the old Monarchy as a whole. The territory of the Republic consumed about 1.83 barrels per capita per year against the monarchy's 1.63. The pre-war balance between the production and consumption of wheat and rye within the 1921 confines of the Republic of Austria are shown in Table 66:

³ In the following statement and elsewhere in the report the amounts in barrels have been obtained by reducing metric tons to pounds and dividing by 196.

TABLE 66.—Average wheat and rye balance in Austria in 1904-1913 within the present boundaries.

[Not including Burgenland.]

Crop.	Area seeded.	Production.	Less seed.	Net production in grain.	Net production in flour.
	<i>Acres.</i>	<i>Short tons.</i>	<i>Short tons.</i>	<i>Short tons.</i>	<i>1,000 barrels.</i>
Wheat.....	463,312	888,895	131,504	757,391	5,410
Rye ¹	1,010,700				

¹ Includes maslin.

² Wheat 9,321,784 bushels, rye 21,758,615 bushels.

³ Original data in metric quintals, wheat and rye combined.

(See tables 55, 59, and 79.) The 6,355,000 inhabitants of the Republic of Austria (not including Burgenland) consumed yearly at the rate of 1.83 barrels per capita, 11,630,000 barrels of flour. Their production amounted to 5,410,000 barrels, leaving a normal balance of 6,220,000 barrels to be imported into the territory now comprising the Austrian Republic.

Under normal pre-war conditions the theoretical amount of wheat and rye flour that the Austrian Republic would have to import to supply normal consumption would have been around 6,000,000 barrels. But at the close of the war the population had decreased to 6,132,000, and the consumption rate had fallen off to 185 pounds per capita per year. On this basis the Austrian Department of Agriculture calculated that the total average requirements for wheat and rye during the period 1919-1921 was 5,788,000 barrels, or about 5,840,000 barrels less than pre-war.

The 1920 and 1921 balances between production, consumption, and import of wheat and rye are brought out in Tables 67 and 68.

TABLE 67.—Average wheat and rye balance in Austria, 1920.

[Not including Burgenland.]

Crop.	Area seeded (see table 55).	Production (see table 56).	Seed.	Net production in grain.	Net production in flour. ²
	<i>Acres.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 barrels.</i>
Wheat.....	371,250	5,434	1,104	4,330	1,010
Rye ¹	728,702	10,263	2,322	7,941	1,633
Total net production of flour.....					2,643

¹ Includes maslin.

² Converted from original data in metric quintals. The Austrian factor for converting wheat to flour by weight is 0.762; rye, 0.720.

	1,000 barrels.
Average flour requirement, 1919-1921, for 6,132,000 inhabitants.....	5,788
Net production (1920).....	2,643
Statistical deficit.....	3,145
Actual net imports (1920) (Tables 65 and 66):	1,000 barrels.
Wheat as flour.....	3,489
Rye as flour.....	468
Total net imports.....	3,957
Imports in excess of statistical requirements.....	812

TABLE 68.—Average wheat and rye balance in Austria, 1921.

[Not including Burgenland.]

Crop.	Area seeded (see table 55).	Production (see table 56).	Seed.	Net production in grain.	Net production in flour. ¹
	<i>Acres.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 barrels.</i>
Wheat.....	377,742	6,530	1,123	5,407	1,261
Rye ²	773,643	13,371	2,465	10,906	2,244
Total net production of flour.....					3,505

¹ Converted from original data in metric quintals. The Austrian factor for converting wheat to flour by weight is 0.762; rye, 0.720.

² Includes maslin.

Average flour requirement, 1919-1921, for 6,132,000 inhabitants.....	1,000 barrels.	5,788
Net production, 1921.....		3,505
Statistical deficit.....		2,283
Actual net imports (1921) (Tables 65 and 66):	1,000 barrels.	
Wheat as flour.....		4,090
Rye as flour.....		461
Total net imports.....		4,551
Imports in excess of statistical requirements.....		2,268

The countries of origin of the grain and flour that were imported into Austria during the years 1920 and 1921, together with the quantities, are given in Tables 69 and 70.

TABLE 69.—International trade of Austria in wheat and wheat flour, by countries, calendar years 1920 and 1921.

[Net imports.]

Countries.	Wheat.		Wheat flour.	
	1920	1921	1920	1921
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Barrels.</i>	<i>Barrels.</i>
Germany.....	285,316	1,486,411	51,850	83,604
Italy.....	985,802	411,305	590,589	15,076
Netherlands.....	35,490	125,633	35,567	41,454
Rumania.....	1,470	21,996	262	48,201
Switzerland.....	143,248	72,531	58,342	757
Yugoslavia.....	1,450,763	1,183,393	138,218	180,200
Hungary.....	51,911	478,398	8,863	431,234
United States.....	1,043,364	3,028,235	1,574,940	215,343
Other countries.....	221,561	5,262,086	46,202	258,571
Total.....	4,218,925	12,060,990	2,504,853	1,274,479
Wheat to flour ¹			984,129	2,815,510
Total wheat flour.....			3,488,982	4,089,989

¹ See note on Table 70.

TABLE 70.—*International trade of Austria in rye and rye flour, by countries, calendar years 1920 and 1921.*

[Net imports.]

Countries.	Rye.		Rye flour.	
	1920	1921	1920	1921
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Barrels.</i>	<i>Barrels.</i>
Germany.....	382,821	245,608	3,414	9
Italy.....	8	16,322	2	
Switzerland.....	34,514	55	7,761	
Yugoslavia.....	10,236	331,328	18,715	2,803
Czechoslovakia.....	184,950	10,940	171	174
Hungary.....	1,441	26,900	17	91,612
United States.....	1,331,882	368,629	1	1
Other countries.....	184,811	778,716	1	149
Total.....	2,130,663	1,778,498	30,082	94,748
Rye to flour ¹			438,308	365,862
Total rye flour.....			468,390	460,610

Original data in metric quintals multiplied by the Austrian factors—wheat to wheat flour, 0.762; rye to rye flour, 0.720. Product converted to barrels by multiplying by the factor $\frac{220.46}{196}$.

Austria imported relatively much larger amounts of wheat in 1921 than she did the preceding year, and her consumption per capita was increasing rapidly. Dividing the total flour requirement in pounds by the population gives 185 pounds as the average or statistical per capita consumption in 1921, but the consumption as a matter of fact, averaged more than that. If we add the 2,268,000 barrels excess imports to the average post-war (1919-1921) requirement of 5,788,000 barrels and divide the sum by 6,132,000 we have 257 pounds as the yearly per capita consumption.

INCREASED PER CAPITA CONSUMPTION OF BREAD.

In estimating the per capita consumption for the years 1922-1926 the Austrian Department of Agriculture proposes to employ the consumption of 344 pounds or 1.75 + barrels per capita per year; which is still 15 pounds below pre-war normal. The population figure that will be used will be 6,500,000. This increased population includes that of Burgenland.

TABLE 71.—*Average wheat and rye balance in Austria, 1922—preliminary approximation.*

[Not including Burgenland.]

Crop.	Area seeded (see Table 59).	Production (see Table 60).	Seed.	Net production.	Net production in flour. ¹
	<i>Acres.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 barrels.</i>
Wheat.....	380,231	6,363	1,131	5,232	1,221
Rye ²	788,117	12,611	2,416	10,195	2,097
Total net production of flour.....					3,318

¹ Converted from original data in metric quintals. The Austrian factor for converting wheat to flour by weight is 0.762; rye, 0.720.
² It is not known whether this includes maslin or not.

	1,000 barrels.
Average estimated flour requirement 1922-1926 for 6,500,000 inhabitants.....	11,394
Preliminary approximated net production, 1922.....	3,313
Statistical deficit.....	8,076
Average net surplus of Burgenland:	1,000 barrels.
Wheat flour.....	210
Rye flour.....	29
	239
Net approximate deficit.....	7,837

DRAWBACKS TO EFFECTIVE AGRICULTURAL OPERATIONS IN AUSTRIA.

The Austrian farmer has always operated under difficulties. In the first place, a large portion of the soil is low in plant food, which chiefly accounts for the great dropping off in yield per acre when the supply of commercial fertilizers was shut off by the outbreak of the war. This is indicated in Table 72.

TABLE 72.—Average yield per acre of wheat, sugar beets, and clover.

[See Table 61, p. 49.]

Crop	Yields per acre.		
	1904-1913	1914-1918	1919-1921
Wheat.....bushels.....	20.1	16.1	14.1
Sugar beets.....short tons.....	8.6	9.0	6.5
Clover.....do.....	1.7	1.6	1.4

This can be remedied as soon as the farmer can get the required credits to enable him to purchase fertilizers abroad, since only ammonium-sulphate is manufactured within the Republic.

However, even with the use of commercial fertilizers the yield per acre can not be brought up to a higher standard than in Switzerland, since most of Austria's cultivated lands are located in the highlands more than 2,600 feet above sea level. Other things being equal, this limits Austria's production per acre to about two-thirds that of Germany.

The second drawback to effective agriculture is the "strip system" of land tenure. This strange system is almost incomprehensible to the American farmer. An idea of what is meant by the strip system of ownership can be gained by glancing at the map (fig. 9) of the farming district of Steinhaus on page 57.

This was probably an old estate that was divided up among the peasants more than a century ago. The entire area was recorded as being 675 acres. This land was in the possession of 34 peasants. There were 693 fields which averaged about 1 acre each. The average length of these fields was 667 feet, the average width 67 feet. Each peasant owned one or more of these tiny plots scattered here and there on the 675-acre tract. A fairly rich peasant would own several, as in the case of Johann Hirschvogel, whose fields are shown as the shaded areas at the top of the map; or, as in the case of Alois Mayr, whose fields are shown as the shaded areas at the bottom of the

map. Each of the other 32 owners had their plots widely scattered throughout this maze of little strips.

The tremendous loss of time and the difficulty in tilling such small plots is obvious.

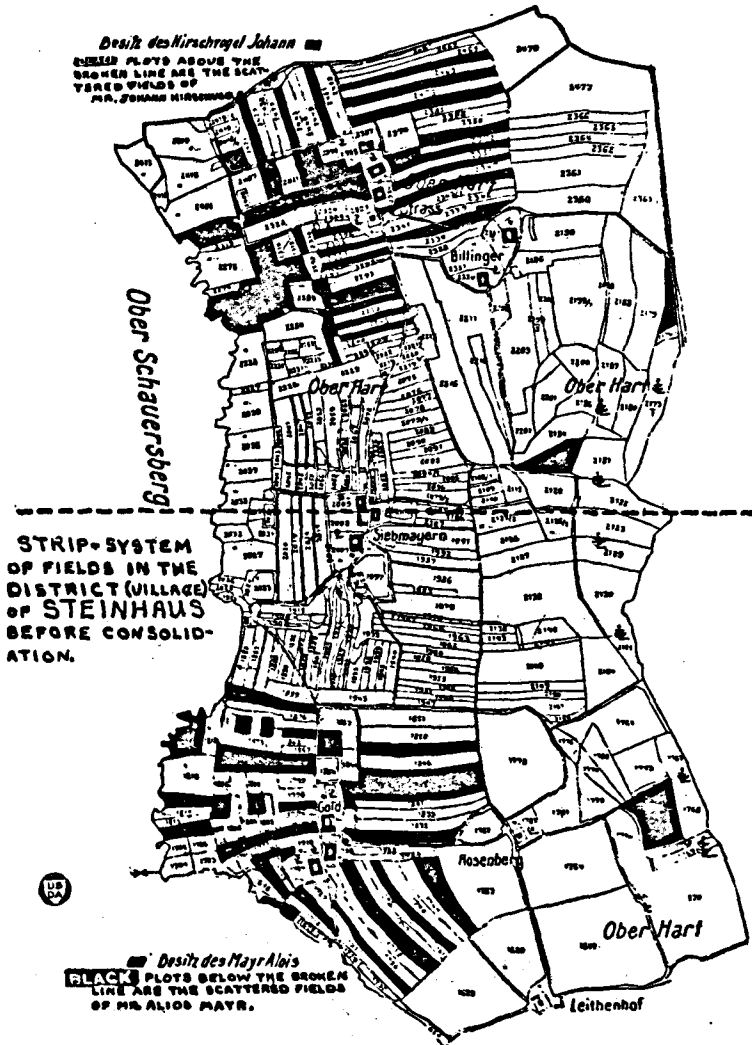


FIG. 9.—Strip system of land tenure in Austria before consolidation.

The system arose out of the enforcement of an ancient law that the heirs of a deceased should share equally in each piece of land of which he died possessed. Sometimes these heirs sold out, but throughout Europe it is a distinct honor to possess land and usually an heir would cling to his heritage however small. This resulted in the parceling of the land into minute strips.

Only recently the Imperial Austrian Government began a campaign to remedy this system of land tenure, so wasteful of time and energy, by concentrating the holdings of a single individual into a few fair-sized fields. Many difficulties had to be overcome in each case

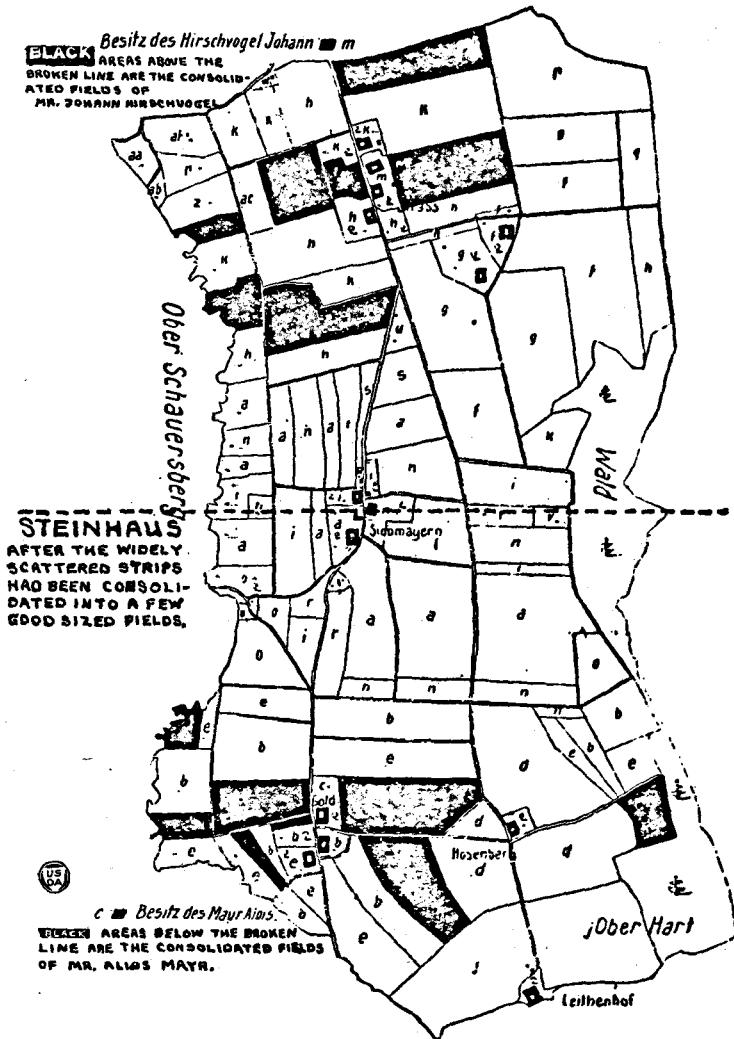


FIG. 10.—Strip system of land tenure in Austria after consolidation.

because of local prejudices and "conservatism," but great progress was being made when the war opened. The beneficial results of the concentration of individual holdings can be seen by a glance at the map of Steinhaus shown above after the concentration of the plots owned by a single individual had been effected.

The actual survey of the fields showed the total area of the community to be 579 acres. The number of fields are reduced from 690 to 119, a reduction of 83 per cent. The average size of each field was increased to about 5 acres.

Only by doing away with this absurd system of land tenure can Austria hope to bring her production up to maximum.

AUSTRIA PLANS TO INCREASE CROP PRODUCTION.

The Austrian Government is keenly alive to the needs of the present situation and a campaign is planned to bring production up as high as possible in an effort to meet internal requirements. This campaign includes use of better seed and fertilizers, and it also includes an active land reform which will increase the size of individual fields so that they can be cultivated effectively. Tables 73 and 74 contrast the previous performance (before the war, during the war, and immediately after the war) with what Austria hopes to accomplish in the next five years, and the highest to which the farmers can probably attain. These high points may not be attained in practice, but they at least fix the maximums set by the experts of the Austrian Government.

TABLE 73.—Areas seeded in Austria in past years and proposed seedings of various crops, 1904–1926.

Crop.	Before the war, 1904–1913.	Total tilled land. ¹	During the war, 1914–1918.	Total tilled land. ¹	After the war, 1919–1921.	Total tilled land. ¹	Proposed, for 1922–1926.	Total tilled land. ¹	Highest attainable.	Total tilled land. ¹
	Acres.	Per cent.	Acres.	Per cent.	Acres.	Per cent.	Acres.	Per cent.	Acres.	Per cent.
Wheat.....	463,312	10.1	430,201	9.5	373,256	8.3	618,000	12.4	741,000	14.9
Rye.....	1,010,700	22.1	885,606	19.7	744,593	16.5	1,067,000	21.8	1,236,000	24.8
Total bread grains.....	1,474,012	32.2	1,315,807	29.2	1,117,849	24.8	1,705,000	34.2	1,977,000	39.7
Barley.....	331,114	7.2	285,648	6.3	240,318	5.5	400,000	8.1	494,000	9.9
Oats.....	805,546	17.6	758,844	16.8	632,702	14.0	850,000	17.1	988,000	19.8
Corn.....	113,666	2.5	123,056	2.7	106,157	2.4	151,000	3.0	173,000	3.5
Total fodder grains.....	1,250,326	27.3	1,167,548	25.8	985,177	21.9	1,401,000	28.2	1,655,000	33.2
Beans, peas, etc.....	42,995	.9	32,864	.7	20,015	.4	54,000	1.1	62,000	1.2
Potatoes.....	336,056	7.3	350,141	7.8	285,913	6.3	408,000	8.2	469,000	9.4
Sugar beets.....	32,123	.7	26,687	.6	16,785	.4	54,000	1.1	67,000	1.3
Fodder beets.....	185,325	4.0	145,789	3.3	96,859	2.2	198,000	4.0	247,000	5.0
Hay, clover, etc.....	442,309	9.7	452,440	10.1	414,042	9.3	445,000	8.9	494,000	9.9
Artificial meadows ²	247,100	.....	303,439	.....	326,666	.....	247,000	.....	247,000	.....
Natural meadows ²	2,113,940	.....	2,322,740	.....	2,396,870	.....	2,273,000	.....	2,348,000	.....
Total forage.....	2,803,349	.....	3,078,619	.....	3,137,578	.....	2,965,000	.....	3,089,000	.....

¹ These percentages are copied, with slight adjustments, from the original data furnished by Court Councillor Thalmayr. The base figure for total tilled land is not given in the original.
² Not tilled land.

TABLE 74.—*Production and yield per acre of crops in Austria, 1904-1921, and Government plans for the future.*

Crop.	Before the war average, 1904-1913,		During the war average, 1914-1918.		After the war average 1919-1921.		Proposed 1922-1926.		Estimated maximum.	
	Production.	Yield per acre.	Production.	Yield per acre.	Production.	Yield per acre.	Production.	Yield per acre.	Production.	Yield per acre.
Wheat.....	<i>Bushels.</i> 9,321,794	<i>Bush.</i> 20.1	<i>Bushels.</i> 6,938,820	<i>Bush.</i> 16.1	<i>Bushels.</i> 5,692,560	<i>Bush.</i> 15.3	<i>Bushels.</i> 13,779,000	<i>Bush.</i> 22.3	<i>Bushels.</i> 19,841,000	<i>Bush.</i> 26.8
Rye.....	21,758,615	21.5	13,642,931	15.4	10,943,067	14.7	25,983,000	23.9	39,368,000	31.9
Total bread grains..	31,080,399	21.1	20,601,751	15.7	16,635,627	14.9	39,762,000	23.3	59,209,000	29.9
Barley.....	7,729,879	23.3	5,412,293	19.0	4,575,528	18.6	10,417,000	26.0	16,534,000	33.5
Oats.....	25,173,776	31.3	18,897,556	24.8	16,196,450	25.6	30,809,000	36.2	44,092,000	44.6
Corn.....	2,708,509	23.8	3,137,618	25.5	2,254,937	21.2	4,803,000	31.8	7,165,000	41.4
Total fodder grains..	35,612,164	28.5	27,447,467	23.5	23,026,915	23.4	46,029,000	32.9	67,791,000	41.0
Beans, peas, etc.....	626,474	14.6	422,916	12.9	282,924	14.1	970,000	18.0	1,378,000	22.2
Potatoes.....	44,529,245	132.5	37,696,455	107.8	25,111,752	87.8	60,626,000	148.6	90,756,000	193.5
Sugar beets..	<i>Short tons.</i> 276,236	<i>Short tons.</i> 8.6	<i>Short tons.</i> 239,442	<i>Short tons.</i> 9.0	<i>Short tons.</i> 110,018	<i>Short tons.</i> 6.6	<i>Short tons.</i> 485,000	<i>Short tons.</i> 9.0	<i>Short tons.</i> 744,000	<i>Short tons.</i> 11.1
Fodder beets.	1,233,804	6.7	845,310	5.8	563,859	5.8	1,587,000	8.0	3,086,000	12.5
Hay, clover, etc.....	768,744	1.7	740,580	1.6	562,006	1.4	893,000	2.0	1,323,000	2.7
Artificial meadows..	356,263	1.4	367,000	1.2	300,000	.9	398,000	1.6	551,000	2.2
Natural meadows..	3,400,044	1.6	3,194,653	1.4	2,600,000	1.1	4,056,000	1.8	4,712,000	2.0
Total hay (all kinds) .	4,525,051	1.6	4,302,233	1.4	3,462,006	1.1	5,335,000	1.8	6,586,000	2.1
Straw (all kinds).....	3,333,906	.....	2,160,199	.....	1,960,551	.....	4,220,000	.....	4,944,000	.....
Fruit.....	<i>Pounds.</i> 732,081,522	.....	<i>Pounds.</i> 619,272,140	.....	<i>Pounds.</i> 423,327,292	.....	<i>Pounds.</i> 771,610,000	.....	<i>Pounds.</i> 1,543,220,000	.....
Wine.....	<i>Gallons.</i> 2,900,597	.....	<i>Gallons.</i> 2,613,244	.....	<i>Gallons.</i> 856,332	.....	<i>Gallons.</i> 2,803,000	.....	<i>Gallons.</i> 3,904,000	.....

Taking cereals as an index, the Government plans not only to increase greatly the areas under cultivation, but also to increase production per acre at least 40 per cent above pre-war levels.

This is a heavy program that can be carried into effect only by concerted action by the Austrian Government and the Austrian farmer.

The farmer must have credits to enable him to get the necessary fertilizers and to bring his equipment of farm implements up to an efficient modern standard.

There must be an active land reform, not a splitting up of big estates into small holdings, as in the case in many parts of south-eastern Europe, but the concentration of the minute strips of land owned by one man into a few units that can be effectively operated with modern farm implements.

All this is within the realm of the possible, but requires time and capital to bring it into reality. Even if the ideal is not attained,

the next few years should see a marked improvement in Austria's balance of trade in cereal and vegetable food supplies.

ANIMAL INDUSTRY IN AUSTRIA.

The animal industry of Austria was and is more highly developed than the production of field crops. Her high upland pastures are specially suited to developing good breeds of livestock.

Austria is rapidly recovering from war requisitions, which very greatly depleted her stocks of swine and horses, reducing the former by 30 per cent and the latter by 20.8 per cent, as compared with 1910 numbers. It is possible to quickly bring the number of swine up to pre-war level. This is largely a matter of finding sufficient feed. However, the question of horses is more serious.

Tables 75 and 76 show the number of each kind of domestic animal per 1,000 inhabitants in Austria and separately for Burgenland.

TABLE 75.—Comparison between numbers of domestic animals in Austria, 1910 and 1920.

[Not including Burgenland.]

Kind of animal.	1910		1920	
	Number.	Per 1,000 inhabitants.	Number.	Per 1,000 inhabitants.
Cattle.....	2,318,283	349	2,190,433	357
Horses.....	298,068	47	235,823	38
Swine.....	1,839,264	289	1,246,663	203
Sheep.....	285,993	47	450,491	73
Goats.....	234,034	37	319,711	52

Population in 1910 was 6,354,919; in 1920 it was 6,131,445.

TABLE 76.—Comparison between numbers of domestic animals in Burgenland, 1911 and 1920.

Kind of animal.	1911		1920	
	Number.	Per 1,000 inhabitants.	Number.	Per 1,000 inhabitants.
Cattle.....	143,512	483	129,522	436
Horses.....	24,366	82	16,434	55
Swine.....	121,154	408	107,357	362
Sheep.....	29,381	99	19,840	67

Population in 1910 was 296,891; in 1920 it was 296,787.

TABLE 77.—Domestic animals in Austria, 1910 and 1920.

[Includes Burgenland.]

Kind of animal.	1910	1920	Difference.	
	Number.	Number.	Number.	Per cent.
Horses.....	318,652	252,257	-66,395	-20.8
Cattle.....	2,355,878	2,319,955	-35,923	-1.5
Cows.....	1,172,697	1,037,755	-134,942	-11.5
Young stock ¹	401,804	564,976	+163,172	+40.6
Swine.....	1,932,268	1,354,020	-578,248	-29.9
Sheep.....	300,783	452,475	+151,692	+50.4
Goats.....	239,147	322,203	+83,056	+34.7

¹ Included under "cattle."

Table 77 shows that there was a decrease of 66,395 horses. Of this number, 22,479 were from the city of Vienna and 31,102 from the two districts of Upper and Lower Austria. The rest of the country suffered but little.

The table shows that there has been a decrease of 11.5 per cent of the cows formerly held in the Republic. This decrease was confined largely to three districts, 58,000 from Lower Austria, 25,000 from Upper Austria, and 23,000 from Steiermark, all districts easily accessible to the requisition commission. The cattle statistics of Austria are probably inaccurate, just as they are in Czechoslovakia, Hungary, Yugoslavia, and other countries of the southeast, and the actual numbers of animals being fed is probably much greater than indicated here. During the war the peasants early learned to hide their cattle from the requisition commissions, and they have not yet fully recovered from this tendency toward secretiveness. The great gain of 40.6 per cent in young stock speaks well for the future. Austria has increased the number of her sheep 50 per cent. This is due largely to the relaxation of the state control of forests, for it is easy to drive the flocks into the woods, where they obtain fairly good grazing. The increase in goats to 34.7 per cent more than the pre-war number is significant. An increase of 59,000 took place largely in the district of Lower Austria in connection with the cheese industry.

During the last two years horses have been brought in from Hungary, and cattle and swine have continued to increase. It is probable that the total number of live animals in Austria to-day exceeds the pre-war total.

Before examining Austria's plans for the future development of her live-animal industry, it will be well to contrast the pre-war and post-war numbers of her domestic animals per 100 acres, as shown in Table 78.

TABLE 78.—Number of domestic animals in Austria per each 100 acres of farm land, 1910 and 1920.

Kind of animal.	1910	1920	Difference.
Horses.....	3.05	2.46	-0.59
Cattle.....	22.51	22.19	-0.32
Cows.....	11.21	9.92	-1.29
Young stock.....	3.83	5.40	+1.57
Swine.....	18.50	12.97	-5.53
Sheep.....	2.87	4.32	+1.45
Goats.....	2.29	3.09	+0.80

The above decreases in horses, cows, and pigs do not seem to be great in comparison with the acreage. As pointed out before, Austria does not produce luxurious forage, and the problem is not so much producing sufficient numbers of young stock as it is keeping the animals in feed.

GOVERNMENT PLANS TO INCREASE ANIMAL PRODUCTION.

The development of field crop production, cereals, forage, and fodder, will go on parallel to the development of Austria's animal industry. Due to such considerations as the soil conditions of the

country, the elevation and climate, it will not be possible for the republic to cover her requirements of bread and meat by local production. It will always be necessary for her to import both cereal and animal products.

It is part of the general plan of the government to develop the pure breed side of her livestock industry, exporting breeding animals to the south and east and importing the *grade stock* from these countries for local consumption. Or she may follow the plan of Czechoslovakia and ship to western Europe her better grades of fat stock and import the coarser eastern animals for food.

POSSIBILITIES OF INCREASED FOOD PRODUCTION.

The Austrian Government has prepared a comprehensive plan for increasing domestic food production in order to supply as nearly as possible the requirements of its own people. The plans for increasing cereal production have already been indicated in Tables 73 and 74. In addition the plan involves the increase of domestic animals to the maximum fodder and forage possibilities of the country. This would mean about 2,700,000 cattle, 1,200,000 calves, 350,000 horses, 2,700,000 swine, 660,000 sheep and goats and 8,000,000 fowls. The government also hopes to improve the stock so that the annual milk production per cow will be increased from 502 to 582 gallons, and that of goats from 93 gallons to 106 gallons. It is thought possible also to increase the average egg production from 70 to 80 eggs per fowl.

In Table 79 this government plan is presented in condensed form, showing the actual production of food supplies before, during, and after the World War, the proposed production during the period 1922-1926 and the maximum production which the government hopes to attain. In this connection it is particularly important to consider the per capita production of the different classes of food products. During the war the production of flour, meat, milk, eggs, and fats decreased materially and there was some increase in barley, corn, and potatoes. In the period 1919-1921 the per capita production of all food products decreased below even the war levels, and only barley and corn remained above pre-war levels.

During the immediate transition period 1922-1926, the government plans to bring the per capita production of vegetable products above pre-war levels, while conserving animal products in order to increase the number of animals. In future years it is planned to increase cereal and vegetable production still further, and at the same time to produce greater quantities of meat and dairy products.

TABLE 79.—*Provisioning the Austrian civil population from yearly domestic production.*

Products.	Before the war 1904-1913; population- 6,355,000.		During the war 1914-1918; popu- lation, 5,625,000 (10 per cent of the population in the army).		After the war 1919-1921; population, 6,132,000 (without Burgenland).		Proposed for 1922-1926; population, 6,500,000 (including Burgenland).		Maximum production; population, 7,150,000 (including Burgenland).	
	Total produc- tion.	Per cap- ita.	Total produc- tion.	Per cap- ita.	Total produc- tion.	Per cap- ita.	Total produc- tion.	Per cap- ita.	Total produc- tion.	Per cap- ita.
	Tons.	Lbs.	Tons.	Lbs.	Tons.	Lbs.	Tons.	Lbs.	Tons.	Lbs.
Flour.....	530,174	167	379,579	135	270,885	88	692,135	213	1,054,822	298
Rolled barley and corn meal.....	22,046	7	44,092	16	33,069	11	55,115	17	66,138	19
Beans, peas, etc.	10,432	3	7,804	3	4,691	2	16,976	5	25,077	7
Potatoes.....	725,236	228	695,729	247	397,551	130	878,022	270	1,382,284	387
Sugar.....	33,148	10	27,009	10	11,814	4	55,291	17	84,822	24
Meat.....	213,952	67	1128,341	46	127,226	41	166,304	51	284,540	80
Fats (cooking)	31,077	10	119,721	7	19,602	6	24,535	8	40,693	11
Butter.....	27,998	9	25,353	9	23,369	8	20,014	8	32,408	9
Milk ^a	1,000 galls. 298,176	Galls. 47	1,000 galls. 195,750	Galls. 35	1,000 galls. 162,993	Galls. 27	1,000 galls. 259,943	Galls. 40	1,000 galls. 388,330	Galls. 34
Eggs.....	350,000,000	Number.	260,000,000	Number.	222,000,000	Number.	315,000,000	Number.	480,000,000	Number.

¹ 85,550 additional tons of meat and 13,143 tons of fats used for army.

² 7,716 additional tons of butter unaccounted for. See Table 80.

³ Milk converted on the basis of 8.6 pounds per gallon.

TOTAL FOOD REQUIREMENTS.

In looking forward to the future, an increase in population up to 7,150,000 has been anticipated. With this population, even should the relatively high per capita production as indicated in the last column be attained, it will still be necessary for Austria to import large quantities of all kinds of foods except possibly milk.

In drafting its plan for increasing agricultural production the Ministry of Agriculture has kept in mind not only the economic necessity of maximum production and minimum imports, but also the balanced ration necessary to maintain the people in a state of productive efficiency.

It is calculated that in western Europe the normal daily food requirement of the average person is 3,000 calories. The average requirement for Austria, on account of the altitude and climatic conditions is probably somewhat higher. From Table 80 it will be seen that before the war actual food consumption of the Austrian people averages somewhat above the western European normal.

It must be borne in mind that 70 per cent of the people are city and town dwellers, and that the above calculations pertain primarily to these urban populations. Before the war the rural population was not so well fed, but since the war it is probably better fed than the urban population. During the war all classes were on short rations and after the war food supplies fell off until the people were in actual want. The daily ration of 2,070 calories was not sufficient to support normal bodily functions.

TABLE 80.—*Estimate of the food supply of the civil population of Austria per capita in pounds and calories.*

Article.	Consumption per year.									
	Before the war, 1904 to 1913.		During the war, 1914 to 1918.		After the war, 1919 to 1921.		Proposed for 1922 to 1926.		Government plans for future years.	
	Pounds.	1,000 calories.	Pounds.	1,000 calories.	Pounds.	1,000 calories.	Pounds.	1,000 calories.	Pounds.	1,000 calories.
Flour.....	359	522	258	374	185	269	344	499	344	499
Rolled barley and corn meal.....	11	16	13	19	20	29	11	16	11	16
Beans, peas, etc.....	20	23	26	30	33	38	29	33	26	30
Potatoes.....	344	125	353	128	397	144	459	166	459	166
Sugar.....	48	84	65	100	33	60	44	80	44	80
Meat.....	146	66	110	60	66	20	88	40	106	48
Cooking fat.....	33	135	22	90	13	54	18	72	22	90
Butter.....	28	96	13	64	11	40	18	64	22	80
Milk.....	463	141	388	118	282	86	392	119	454	138
Eggs.....	13	8	10	6	6	4	9	6	11	7
Total.....	1,216		977		754		1,095		1,154	
Calories per capita per day.....	2,830		2,680		2,070		3,000		3,160	

From Table 80 it will be seen that Austria plans to make less use of cereals, meat, milk, butter, and eggs than she did before the war, substituting potatoes and beans in their places. It is a question whether this can be done. The working man and the farmer are eating more meat than formerly and will continue to live better than they did before the war. If this tendency continues, the relative proportions of the different articles of food will be materially changed, and the change will modify upward the import requirements of meat and flour forecasted in the last column of Table 81. In this table for each period the first column gives the total internal consumption of the different articles of food, the next column the total internal production, while the fourth column gives amounts required to balance the deficit. Actual imports may have been more or less than indicated here. The third column shows the percentages of domestic production as compared with the total requirements.

TABLE 81.—*Yearly production and consumption of food in Austria.*

Article.	Before the war (1904-1913).				During the war (1914-1918).			
	Consumption.	Domestic production.		Required import.	Consumption.	Domestic production.		Required import.
	Short tons.	Short tons.	Per cent of requirement.	Short tons.	Short tons.	Short tons.	Per cent of requirement.	Short tons.
Flour.....	1,140,881	630,174	46.8	610,707	725,313	379,579	52.3	345,734
Rolled barley, etc.....	35,274	22,045	62.5	13,228	37,478	44,092	117.6	.....
Beans, peas, etc.....	62,831	10,432	16.6	52,399	73,854	7,804	10.6	66,650
Potatoes.....	1,092,379	725,236	66.4	367,143	997,582	695,728	69.7	301,854
Sugar.....	146,606	33,148	22.6	113,558	155,424	27,009	17.4	128,415
Meat.....	462,966	218,952	46.2	249,014	309,746	128,341	41.4	181,406
Cooking fat.....	104,719	31,077	29.7	73,642	61,729	19,721	31.9	42,008
Butter.....	83,775	27,998	33.4	55,777	49,604	25,353	51.1	24,251
Milk, 1,000 gallons.....	352,667	298,776	84.7	53,891	260,207	195,750	75.2	64,457
Eggs..... millions..	662	350	52.9	312	450	260	57.8	190

TABLE 81.—Yearly production and consumption of food in Austria—Continued.

Article.	After the war (1919-1921).			Proposed for 1922-1926.			
	Consumption.	Domestic production.		Required import.	Consumption.	Domestic production.		Required import.
	Short tons.	Short tons.	Per cent of requirement.	Short tons.	Short tons.	Per cent of requirement.	Short tons.
Flour.....	537,685	270,835	47.7	298,800	1,116,630	692,135	62.0
Rolled barley, etc.	60,627	33,069	54.5	27,558	36,376	55,115	151.5
Beans, peas, etc.	101,412	4,691	4.6	96,721	92,593	16,976	18.3
Potatoes.....	1,215,837	397,551	32.7	817,286	1,488,105	878,022	59.0
Sugar.....	101,412	11,814	11.6	89,598	143,299	55,291	38.6
Meat.....	202,823	127,221	62.7	75,602	286,598	166,304	58.0
Cooking fat.....	40,785	19,602	48.1	21,183	57,320	24,535	42.8
Butter.....	34,171	23,369	68.4	10,802	57,320	26,014	45.4
Milk, 1,000 gallons.	207,373	162,993	78.6	44,381	305,116	259,943	85.2
Eggs, millions.....	319	222	69.6	97	455	315	69.2

Article.	Government plan for future years.			
	Consumption.	Domestic production.		Required import.
	Short tons.	Short tons.	Per cent of requirement.	Short tons.
Flour.....	1,256,622	1,064,622	84.7	191,800
Rolled barley, etc.	39,683	66,138	166.7	
Beans, peas, etc.	94,798	25,077	26.5	69,721
Potatoes.....	1,636,916	1,382,284	84.4	254,632
Sugar.....	157,629	84,622	53.8	72,907
Meat.....	378,089	284,680	75.3	93,509
Cooking fat.....	79,366	40,693	51.2	38,673
Butter.....	79,366	32,408	40.8	46,958
Milk, 1,000 gallons.....	388,330	388,330	100.0	
Eggs.....	600	490	80.0	120

RELATIVELY HEAVY FOOD IMPORTS NECESSARY.

Before the war the area now comprising the Republic of Austria imported 53.5 per cent of the flour, 84.2 per cent of its beans and peas, 53.8 per cent of its meat, 15.3 per cent of its milk, and 47.1 per cent of its eggs consumed within the country. During the 3-year post war period terminating in 1921 these percentages of imports had somewhat fallen off although production had decreased. This was due to the fact that the people had reduced their food consumption about one-third of normal.

When normal food consumption is resumed after at least another four years, it is the aim of the Government to have so increased production that the imports will be reduced to 15.3 per cent of the flour, 73.5 per cent of beans and peas, 15.6 per cent of the potatoes, 46.2 per cent of the sugar, 48.7 per cent of the cooking fat, 59.2 per cent of the butter, and 20 per cent of the eggs consumed within the country.

This means that the Austrian Republic, through its agricultural reforms, expects to so raise production that the amounts of the yearly imports of foodstuffs will be greatly reduced below pre-war averages.

The figures in the last column of Table 81 take into consideration a possible increase in population to 7,150,000. But they do not take into consideration the higher standard of living that has been adopted by the Austrian peasants and the working men in the industrial centers. It is too early to predict numerically the effect of this demand

for better food. It is certain, however, that the people are eating more meat and that the general effect will be to revise upward most of the estimates of anticipated imports.

ORIGIN OF IMPORTS.

The agricultural imports of Austria come very largely from neighboring surplus-producing countries. As indicated in Tables 69 and 70, much of Austria's supply of flour has always come from Hungary. Tables 82 and 83 show the origin of the other cereal and potato imports. Relatively little is imported from the United States, although some American agricultural products may reach Austria by way of Germany or the Netherlands.

TABLE 82.—*Net imports of barley and corn into Austria, by countries, calendar years 1920 and 1921.*

Countries.	Barley.		Corn.	
	1920	1921	1920	1921
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
Germany.....	14, 633	6, 403	446, 743	161, 975
Italy.....	129, 658	698	4, 027	3, 618
Netherlands.....	1, 658	230	68, 685	1, 165
Rumania.....	7, 050	282, 147	80, 228	383, 297
Switzerland.....	142	73	191, 186	20, 463
Yugoslavia.....	284, 228	713, 464	2, 985, 241	4, 624, 865
Czechoslovakia.....	12, 502	85, 401	4	15, 731
Hungary.....	510	140, 828	882	530, 257
United States.....	5, 167	.....	210, 087	250, 935
Other countries.....	21, 027	100, 580	1, 131, 518	706, 607
Total.....	476, 575	1, 329, 824	5, 118, 601	6, 698, 913

TABLE 83.—*Net imports of oats and potatoes into Austria, by countries, calendar years 1920 and 1921.*

Countries.	Oats.		Potatoes.	
	1920	1921	1920	1921
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
Germany.....	30, 437	38, 587	1, 141, 358	479, 607
Netherlands.....	2, 701	.....	2, 118, 712	170, 743
Rumania.....	647	24, 822	551	.....
Switzerland.....	1, 171	48	122, 418	823
Yugoslavia.....	242, 320	436, 469	138, 317	91, 811
Czechoslovakia.....	38, 305	30, 527	69, 831	44, 121
Hungary.....	12, 952	272, 867	1, 007, 072	925, 054
Other countries.....	2, 446	8, 028	1, 314, 686	2, 436, 105
Total.....	331, 179	811, 348	5, 913, 145	4, 148, 264

Source: Statistische Übersichten über den Auswärtigen Handel Österreichs.

THE AGRICULTURAL SITUATION IN CZECHOSLOVAKIA.

GEOGRAPHY AND POPULATION.

The Republic of Czechoslovakia is made up of five districts. Three of these districts, Bohemia, Moravia, and Silesia, were formerly part of the Austrian Monarchy; to which part of the county of Ratibor was added from German Silesia. For clearness in this report, the inhabitants of these districts are called Czechs (see page 69). The two remaining districts were formerly part of the Kingdom of Hungary; Slovakia, which for the most part is inhabited by the Slovaks, a race closely allied to the Czechs, and Ruthenia, which is inhabited to a large extent by the sub-Carpathian Russians. The inhabitants of the latter district will be spoken of as Ruthenians.

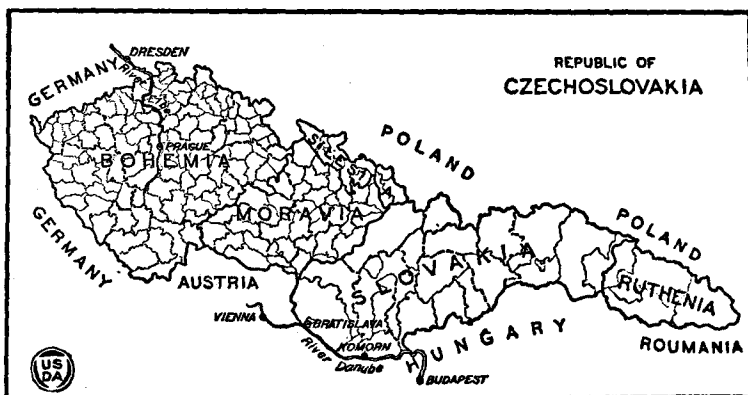


FIG. 11.

The area of each of these subdivisions of the Republic, with its population in 1920, and the density of the population per square mile, is shown in Table 84.

TABLE 84.—Area and population of Czechoslovakia, by subdivisions, 1920

District.	Square miles.	Population.	Inhabitants per square mile.
Bohemia.....	20,067	6,664,933	332
Moravia.....	8,580	2,660,737	310
Silesia.....	1,987	670,637	338
Slovakia.....	25,617	2,963,479	117
Ruthenia.....	5,681	606,731	107
Total.....	61,922	13,505,716	220

The population of these districts in 1911 was 13,596,601, so that there has been but little net change. However, Bohemia has lost 117,031 inhabitants and the other districts have gained 116,146, showing a net loss of 885.

Prague, the capital city, with a population of 617,000 lies on the parallel of latitude passing about 2 degrees north of Winnipeg, Canada. Prague is on a branch of the River Elbe, giving cheap barge transportation to and from Hamburg and the North Sea, while the River Danube, skirting the Republic's southern frontier, gives cheap water transportation to the grain fields of southeastern Europe and the Black Sea.

The western districts of Bohemia, Moravia, and Silesia are hilly to mountainous with valleys of a fair degree of fertility. Before the war these districts produced an exportable surplus of rye and barley (malt). Slovakia merges into the great Hungarian plain, and is, in large part, good agricultural country producing a surplus of wheat. Farther east Ruthenia lies in the foothills of the Carpathian Mountains, and although this district is of less importance in raising grain, it has a very considerable revenue from livestock and forest products.

In the western districts 5,200,000 inhabitants derive their income from commerce and industry, while 3,400,000 are engaged in agriculture. The soil is not sufficiently rich and the climate is too severe to make it possible for this number of farming people to produce enough foodstuffs to feed the total population. So this portion of the Republic, which is not agriculturally self-supporting, will continue to import an important share of its annual food requirement.

In Slovakia more than 2,000,000, or 66 per cent of the people, are farming peasants. This region does produce a surplus; however, the Republic as a whole can be classed only as semiagricultural,¹ although 41 per cent of the people till the soil.

In 1922 the productive territory, including forests, was 33,084,622 acres, or 95.5 per cent (see Table 86). The unproductive territory was 1,596,333 acres, or 4.5 per cent.

The people of Czechoslovakia differ widely among themselves in race and language. This is illustrated by Table 85 in which the population is classified according to mother tongue.

TABLE 85.—Native language of the inhabitants of Czechoslovakia in percentages of total population.

District.	Population.	Czech.	German.	Slovak.	Ruthenian.	Polish.	Others.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Bohemia, Moravia, and Silesia.....	9,936,606	62.0	34.6	.....	.....	2.5	0.9
Slovakia.....	2,993,479	.2	6.3	51.0	.....	4.6	37.1
Ruthenia.....	606,731	.....	12.4	.2	43.0	.1	44.3
Total.....	13,596,716	45.6	27.4	11.2	2.9	2.0	10.9

¹ In Rumania, which is primarily an agricultural state, 79 per cent of the population are farming peasants.

UTILIZATION OF THE LAND.

The manner in which the land of Czechoslovakia was utilized in 1920, 1921, and 1922 under the Republic, in comparison with the manner in which this same territory was utilized when it was part of the Austro-Hungarian Monarchy, is brought out in Table 86:

TABLE 86.—Utilization of land in Czechoslovakia, pre-war and 1920-1922.

Area.				
Item.	Pre-war. ¹	1920	1921	1922
	1,000 acres.	1,000 acres.	1,000 acres.	1,000 acres.
Cereals.....	9,624	7,978	7,783	7,850
Leguminous plants.....	301	415	473	462
Fiber plants, etc.....	183	169	145	141
Tubers, roots, etc.....	2,778	2,842	2,451	2,460
Vegetables.....	88	83	81	79
Forage plants.....	2,103	2,851	2,977	2,994
Other plants.....		15	14	15
Untilled (fallow land).....	393	899	637	574
Total plow land.....	15,470	14,752	14,561	14,579
Decrease from pre-war.....		718	909	891
Increase in fallow land.....		506	244	181
Decrease in land under crop.....		1,224	1,153	1,072
Plow land.....	15,470	14,752	14,561	14,579
Natural prairies.....	3,200	3,416	3,432	3,425
Vegetable gardens.....		59	40	40
Fruit gardens.....	409	319	321	321
Vineyards.....	59	46	43	43
Pastures.....	2,784	2,851	2,995	2,943
Forests.....	11,431	11,518	11,602	11,500
Lakes, marshes, etc.....	151	193	195	194
Unproductive.....	1,237	1,559	1,601	1,596
Total statistical area.....	34,741	34,713	34,690	34,681
Difference compared with pre-war.....		28	51	60

¹ The pre-war averages for the former Austrian territory of Bohemia, Moravia, and Silesia are taken from "Statistisches Jahrbuch des K. K. Ackerbau-Ministeriums für das Jahr 1912." The averages for the five chief cereals for the former Hungarian territory of Slovakia and Sub-Carpathian Russia are from "Magyar Statisztikai Évkönyv." The other averages are partially from the same source, from "Le Hongrie après le Traité de Trianon" from "Zpravy Statního Úradu Statistického Republiky Československé" and other authorities. The figures for the years 1920, 1921 and 1922 are from the "Zpravy" published by the Office of Statistics of Czechoslovakia.

Before the war there were in Czechoslovakia 112.9 acres of plow land per 100 inhabitants. In 1922 there were 106.3 acres per 100 inhabitants.

The first striking feature of Table 86 is that there has been a decrease in the amount of land normally plowed: 718,000 acres in 1920, 909,000 acres in 1921, and 891,000 acres in 1922.

Examining the first group of farm crops, we find that the heaviest absolute decrease was in cereal acreage, followed by tubers, roots, etc. (including sugar beets and potatoes). The fiber-plant acreage shows a decrease of over 20 per cent and vegetables 10 per cent. There has been an increased planting of beans, peas, etc.; a great increase in forage plants and a large amount of land has lain fallow. Examining the second group, we see that the meadows (prairies) have increased, as have the pasture lands, while considerable land has been allowed to go back to marsh. In addition to the 8 per cent of the plow land not plowed, 359,000 acres more than average are classed as "unproductive" in the year 1922.

The general tendency during the past few years has been toward a decreased acreage in all cereals except corn, as shown in Table 87.

TABLE 87.—Area in cereals, potatoes, and sugar beets in Czechoslovakia, pre-war and 1920-1922.

Item.	Pre-war.	1920	1921	1922
	<i>1,000 acres.</i>	<i>1,000 acres.</i>	<i>1,000 acres.</i>	<i>1,000 acres.</i>
Wheat.....	1,727	1,566	1,557	1,527
Rye.....	2,593	2,271	2,226	2,218
Barley.....	2,373	1,710	1,583	1,667
Oats.....	2,460	1,972	2,003	2,016
Corn.....	374	369	363	392
Total (5 chief cereals).....	9,527	7,888	7,732	7,820
Decrease from pre-war average.....		1,639	1,795	1,707
Percentage of decrease.....		17.2	18.8	17.9
Potatoes.....	1,900	1,494	1,574	1,606
Sugar beets.....	699	517	544	519

The 1923 area planted to sugar beets is estimated at 542,000 acres. The yields of the five chief cereals have also undergone changes due to changes in areas seeded, lack of fertilizers and climatic conditions as shown in Table 88:

TABLE 88.—Production of cereals, potatoes, and sugar beets in Czechoslovakia, pre-war and 1920-1922.

Item.	Pre-war.	1920	1921	1922
	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>
Wheat.....	37,780	26,375	40,658	33,621
Rye.....	61,000	33,681	55,764	52,041
Barley.....	59,722	37,244	47,358	46,352
Oats.....	66,238	59,659	72,324	71,552
Corn.....	8,126	9,648	10,501	9,884
Total (5 chief cereals).....	232,846	166,607	226,605	213,450
Potatoes.....	267,542	183,810	136,429	333,231
Sugar beets..... short tons..	7,783	5,270	4,811	5,776

From the two foregoing tables we obtain the following yields per acre:

TABLE 89.—Yield per acre of cereals, potatoes, and sugar beets, pre-war and 1920-1922.

Item.	Pre-war.	1920	1921	1922
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
Wheat.....	21.9	16.8	26.1	22.0
Rye ¹	23.5	14.8	25.1	23.5
Barley.....	25.2	21.8	29.9	27.8
Oats.....	26.9	30.3	36.1	35.5
Corn.....	21.7	26.1	28.9	25.2
Total.....	24.4	21.1	29.3	27.3
Potatoes.....	140.8	123.0	86.7	207.5
Sugar beets..... short tons..	11.1	10.2	8.8	11.1

¹ Includes maslin.

Thus we have for each 100 inhabitants:

TABLE 90.—*Production per 100 inhabitants, cereals, potatoes, and sugar beets.*

Crop.	Pre-war. ¹		1922 ²	
	Acres.	Bushels.	Acres.	Bushels.
Wheat.....	12.7	277.7	11.2	247.3
Rye.....	19.1	448.6	16.2	352.8
Barley.....	17.5	439.2	12.3	340.9
Oats.....	18.1	487.2	14.8	526.3
Corn.....	2.8	59.8	2.9	72.7
Total cereals.....	70.2	1,712.5	57.5	1,570.0
Potatoes.....	14.0	1,907.7	11.8	2,451.0
Sugar beets.....	5.1	Short tons. 57.2	3.8	Short tons. 42.5

¹ Pre-war population used here, 13,596,601, is according to Czech estimates. However, based on Austro-Hungarian figures, the population is estimated to have been 13,874,109.

² 1920 population, 13,595,716.

It is not possible to discuss the changes indicated in the foregoing tables between pre-war conditions and those of the last three years for the entire territory of Czechoslovakia and, at the same time, to give a picture that would be true for the agriculture of the country as a whole. Therefore this discussion will be reserved until the individual districts are taken up. At this time some of the general aspects of Czechoslovakia's agricultural situation will be considered.

THE WHEAT AND RYE SITUATION.

Based upon estimates made by the Austrian Government for Bohemia, Moravia, and Silesia and upon estimates based upon certain Hungarian data, the following pre-war average wheat balances between production, consumption, and import have been worked out:

Czechoslovakia's pre-war wheat balance.

Average acreage seeded.....	1,000 acres..	1,727
Average production.....	1,000 bushels..	37,760
Average seed.....	do.....	5,136
Net production.....	do.....	32,624
Average consumption ¹	do.....	45,496
Average deficit.....	do.....	12,872

Before the war the net imports of wheat into the territory now comprising Czechoslovakia were approximately 12,872,000 bushels. The Czechs imported 13,300,000 bushels (see page 80); 700,000 bushels (see page 92) were imported by the Ruthenians; while the Slovaks produced a surplus of about 1,200,000 bushels (see page 87).

Czechoslovakia's pre-war rye balance.

Average acreage seeded.....	1,000 acres..	2,593
Average production.....	1,000 bushels..	61,000
Average seed.....	do.....	8,264
Net production.....	do.....	52,736
Average consumption ¹	do.....	50,608
Average surplus.....	do.....	2,128

Before the war approximately 2,128,000 bushels of rye were exported yearly from the territory now comprising Czechoslovakia, making the net import of bread cereals about 10,744,000 bushels.

¹ Population as given in Austro-Hungarian data.

WHEAT AND RYE SITUATION 1921.

According to "Zahranicni Obchod" the total 1921 net imports of wheat and wheat flour calculated to a wheat basis amounted to 19,000,000 bushels. During this period Czechoslovakia also imported 3,424,000 bushels of rye as grain and flour. The statistical requirement of the Republic was only 9,674,000 bushels of bread cereals, as indicated in Table 91:

This excess importation of 12,750,000 bushels is due not only to an increased wheat consumption, but to the fact that the foreign exchange value of the Czechoslovak crown nearly doubled during 1921 so that foreign wheat and flour could be bought at about half price of the native product and there was probably a heavy overstocking as indicated in the 1922 situation.

TABLE 91.—*Bread-cereal balance in Czechoslovakia, 1921.*

	Wheat.	Rye.
Area seeded.....1,000 acres.....	1,557	2,226
Production.....1,000 bushels.....	40,658	55,764
Seed.....do.....	4,631	7,091
Net production.....do.....	36,027	48,673
Estimated food requirement ¹.....do.....	44,654	49,720
	-8,627	-1,047
		-8,627
Statistical deficit in bread cereals.....do.....		-9,674

¹ Population as given on p. 68.

WHEAT AND RYE SITUATION, 1922.

Based upon the rate of consumption used in computing the foregoing balance, there is a shortage of 20,300,000 bushels of bread cereals for the crop season 1922-23, as compared with 10,000,000 bushels for the same period 1920-21. The actual import during the calendar year of 1922 was 10,368,000 bushels of wheat and flour calculated to a wheat basis and a net import of 926 bushels of rye as grain and flour. This import of 11,294,000 bushels of bread cereals was 9,006,000 bushels below the estimated statistical deficit indicated in Table 92.

TABLE 92.—*Bread-cereal balance in Czechoslovakia, 1922.*

	Wheat.	Rye.
Area seeded.....1,000 acres.....	1,527	2,218
Production.....1,000 bushels.....	33,621	52,041
Seed.....do.....	4,535	7,075
Net production.....do.....	29,086	44,966
Estimated food requirement.....do.....	44,654	49,720
	-15,568	-4,754
		-15,568
Total statistical deficit in bread cereals.....do.....		-20,322

This increased shortage is due chiefly to the great falling off in yield per acre for both wheat and rye (see Tables 89 and 90), although there was also a minor shrinkage in area.

THE WHEAT AND RYE SITUATION IN 1923.

The net importation of wheat and wheat flour (calculated to a wheat basis) during the first four months of 1923 was 2,966,000 bushels, or about 464,000 bushels less than the average for the first four months of the preceding year. This is not strange, as there was still an unconsumed statistical surplus of about 2,700,000 bushels of wheat on hand January 1, 1923.

Before the war Czechoslovakia exported about 2,100,000 bushels of rye yearly. Beginning with 1923, rye exportation is being resumed. During the first four months of the current year net exports of rye as grain and flour amounted to 440,000 bushels (see Table 94), although in Table 92 a statistical deficit of nearly 5,000,000 bushels is indicated.

Estimates received through the International Institute of Agriculture place the bread-cereal acreage and production of Czechoslovakia for 1923 at:

	1000 acres.	1000 bushels.
Wheat.....	1,483	36,537
Rye.....	2,127	51,813

Both wheat and rye acreages in 1923 are somewhat below those reported for last season, but the crops are better than last year.

TABLE 93.—Wheat and flour, international trade of Czechoslovakia, 1920-1922, and January-April, 1923.

Countries.	1920		1921		1922		Jan.-Apr., 1923.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
Wheat:	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.
Hungary.....	(1)	10	1	26	7	1	.....	.....
Germany.....	(1)	29	.....	44	.....	71	.....	.....
Netherlands.....	123	84	.....	37	.....	3	.....	.....
Rumania.....	6	6	15	(1)	27	(?)	.....	.....
Yugoslavia.....	(1)	86	.....	27	.....	(?)	.....	.....
United States.....	100	2,075	549	.....	29	.....	.....	.....
Bulgaria.....	15	463	1	.....	(?)	.....	.....	.....
Argentina.....	317	2,132	433	.....	5	.....	.....	.....
Other countries..	92	208	3	117	.....	27	.....	.....
Total.....	653	35	5,102	4	1,234	15	142	.....
Wheat flour:	1,000 barrels.	1,000 barrels.	1,000 barrels.	1,000 barrels.	1,000 barrels.	1,000 barrels.	1,000 barrels.	1,000 barrels.
Belgium.....	(?)	.....	(?)	.....	(?)	.....	251	2
Hungary.....	719	(1)	121	870	.....	(?)	88	.....
Netherlands.....	5	.....	310	216	.....	70	.....	.....
Rumania.....	5	.....	288	41	.....	6	.....	.....
Yugoslavia.....	1	.....	126	32	.....	3	.....	.....
Great Britain.....	143	.....	32	19	.....	19	.....	.....
United States.....	(1)	.....	890	761	.....	140	.....	.....
Other countries..	891	54	1,257	361	.....	185	132	.....
Total.....	1,795	54	3,091	1	2,304	271	762	134
Wheat, including flour:	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.	1,000 bushels.
Belgium.....	3,237	.....	546	16	.....	(?)	.....	.....
Hungary.....	21	(?)	1,404	3,941	.....	295	.....	.....
Germany.....	(1)	.....	28	44	.....	1,208	.....	8
Netherlands.....	146	.....	1,380	1,010	.....	319	.....	.....
Rumania.....	10	6	581	184	.....	25	.....	.....
Yugoslavia.....	644	.....	231	173	.....	12	.....	.....
United States.....	4,109	.....	7,733	3,972	.....	659	.....	.....
Bulgaria.....	15	.....	463	1	.....	(?)	.....	.....
Argentina.....	317	.....	2,132	433	.....	5	.....	.....
Great Britain.....	(1)	.....	4,007	84	.....	83	.....	.....
Other countries..	230	272	507	8	1,744	.....	865	595
Total.....	8,729	278	19,013	9	11,602	1,234	3,569	603

1 Less than 500.

2 Not separately stated.

Source: Aperçu Statistique du Commerce Extérieur de la République Tchécoslovaque.

TABLE 94.—Rye and flour, international trade of Czechoslovakia, 1920-1922 and January-April, 1923.

Countries.	1921	1922	January-April, 1923.	
	Imports.	Imports.	Imports.	Exports.
Rye:¹	<i>1,000 bush.</i>	<i>1,000 bush.</i>	<i>1,000 bush.</i>	<i>1,000 bush.</i>
Austria.....			(*)	
Belgium.....	11			
Hungary.....	12	5	(*)	
Germany.....	20	21	(*)	
Netherlands.....	44	7		
Rumania.....	84	42	(*)	
United States.....	2,686	140		
Sweden.....	13			
Argentina.....	46	21		
Other countries.....	17	146		
Total imports.....	2,933	382	(*)	
Total exports.....	1	158		
Net imports.....	2,932	224		
Rye flour:²	<i>1,000 barrels</i>	<i>1,000 barrels</i>	<i>1,000 barrels</i>	<i>1,000 barrels</i>
Hungary.....	57	123	119	
Netherlands.....	10	(*)		
Austria.....	4	14	17	208
Rumania.....	3	20	1	
United States.....	5	1		
Germany.....	(*)	(*)	(*)	
Other countries.....	3	6		3
Total imports.....	82	164	137	* 211
Total exports.....	(*)	47	211	
Net imports.....	82	117	* 74	
Rye, including flour:⁴	<i>1,000 bush.</i>	<i>1,000 bush.</i>	<i>1,000 bush.</i>	<i>1,000 bush.</i>
Belgium.....	11			
Hungary.....	357	740	712	
Germany.....	20	21	1	
Austria.....	23	87	106	1,251
Netherlands.....	103	10		
Rumania.....	103	160	6	
United States.....	2,716	145		
Sweden.....	13			
Argentina.....	46	21		
Other countries.....	34	181		14
Total imports.....	3,426	1,365	825	* 1,265
Total exports.....	2	439	1,265	
Net imports.....	3,424	926	* 440	

¹ Total imports of rye in 1920 amounted to 977,000 bushels, exports to 23,000 bushels, net imports to 954,000 bushels.

² Less than 500.

³ Total imports of rye flour in 1920 amounted to 45,000 barrels, exports to 19,000 barrels, net imports to 26,000 barrels.

⁴ Total imports of rye, including flour, amounted to 1,247,000 bushels in 1920, exports to 139,000 bushels, net imports to 1,108,000 bushels.

* Not separately stated.

† Exports.

Source: Aperçu Statistique du Commerce Extérieur de la République Tchécoslovaque

TABLE 95.—Barley, oats, and corn, international trade of Czechoslovakia, 1920-1922 and January-April, 1923.

Commodity.	1921		1922		January-April, 1923.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
Barley:	1,000 bush.	1,000 bush.	1,000 bush.	1,000 bush.	1,000 bush.	1,000 bush.
Germany.....						377
Belgium.....	2	22			44	
Italy.....		44			39	
Hungary.....			(¹)		1	
Austria.....	3	23	1	1,791	(¹)	1,264
Rumania.....	42		8		2	
Netherlands.....		22		76		22
Other countries.....	2	11	1	4,199	(¹)	354
Total ²	49	122	10	6,149	3	2,017
Oats:						
Hungary.....	106		205		43	
Poland.....	49		55		7	
Austria.....	235	13	88	8	13	60
Rumania.....	469		886		143	
Yugoslavia.....	119		53			
Switzerland.....		237		4		13
Other countries.....	13	2	53	3	12	1
Total ³	991	252	1,340	15	218	64
Corn:						
Hungary.....	505		139		7	
Germany.....	412		206		99	
Austria.....	579		213		33	
Rumania.....	1,446		1,039		107	
Yugoslavia.....	1,475		83		17	
United States.....	265		601		5	
Bulgaria.....	743		28			
Argentina.....	2,153		1,159		32	
Other countries.....	189		401		37	
Total ⁴	7,767		3,868		337	

¹ Less than 500 bushels.² Total exports of barley in 1920 amounted to 34,000 bushels, imports to 1,000 bushels, net exports to 33,000 bushels.³ Total exports of oats in 1920 amounted to 784,000 bushels of oats, imports to 4,000 bushels, net exports to 780,000 bushels.⁴ Total imports of corn in 1920 amounted to 314,000 bushels, exports to 1,000 bushels, net imports to 313,000 bushels.

Source: Aperçu Statistique du Commerce Extérieur de la République Tchécoslovaque.

TABLE 96.—Potatoes and sugar beets, international trade of Czechoslovakia, 1921-1922 and January-April, 1923.

Countries.	1921		1922		January-April, 1923.	
	Imports.	Exports.	Imports.	Exports.	Imports.	Exports.
Potatoes:	1,000 bush.	1,000 bush.	1,000 bush.	1,000 bush.	1,000 bush.	1,000 bush.
Austria.....				2,378	(¹)	847
Italy.....	96	65	260		1	
Hungary.....	34		2		(¹)	66
Germany.....	51		7		18	
Netherlands.....	31		14			
Poland.....	60		25		2	
Other countries.....	11	(¹)	11	456	(¹)	67
Total.....	283	65	319	2,834	21	950
Sugar beets:	1,000 short tons.	1,000 short tons.	1,000 short tons.	1,000 short tons.	1,000 short tons.	1,000 short tons.
Germany.....	8	8	19	16	(¹)	(¹)
Austria.....	22				(¹)	(¹)
Other countries.....			(¹)	2		(¹)
Total.....	30	8	19	18	(¹)	(¹)

¹ Less than 500.

Source: Aperçu Statistique du Commerce Extérieur de la République Tchécoslovaque

POST-WAR CHANGES IN AGRICULTURE.

As already stated, Czechoslovakia is made up of two groups of Provinces: (1) Those that were formerly under the Austrian Government—Bohemia, Moravia, and Silesia—occupied chiefly by the Czechs and Germans. (2) Those districts that were formerly under the Hungarian Government—Slovakia and Ruthenia—with Slavic populations, more closely related to the Russians.

The characters of these people differ greatly; the influence of the governments under which they have lived for centuries has been different; their agriculture and agricultural tendencies are not the same, and therefore to get a clear idea of the present conditions of agriculture in Czechoslovakia each district separately must be considered.

FORMER AUSTRIAN TERRITORY (BOHEMIA, MORAVIA, AND SILESIA).

THE COUNTRY OF THE CZECHS.

The influence of the war and post-war conditions on Czech agriculture are brought out in Table 97:

TABLE 97.—Area, production, and yield in Bohemia, Moravia, and Silesia: 1903-1912, 1914-1922.

AREA IN THOUSAND ACRES.										
Crop.	1903-1912	1914	1915	1916	1917	1918	1919	1920	1921	1922
Wheat.....	862	895	909	901	897	898	843	864	866	844
Rye.....	2,043	2,003	2,033	1,960	1,925	1,922	1,850	1,725	1,700	1,695
Barley.....	1,427	1,288	1,155	1,078	1,059	947	899	917	849	877
Oats.....	1,812	1,875	1,737	1,609	1,512	1,429	1,375	1,399	1,446	1,445
Corn.....	27	.....	.....	.....	.....	.....	.....	38	41	40
Potatoes.....	1,256	.....	.....	.....	.....	.....	.....	968	1,005	1,019
Sugar beets.....	534	.....	.....	.....	.....	.....	.....	429	451	430

PRODUCTION IN THOUSAND BUSHELS.										
Wheat.....	22,707	23,516	17,269	14,367	10,986	11,537	15,359	15,983	24,140	19,850
Rye.....	52,989	51,533	32,321	27,794	22,873	25,629	32,715	26,337	43,738	41,038
Barley.....	35,486	47,491	22,459	25,996	13,779	14,973	21,587	21,495	27,190	25,377
Oats.....	48,846	95,280	85,963	50,282	21,495	32,793	40,090	45,539	54,425	53,166
Corn.....	676	.....	.....	.....	.....	.....	.....	773	1,000	936
Potatoes.....	184,522	.....	.....	.....	.....	.....	.....	105,819	91,678	226,693
Sugar beets ¹	6,807	.....	.....	.....	.....	.....	.....	4,425	4,186	4,881

YIELD, BUSHELS PER ACRE.										
Wheat.....	26.3	26.3	19.0	15.9	12.2	12.6	18.2	18.5	27.9	23.5
Rye.....	25.9	25.7	15.9	14.2	11.9	13.3	17.7	15.3	25.7	24.2
Barley.....	24.9	36.9	19.4	24.1	13.0	15.8	24.0	23.4	32.0	23.9
Oats.....	27.0	50.8	20.7	31.3	14.2	22.9	33.5	32.6	37.6	36.8
Corn.....	25.0	.....	.....	.....	.....	.....	.....	20.3	24.4	23.4
Potatoes.....	146.9	.....	.....	.....	.....	.....	.....	109.5	91.2	222.5
Sugar beets ¹	12.7	.....	.....	.....	.....	.....	.....	10.3	9.3	11.4

¹ Short tons.

In the first place, the area seeded to wheat during the war period exceeded the average pre-war area. This was due to the better relative price fixed for wheat by the Austrian Monarchy and also to the activity of the Austrian War Office which encouraged the main-

tenance of wheat production in order to keep up the food supply of the cities, the upper classes, and the army.

Before the war the Czechs imported yearly over 2,000,000 barrels of flour (mostly wheat) from Hungary (Slovakia). They were accustomed to export some rye to the territory that is now Poland, so that as labor became scarce toward the end of the war period, rye was seeded in decreased amounts. Since the war rye has continued to fall off, although wheat has maintained its pre-war level and increased in relative importance as a crop. The barley grown by the Czechs was for the most part a high-grade brewing variety. Large amounts of malt and unmalted grain were exported annually and much malt was used for the domestic manufacture of beer. The post-war increase in the cost of domestic beer has cut down local consumption very greatly, and this, coupled with the high exchange rate of the Czech crown, which has hindered the export of grain and malt, has caused the areas under barley to decrease rapidly.

After the Austrian War Office began to requisition wheat and rye from the Czech peasant, the production of wheat per acre fell from the pre-war average of 26.3 bushels to 12.2 bushels in 1917, and rye from a pre-war average of 25.9 bushels to 11.9 bushels in 1917. The reported yields per acre have been low ever since and are only just beginning to recover now that free trade in grain has again been established. Had the yields in rye been actually as low as reported during the war period, a considerable portion of the Czech nation would have died of starvation. This reluctance of the Czech farmer to make an accurate statement of his yields makes it a little difficult to judge the Czechoslovak statistics even now.

DECREASE IN CEREAL PRODUCTION DUE TO ECONOMIC CONDITIONS.

During the war the manufacture of beer was restricted and the export of barley limited, while the local consumption of oats was greatly reduced as the country was depleted of its horses. Following these initiating causes, the wage of labor has greatly increased, making production costly.

In the meantime the value of the Czechoslovak crown has risen, making its purchasing power greater abroad, so that American and southwestern European products have entered the Czech market in competition with home-grown products to the detriment of the Czech farmers. During the summer of 1922 the value of imported wheat dropped from about 7 to 4 crowns per kilogram. These factors have forced the farmer to decrease cereal production in favor of more remunerative kinds of agriculture. One of these kinds of agriculture is breeding livestock, which means increased area under forage crops.

It was seen in Table 86 that there is a marked tendency to increase the acreage under forage crops as well as meadows and pastures. The increase in the area under clover in Bohemia, Moravia, and Silesia is most striking. During the war the export of clover seed was developed to a very great degree, and this has been continued up to date. The increase in the area under clover is shown in Table 98:

TABLE 98.—Area seeded to clover for fodder and for seed in Bohemia, Moravia, and Silesia.

	Acres.		Acres.
1904-1913.....	1,215,692	1918.....	1,326,438
1914.....	1,423,074	1919.....	1,646,193
1915.....	1,594,655	1920.....	1,848,629
1916.....	1,771,964	1921.....	1,774,450
1917.....	1,583,545	1922.....	1,736,196

The production of clover hay increased from 1,835,000 short tons as the average for the period 1904-1913 to 3,235,000 tons in 1920; the natural meadows yielding 4,747,000 tons of other kinds of hay that same year.

The decrease in cereal production with the increase in forage production signifies an increase in livestock as noted above, but it is impossible to determine just how great this increase is. A livestock census of all Czechoslovakia said to have been taken on December 31, 1920, has been published but it is admittedly faulty. Only the figures for Bohemia, Moravia, and Silesia are the result of an actual enumeration. Those for Slovakia and Ruthenia have been calculated from the Hungarian census of 1911. It is reported by government officials visiting remote districts of the Republic that some of the peasants have two and three times as many head of stock to-day as they had before the war. However, the peasants are very cautious in revealing how many animals they have, having learned a costly lesson during the war from the requisitioning officers of the Austro-Hungarian army who drew largely on the land of the Czechs for their animals for food and draft. The following comparison between the number of animals in Czech territory in 1919 and 1920 does not reveal the real situation, which is much better than indicated.

TABLE 99.—Livestock in Bohemia, Moravia, and Silesia, 1910, 1918, 1920.

	Horses.	Cattle.	Swine.	Sheep.	Goats.
	Number.	Number.	Number.	Number.	Number.
Dec. 31, 1910.....	423,167	3,288,291	1,790,545	182,863	649,615
April, 1918.....	.....	2,511,869	543,393	147,111	752,519
Dec. 31, 1920.....	385,806	3,043,091	1,437,050	217,357	.....
Increase in 1920 over 1918.....	.....	531,222	893,657	70,246	.....
Percentage of increase.....	.....	21.1	164.5	47.8	.....

It was generally reported in 1922 that the Czech peasants had more livestock per farm than before the war and that there is still a strong tendency to increase their number. During the two years and eight months between April, 1918, and December, 1920, there was a yearly average increase of 7.92 per cent for cattle, 61.88 per cent for swine, and 17.9 per cent for sheep. The rapidity with which the Czechs actually do regain their pre-war normal number of live animals and the total number that they will maintain in the future depends largely upon the amount of forage they are able to produce. If the rate of increase over consumption indicated above was maintained during the past two years, the number of animals in Czechoslovakia would be greater to-day than before the war; but there are no data to demonstrate whether this is true or not.

The country requires 5,000,000 swine to satisfy its requirements of lard, fats, and pork, and the number on hand will be increased as

rapidly as the problems surrounding feed and forage supply can be solved. It is the definite aim of the Czechs to export cattle or animal products to western Europe. In any case it is indicative of the general trend toward increased animal husbandry that there has been a falling off in livestock of only 10.6 per cent against a decrease of 18.8 per cent in cereal acreage in 1920, compared with pre-war average, 1903-12 while in 1922 the cereal decrease reached 20.4 per cent.

PRE-WAR WHEAT AND RYE BALANCE IN BOHEMIA, MORAVIA, AND SILESIA, 1909-13.

The average pre-war wheat and rye balance of the Czechs according to "Das Österreichische Ernährungsproblem" Wien, 1921, was:

TABLE 100.—*Pre-war wheat and rye balance in Bohemia, Moravia, and Silesia, 1909-1913.*

Crop.	Area seeded.	Production.	Seed.	Net production.	Food requirement. ¹	Surplus or deficit.
	<i>Acres.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
Wheat.....	861,556	22,707,233	2,562,238	20,144,995	33,490,634	-13,345,639
Rye ²	2,043,211	52,984,057	6,510,467	46,473,590	42,598,860	+3,884,730
Net deficit of bread cereals.....						-9,461,229

¹ Per capita consumption: Wheat, 198 pounds; rye, 235 pounds. Population (1910), 10,148,768 (see "Das Österreichische Ernährungsproblem," page 60.)

² Includes maslin.

Slovakia produced a wheat surplus of about a million bushels, most of which was shipped to the Czechs. Thus before the war from 12,000,000 to 13,000,000 bushels of wheat were imported annually into Bohemia, Moravia, and Silesia from territories other than those lying within the present boundaries of the Czechoslovak Republic.

Before the war the Czechs exported some rye to Poland and Bucovina.

POST-WAR WHEAT AND RYE BALANCE IN BOHEMIA, MORAVIA, AND SILESIA.

If we employ the 1921 population and the above per-capita food norm of the Czechs, the relations of production to consumption in Bohemia, Moravia, and Silesia, in 1921 were approximately:

TABLE 101.—*Wheat and rye balance in Bohemia, Moravia, and Silesia, 1921.*

Crop.	Area seeded.	Production.	Seed.	Net production.	Food requirement.	Deficit.
	<i>Acres.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
Wheat.....	866,051	24,154,671	2,575,605	21,579,066	32,989,800	-11,409,734
Rye ¹	1,699,808	43,352,046	5,416,254	37,935,792	41,950,044	-4,014,252
Total deficit.....						-15,423,986

¹ Includes maslin.

A portion of this 11,000,000 bushels wheat deficit could have been covered by shipments of wheat from Slovakia where there was a surplus of 3,000,000 to 4,000,000 bushels, giving a net deficit for Czechoslovakia of 7,000,000 to 8,000,000 bushels. During the period July 1, 1921 to June 30, 1922, Czechoslovakia actually imported wheat and wheat flour amounting to 10,600,000 bushels of which 600,000 would cover Ruthenia's deficit, while the remainder went to the Czechs.

This indicates that the Czechs imported considerably more wheat (about 2,000,000 to 3,000,000 bushels) than their normal consumption rate would require.

During this same period only 2,058,000 bushels of rye were imported and about 2,000,000 bushels were available in Slovakia, while the statistical requirement rye deficit was about 4,000,000 bushels.

It would seem that not only are the Czechs eating more but they are to a certain extent substituting wheat and rye for other foods.

1922 WHEAT AND RYE SITUATION.

The following preliminary figures indicate the present Czech bread-stuffs situation:

TABLE 102.—Wheat and rye balance in Bohemia, Moravia, and Silesia, 1922.

Crop.	Area sown.	Production.	Seed.	Net production.	Food requirements. ¹	Deficit.
	<i>Acres.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
Wheat.....	844,477	19,849,739	2,508,097	17,341,642	32,988,800	-15,647,158
Rye.....	1,695,248	41,037,629	5,407,841	35,629,788	41,950,044	-6,320,256
Total deficit.....						-21,967,414

¹ Same as in Table 101.

This total statistical deficit would indicate that the imports by Czechs during 1922-23 would be about twice what they were from July 1, 1921 to June 30, 1922.

TENDENCIES IN CZECH AGRICULTURE.

Table 103 compares the manner in which the territories of Bohemia, Moravia, and Silesia were utilized in 1922 under the Czechoslovak Republic and the manner in which the same territory was utilized when part of the Austrian Monarchy during the period 1903-1912.

TABLE 103.—Utilization of Czech land, average 1903-1912 and 1922.

Item.	Pre-war area (1903-1912).	1922 area.
Plow land:	1,000 acres.	1,000 acres.
Cereals.....	6,160	4,913
Leguminous plants.....	214	309
Fiber plants.....	150	87
Tubers, roots, etc.....	1,944	1,708
Vegetables.....	65	50
Forage crops.....	1,442	2,242
Other crops.....		11
Fallow.....	145	125
Total.....	10,120	9,445
Decrease from pre-war.....		675
Plow land.....	10,120	9,445
Natural prairies.....	1,748	1,898
Gardens.....	256	231
Vineyards.....	28	14
Pastures.....	1,041	1,005
Forests.....	5,709	5,845
Lakes, marshes, etc.....	107	153
Unproductive.....	627	875
Total statistical area.....	19,636	19,466
Difference.....		170
		19,636

There are increases in unplowed tilled land, in natural prairies, and in forests; but the most marked increase is in forage crops (see p. 81). There has been a great falling off in cereals as already noted as well as decreases in roots and tubers.

Aside from the factors in the general economic situation that influence these changes in Czech agriculture for the most part, there are certain influences exerted by changes in the size of the farm unit that should be noted. These influences will not greatly modify Czech agriculture, but the facts are given here on account of the light that they throw upon the general question of land reform as affecting all of Central Europe.

LARGE VERSUS SMALL FARMS IN CEREAL PRODUCTION.

The differences between the farming on large and small holdings have been worked out for Czech conditions under the direction of Dr. Vladimer Brdlik. A single comparison (Table 104) will serve to show the general trend of field-crop operations as influenced by the size of the farm.

TABLE 104.—*Per cent of cereals seeded in Bohemia, Moravia, and Silesia on farms of various sizes.*

Crop.	Per cent by size of farms in acres.			
	5 to 12 acres.	12 to 50 acres.	50 to 250 acres.	Above 250 acres.
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Wheat.....	14	18	20	27
Rye.....	41	35	31	23
Barley.....	14	16	22	28
Oats.....	31	31	27	22

The larger the farm the greater is the percentage seeded to wheat and barley, the two cash crops. The smaller the farm the more rye, the peasant's food, and the more oats, feed for his stock, are seeded. In Bohemia, Moravia, and Silesia there were—

176,942 farms of from 5 to 12 acres.
103,592 farms of from 12 to 50 acres.
56,341 farms of from 50 to 250 acres.
3,002 farms of more than 250 acres.

The pre-war (1904–13) average number of acres and the relative area in percentages of four cereals seeded were—

Crop.	Acres.	Per cent.
Wheat.....	861,556	14.0
Rye.....	2,043,211	33.3
Barley.....	1,426,960	23.2
Oats.....	1,811,695	29.5
Total.....	6,143,452	100.0

The relative wheat acreage on the average was that of farms from 5 to 12 acres; the percentage of rye was similar to that on farms of from 12 to 50 acres; barley to that on farms of from 50 to 250 acres; while oats approximated that on farms between 12 to 250 acres. The agriculture in general was that of farms below 50 acres. That is to say the general type of Czech agriculture is that of small peasant farming.

LARGE VERSUS SMALL FARMS IN ANIMAL PRODUCTION.

The number of animals on the smaller holdings is greater per acre of agricultural land than on the larger farms, as brought out in Table 105.

TABLE 105.—*Value of live stock on large farms and small holdings in Bohemia, Moravia, and Silesia, 1904-1913.*

Species.	Average per acre of agricultural land.			
	5 to 12 acres.	12 to 50 acres.	50 to 250 acres.	Over 250 acres.
Horned cattle.....	<i>Kroner.</i> 328	<i>Kroner.</i> 211	<i>Kroner.</i> 171	<i>Kroner.</i> 123
Pigs.....	44	29	14	2
Sheep and goats.....	2.7	2.2	3.4	2.9
Fowls.....	11.0	6.6	3.0	0.3

The small farmer's family has always a horse or an ox, a cow, 1 or 2 calves, 2 or 3 pigs, 1 or 2 sheep, and some chickens. Consequently there is a greater number of livestock per acre on the small farm. When large estates are divided there is always a tendency to increase the number of live animals per acre of plow land.

THE LAND REFORM.

In a table in "La Reforme Agraire en Tchecoslovaquie" the areas of the properties seized in the entire Czechoslovak Republic are given as follows:

TABLE 106.—*Czechoslovakia: Total area of land and land expropriated.*

Item.	Area in Republic.	Area expropriated.	
	<i>Acres.</i>	<i>Acres.</i>	<i>Per cent.</i>
Land under cultivation:			
Plow land.....	14,751,485	2,463,600	16.7
Meadows.....	3,418,354	494,200	14.5
Gardens.....	379,219	55,300	14.6
Vineyards.....	46,200	3,700	8.0
Total.....	18,595,258	3,016,800	16.2
Pastures.....	2,851,448	448,500	15.7
Forests.....	11,517,680	5,989,000	52.0
Lakes, marshes, etc.....	192,733	100,300	52.0
Unproductive.....	1,558,791	143,100	9.2
Total.....	34,715,890	9,697,700	27.9

According to the following information furnished by Dr. Vladimer Brdlik of the agricultural section of the Czechoslovak Technical School, the total areas of the agricultural lands expropriated are somewhat higher than the above:

Agricultural lands expropriated.

	Total of large estates.	Amount expropriated from large estates.	Per cent.
Czech lands.....	<i>Acres.</i> 2,107,209	<i>Acres.</i> 1,829,405	87
Slovak lands.....	2,090,861	1,391,297	67
	4,198,130	3,220,702	.....

Forty-three per cent, or 786,569 acres of Czech large estates were rented to small operators; 1,042,836 acres were operated by the owners, totaling 1,829,405 acres.

Twenty-six per cent, or 361,737 acres of large estates in Slovakia were rented to small operators; 1,029,559 acres were operated by the owners, totaling 1,391,296 acres.

The total agricultural land in Bohemia, Moravia, and Silesia is approximated at 12,580,874 acres, of which 10,751,469 acres were owned and operated by the small farmers, and an additional 786,569 acres of large estate lands were rented and operated by them. Only 277,864 acres of large estates are to remain in the possession of the former large owners, while 1,042,836 acres are to be transferred to new operators. This change involves only 8.3 per cent of the total plow land, and will not have a profound influence upon changes in the type of Czech agriculture, except as regards sugar beets and potatoes used for alcohol manufacture.

That the present changes in Czech agriculture are not the result of the land reform is seen by comparing the areas seeded in 1922 with Doctor Brdlik's table on page 82.

Acres seeded for crop of 1922.

Crop.	Acres.	Per cent.
Wheat.....	844,477	17.4
Rye.....	1,695,248	34.9
Barley.....	876,566	18.0
Oats.....	1,444,742	29.7
	4,861,033	100.0

The ratio of oats seeding has remained constant; barley has decreased toward smaller farming and wheat and rye have risen toward large estate farming. There is no direct correlation between the rates of cereal seeding and the breaking up of the large estates in Bohemia, Moravia, and Silesia. These changes are due to economic influences, such as high cost and scarcity of labor, high cost of fertilizers, high cost of beer, lessening the demand for malting barley, etc. These distributing influences are temporary and only after they are removed with the return of normal economic conditions will the effects of the land reform become apparent.

Doctor Brdlik estimates that, if all other factors remained unchanged, the land reform would result thus:

Wheat production, 0.6 per cent decrease.

Rye production, 2.9 per cent increase.

Barley production, 3.5 per cent decrease.

Oats production, 3.4 per cent increase.

Resulting in a total increase in cereal production of 0.6 per cent.

Alcohol production would decrease 64.4 per cent.

Sugar production would decrease 13 per cent.

Potato production would decrease 0.8 per cent.

A decrease of 0.6 per cent in wheat would mean a loss of 120,000 bushels, which is negligible, being much less than the seasonal differences in production.

The land reform, of itself, will have but little direct effect upon cereal production in Bohemia, Moravia, and Silesia.

FORMER HUNGARIAN TERRITORY (SLOVAKIA).

When the frontier of Moravia is crossed into Slovakia, the agriculture of the west, that is grounded upon science with practice, is

left and the land of farming by "custom and habit" is found, the land where great political and economic changes make but little impression on peasant traditions.

To the west of this line of demarcation in Bohemia, Moravia, and Silesia, that is, in the region of scientific agriculture, the manner in which the Czechs reacted to post-war conditions is brought out in Table 107.

TABLE 107.—Area of cereals in Bohemia, Moravia, and Silesia, 1903-1912 and 1922.

Crop.	Average, 1903-1912.		1922	
	Acres.	Per cent.	Acres.	Per cent.
Wheat.....	861,556	14.0	644,477	17.2
Rye.....	2,043,211	33.1	1,695,248	34.6
Total bread cereals.....	2,904,767	47.1	2,539,725	51.8
Barley.....	1,426,990	23.1	876,566	17.9
Oats.....	1,811,695	29.4	1,444,742	29.5
Corn.....	26,909	.4	40,047	.8
Total cereals.....	6,170,361	100.0	4,901,080	100.0

Decrease below pre-war normal, 1,269,281 acres. Percentage of decrease, 20.6.

In 1922 the Czechs seeded 51.8 per cent of their cereal area to bread grains (wheat and rye) as compared to 47.1 per cent in 1903-1912, an increase of 4.7 per cent, while barley decreased 5.2 per cent. This is due to the relatively higher price that wheat and rye commanded above the price for barley. As the area under cereals decreased 1,269,281 acres, due to shortage in man power, animal power, and high cost of fertilizers, the Czechs exercised a selective judgment as to which cereals to retain, favoring wheat and rye and eliminating barley.

In Slovak territory, on the other hand, 494,000 acres went out of cultivation after 1919, but from Table 108 it will be seen that no marked indication exists that a selective judgment was exercised by the Slovaks as to which cereals to eliminate, such as is found in the cases of wheat and barley in Table 107.

In Slovakia the areas that should be dropped from cultivation were governed by the laws of chance and, since the chances governing the seeding of each crop were about equal, the ratios at which the cereals were seeded in 1922 remained about what they were before the war. In Table 108 note the similarity of percentages from year to year.

TABLE 108.—Area of cereals, potatoes, and sugar beets in Slovakia, 1911-1915, 1920-1922.

Crop.	Average, 1911-1915.		1920		1921		1922	
	Acres.	Per cent.	Acres.	Per cent.	Acres.	Per cent.	Acres.	Per cent.
Wheat.....	761,204	25.7	645,732	24.4	634,303	25.0	625,247	24.0
Rye.....	510,444	17.2	501,744	19.0	479,379	18.9	476,884	18.3
Bread cereals.....	1,271,648	42.9	1,147,476	43.4	1,113,682	43.9	1,102,131	42.3
Barley.....	931,261	31.4	781,587	29.6	722,876	28.5	778,926	29.9
Oats.....	551,797	18.6	502,273	19.0	477,580	18.9	492,119	18.9
Corn.....	211,609	7.1	212,887	8.0	220,398	8.7	231,766	8.9
Total cereals.....	2,968,315	100.0	2,644,223	100.0	2,534,536	100.0	2,604,941	100.0
Potatoes.....	571,918	.....	451,995	.....	492,890	.....	503,362	.....
Sugar beets.....	165,223	.....	88,524	.....	90,661	.....	88,469	.....

There is a slight decrease in the rate of seeding of both wheat and barley and slight increases in rye, oats, and corn. Potatoes have fallen off somewhat, and there has been a large decrease in sugar beets. Although estate agriculture never played a decisive rôle in Slovakia, since the large estates were often rented out in small plots rather than being operated as a whole, still a very slight effect of the dropping out of the estates is noticeable in the case of wheat and rye as indicated by the following comparison.

The yields obtained from the areas under the principal crops both before the war and during the three crop seasons, 1920, 1921, and 1922, are given in Table 109.

TABLE 109.—*Production of cereals, potatoes, and sugar beets in Slovakia, 1911-1915, 1920-1922.*

Crop.	1911-1915	1920	1921	1922
	1,000 bush.	1,000 bush.	1,000 bush.	1,000 bush.
Wheat.....	13,757	9,833	15,539	12,721
Rye.....	7,455	6,913	11,311	10,151
Barley.....	23,842	15,568	19,944	20,732
Oats.....	15,407	12,406	15,325	16,057
Corn.....	5,519	6,051	66,657	6,611
Total, five chief cereals.....	65,980	50,771	69,773	66,272
Potatoes.....	76,292	68,285	38,374	95,246
Sugar beets..... short tons..	1,693	843	623	895

LARGE ESTATE AGRICULTURE VERSUS SMALL FARMING IN SLOVAKIA.

It is possible to make a comparison between large and small estate operations in the former Hungarian districts that now constitute Slovakia, through the courtesy of the Central Statistical Bureau in Budapest, that prepared the material from which Table 110 was taken.

TABLE 110.—*Slovakia cereal areas seeded, 1914.*

Item.	Large estates.		Peasant holdings.		Both large and small.	
	Acres.	Per cent.	Acres.	Per cent.	Acres.	Per cent.
Wheat.....	275,072	35.5	538,349	24.0	813,421	27.0
Rye.....	114,358	14.7	401,906	17.9	516,264	17.1
Total bread cereals.....	389,430	50.2	940,255	41.9	1,329,685	44.1
Barley.....	227,008	29.3	686,429	30.6	913,437	30.2
Oats.....	99,932	12.9	464,353	20.7	564,285	18.7
Corn.....	59,624	7.6	152,130	6.8	210,754	7.0
Total cereals.....	774,994	100.0	2,243,167	100.0	3,018,161	100.0

It will be noted that the total and the relative manner in which the five chief cereals were seeded on both the large and small estates in 1914 are nearly identical with the total and relative seeding for the average of the period 1911-1915, shown in Table 108. On the estates more than one-third of the cereal area was seeded to wheat, the "cash crop." When the territory now constituting Slovakia became a portion of the Czechoslovak Republic, a considerable number of the large landowners, mostly Hungarian nobles, are reported to have abandoned their estates and to have fled to Budapest. This threw nearly 494,000 acres out of cultivation of which all but 49,000 acres had been under cereals. Thus the farming of this

district was brought nearer to the level of peasant farming. That is to say, the difference between the percentage rate of seeding by the peasants in 1914, and the rate of seeding by all classes in 1922 is less than the difference in the percentage rate of seeding by all classes in 1914 and in 1922.

The Slovak peasants continued to seed their cereal areas in 1922 in about the same ratio that they seeded them in 1914 in spite of the very considerable demand for wheat existing in the western districts of the Republic.

HYPOTHETICAL WHEAT AND RYE BALANCE.

In Bohemia, Moravia, and Silesia, Austrian figures are given for the actual amounts of wheat and rye required by the inhabitants of these provinces. The Hungarian Government employed a per capita consumption figure for the entire Kingdom of 292.6 pounds of wheat and 79.2 pounds of rye per year; but the application of this figure to the present territories of Slovakia and Ruthenia does not give results that conform to the facts; that is, it was a fact that before the war part of the Czech food deficit was covered by importation of wheat from Slovakia.

In order to get a rough estimate of Slovak wheat movement, the same wheat consumption norm is employed in the following balance that is used by the Prague Government in making the Czech balance; that is, 198.4 pounds of wheat instead of the norm for all Hungary given above. These people in Slovakia eat some rye, considerable barley, and not a little corn. It is estimated that their average rye consumption is indicated by their average rye production, or about 132 pounds per capita per year, as it is improbable that this district exported wheat and imported rye. Their adjustment to economic variables was scarcely fine enough for that. The following approximate wheat and rye balance is given as indicating the probable average relations that existed between production and consumption before the war.

TABLE 111.—Average wheat and rye balance, Slovakia, 1911–1915.

Crop.	Area seeded.	Production.	Seed.	Net production.	Food requirement. ¹	Surplus.
	<i>Acres.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
Wheat.....	761, 204	13, 756, 964	2, 263, 793	11, 493, 171	10, 294, 713	+1, 198, 458
Rye ²	610, 444	9, 073, 819	1, 626, 475	7, 447, 344	7, 353, 366	+93, 978

¹ Population, from Hungarian statistics, 3,119,610. This figure is used because the other data employed here are from Hungarian statistics. The population figure (1910) published by the Czechs is 2,926,824.

² Includes maslin.

Before the war a portion of Slovakia's normal wheat surplus (probably most of it) was shipped to the Czechs. The rye surplus is negligible.

TABLE 112.—Wheat and rye balance, Slovakia, 1922.

Crop.	Area sown.	Production.	Seed.	Net production.	Food requirement. ¹	Surplus.
	<i>Acres.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
Wheat.....	625, 247	13, 721, 332	1, 856, 984	10, 864, 348	9, 873, 481	+985, 867
Rye ²	476, 884	10, 151, 065	1, 521, 260	8, 629, 805	7, 056, 058	+1, 573, 747

¹Population of 1922, 2,993,479.

² Includes maslin.

Little of this wheat will move during the 1922-23 season, though some rye will probably be shipped west to make up the Czech shortage.

Speaking generally, it may be expected that the Slovak wheat and rye situation will be little affected by the segregation of this territory from the old Hungarian Monarchy, or by the ordinary changes attending the establishment of the Czechoslovak Republic. There is one factor (the colonization of Slovak lands by Czechs) that may, however, modify production somewhat (see p. 89).

GENERAL TENDENCIES OF POST-WAR SLOVAK FARMING.

Table 113 shows the manner in which the land in Slovakia was utilized in 1911-1915 as compared with 1922. A comparison of the two columns will show the effect of the changed economic conditions.

TABLE 113.—Utilization of land in Slovakia, 1911-1915 and 1922.

Item.	Area.	
	Pre-war (1911-1915).	1922
	<i>Acres.</i>	<i>Acres.</i>
Flow land:		
Cereals.....	3,087,673	2,619,713
Leguminous plants.....	80,495	143,064
Fiber plants.....	28,319	46,519
Tubers and roots.....	753,161	665,097
Vegetables.....	20,813	27,851
Forage plants.....	632,536	703,097
Other plants.....		2,576
Fallow land.....	214,201	383,065
Total.....	4,815,203	4,592,382
Natural prairies.....	4,815,203	4,592,382
Gardens.....	1,056,524	1,091,969
Vineyards.....	122,102	106,987
Pastures.....	23,022	21,750
Forests.....	1,383,800	1,502,872
Lakes, marshes, etc.....	4,160,848	4,124,593
Unproductive.....	35,367	32,140
Total statistical area.....	619,847	619,366
Difference.....	12,116,717	12,002,059
		24,658

The total area under crops has decreased nearly 400,000 acres. The cereal acreage alone has decreased 468,000 acres, but this has been made up in part by increase in leguminous plants, vegetables, forage plants, and fallow land so that the net decrease in cultivated land is only 223,000 acres.

There are increases in meadows, in pastures, and in idle unproductive land, which are to be expected if estates have been abandoned without the land being taken up by the peasants, but these changes are not great. In this district relatively large quantities of sugar beets and potatoes were grown on the estates; and the areas at present under these crops have been reduced below pre-war—potatoes about 12 per cent, sugar beets about 46 per cent (see Table 108). There is an increase in the area under forage plants, indicating that in Slovakia there has been a tendency to bring livestock production

up to pre-war normal more rapidly than cereal production. But there is no post-war census of livestock for Slovakia.

Employing the data given in the Hungarian Census of 1911 and estimating the number of live animals that were at that time in the territory now comprised within the boundaries of Slovakia, the following approximation of the livestock within Slovak territory in 1911 is obtained: In 1911, horses, 181,555; cattle, 1,095,919; swine, 564,036; sheep, 660,407; total, 2,501,917: The figures published by Czechoslovakia as the 1920 enumeration of livestock in Slovakia are identically the same as the figures for the same territory calculated from the census of 1911.

There is, as noted, a wheat and rye surplus produced in Slovakia. It is probable that the Czech demand for wheat and the local demand for rye will in years to come keep the ratios at which the cereals are seeded about the same as they have been in the past on farms operated by Slovak peasants. That is to say, there are probably no forthcoming factors affecting production strong enough to influence the agricultural habits of the Slovak population, and in the future they will continue to farm in the same way that they have done in the past.

CZECH COLONIZATION IN SLOVAKIA.

The Czech Government, however, is attempting to improve general productivity of these Slovak counties, by colonizing the abandoned estates with more progressive farmers.

It is reported that agencies are locating Czechs in America who have a practical knowledge of agriculture, who have made a success in this country and who have amassed sufficient capital to swing a modernly-equipped farming proposition. These Americanized Czechs are receiving attractive offers of land in Slovakia and thousands are reported to be returning to Czechoslovakia to throw in their fortunes with the Republic.

It is hoped that their example will stimulate the Slovaks to higher endeavors. In any case each such Czech farmer will help increase Slovak production in just so far as he is a better farmer than the natives and the movement must work toward a general improvement in Czechoslovak agriculture.

FORMER HUNGARIAN TERRITORY (RUTHENIA).

In addition to cereal production the principal branches of agriculture in Ruthenia or sub-Carpathian Russia are sugar beet culture in the low lands, potato growing for alcohol in the foothills, and cattle grazing and forage production in the uplands of the Carpathian Mountains. The district is also semi-industrial, with mining, lumbering, and some manufacture as the chief industries. Table 114 gives the contrast of the crop of 1922 with the areas seeded for the average crop years 1911-1915:

TABLE 114.—*Cereal areas seeded in Ruthenia, 1911-1915, 1920, 1922.*

Item.	1911-1915		1920		1921		1922	
	Acres.	Per cent.	Acres.	Per cent.	Acres.	Per cent.	Acres.	Per cent.
Wheat.....	104,150	28.7	55,790	18.6	56,952	19.3	57,812	18.2
Rye.....	39,971	10.3	44,372	14.8	46,524	15.7	46,129	14.6
Total bread cereals.....	144,121	37.0	100,162	33.4	103,476	35.0	103,441	32.8
Barley.....	14,833	3.8	11,871	3.9	11,208	3.8	11,925	3.8
Oats.....	95,736	24.6	70,339	23.4	79,356	26.8	79,546	25.3
Corn.....	134,825	34.6	117,914	39.3	101,546	34.4	119,851	38.1
Total cereals.....	389,515	100.0	300,286	100.0	295,898	100.0	314,763	100.0
Decrease below pre-war average.....							74,752	
Percentage of decrease.....								19.2
Potatoes.....	72,526		76,218		74,350		84,281	
Sugar beets.....	462		128		331		109	

As in other districts, in Czechoslovakia there has been a decrease in the total area under cereals, though this decrease in the area seeded is not great. There is a marked decrease in wheat, the food of the cities, and a sharp increase in rye, the food of the peasants. Total bread cereals have fallen 4.2 per cent and corn has risen 3.5 per cent. These changes, though relatively great, are without special significance to the agriculture of Czechoslovakia as a whole.

The yields obtained from the areas under the principal crops both before the war and during the crop seasons, 1920, 1921, and 1922, are given in Table 115:

TABLE 115.—*Production in Ruthenia, 1911-1915 and 1920-1922.*

Crop.	1911-1915	1920	1921	1922
	<i>1,000 bush.</i>	<i>1,000 bush.</i>	<i>1,000 bush.</i>	<i>1,000 bush.</i>
Wheat.....	1,296	559	982	1,050
Rye.....	556	431	715	852
Barley.....	394	181	227	242
Oats.....	1,985	1,714	2,573	2,329
Corn.....	1,931	2,824	2,844	2,337
Five chief cereals.....	6,162	5,709	7,341	6,810
Potatoes.....	6,727	9,706	6,377	11,292
Sugar beets.....	3.0	1.0	1.8	0.7

¹ Short tons.

A comparison between the manner of utilizing the land under the Republic (1922) and under the former Hungarian Kingdom (1914) is brought out in Table 116:

TABLE 116.—Utilization of land in Ruthenia, pre-war and 1922.

Item.	Area.	
	Pre-war.	1922
Plow land:	<i>Acres.</i>	<i>Acres.</i>
Cereals.....	376,516	316,656
Leguminous plants.....	6,640	10,363
Fiber plants.....	6,415	7,937
Tubers and roots.....	80,409	86,962
Vegetables.....	2,569	1,814
Forage crops.....	23,276	51,918
Other crops.....		1,066
Fallow.....	34,174	64,420
Total.....	535,099	541,165
Plow land.....	535,099	541,165
Natural prairies.....	395,755	435,380
Gardens.....	30,727	23,445
Vineyards.....	8,446	7,003
Pastures.....	358,883	475,697
Forests.....	1,561,704	1,530,016
Lakes, marshes, etc.....	8,221	8,733
Unproductive.....	89,870	101,766
Statistical total area.....	2,988,706	3,123,205
Difference.....		134,500

In Ruthenia, as in Slovakia, the cereal area has been greatly decreased by the economic changes of the war period, and there has been a corresponding substitution of other crops. With the addition of fallow land the total cultivated area is even greater than before the war. There has been an increase in forage plants, meadows and pastures, and in land classed as unproductive, and there is an increase in the total of the statistically reported area.

It is reported that there have been great increases in livestock in this part of the Republic, but actual statistics demonstrating the fact are lacking. Most of the data relative to this territory are fragmentary and unsatisfactory. Estimating the live animals of Ruthenia in the same manner as given on page 89 for Slovakia, there were, in 1911, 23,326 horses, 273,755 cattle, 51,601 swine, and 107,762 sheep. The figures published by Czechoslovakia as the 1920 enumeration of livestock are identically the same as the figures for the same area calculated from the census of 1911.

RUTHENIAN PRE-WAR WHEAT AND RYE BALANCE.

Certain of the peoples living in the far-eastern end of Czechoslovakia in the Carpathian Mountains consume considerable quantities of corn-meal mush in place of wheat or rye. The average per capita cereal diet of all the Ruthenians is approximated to be:

	Pounds annually.
Wheat.....	176
Rye.....	66
Corn.....	110

Balancing pre-war production against consumption, Table 117 shows:

TABLE 117.—*Wheat and rye balance in Ruthenia, average 1911-1915.*

Crop.	Area seeded.	Production.	Seed.	Net production.	Food requirement. ¹	Deficit.
Wheat.....	<i>Acres.</i> 104, 150	<i>Bushels.</i> 1, 296, 342	<i>Bushels.</i> 309, 739	<i>Bushels.</i> 986, 603	<i>Bushels.</i> 1, 684, 863	<i>Bushels.</i> -698, 260
Rye ²	39, 971	556, 181	127, 362	428, 819	676, 954	-248, 135

¹ Population from Hungarian statistics 574,385. The Czechs published a 1910 population of 598,345; but the figure calculated from Hungarian data is employed because the other data are from the same source—the Hungarian Ministry of Agriculture.

² Includes maslin.

Before the war these small deficits were balanced by shipments from the near-by surplus districts of present Hungarian territory.

TABLE 118.—*Wheat and rye balance in Ruthenia, 1922.*

Crop.	Area sown.	Production.	Seed.	Net production.	Food requirements. ¹	Deficit.
Wheat.....	<i>Acres.</i> 57, 312	<i>Bushels.</i> 1, 650, 010	<i>Bushels.</i> 170, 217	<i>Bushels.</i> 879, 793	<i>Bushels.</i> 1, 776, 811	<i>Bushels.</i> -897, 018
Rye ²	46, 129	852, 184	147, 152	705, 032	713, 697	-8, 665

¹ Population of 1921, 605,731. Consumption norms the same as in the previous table.

² Includes maslin.

The wheat and rye deficit was probably balanced by shipments from Hungary.

There is little probability of any marked change taking place in the cereal situation in Ruthenia. This district will continue to require from 500,000 to 800,000 bushels of wheat yearly to cover its deficit.

CONCLUSIONS.

The depressed agricultural situation in Czechoslovakia is temporary, due in the first instance to the unstable economic conditions with which the struggling republic has had to contend. To a lesser degree it has been affected by the land reform, especially in Slovakia and Ruthenia. With the improvement of these economic conditions and the settlement of the land question the agriculture of the country is bound to return toward normal except as noted. There will probably be a decrease in beet-sugar production, an increase in livestock production, and a minor decrease in cereal production.

It is probable that, because of the adoption of a higher standard of living, Czechoslovakia will import more wheat than formerly, but this increased importation will be supplied from the surplus producing states to the south—Hungary and Yugoslavia, just as before the partition of the Austro-Hungarian monarchy. These southern states will also probably supply most of the pork and pork products that Czechoslovakia will require, so that the United States will soon relinquish this market. It is even possible that Czechoslovakia may in the near future compete with American producers for the bacon and lard markets of Poland and eastern Germany.

THE AGRICULTURAL SITUATION IN YUGOSLAVIA.

The Kingdom of Yugoslavia (land of the south Slavs), officially known as the Kingdom of the Serbs, Croats, and Slovenes, was created at the close of the World War by uniting the old Kingdom of Serbia and the Principality of Montenegro with several former Austro-Hungarian subject States and Provinces, of which the most important are Bosnia, Herzegovina, Dalmatia, Croatia, Slavonia, and Slovenia.



FIG. 12.

According to the census taken on January 1, 1921, Yugoslavia had a population of 12,017,323 as compared with a total of 12,678,780 for the separate districts included within the present kingdom according to the censuses of Austria, Hungary, Serbia, and Montenegro in 1910. The area of each of these subdivisions, with the total population and density of the population per square mile by districts both in 1910 and 1921 is given in Table 119.

TABLE 119.—Area and population of Yugoslavia, 1910 and 1921.

District.	Area.	Population.			
		1910		1921	
		<i>Square miles.</i>	<i>Number.</i>	<i>Per square mile.</i>	<i>Number.</i>	Per square mile.
Old Kingdom of Serbia ¹	19,286	2,967,401	154	2,655,076	138
South Serbia ²	17,595	1,699,807	97	1,474,560	84
Montenegro.....	3,733	238,423	64	196,837	54
Bosnia and Herzegovina.....	19,798	1,931,802	98	1,886,929	96
Dalmatia.....	4,915	621,803	126	621,426	126
Croatia and Slavonia ³	16,906	2,715,237	161	2,710,893	160
Slovenia ⁴	6,254	1,092,798	175	1,085,174	174
Voivodina.....	7,607	1,411,809	186	1,380,413	181
Total.....	96,064	12,678,780	132	12,017,323	125
Decrease below pre-war estimates.....				661,457	

¹ Includes New Serbia.² Includes New Macedonia.³ Includes Medjumurje and Ile de Krk and Kastav.⁴ Includes Prekmurje.

Sources: Most of the pre-war totals are as given in "Glavni Statistick; podaci," Dr. Jozef Rus, Ljubljana 1920, except for Croatia-Slavonia and Voivodina which are from Hungarian sources: "Magyar Statistikal Evkonyv," 1911, and "Statistikal Havi Közlemenyek," December, 1921. The 1921 figures are from unpublished data furnished by the Bureau of Statistics at Belgrade.

The area of Yugoslavia is 96,064 square miles, or slightly less than that of Oregon. Of this the productive area in 1922 was 17,116 square miles, or 47,434,000 acres, utilized in 1920, 1921, and 1922 as follows:

TABLE 120.—Utilization of land in Yugoslavia, pre-war and 1920-1922.

Item.	Area.			
	Pre-war.	1920	1921	1922
	<i>1,000 acres.</i>	<i>1,000 acres.</i>	<i>1,000 acres.</i>	<i>1,000 acres.</i>
Cereals.....	12,623	10,822	11,430	.....
Leguminous plants.....	170	204	247	.....
Industrial plants (flax, hemp, etc.).....	199	198	219	.....
Tubers, roots, etc.....	498	599	622	.....
Vegetables.....	208	.....	.....	.....
Forage plants.....	715	553	574	.....
Other plants (reeds).....	143	178	192	.....
Untilled (fallow land).....	1,547	2,339	2,197	.....
Total plow land.....	16,103	14,891	15,481	15,953
Cultivated land.....	16,103	14,891	15,481	15,953
Meadows.....	3,868	3,732	3,779	4,093
Pastures.....	6,468	6,322	6,291	6,895
Vineyards.....	532	428	424	458
Orchards and gardens.....	927	533	540	634
Forests.....	19,037	18,968	18,968	18,988
Marshes.....	471	547	484	413
Unproductive.....	14,074	16,039	15,493	14,046
Total.....	61,480	61,480	61,480	61,480

The figures given in column 1 are a conglomerate of statistics from several sources varying widely in their accuracy.

Accurate pre-war data are obtainable for the former Hungarian and Austrian territories including Bosnia, Herzegovina and Dalmatia. However, Serbian statistics leave much to be desired and the Montenegrin data are fragmentary. South Serbian pre-war figures are approximations and subject to future revision by a commission

that is investigating the lands of southern Yugoslavia that were until recent years in the hands of the Turks.

During the past two years there has been a general increase in cultivated land and a decrease in marsh lands, due no doubt to the fact that the seasons of 1921 and 1922 have been drier than 1920, and therefore low-lying lands were plowed. One million nine hundred thousand acres more productive land are reported in 1922 than in 1920. This is for the most part an increase in meadows and pasture.

However, taking into consideration the fact that a great part of Yugoslavia's records were destroyed during the war and that the entire crop-reporting service of the country has had to be reorganized from the very foundation, it is realized even by Yugoslavian officials that most of the following statistics are "sketchy," to say the least. They should be accepted only in the most general way.

THE CEREAL SITUATION.

The cereal crops for which comparable data have been obtained are wheat, rye, barley, oats, and corn. The acreage harvested for each of these cereals is shown in Table 121 for 1920 and 1921 as compared with the pre-war average:

TABLE 121.—Area harvested in Yugoslavia, pre-war and 1920-1922.

Crop.	Pre-war.		1920		1921		1922 ¹	
	1,000 acres.	Per cent.	1,000 acres.	Per cent.	1,000 acres.	Per cent.	1,000 acres.	Per cent.
Wheat.....	8,982	33.4	8,560	33.6	8,699	34.5	8,669	34.1
Rye ²	732	6.1	578	5.5	461	4.3	487	4.5
Total bread cereals.....	4,714	39.5	4,138	39.1	4,160	38.8	4,156	38.6
Barley.....	1,058	8.9	926	8.8	910	8.5	927	8.6
Oats.....	1,358	11.4	1,029	9.7	1,003	9.4	966	9.0
Corn.....	4,786	40.2	4,485	42.4	4,646	43.3	4,706	43.8
Total 5 cereals.....	11,916	100.0	10,578	100.0	10,719	100.0	10,755	100.0
Decrease below pre-war.....			1,338		1,197		1,161	
Percentage of decrease.....				11.2		10.0		9.7
Potatoes.....			504		516		532	
Sugar beets.....			39		41		48	

¹ Report Consul K. S. Patton, Belgrade, June 11, 1923.

² Includes maslin.

In 1920 the areas from which cereals were harvested were 11.2 per cent below the pre-war average. The estimated harvested area in 1922 is only 9.7 per cent below pre-war. If this estimate proves to approximate the truth, the territories comprising the Kingdom of Yugoslavia will have recovered from the disrupting influences of the war more rapidly than any other of the States of the Danube Basin.

TABLE 122.—Production in Yugoslavia, pre-war and 1920-1922.

Crop.	Pre-war.	1920	1921	1922 ¹
	1,000 bush.	1,000 bush.	1,000 bush.	1,000 bush.
Wheat.....	62,024	43,011	51,809	44,400
Rye ²	9,004	6,507	5,812	4,561
Total bread cereals.....	71,028	49,518	57,622	48,961
Barley.....	20,229	11,699	13,376	11,069
Oats.....	35,516	22,242	18,907	18,272
Corn.....	111,897	101,136	73,788	60,136
Total 5 cereals.....	236,670	184,595	163,695	167,438
Decrease from pre-war.....		52,993	73,893	70,150
Potatoes.....		41,078	26,184	31,100
Sugar beets.....	short tons.	226	208	345

¹ Report Consul K. S. Patton, Belgrade, June 11, 1923.

² Includes maslin.

TABLE 123.—Yield per acre in Yugoslavia, pre-war and 1920-1922.

Crop.	Pre-war.	1920	1921	1922 ²
	Bushels.	Bushels.	Bushels.	Bushels.
Wheat.....	15.6	12.1	14.0	12.1
Rye.....	12.3	11.3	12.6	9.4
Barley.....	19.1	12.6	14.7	11.9
Oats.....	24.7	21.6	18.9	14.9
Corn.....	23.4	22.5	15.9	18.9
Total 5 cereals.....	19.9	17.5	15.3	15.6
Potatoes.....		81.5	50.7	58.5
Sugar beets..... short tons.		5.8	5.1	7.2

¹ Includes maslin.² Preliminary estimate.

Thus we have for each 100 inhabitants:

TABLE 124.—Area and production per 100 inhabitants in Yugoslavia, pre-war and 1922.

Crop.	Pre-war. ¹		1922 ²	
	Acres.	Bushels.	Acres.	Bushels.
Wheat.....	31.4	489.2	30.5	349.5
Rye.....	5.8	71.0	4.1	34.0
Barley.....	8.3	159.6	7.7	92.1
Oats.....	10.7	264.3	8.0	152.0
Corn.....	37.7	882.6	39.2	741.7
Total 5 cereals.....	93.9	1,866.7	89.5	1,393.3
Potatoes.....			4.4	258.6
Sugar beets..... short tons.			.4	2.9

¹ The pre-war population was estimated to be 12,678,780.² The 1921 population of 12,017,323 is used for 1922 as given in Table 119.

TABLE 125.—Number of domestic animals in Yugoslavia, January 31, 1921.

Provinces.	Cattle.	Buffaloes.	Horses.	Mules.	Asses.	Swine.	Sheep.	Goats.	Fowls.
	1,000 head.	1,000 head.	1,000 head.	1,000 head.	1,000 head.	1,000 head.	1,000 head.	1,000 head.	1,000 head.
North Serbia ¹	1,061	7	70	2	2	746	2,292	249	4,037
1910.....	958	7	158		1	864	3,809	627	6,722
South Serbia ¹	570	43	72	7	56	79	1,374	430	785
Montenegro.....	82		10	1	4	10	239	75	87
Bosnia.....	1,223	1	192	1	6	279	1,571	530	1,762
1911.....	1,310					527	2,489	1,393	
Dalmatia ²	52		12	4	12	23	273	117	183
Croatia-Slavonia ¹	1,118		343	2	3	977	566	84	3,896
1911.....	1,135		350			1,164	851		
Slovenia ¹	479		58			304	76	24	1,058
Voivodina (Banat and Batchka).....	375	1	312	1	1	955	620	4	3,268
1911.....	383	1	289			727	611		
Total, 1921.....	4,960	52	1,069	18	84	3,373	7,011	1,553	15,076

¹ See notes on Table 119.² In the parts of Dalmatia occupied by the Italians, the enumeration of domestic animals on January 31, 1921, was impossible.

THE WHEAT AND RYE BALANCE.

PRODUCTION, LESS FOOD, AND SEED REQUIREMENTS.

The food requirements of the population of Yugoslavia differ greatly according to locality and religion. In the old Kingdom the Serbs seldom eat wheat or rye bread except on holidays, their diet consisting almost exclusively of corn. In the North the Slovenes

eat almost no corn, their diet being mostly rye and wheat. The Austrian norm for wheat and rye food consumption was 7.52 bushels per capita per year. The wheat consumption was 3.6 bushels, the rye 3.92 bushels. This norm was employed by the Austrian Government before the war in calculating the food requirements of the Slovenes and the Dalmatians. The Hungarian norm was 6.13 bushels of wheat and rye per capita per year. The wheat consumption was estimated at 4.89 bushels, the rye at 1.24. This norm was employed by the Hungarian Government in calculating the food requirements of Croatia-Slavonia. Wheat consumption in Voivodina was 5.14 bushels and rye 0.76 bushel. Based on Hungarian estimates the per capita consumption of wheat and rye in Bosnia-Herzegovina was about 2.77 bushels per year, which may also be considered as the norm for South Serbia. For the old Kingdom of Serbia it was 2.25 bushels. In Montenegro, based upon Hungarian data, the pre-war consumption of wheat and rye was about 4.07 bushels per capita per year.

Naturally the war placed most of these peoples on very short rations even to the point of starvation in some places. Therefore at the present time in certain districts the people consume much less than these pre-war norms and still are better fed than during the time when the country was devastated by hostile forces. This is particularly true of the South—old Serbia, Macedonia, Montenegro, and the territory between. It also applies to certain of the deficient districts which, during the war, were cut off from their usual supplies of food, although not actually invaded, as, for example, Bosnia.

Employing the pre-war norms of Austria and Hungary and the Serbian norm calculated from the statistics of 1905-1909, and estimating the south Serbian norm at 2.77 bushels, the following hypothetical pre-war wheat and rye balance is given in Table 126.

TABLE 126.—Pre-war wheat and rye balance in Yugoslavia.

District.	Population in 1910.	Norm per capita food requirement.	Gross production.	Seed.	Net production.	Food requirements. Population × norm.	Surplus (+) or deficit (-).
		<i>Bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>
Old Kingdom of Serbia ¹	2,967,401	2.25	13,363	3,120	10,243	6,677	+3,566
South Serbia ²	1,699,807	2.77	7,172	1,780	5,392	4,708	+ 684
Voivodina ³	1,411,809	5.90	26,070	3,944	22,126	8,330	+13,796
Subtotal and total surplus.....	6,079,017	.....	46,605	8,844	37,761	19,715	+18,046
Slovenia ⁴	1,092,798	7.52	3,286	701	2,585	8,218	-5,633
Montenegro.....	238,423	4.07	259	71	188	970	-782
Dalmatia.....	621,503	7.52	1,256	293	963	4,674	-3,711
Croatia-Slavonia ⁵	2,715,237	6.13	15,886	3,096	12,790	16,644	-3,854
Bosnia ⁶	1,931,802	2.77	3,736	920	2,816	5,351	-2,535
Subtotal and total deficit.....	6,599,763	.....	24,423	5,081	19,342	35,857	-16,515
Total for country and net surplus.....	12,678,780	.....	71,028	13,925	57,103	55,572	+1,531

¹ Including New Serbia.
² Including New Macedonia.
³ Banat, Batschka, and Baranya.
⁴ Including Prekmurje.
⁵ Including Medjmurje and Ile de Krk and Kastav.
⁶ Including Herzegovina.

These figures indicate that within the present area of Yugoslavia under pre-war conditions there was an average exportable surplus of 1,500,000 bushels of wheat and rye, or assuming that the export surplus would be in the same proportion as the production of the two cereals, about 1,300,000 bushels of wheat and 200,000 bushels of rye. The actual pre-war exports of the two cereals from the old Kingdom of Serbia averaged (1904-1909) 3,700,000 bushels. The acquisition from Hungary of the highly productive provinces of Banat, Batchka, and Baranya (combined under the name of Voivodina) has not made it possible for Yugoslavia to produce an exportable surplus greater than the pre-war surplus of the old Kingdom of Serbia. The explanation is that at the same time that Yugoslavia acquired the surplus-producing Voivodina, she also acquired those large deficient districts to the west which formerly drew their food supplies from Hungary through the agency of merchants (usually banks) in Vienna and Budapest. These western districts must now be supplied directly from the newly acquired surplus districts in the East.

There are many sources of error in Table 126 and the final figure for the surplus may be too low. It is certain that other things being equal in good years, the exportable surplus probably will rise to two and even more times the amount indicated. However, the splitting up of the large estates in Voivodina and Croatia which may permanently reduce the production of wheat will tend to partially offset any possible underestimate of the surplus.

Table 127 corresponding to Table 126 gives the hypothetical wheat and rye balance for Yugoslavia in 1921:

TABLE 127.—Wheat and rye balance in Yugoslavia, 1921.

District.	Population 1921.	Norm per capita food require- ment.	Production of wheat and rye.			Food require- ment. Popula- tion × norm.	Surplus (+) or deficit (-).
			Gross.	Seed.	Net.		
			<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>
Old Kingdom ¹	2,655,078	2.25	11,124	3,056	8,068	5,974	+2,084
South Serbia ²	1,474,560	2.77	6,011	1,545	4,466	4,064	+382
Voivodina ³	1,390,413	4.03	13,611	3,750	9,861	5,563	+4,298
Subtotal and total surplus.....	5,510,051		30,746	8,351	22,395	15,621	+6,774
Slovenia.....	1,085,174	6.13	3,554	610	2,944	6,652	-3,708
Montenegro.....	199,857	2.77	175	47	128	554	-426
Dalmatia.....	621,429	6.13	589	199	390	3,909	-3,419
Croatia ⁴	2,710,883	6.13	18,712	2,964	15,728	16,618	-899
Bosnia ⁵	1,889,929	2.77	3,846	985	2,861	5,235	-2,374
Subtotal and total deficit.....	6,507,272		26,876	4,825	22,051	32,868	-10,817
Total for country and net deficit.....	12,017,323		57,622	13,176	44,446	48,489	-4,043
Less one-half of estimated deficit in Dalmatia.....							-1,709
Deficit, theoretical.....							-2,334

¹ Including New Serbia.

² Including New Macedonia.

³ Banat, Batchka, and Baranya.

⁴ Including Slavonia and Medjmurja.

⁵ Including Herzegovina.

SUMMARY OF WHEAT AND RYE BALANCE.

Referring again to Tables 126 and 127 it will be seen that in 1921 Yugoslavia had a statistical deficit of 4,000,000 bushels; whereas the pre-war annual surplus was 1,500,000 bushels in Yugoslavian territory as a whole. However, by correcting the foregoing table so as to include only half of the estimated deficit in Dalmatia, to allow for the districts occupied by the Italians, who must supply the food requirements of the populations, the theoretical deficit to be supplied by Yugoslavia is reduced to 2,334,000 bushels of wheat and rye.

Although there was this theoretical deficit in 1921, the International Institute of Agriculture at Rome reported exports from Yugoslavia in that year as given in Table 128. The 1920 exports are shown for comparison.

TABLE 128.—Cereal exports from Yugoslavia, calendar years 1920, 1921.

Cereal.	1920	1921
	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>
Wheat.....	1,527	1,730
Wheat flour (in terms of wheat).....	1,336	1,469
Rye.....	18	62
Barley.....	235	1,124
Oats.....	88	891
Corn.....	5,003	12,988

These figures are somewhat lower than those furnished by K. S. Patton, United States Consul at Belgrade as indicated in Table 129.

TABLE 129.—Wheat, flour, and corn exports from Yugoslavia, by months, 1921, 1922.

Month.	1921		1922		1921	1922
	Wheat.	Flour in terms of wheat.	Wheat.	Flour in terms of wheat.	Corn.	Corn
	<i>1,000 bush.</i>	<i>1,000 bush.</i>	<i>1,000 bush.</i>	<i>1,000 bush.</i>	<i>1,000 bush.</i>	<i>1,000 bush.</i>
January.....	540	313	280	150	621	2
February.....	158	167	54	39	576	8
March.....	277	127	125	89	2,478	2
April.....	214	19	91	257	2,869	110
May.....	278	46	154	291	2,334	75
June.....	171	89	232	109	2,434	12
First half year.....	1,638	761	1,036	935	11,312	209
July.....	42	57	56	85	1,361	.....
August.....	71	55	.....	.....	245	.....
September.....	83	22	.....	.....	1	.....
October.....	335	82	.....	.....	44	.....
November.....	749	525	0	2	11	.....
December.....	306	107	4	.....	11	.....
Second half year.....	1,586	845	.....	.....	1,673	.....

Second half of 1921 plus first half of 1922: Wheat 2,622,000 bushels, flour 1,783,000 bushels, total wheat export for fiscal year 1921-1922: 4,405,000 bushels.

The exportation of over 4,000,000 bushels in the face of a theoretical deficit of 2,300,000 bushels needs some explanation. In the first place the people in the deficient districts, particularly in Montenegro, Bosnia, Herzegovina, Dalmatia,¹ Slovenia, and the mountain sections of old and south Serbia, are not eating as much wheat as formerly. They are still subsisting on a reduced ration more nearly approximating their war allowance. They are also substituting corn meal and potatoes for the bread cereals. However, the chief expla-

¹ The American Consul at Belgrade states that buyers from Dalmatia have approached agents of American companies in Belgrade, inquiring how they could import flour from America, since they were unable to obtain supplies from the surplus districts of Yugoslavia.

nation of this exportation is that the grain movement of Yugoslavia is still following established routes which were in operation before the war. These routes are from Voivodina and north Serbia up the Danube to Austria and Czechoslovakia, or down the river to the Black Sea and thence to western Europe. The grain of the Voivodina district was concentrated before the war, largely by local banks which had commercial sections especially organized for this business. These banks were affiliated with central banks in Vienna and Budapest. The selling of grain in the northern part of the Austro-Hungarian Empire was done by branches of these same banks in Prague and other cities of the districts now comprised in Czechoslovakia, Austria, and Poland. These northern banks sold grain, then placed their orders with the central bank in Vienna or Budapest, which in turn ordered their southern branches to concentrate grain for shipment.

When the Empire was partitioned, the official association of these northern and southern banks was broken off and the branch banks reorganized under the laws of the respective countries in which they found themselves; but, although the official affiliation was ended, the commercial association continued.

The northern banks still sell grain, the southern banks still concentrate grain and ship it north, and the transactions are cleared in Vienna and Budapest, quite as before the war. The trade routes to the west, especially to the Adriatic coast, have not yet been established, and the peoples of the western districts are deprived of their natural supply of grain.

In the following tables the comparisons are between the areas seeded for the crops of 1921 and 1922, whereas elsewhere in this report comparisons are made between areas harvested in 1920 and 1921. The pre-war averages are probably in each case for areas harvested. The whole kingdom is subject to disasters of one sort or another—the lowlands to floods, the upland plateaus to droughts and torrential rains, the entire country to hail storms, to insect pests and plant diseases. For these reasons there is considerable difference between the areas seeded and the areas harvested.

TABLE 130.—Wheat areas seeded in Yugoslavia.

District. ¹	Pre-war.	For crop of 1921.			For crop of 1922.		
		Autumn seeding, 1920.	Spring seeding, 1921.	Total.	Autumn seeding, 1921.	Spring seeding, 1922.	Total.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Old Serbia.....	924,315	889,661	35,847	925,508	758,688	67,271	826,159
South Serbia.....	391,060	241,883	19,961	261,844	333,100	28,560	361,720
Croatia.....	840,130	828,059	22,528	850,587	857,210	24,278	881,488
Voivodina.....	1,328,244	1,206,021	10,247	1,216,268	1,174,286	26,375	1,200,661
Slovenia.....	141,262	122,596	5,199	127,795	134,158	5,854	140,012
Dalmatia.....	79,724	39,462	489	39,951	44,945	1,448	46,393
Montenegro.....	15,318	10,749	1,058	11,807	6,494	1,221	7,715
Subtotal.....	3,720,053	3,438,431	95,329	3,533,760	3,309,141	155,007	3,464,148
Bosnia ²	261,840	243,861	37,527	281,388			284,292
Total.....	3,981,893	3,682,292	132,856	3,815,148			3,748,350
Decrease from pre-war average.....				166,745			233,543

¹ In this and subsequent tables, old Serbia includes New Serbia, South Serbia includes New Macedonia, Croatia includes Slavonia and Medjurje, and Bosnia includes Herzegovina.

² At the time of writing this report, September 7, 1922, the Central Bureau of Statistics of the Department of Agriculture at Belgrade had not received a report of the area seeded in Bosnia and Herzegovina for the 1922 crops. The figures for these districts in the following tables are therefore only estimates based on incomplete data. For this reason sub-totals are inserted for the districts reporting officially and the Bosnian estimate added at the end of each table in order to give a national total.

³ Estimates based on information furnished by the Yugoslavian Department of Agriculture.

The decrease in the autumn seeding of wheat in 1921 below that of the autumn of 1920 amounting to some 130,000 acres was due to an early fall of snow in the southern districts particularly in old Serbia. It will be noted that in these districts there was a larger seeding of spring wheat than in the preceding year, but not enough to compensate for the decrease in winter wheat acreage.

The statistics of rye production for Yugoslavia are complicated by the fact that in some parts of the country wheat and rye are sown together. This crop is known as maslin and is used entirely for home consumption. In the pre-war averages, maslin is included with rye, but in some of the recent figures it is not certain whether it is included or not.

TABLE 131.—Rye areas seeded in Yugoslavia.

District.	Pre-war average total.	For crop of 1921.			For crop of 1922.		
		Autumn seeding, 1920.	Spring seeding, 1921.	Total.	Autumn seeding, 1921.	Spring seeding, 1922.	Total.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Old Serbia.....	117,627	56,708	28,730	85,439	54,656	38,083	92,739
South Serbia.....	203,240	126,414	20,700	147,114	133,071	23,153	156,224
Croatia.....	183,811	95,470	6,746	102,216	95,138	8,562	103,700
Vojvodina.....	53,188	29,103	1,379	30,482	21,633	1,656	23,309
Slovenia.....	92,660	66,378	5,735	72,113	64,513	6,506	71,019
Dalmatia.....	18,137	8,127	185	5,312	6,321	378	6,699
Montenegro.....	8,490	2,585	996	3,581	2,560	1,371	3,931
Subtotal.....	686,851	381,796	64,471	446,257	377,962	79,709	457,671
Bosnia.....	45,410	22,096	6,402	28,498	.....	.....	130,976
Total for rye.....	732,261	403,892	70,873	474,755	.....	.....	488,647
Maslin.....	.....	.....	.....	102,079	.....	.....	111,610
Total.....	732,261	.....	.....	576,834	.....	.....	600,257
Decrease from pre-war average.....	.....	.....	.....	155,427	.....	.....	132,004

¹ Estimated.

TABLE 132.—Barley areas seeded in Yugoslavia.

District.	Pre-war average total.	For crop of 1921.			For crop of 1922.		
		Autumn seeding, 1920.	Spring seeding, 1921.	Total.	Autumn seeding, 1921.	Spring seeding, 1922.	Total.
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Old Serbia.....	264,792	112,445	48,864	161,309	93,856	63,865	157,721
South Serbia.....	190,267	137,385	65,432	202,817	154,393	76,018	230,411
Croatia.....	161,171	94,721	59,353	154,074	91,491	60,782	152,273
Vojvodina.....	115,210	78,835	33,334	112,169	63,608	44,562	106,170
Slovenia.....	44,631	34,339	15,103	49,442	37,972	10,136	48,108
Dalmatia.....	53,000	45,069	9,489	54,558	45,990	10,504	56,494
Montenegro.....	8,154	1,856	4,581	6,437	492	4,566	5,058
Subtotal.....	837,225	504,650	236,156	740,806	437,802	270,433	758,235
Bosnia.....	220,907	44,394	151,808	196,192	.....	.....	1200,116
Total.....	1,058,132	549,034	387,964	936,998	.....	.....	958,351
Decrease from pre-war average.....	.....	.....	.....	121,134	.....	.....	99,781

¹ Estimated.

TABLE 133.—Oats areas seeded in Yugoslavia.

District.	Pre-war average.	1921	1922
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Old Serbia.....	255,084	188,031	185,039
South Serbia.....	148,260	98,017	86,808
Croatia.....	255,380	254,530	243,228
Voivodina.....	270,200	218,132	186,570
Slovenia.....	72,482	63,411	55,921
Dalmatia.....	9,998	3,580	3,808
Montenegro.....	2,224	1,124	1,534
Subtotal.....	1,013,628	626,825	783,506
Bosnia.....	243,836	211,960	201,362
Total.....	1,257,464	1,038,785	984,868
Decrease from pre-war average.....		218,679	272,596

¹ Estimated.

The seeding of oats is 54,000 acres below the 1921 seeding and 273,000 acres below the average pre-war seeding. This decrease in oats is attributable chiefly to the lessening influence of the great landlords on the character of the crops sown; oats being demanded by the landlords for feeding horses and for export. It will be noted that in old Serbia where the feudal system had been abolished before the war, there is an increase in the acreage in oats in 1922 over that of 1921.

TABLE 134.—Corn areas seeded in Yugoslavia.

District.	Pre-war average.	1921	1922
	<i>Acres.</i>	<i>Acres.</i>	<i>Acres.</i>
Old Serbia.....	1,384,736	1,248,821	1,322,526
South Serbia.....	301,709	243,752	261,647
Croatia.....	1,055,273	1,146,771	1,183,906
Voivodina.....	1,201,141	1,390,724	1,469,101
Slovenia.....	86,764	95,015	82,571
Dalmatia.....	100,822	78,180	92,700
Montenegro.....	34,594	24,568	15,407
Subtotal.....	4,165,039	4,227,836	4,427,858
Bosnia.....	621,227	569,783	629,771
Total.....	4,786,266	4,827,619	5,057,629
Increase over pre-war average.....		41,353	271,363

¹ Estimated.

There has been a steady increase in the areas planted to corn since 1920, except in Slovenia, where corn does not thrive particularly well, and in Montenegro, where there has been a general slump in cereal cultivation. This increase is particularly noticeable in Croatia and Voivodina, the great wheat-growing districts. In 1922 a sharp increase in corn planting was to be expected to counterbalance the shortage of the fall seeding of wheat in 1921; nevertheless there is an indication of permanency in this increase of corn area at the expense of the other cereals. In Croatia and Voivodina the large estates are being broken up and divided among the peasants, who are greatly increasing the numbers of their livestock, especially swine, thereby increasing the demand for corn for stock feeding.

This seems to be the general tendency throughout the upper Danube Basin, including Austria and Hungary.

THE ORIGINAL KINGDOM OF SERBIA.

In the old Kingdom of Serbia before the war, the peasants were in actual possession of the land; that is, there were no large estates. So any recent changes in agricultural conditions are almost entirely due to the disturbing factor of the war. Recent statistics show that there has been practically no change in the acreage planted to corn; there is a slight decrease in the seeding of oats, barley, and rye, and a slight decrease, although proportionately an increase, in the wheat acreage. Table 135 shows the areas harvested for each of the five principal cereals for 1905-1909 and for 1920 and 1921.

TABLE 135.—*Cereal acreage in Old Serbia.*

Crop.	1905-1909		1920		1921	
	<i>A cres.</i>	<i>Per cent.</i>	<i>A cres.</i>	<i>Per cent.</i>	<i>A cres.</i>	<i>Per cent.</i>
Wheat.....	924,315	31.4	817,642	34.4	902,550	35.6
Rye.....	117,627	4.0	88,724	3.7	87,224	3.4
Barley.....	264,792	9.0	150,882	6.3	157,566	6.2
Oats.....	255,084	8.6	167,709	7.1	180,324	7.1
Corn.....	1,384,736	47.0	1,152,929	48.5	1,211,573	47.7
Total.....	2,946,554	100.0	2,377,686	100.0	2,539,237	100.0
Decrease from pre-war average.....			568,868		407,317	

This decrease in production is due to lack of man power, a scarcity of draft animals, and a shortage of farm implements. Using the pre-war norm there was in 1921 a surplus of about 2,000,000 bushels of wheat and rye and it seems to be only a question of time before the sturdy Serbs, even with their reduced population, will recover their pre-war position in cereal production.

SOUTH SERBIA.

This territory was liberated from the Turks in 1913. The population is of Serbian blood and speech, but largely Mohammedan in religion. Under Turkish rule the land was held under a system of feudal tenure. Bondage was hereditary and it was almost impossible for any individual to escape from its conditions. The serf was obliged to pay to his "beg" or lord, a third, a fourth, or a fifth of his crops, but his occupancy of the land was secure since the "beg" seldom engaged in agriculture himself, and was content to collect his dues.

In 1919 an agreement was made with the feudal lords of Serbian blood by which the serfs were to continue to pay their dues, as before, but were to be reimbursed by the State. However, most of the serfs, having awakened to the strength of their position, refused to pay any dues whatsoever, and have simply remained in possession of the land which they were accustomed to cultivate.

In Table 136 the column headed "pre-war average" is an approximation based upon the assumption that the agricultural practice of south Serbia closely approached that of old Serbia. It is improbable that there have been any marked changes in the agriculture of this district, since the land reform produced no changes in the relative amounts of land operated by the peasants.

TABLE 136.—Cereal acreage in South Serbia.

Crop.	Pre-war average.		1920		1921	
	<i>A cres.</i>	<i>Per cent.</i>	<i>A cres.</i>	<i>Per cent.</i>	<i>A cres.</i>	<i>Per cent.</i>
Wheat.....	391,050	31.7	338,268	33.5	349,031	34.2
Rye.....	203,240	16.5	135,149	13.4	139,646	13.7
Barley.....	130,267	10.4	139,511	13.6	197,191	19.4
Oats.....	148,280	12.0	102,302	10.1	94,115	9.2
Corn.....	301,708	24.4	244,683	24.2	239,077	23.5
Total.....	1,234,536	100.0	1,009,313	100.0	1,019,060	100.0
Decrease from pre-war average.....			225,223		215,476	

It will be noted that corn is produced much less extensively than in the old Kingdom and that rye occupies a much more important place in the agriculture of this district than in any other part of Yugoslavia. Wheat and rye form a greater part of the diet than in old Serbia, and in the absence of accurate data it has been assumed that the Mohammedans of south Serbia consume about the same amounts of wheat and rye as the Mohammedans of Bosnia, thus giving a per capita consumption of 2.77 bushels per year.

On the basis of the actual net production and the use of this norm, the theoretical surplus for export was about 382,000 bushels in 1921. Such a small surplus scattered through Macedonia and the mountains of the western part of the district is difficult to collect for export, and the greater part necessarily remained in the country. It may be noted, however, that in 1921 the exports to Greece were: Wheat and flour in terms of wheat 92,000 bushels, oats 200,000 bushels, and corn 118,000 bushels. The diminished production of cereals is accounted for as in old Serbia by the shortage of labor, animals, and machinery. It is, however, probable that this district will soon recover and have an appreciable surplus of wheat and rye either for export or for shipment to the deficient areas of Yugoslavia. This surplus will probably amount to—from 740,000 to 920,000 bushels.

MONTENEGRO.

The political, social, and economic conditions in Montenegro were much the same as in south Serbia and Bosnia. The land was held by the feudal lords of the old Turkish regime. The greater number of these lords were of Serbian blood, descendants of the Serbian nobles who, when the Turks conquered the country, gave their allegiance to the Sultan in order to hold their estate. After a time the Serbian tribemen were reduced to serfdom. In return for the privilege of working their land holding, the serf paid dues to the "beg" or lord. In 1919 some of the lords refused to take dues, leaving the peasants in full possession of the land. The rest of the peasants refused to pay dues and retained the plots of land which they had been holding from the lord under the old regime.

Thus the land reform was simply and effectually accomplished, without greatly affecting the agricultural customs and habits of the country, as far as concerned the character of the crops cultivated and the ratios in which they were seeded, although the total area cultivated has decreased.

Hungarian records show that in 1912, the last normal pre-war year, Montenegro imported cereals as follows: Oats, 584,764 bushels; corn, 308,173 bushels; rice, 296,200 bushels; flour, 62,543 barrels, equivalent to 272,094 bushels of wheat. The domestic production in 1913 was estimated at 250,000 bushels of wheat, 200,000 bushels of oats and 1,550,000 bushels of corn. Aside from the annual deficit of some 800,000 bushels of wheat and rye as indicated in Table 126, there was a corn deficit of about 2,500,000 bushels.

The census of 1921 shows that the population of Montenegro had been reduced to 200,000. The Montenegrins have suffered great privations and have been on short rations during and since the war period. It is estimated that their wheat and rye consumption can not have exceeded that of south Serbia, Bosnia and Herzegovina and was probably lower, but for the purposes of the comparison in Table 127 it is placed at 2.77 bushels per capita per year for the post-war period.

The Montenegrins are corn eaters to a greater extent than are the Bosnians and it is probable that they have substituted corn for wheat and rye to a considerable extent in recent years. Even so, they do not produce enough corn for their requirements and were on short rations last year even as regards corn. In a deficient district, in time of a bad harvest, the theoretical deficit is never imported. The population, especially the proletariat, eat other coarser foods, going short on the more expensive bread cereals.

In Table 137 the areas in the column headed "pre-war average" are purely hypothetical, estimated from data collected by the Yugoslavian Government in 1920 and 1921.

TABLE 137.—*Cereal acreage in Montenegro.*

Cereal crop.	Pre-war average.		1920		1921	
	<i>Acrea.</i>	<i>Per cent.</i>	<i>Acrea.</i>	<i>Per cent.</i>	<i>Acrea.</i>	<i>Per cent.</i>
Wheat.....	15,300	22.2	13,250	23.3	11,211	24.4
Rye.....	8,500	12.4	5,908	10.4	3,412	7.4
Barley.....	8,200	11.9	8,295	14.6	6,170	13.4
Oats.....	2,200	3.2	1,517	2.6	1,102	2.4
Corn.....	34,600	50.3	27,922	49.1	24,062	52.4
Total.....	68,800	100.0	56,892	100.0	45,967	100.0
Decrease from pre-war average.....			11,908		22,813	

The most significant feature of this table is the indication that the mountaineers of Montenegro harvested far smaller acreages of all important cereals in 1921 than in 1920. This decrease has little effect on the situation in Yugoslavia as a whole, but it is serious for the little mountain district where the impoverished people can ill afford to buy grain from the outside. It is impossible to foresee what will be the future tendencies of Montenegrin agriculture.

BOSNIA AND HERZEGOVINA.

During the war these two districts were cut off from their normal grain supply which in pre-war years came from Hungary² through Austrian merchants. An effort was undoubtedly made during the war to supply their own requirements.

² Probably from the districts now annexed to Yugoslavia as Voivodina.

The seeding of wheat and rye in particular was increased because of the high prices which bread cereals brought in the cities. This condition continued through 1920, to the extent that in that year the areas of wheat and rye harvested were 6.4 per cent above the pre-war average. The corn area, however, was correspondingly decreased. But in 1921, probably as the result of the reform in land tenure, the harvest of bread cereals was much reduced, and that of corn increased. These changes will be noted in Table 138;

TABLE 138.—*Cereal acreage in Bosnia and Herzegovina.*

Cereal crop.	Pre-war average.		1920		1921	
	<i>Acres.</i>	<i>Per cent.</i>	<i>Acres.</i>	<i>Per cent.</i>	<i>Acres.</i>	<i>Per cent.</i>
Wheat.....	261,840	18.8	331,794	24.2	266,396	21.8
Rye.....	45,410	3.3	58,607	4.3	26,912	2.2
Barley.....	220,907	15.8	225,563	16.4	186,837	15.3
Oats.....	243,336	17.5	222,200	17.0	203,712	16.7
Corn.....	621,227	44.6	521,391	38.1	537,472	44.0
Total.....	1,393,220	100.0	1,369,555	100.0	1,221,329	100.0
Decrease from pre-war average.....			23,665		171,891	

Previous to the World War about one-third of the arable land and a large part of the meadow and forest land in Bosnia and Herzegovina was still held in feudal tenure. The official measures of land reform began with an order of July 21, 1919, which directed the registration of the serfs in the land books. A second order of May 12, 1921, set aside the sum of 255,000,000 dinars (\$49,215,000, normal exchange) for the compensation of the feudal lords. By these measures, 111,000 families of 650,000 persons were freed from serfdom and placed in possession of 1,915,601 acres of land.

Aside from these hereditary serfs or bondmen, there were under the old regime bondmen of another kind, who held land from the lords under contract. About 546,000 acres were so held. These quasi-serfs were also freed, and, where they were bound by contracts running only 10 years, were permitted to buy directly the lands they had been cultivating. In other cases where the contracts ran for 40 years or more the State bought the lands on behalf of the peasants. Still other large estates were dealt with on the same terms as in other districts of Yugoslavia.

The imports and exports of these two districts were in 1913:

TABLE 139.—*Food imports and exports in Bosnia and Herzegovina, 1913.*

Foodstuffs.	Imports.	Exports.	Foodstuffs.	Imports.	Exports.
	<i>1,000 bushels.</i>	<i>1,000 bushels.</i>		<i>1,000 bushels.</i>	<i>1,000 bushels.</i>
Wheat.....	590	110	Barley malt (in terms of barley).....	110	.....
Wheat flour (in terms of wheat).....	2,910	29	Oats.....	300	143
Rye.....	375	8	Corn.....	865	870
Rye flour (in terms of rye).....	368	.....	Potatoes.....	200	188
Barley.....	113	55	Rice.....	263	2

DALMATIA.

The Dalmatian coast is only 10.69 per cent under cultivation. The islands and the mainland are, to a large extent, planted to vineyards and olive orchards, and there is much meadowland. The agricul-

tural lands have long since passed almost entirely into the hands of small owners. Only a few large estates remained under feudal tenure when on March 11, 1921, an official order directed the completion of the land reform. Table 140 shows the acreage of cereals harvested in Dalmatia in the specified years.

TABLE 140.—*Cereal acreage in Dalmatia.*

Cereal crop.	1909-1913		1920		1921	
	<i>Acres.</i>	<i>Per cent.</i>	<i>Acres.</i>	<i>Per cent.</i>	<i>Acres.</i>	<i>Per cent.</i>
Wheat.....	79,724	30.5	41,785	22.9	39,951	22.0
Rye.....	18,137	6.9	10,294	5.6	5,313	2.9
Barley.....	53,000	20.3	47,767	26.2	54,557	30.0
Oats.....	9,998	3.8	2,785	1.5	3,580	2.0
Corn.....	100,822	38.5	79,867	43.8	78,190	43.1
Total.....	261,681	100.0	182,518	100.0	181,581	100.0
Decrease from pre-war average.....			79,163		80,100	

The fact that there has been a decrease of 30 per cent in the areas harvested as compared with the pre-war average may be attributed to the fact that a part of the coast and islands was occupied in 1920 and 1921 by Italian military forces. The increase in the barley area harvested is explained by the fact that it brought a better price than wheat. Since corn plays a large part in the customary diet of the Dalmatians, its production has remained nearer the pre-war level than has the production of the locally less considered crops of wheat and rye.

The Austrian Government before the war included Dalmatia in the district of the south, and in this district calculated the wheat and rye norm at 7.52 bushels per capita per year. It is hardly probable that Dalmatia consumed so much as this of the bread cereals, because of the extensive use of corn. Therefore, for the 1921 wheat and rye balance it has been thought better to employ the Hungarian norm of 6.13 bushels.

The theoretical deficit as shown by Table 127 was, in 1921, 3,400,000 bushels of wheat and rye. Of this less than half should be charged to the 1921 harvest of Yugoslavia. The first, second, and third zones of Dalmatia were occupied by the Italians, and the deficits of this area were supplied from Italian sources. During this occupation other sections of the coast were inaccessible from the central districts of Yugoslavia, and the inhabitants were obliged to shift for themselves, in some cases importing their own grain and flour. Through the entire district, just as in the mountains of Montenegro, the people were reduced to short rations and the use of substitutes in the place of their customary foods.

SLOVENIA.

Slovenia is composed of parts of two former Austrian Provinces of Steiermark and Krain, and parts of the two Hungarian counties of Vas and Zala. None of these regions is well adapted to grain culture. The greater part of the district is in forest, and there are also extensive vineyards, orchards, and pasture lands. Under the old régime there were 230 large estates in Slovenia, aggregating about 469,500 acres, of which about 70 per cent was in forests, 5 per cent meadows, and only 6 per cent cultivated land. These lands were leased to the

cultivators, and therefore the land reform can not be considered as accounting for such changes in the character of the cereal crops as are indicated in Table 141.

TABLE 141.—*Cereal acreage in Slovenia.*

Cereal crop.	1913		1920		1921	
	<i>Acres.</i>	<i>Per cent.</i>	<i>Acres.</i>	<i>Per cent.</i>	<i>Acres.</i>	<i>Per cent.</i>
Wheat.....	141,282	32.3	120,150	30.3	127,795	31.3
Rye.....	92,660	21.2	69,529	17.6	72,114	17.7
Barley.....	44,631	10.2	45,741	11.6	49,440	12.1
Oats.....	72,432	16.5	60,339	15.2	63,411	15.6
Corn.....	86,704	19.3	100,216	25.3	95,015	23.3
Total.....	437,799	100.0	395,975	100.0	407,775	100.0
Decrease from pre-war average.....			41,824		30,024	

The Slovenians use very little corn as food, but use relatively large quantities of wheat and rye. The increase in the corn acreage, indicated in Table 141, is probably due to the increased numbers of swine in accordance with the tendency throughout this district and north through Austria to turn to meat rather than grain production. It is probable, however, that as soon as the district recovers from the effects of the war the production of cereals will return approximately to its pre-war normal.

CROATIA-SLAVONIA.

Count Paul Tleki, in "The Economics of Hungary in Maps," prepared for the peace negotiations, places the average yearly pre-war wheat and rye deficit of Croatia-Slavonia at 4,200,000 bushels. Since the war a small area called Medjmurje, occupied by Croats, has been ceded by Hungary to Yugoslavia and added to the district of Croatia-Slavonia. The addition of this area, together with an unusually good harvest in 1921 has cut this large deficit to less than 900,000 bushels. As indicated in Table 142 there was a slight increase in the wheat area with a heavy reduction in the rye area.

TABLE 142.—*Cereal acreage in Croatia-Slavonia.*

Cereal crop.	1910-1914		1920		1921	
	<i>Acres.</i>	<i>Per cent.</i>	<i>Acres.</i>	<i>Per cent.</i>	<i>Acres.</i>	<i>Per cent.</i>
Wheat.....	840,130	33.5	783,581	32.2	842,959	34.0
Rye.....	193,511	7.7	103,510	4.3	101,857	4.1
Barley.....	161,171	6.5	152,505	6.3	153,259	6.2
Oats.....	255,380	10.2	283,129	10.8	252,620	10.2
Corn.....	1,053,273	42.1	1,128,997	46.4	1,130,512	45.5
Total.....	2,505,465	100.0	2,431,722	100.0	2,481,207	100.0
Decrease from pre-war average.....			73,743		24,258	

The increase in the corn area is probably due directly to the land reform and to the increase in peasant farming as compared with estate farming. Both here and in the adjoining district of Voivodina the Hungarian nobles held large estates which, as in Rumania, Russia, Poland, and Germany, were operated for the production of a cash crop, usually wheat. In Croatia-Slavonia there were 363 large estates totaling 609,000 acres which came within the scope of the reform.

In the beginning of 1921, 215,000 acres were distributed among peasants, and 33,000 acres were allotted to ex-service men who had volunteered to serve against the Central Powers. The remainder of the land was yet to be assigned at the end of 1921.

VOIVODINA.

This is the richest wheat district of Yugoslavia. It comprises parts of Temes-Torontal, and Krasov-Severin, these three areas being known as the Banat, a famous grain-producing section. It also includes parts of Baranya, Batchka, and Csongrad, the southern and richest portions of the cereal lands formerly included in the Kingdom of Hungary.

In this district 1,147 large estates, totaling 956,000 acres, were subject to the land reform. Of these 242,000 acres were distributed among farmers and 50,000 acres to volunteers. The owners of these estates were extensive breeders of horses and consequently required large quantities of oats. The small farmers produced swine and therefore grew corn. The redistribution of the estates is reflected in Table 143, which shows a decrease in the areas under wheat and oats and an increase in the corn acreage:

TABLE 143.—Cereal acreage in Voivodina.

Cereal crop.	1910-1914		1920		1921	
	Acres.	Per cent.	Acres.	Per cent.	Acres.	Per cent.
Wheat.....	1,328,244	43.3	1,113,228	41.6	1,159,354	41.0
Rye.....	53,196	1.7	25,323	1.0	29,635	1.1
Barley.....	115,210	3.8	106,386	4.0	104,704	3.7
Oats.....	370,200	12.1	198,755	7.4	204,127	7.2
Corn.....	1,201,141	39.1	1,230,271	46.0	1,330,317	47.0
Total.....	3,067,981	100.0	2,673,963	100.0	2,828,137	100.0
Decrease from pre-war average.....			394,018		239,844	

The crop season of 1920-21 started out unpropitiously with an autumn in 1920 too dry to admit of a normal seeding. Yet in the spring, spring wheat was not seeded to an abnormal extent; so that it is probable that the increased corn area is partly to be accounted for by the low seeding of winter wheat. However, much of the increase in the corn area is permanent, and this will be at the expense of wheat and oats for the reasons above indicated.

In this northeast district, the crop season was reported to be bad. In some sections little more grain was threshed than enough to recover the seed. The average yields were from 9 to 12 bushels to the acre, as compared with pre-war averages of from 19 to 21 bushels per acre. For these reasons the surplus in this district was greatly reduced below the pre-war average, as will be noted from a comparison of Tables 126 and 127.

In Table 127 a new norm has been introduced for Voivodina unlike any other previously employed in this report. As was shown in Table 129, 4,405,000 bushels of wheat and flour in terms of wheat were exported from Yugoslavia from July 1, 1922, through June 30, 1922, most of which came from the 1921 crop. The wheat, with the exception of about 75,000 bushels exported to Greece, was shipped up the Danube direct to Austria, Czechoslovakia, and



UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

AGRICULTURAL SURVEY OF EUROPE:
THE DANUBE BASIN—PART 2, RUMANIA,
BULGARIA, AND YUGOSLAVIA

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UNITED STATES PENETRATION INTO THE DANUBE BASIN

In the markets of Germany, Czechoslovakia, Austria, the Adriatic ports, and the Orient, wheat, wheat flour, and lard from the United States are now competing with wheat, wheat flour, lard, pork, and pork products from Hungary, Rumania, Yugoslavia, and Bulgaria.

The recent expansion of corn acreage in the south Danube States, the increased shipments of hogs, pork, pork products, and lard up the

¹ With the collaboration of Pauline A. McDonnell, of the Bureau of Agricultural Economics.

Danube, and the projected construction by British interests of packing plants in Bulgaria, with a direct line of steamships to western Europe, center attention on the potential importance of the south Danube corn belt as a hog-producing region. There is little question that the hog industry of the United States must prepare to face increased competition from the lower Danube Basin.

The production of wheat and wheat flour in southeastern Europe was badly crippled by the events of the World War and the disastrous economic situation following the war; by the breaking up of the Austro-Hungarian Empire; and by the sweeping land reforms in which millions of acres formerly operated as large estates passed into the hands of peasant farmers. The former wheat surplus of the south Danube States, which during 1909-1913 averaged more than 110,000,000 bushels,² was reduced to an average of 26,000,000 bushels² during the 5-year period ended 1925-26. During this period American wheat penetrated to the mountainous interior of Rumania, but both American wheat and flour are now being forced back toward north central Europe, for wheat production in the Danube Basin is recuperating, and the milling industry is again struggling to recover its former footing.

The interest of American agriculture in this region is centered on the degree to which the peasant farmers of the Danube Basin can utilize the lands that were formerly operated as large estates to build up exportable surpluses of wheat, corn, rye, barley, and oats, as well as hogs and other animals and animal products.

The present struggle of United States products to maintain a foothold in the natural markets of the surplus-producing districts along the Danube River is but a recent phase of a struggle that has extended over three-quarters of a century.

THE BATTLE OF GRAIN AND HOGS

During the half decade in which the United States was recuperating from the Civil War, Hungary entered the markets of the west and became the granary of Europe, for production in Russia had been previously crippled by the Crimean War. But by 1874 American grain was again flowing across the Atlantic in increasing volume, and for the next 30 years contended with Hungarian grain in central Europe and Russian grain in the west. It also had to meet the rising tide of cereal exports from the south Danube States—Rumania, Bulgaria, and Serbia.

When American wheat and flour appeared at Trieste, the southern gateway of the Austro-Hungarian Monarchy, and at other Adriatic ports, Hungary realized its inability to cope successfully with the situation by marketing wheat as grain. Hungary therefore set out to develop the flour-milling industry which is now centralized in the great mill combines at Budapest. The commercial mills of Hungary soon developed a capacity sufficient to grind all of the wheat produced in Hungary. Then large quantities of wheat and rye were imported from the Balkan States to be ground in bond and thrown upon the markets of the Austrian Empire and central Europe in competition with flour from Minneapolis.

² The combined surplus of Bulgaria, Hungary, Rumania, and Yugoslavia.

The Balkans, seeing the advantage gained by Hungary in exporting flour instead of grain, established their own commercial mills. These southern mills attempted chiefly to satisfy the flour requirements of the Orient. Rumania, Bulgaria, and Serbia each shipped flour south and east to Istambul (Constantinople) and Salonika. At the same time, large quantities of grain were shipped to western Europe from Rumanian and Bulgarian ports on the Danube and the

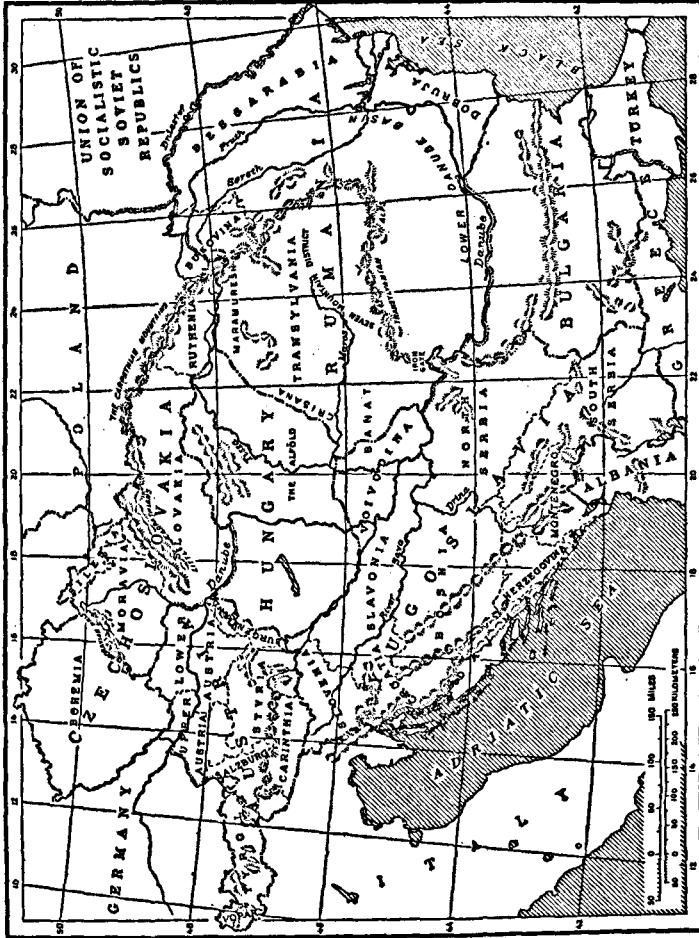


FIGURE 1.—MAP OF THE DANUBE STATES
 The Danube Basin, extending from the Alps southeastward to the Black Sea, comprises the greater part of the six Danube States—Austria, Hungary, Czechoslovakia, Yugoslavia, Rumania, and Bulgaria. The low-land plains of Hungary, Yugoslavia, Rumania, and Bulgaria are fertile regions that before the World War produced very large surpluses of cereals for export. Hungary and northern Yugoslavia in addition to exporting grains also shipped hundreds of thousands of cattle and hogs to northwestern European markets.

Black Sea, which greatly augmented the large yearly shipments from Russia.

Hungarian wheat and overseas wheat had practically put the German farmer out of the running by 1881, and on July 21 of that year the first of a series of protective agricultural tariffs was inaugurated which, by 1906, had eliminated Hungarian wheat as a commercial factor from Germany. The United States continued to

ship grain into Germany over the tariff wall, but the landed nobles and great land barons of Hungary, Rumania, and Russia found it increasingly difficult to compete with American-grown grain. The seeders, self-binders, and steam-driven separators of the western farms in America multiplied the power of a single man to many times that of the nonprogressive European farmer, who broadcasted seed by hand, harvested his crops with a sickle, and trod out his grain with cattle, as in Biblical times. The eastern peasants have clung to their primitive methods in sharp contrast with the estate owners, who were quick to adopt American and other farm machinery and to change their farm methods in keeping with the principles of experimental science.

Even by the use of modern machinery the Hungarian nobles were unable to compete with the rising flood of grain from North America, Russia, the south Danube, Argentina, India, and Australia. Slowly their grain-marketing operations were forced back to the frontiers of the Austro-Hungarian Monarchy. Such shipments as were made abroad were almost exclusively in the form of a very high-grade wheat flour which was much in demand by the bakers of central Europe. The struggle was for existence. By 1906 it had become so bitter that the dual monarchy, following the examples of Germany and France, passed a tariff act that practically inhibited grain, cattle, and hogs from passing the frontiers of Austria-Hungary.

Between 1850 and 1860, lard from the United States had made its active appearance upon the European markets in such quantities that Hungarian lard prices were cut from 10 to 30 per cent. Hogs from Serbia and Rumania had been marketed in Hungary and Austria from early times, in tens of thousands yearly. In the early nineties Serbia shipped 250,000 hogs up the Danube in a single year. The Austro-Hungarian agricultural tariff dealt a death blow to the Serbian live-hog export and forced the development of the packing industry within Serbia itself.

Before the World War the United States farmer had three powerful groups of competitors in southeastern Europe. The most powerful of these groups was found to the north of the Black Sea in Russia. This group was made up of the nobles and rich landlords, whose broad, well-tilled acres were devoted to the production of export cereals; and of the mushiks, from whose tiny plots of land were wrung dribbles of surpluses whose cumulative amount supplied nearly half of the exported total. The second most powerful group, that of the south Danube States, was made up of the great land barons and impoverished peasantry of Rumania, and the independent peasant farmers of Bulgaria and Serbia. The third group comprised the powerful farming nobles of the former Kingdom of Hungary and a colorful variety of subjugated peasants of diverse nations who were held to the farming policies of the Hapsburgs by the force of the Austro-Hungarian Monarchy.

At the outbreak of the World War the Hungarians had continued their practice of importing Rumanian and Serbian wheat for milling in bond, but only a small part of the surplus that was produced in Serbia and Rumania went up the Danube. The bulk of all surplus cereals produced in Serbia, Bulgaria, and Rumania was shipped to western Europe where it had a very important influence in determining world prices.

Then came the Balkan and the World Wars, followed by Bolshevism in former Russia, the breaking up of the Austro-Hungarian Empire, and the sweeping land reforms in the succession States east of the Alps. The vast grain-surplus-producing estates of former Russia, Rumania, and the subjugated districts of the former Kingdom of Hungary have passed into the beginnings of tradition. Subject peoples, no longer held to specific lines of farming by imperial policies, have reverted more nearly to those customs and habits of agriculture that were traditional to the peculiar ethnic group to which each belonged, and changes have followed as natural consequences, which are of very great significance to the world of agriculture.

During and immediately following the World War, the power to produce was greatly reduced throughout southeastern Europe. United States wheat, flour, and lard flowed into this former competing region through Trieste into Austria and up the Elbe River from Hamburg into Czechoslovakia. North American wheat was milled even in the Rumanian District of Transylvania. American flour and lard from the United States penetrated Dalmatia and Croatia in western Yugoslavia at a time when the eastern districts were exporting grain and hogs up the Danube.

The question today is, How long can the United States maintain its footing in the natural markets of its competitors in the Danube Basin? To what extent can these competitors come back to drive American products out of their own markets and to compete with grain and pork from the United States in the markets of western and central Europe?

In a former publication (22)³ are given the effects of boundary changes upon the agriculture of the four of the six Danube States—residual Hungary, residual Austria, Czechoslovakia, and Yugoslavia, up to the year 1922. The present report covers the agricultural situation of the south Danube States—Rumania and Bulgaria—as well as Yugoslavia, forming a single group of the three similar States.⁴

The agricultural situation in the three south Danube States has been vitally influenced by the boundary changes attending the splitting up of the Turkish Empire and the Austro-Hungarian Monarchy following the Balkan and the World Wars. This takes into consideration the liberation of the subject peoples of Austria and Hungary from the pressure for greater farm production exerted by the agricultural policies of the Dual Monarchy. The farm operations of these peoples have retrogressed toward the ancient customs and habits peculiar to each ethnic group. This is an important factor. Agricultural production is the result of a series of reactions between inherited potentialities of individual seeds and animals and those conditions of the environment in which the individual develops as modified by the hand of man. Success or failure in production depends very largely upon the character of the man. The land reform has had a sweeping effect upon the farm situation in Rumania and a lesser effect upon farming in Bulgaria and northern Yugoslavia.⁵

³ Italic numbers in parentheses refer to "literature cited," p. 182.

⁴ Farming in Yugoslavia is of the same primitive character as that of Rumania and Bulgaria. These three countries are classified as Near-Eastern countries, together with Greece and Turkey. The two latter countries look to the south Danube States for cereals, flour, animals, and animal products with which to cover the deficit in their domestic production.

⁵ In southern Yugoslavia and Bulgaria, where there were almost no large landed proprietors, the land reform produced little, if any, change in agricultural methods or production. Modern methods of farming had been practiced to a very limited extent in these regions.

The land reform has removed millions of acres from the superior farm methods of the large estates and subjected them to the poorer methods of peasant farming.

The net result of these changes has been a general decrease in production per acre. There have been shifts in the relative acreages of the different field crops cultivated and the number of farm animals maintained. There have been changes in domestic consumption.

There has been a great reduction in the surplus of the five chief cereals available for export from these three south Danube States. The wheat surplus dropped from 89,454,000 bushels before the World War to 23,306,000 bushels in 1925-26. The pre-war rye surplus totaled 11,500,000 bushels as against 455,000 bushels in 1925-26. Other contrasts stated in bushels were as follows: Barley, 35,036,000, as against 14,803,000; oats, 24,198,000, as against 2,809,000; and corn 91,581,000 before the World War, as against 66,207,000 bushels in 1926.

Before the World War a portion of these cereal surpluses was shipped by rail, or up the Danube by water, to central Europe, but the great bulk of all exports was shipped by way of the Black Sea to western Europe. It is, therefore, the markets of western Europe that are most vitally affected by the postwar decreases in cereal production.

THE AGRICULTURAL SITUATION IN RUMANIA

Toward the close of the World War, the forces of the Central Powers occupied fully two-thirds of the old Kingdom of Rumania, forcing the Rumanian Army and Government into the short arm of the country between the Carpathian Mountains and the River Pruth. The rest of the country was systematically despoiled when the German armies withdrew, taking with them all available supplies of foodstuffs and most of the means of transportation in sight. The transportation facilities of the old Kingdom, never first-class, passed into an acute crisis, from which the country had not recovered by 1926.⁶ This lack of transportation has affected Rumanian life vitally at almost every point and has been one of the contributing causes of the present depression in the agriculture of the country. Up to 1925, it was impossible to move crops advantageously.

This inability to move the produce of the country itself was keenly felt during the period of food shortage following the World War. Sections of the Kingdom were cut off from the districts of surplus production and were forced to import wheat and flour from North America and Australia. In the first half of 1919 we find Rumania—one of the former great wheat-exporting countries of the world—importing foodstuffs as follows: Wheat, 1,625,000 bushels; wheat flour (in terms of wheat), 6,765,000 bushels; rye, 100,000 bushels; corn and meal (in terms of grain), 600,000 bushels; barley, 20,000 bushels; and oats, 330,000 bushels.

⁶ Before the World War (1912-1914), the old Kingdom had in round numbers 2,200 miles of railway, 24,051 cars, and 888 locomotives. With the acquisition of her new territory, she increased her railway mileage to 7,424, and her cars to more than 90,000. Rumania had 4,500 locomotives, including purchases abroad, in 1924, but this rolling stock was not entirely available for transportation purposes, since a large part of it was out of repair. In 1925, there were 2,006 locomotives, 2,649 passenger cars, 871 mail coaches, and 41,928 freight cars in commission. To handle her traffic situation effectively, Rumania should have at least 4,000 locomotives and 100,000 cars. Even before the World War the car capacity was not sufficient to move the grain in the fall, and several thousand cars were rented each year from Germany to be used during the period of concentrating the grain. (36, 1826)

These imports carried the country through 1919 until the new crop was harvested, at which time restrictions amounting to prohibition were placed on exports of foodstuffs. The domestic requirements had to be met first, and only such exports were allowed during the season 1919-20 as furthered the policies of the Government, and then only under special permit. Only about 367 bushels of wheat and 80 barrels of wheat flour were allowed to go out of the country. Of the other cereals, 25,000 bushels of corn were sent to Austria, and 718 short tons of meal and grains were exported to Turkey.

Nor were the food requirements of the old Kingdom the main problem pressing for solution. Bessarabia, Bukovina, and a large section of the former Kingdom of Hungary had been added to the

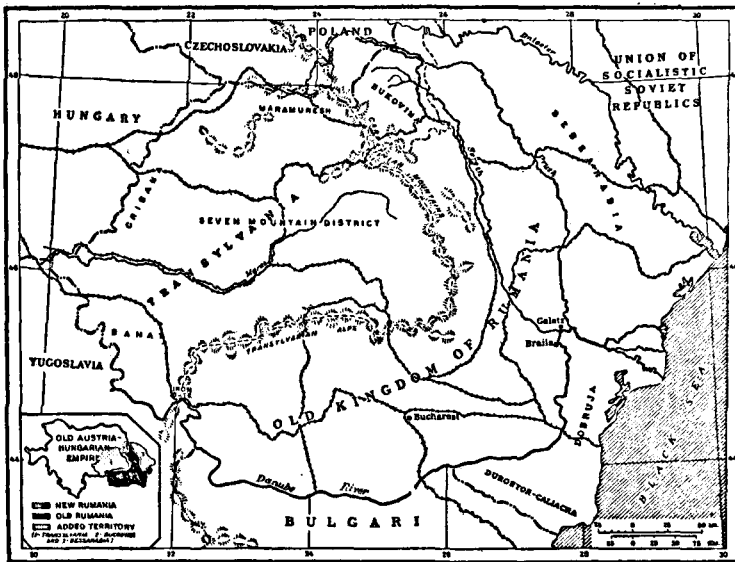


FIGURE 2.—MAP OF RUMANIA

Greater Rumania comprises the old Kingdom of Rumania, Bessarabia (acquired from Russia), Transylvania (acquired from Hungary), and Bukovina (acquired from Austria). Before the World War Rumania was one of the great wheat-producing and wheat-exporting regions of Europe. Following the sweeping land reform initiated in 1919, production of wheat has not regained its pre-war magnitude, and exportation of this cereal is only a fraction of the amount shipped abroad before the World War. On the other hand, livestock production, particularly the production of sheep, has increased above its pre-war importance.

old Kingdom to form the "ethnic unit" of greater Rumania. The administrative staffs of the Austrian and Hungarian Governments had been withdrawn at the time of ceding their territories, and in Bessarabia the Bolshevik uprising had caused former official circles to vanish. The Bucharest Government was faced with the problem of organizing this newly formed Kingdom, more than twice the size of the former one, with the restricted machinery of the old Kingdom, hastily augmented with such local talent as could be induced to come to the aid of the State. These locally selected officials had little or no experience with governmental affairs, having been kept out of participation in civil matters to a large degree by the former ruling powers.

The situation was complicated by budget difficulties. Before funds could be raised by direct taxation the Bucharest Government had to unify four distinct systems of appraisal; the Rumanian, the Austrian, the Hungarian, and the Russian. This, however, was practically accomplished by 1923, in which year the budget was successfully balanced, with a margin on the credit side.

The present Kingdom of Rumania has vast resources of timber, oil, and mineral wealth, in addition to the agricultural production of rich soils. It was therefore but natural to expect that Rumania would be the first of the succession States to recover from the effects of the World War. But the difficulties of administration and finance, coupled with the breakdown of transportation and communication and the falling off in production following the land reform, have deferred the fulfilment of these hopes several years. It was not until 1923 that the value of exports exceeded that of imports and a favorable balance was established in international trade.

Before the World War cereals and cereal products had constituted the bulk of the exports from the old Kingdom of Rumania. The territories acquired from Russia and those ceded by Hungary had also produced large exportable surpluses of wheat, rye, barley, oats, and corn. The Bucharest Government and those interested in Rumanian affairs were confident that the acquisition of these territories would place large surpluses of cereals at the disposition of exporters in quantities that would at least approximate the customary pre-war surpluses, indicated in Table 1.

TABLE 1.—Cereals: Production and net exports of the old Kingdom of Rumania, as compared with those of greater Rumania; average, 1909-1913 and annual, 1925

Cereal	Old Kingdom of Rumania			Greater Rumania					
	1909-1913			1909-1913			1925		
	Net production	Net exports	Percentage of production exported	Approximate net production	Approximate surplus	Percentage of production exported	Net production	Net exportation	Percentage of production exported
	1,000 bushels	1,000 bushels	Per cent	1,000 bushels	1,000 bushels	Per cent	1,000 bushels	1,000 bushels	Per cent
Wheat.....	75,529	54,434	72.1	131,835	71,272	54.1	83,291	9,793	11.8
Rye.....	3,821	2,967	77.6	16,879	8,379	49.6	6,260	1,120	1.9
Barley.....	21,307	16,741	78.6	56,595	32,324	57.1	36,374	12,618	34.7
Oats.....	25,345	10,421	41.1	55,361	18,426	33.3	39,824	1,730	4.3
Corn.....	99,142	38,729	39.1	191,773	64,966	33.9	159,970	22,810	14.3

From tables in succeeding text.

This confidence was shattered by the events following the sweeping land reform inaugurated in 1918, which involved the transfer of nearly 15,000,000 acres from the well-ordered management of large-estate conditions into the hands of peasants, who were not fitted, either by training or habit, to produce the former yields and who did not possess the capital requisite to the proper cultivation of the soil.

The grain situation in Rumania became so serious, after the land reform came into effect, that numerous laws were enacted to foster

production, to control trade, and to obtain a revenue from exports. These laws have had a pronounced depressing effect upon agricultural production and have accentuated the initial depressing influence of the land reform itself.

In 1920 the exportation of wheat from Rumania was negligible. In March of that year a law went into effect which declared all cereals and their derivatives immobilized throughout greater Rumania. Quantities up to 1 ton only were permitted to be sold at any one transaction for food or seed, and owners were obliged to report the quantities of each cereal they had on hand. On April 8 these restrictions were removed from corn, barley, and oats, but wheat and rye remained immobilized. During the late summer and fall the wheat and rye restrictions were temporarily removed, in order to stimulate fall seeding, but were again made effective in December. In the second half of 1920 the small movement of grain abroad was restricted almost exclusively to barley, oats, and corn.

The Government, alarmed at the small acreage of wheat harvested in 1920, not only removed the restrictions imposed in March but also promised free export possibilities in 1921. In the fall there was a material increase in the seeding of wheat, and in the spring of 1921 there was an increased seeding of all cereals.

In 1921 the Government created a monopoly for the export of wheat and rye and to assure a supply of export grain, resorted to the requisitioning of wheat at maximum prices. Corn, barley, and oats were permitted to be exported only after the exporters had delivered to the Government purchasing commission half the available exportable surplus of these cereals in their possession.

The Bratianu Government, upon coming into power in 1922, replaced these varied regulatory measures by a system of export taxes payable in so-called "strong currencies"—that is, currencies of financially sound countries like the United States and Great Britain. The prohibition of the exportation of certain cereals was not altogether abandoned, but was employed only as a temporary measure when the domestic production was insufficient to satisfy internal needs or when exports were in excess of the available surplus.

The export rates and regulations were so onerous that, although production of wheat increased more than 13,000,000 bushels over 1921, net exportation fell to 1,593,000 bushels during the year ended July 31, 1922.

Lack of volume in exports defeated the purpose of the Government to secure revenues, and on November 24, 1923, the export of wheat and rye as a Government monopoly was abandoned, and private trade was reinstated. The immediate effect was the export of about five times as much wheat and rye in December as during the 11 preceding months.

With the liberation of trade at the end of 1923 the exportation of wheat continued rapidly into 1924. This was the poorest crop year since 1920, and although export of bread cereals was prohibited as soon as it was evident that there would be a crop shortage, a net export of nearly 9,000,000 bushels of wheat was sent abroad before the new crop came on the market.

The total export of wheat for the calendar year 1925 was 1,500,000 bushels. The generally low level of cereal exports during 1925 brought forcibly to the attention of the Government the urgent

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necessity of stimulating sales of Rumanian products abroad in order to stabilize the exchange value of the Rumanian leu.

In March, 1926, a reduction was made in the export taxes on grain⁷ and during the following May the surtax of 30 per cent on the freight rates of grain destined for export was abrogated.

The effect of these ameliorations on wheat exports, which increased rapidly during April and the months following, is indicated in Table 2.

TABLE 2.—Cereals: Exports from Rumania, by months, August, 1924, to July, 1926
[In thousands of bushels—i. e., 000 omitted]

Month	Wheat		Wheat flour ¹		Rye		Corn		Barley	
	1924-25	1925-26	1924-25	1925-26	1924-25	1925-26	1924-25	1925-26	1924-25	1925-26
August.....	761	43	498	15	(?)	0	(?)	643	(?)	1, 579
September.....	13	111	513	91	(?)	0	(?)	558	(?)	1, 354
October.....	13	5	801	123	(?)	0	(?)	374	(?)	822
November.....	0	(?)	(?)	261	(?)	(?)	(?)	2, 757	(?)	1, 349
December.....	0	34	(?)	159	(?)	0	(?)	3, 720	(?)	1, 937
January.....	(?)	9	518	169	14	(?)	2, 862	2, 516	305	1, 071
February.....	(?)	3	(?)	272	10	0	2, 059	1, 230	272	795
March.....	(?)	18	0	310	1	0	1, 712	1, 349	171	442
April.....	(?)	720	(?)	380	0	17	1, 557	1, 804	0	1, 572
May.....	(?)	2, 262	(?)	582	0	47	2, 638	2, 624	11	791
June.....	(?)	1, 893	15	972	0	35	2, 734	2, 639	234	607
July.....	0	1, 110	125	487	0	71	1, 224	2, 596	367	298

August-December, 1924 (13, [v.] 15).
January-December, 1925 (35).
January-July, 1926, from report dated Dec. 8, 1926, from Ely E. Palmer, Consul General in charge, Bucharest, Rumania.

¹ In terms of grain.

² Not available.

³ Less than 500 bushels.

This outline statement of Rumania's grain trade since the World War pertains chiefly to restrictions upon the sale and export of wheat and rye. There can be no doubt that these restrictions have tended to diminish the favor with which the farmers looked upon wheat and rye production as contrasted with the production of barley, corn, and oats. On the other hand, the general level of all cereal production in Rumania has been lowered; consequently the exportable surpluses of wheat, barley, oats, corn, and rye are far below those of the period 1909-1913.

Rumanian cereal export had formerly been the chief item in the international trade balance of the country. The sale of cereals upon the European markets in exchange for the currencies of the various customer countries was, before the World War, the strongest factor in building up the financial standing of the Nation. The effect of the enormous shortages in exportable cereals upon the Rumanian financial situation has been all but disastrous. Many contributing causes have been associated with this export situation, but the main factor involved is the land reform.

It is generally conceded, after seven years under the reform system of farming, that the rate of seeding has more or less reached its new levels and that decreased production is an evident fact. Although a portion of this decrease is attributable to unfavorable weather, the main reason is the inability of the peasants to employ modern methods

⁷ The export tax on wheat was reduced from 30,000 to 18,000 lei, on barley and corn from 12,000 to 10,000 lei, and on oats from 20,000 to 10,000 lei. These rates apply to carload lots of 10 metric tons or 22,046 pounds. During the month of March, 1926, the average exchange value of 1 leu was 0.42 cent (par value before the war was 19.3 cents).

of sowing, cultivation, and harvesting. They do not fully realize the advantage to be derived from using improved varieties of seed.

The grain crops, being the main source of Rumania's wealth, it would appear that some drastic steps will sooner or later have to be taken with a view to training the peasants in modern methods of agriculture and, if necessary, assisting them to procure up-to-date implements and selected seed (14, p. 28).

The nature of land tenure, the lack of even primary education on the part of a large percentage of the peasants, and the persistence of ancient customs and habits in peasant agricultural operations make any radical change in the present agricultural situation extremely difficult. It is probable that the present retrogressive state of Rumania's agriculture will continue for many years to come.

LOCATION AND EXTENT OF RUMANIA

The old Kingdom of Rumania comprised the geographical divisions of Moldavia, Wallachia, and Dobruja. In 1912 it had an area of 50,260 square miles,⁸ which is slightly larger than that of the State of North Carolina.

The old Kingdom lies between the forty-third and forty-ninth parallels of north latitude (or about the same distance from the Equator as North Dakota and South Dakota) and between the twenty-second and thirtieth meridians of east longitude. It is bounded on the north and west by the Transylvanian Alps and the Carpathian Mountains, on the south by the Danube River and Bulgaria, and on the east by the River Pruth and the Black Sea.

From the highlands of the Carpathian Mountains the terrain slopes to the east and south through the rolling hill country of the Sereth and the Pruth Valleys; whereas from the highlands of the Transylvanian Alps the country drops abruptly to the level plains of the lower Danube Basin. The mountainous regions are well covered with forests, interspersed with pastures and meadowlands. These mountainous and hill districts are so densely populated that all land that can be productively cultivated is put into field crops.

Between the Sereth and the Pruth Rivers the country is characterized by broad low plateaus and fairly level or gently sloping river valleys. Formerly great estates occupied these plateaus and valleys, whereas the peasants' meager holdings were crowded upon the hill sides in the form of long, narrow strips of land connecting the rich fields above with the more fertile soils below.

From the banks of the Danube River a broad, level, sparsely populated plain stretches away to the north to the foothills of the Transylvanian Alps. This was the chief cereal-surplus region of the old Kingdom. Between the Danube River and the Black Sea stretches another fertile plain, the Dobruja.

There were 84 departments in the old Kingdom of Rumania, and before the war 82 of these departments produced greater or less surpluses of wheat.

The climate of the old Kingdom of Rumania is strictly continental. According to records taken before the World War, rainfall, which is

⁸ By the treaty of Bucharest on Aug. 7, 1913, Bulgaria ceded to Rumania the departments later named *Durostor* and *Calliacra*, now constituting south Dobruja, with an area of 2,983 square miles, according to Rumanian statistics, and 2,971 square miles, according to *Annuaire Statistique du Royaume de Bulgarie*, 1923-24. This places the total area of Rumania at the outbreak of the World War at between 53,231 and 53,243 square miles.

well distributed throughout the year, averaged about 23.5 inches. This, coupled with the fact that the soil of most of the departments is a rich, deep loess, similar to that of Iowa and Illinois, particularly adapts the whole region to winter-wheat production. The years 1912 and 1922 were unusual, but, excepting in these two years, the ranges in precipitation during the pre-war and post-war years have been about the same.

The lands under plow during 1909-1913 averaged 44.3 per cent of the total area of the country. The percentage of productive land, including forests, meadows, and pastures was 86.4 per cent.

Before the World War the old Kingdom of Rumania was, in proportion to its net production, one of the heaviest cereal-exporting countries in the world. During the five years ended 1913, Rumania exported an average of 72.1 per cent of its wheat crop, 77.6 per cent of its rye, 78.6 per cent of its barley, 41.1 per cent of its oats, and 39.1 per cent of its corn. It was thus no inconsiderable competitor of the United States in the grain markets of western Europe.

By the treaty of Trianon, Rumania acquired to the north the former Austrian Province of Bukovina and obtained from Hungary the region of "Seven-Mountains" (also called Transylvania) and parts of Maramuresh, Crisana, and the Banat. In the organization of Greater Rumania, all of these former Hungarian Provinces have been combined to form a single administrative district, to which has been given the name Transylvania.

The Seven Mountain district is heavily wooded, 38.4 per cent of its area having been under forests in 1913, whereas only 27.4 per cent was under plow. Natural meadows and pastures constituted 28.4 per cent of the total area, so that grazing and animal industry are naturally important branches of the agriculture of this region. This is an industrial region, with lumbering, mining, and some manufacturing as the leading occupations. Agriculture occupied a subordinate position before the World War on account of the mountainous and wooded character of the country.

The topography of the region, including "Seven Mountain district," Maramuresh, and Satmar to the north, may be likened to a handleless scoop with the open end toward the west. The Carpathian Mountains form the northern and eastern rim, which is continued on the south by the Transylvanian Alps. The floor of this scoop, a plateau averaging from 1,000 to 1,600 feet in altitude, is much broken by mountain peaks and canyons interspersed with fertile valleys and a central plain. The Maros, Olt, Szamos, and other rivers that drain the central plateau, flow into the Danube or into its tributary, the Tisza. The region as a whole is one of deficit-cereal production.

At the mouth of the "scoop" lie the agriculturally rich districts of Crisana and Temish-Torontal (central Banat).⁹ These districts which lie on the eastern margin of the Alföld, the great Hungarian plain, produced large surpluses of all agricultural products before the World War. The eastern part of the Banat, called Caras Severin, is similar in character to the Seven Mountain district and Maramuresh.

The present administrative district of Transylvania, which includes all of these former Hungarian territories, is a portion of the upper

⁹ Hungary ceded the western portion of the Banat to Yugoslavia.

Danube Basin and has a climate which is more closely associated with that of Hungary than with that of the old Kingdom of Rumania. On the whole, before the war, the present district of Transylvania produced an appreciable surplus of each of the four cereals—rye, wheat, oats, and corn. Barley, equivalent to 31.4 per cent of the net production, had to be imported each year. On the other hand, after satisfying the requirements of the Seven Mountain district and of Maramuresh and Carash Severin, the production of Crisana and Temish-Torontal would have been sufficient to supply an exportable surplus of rye equivalent to 20.2 per cent of the net production of the entire administrative district. In similar comparison, the exportable surplus of wheat was equivalent to 17.4 per cent; oats, 15.4 per cent; and corn, 3.1 per cent of the net production.

The Bukovina (the woodlands) contained before the war 43.2 per cent of forest lands as contrasted with 30 per cent of the total area under plow. The farm lands are located in the eastern part of the Province in the valleys of the Pruth, the Sereth, and Dniester Rivers. Rainfall averaged about 25 inches. Before the World War this territory produced a surplus of oats equivalent to 87.2 per cent of its net production and a surplus of rye equivalent to 21.1 per cent. On the other hand, rather large shipments of corn and barley were required to balance local deficits, whereas the wheat deficit was more than twice as great as local production.

Bessarabia, annexed by Rumania from *Russia* in 1920¹⁰ forms the western extremity of the Russian steppe to which it is similar in characteristics of soil and climate. It is a narrow territory between the rivers Pruth and Dniester, extending from Bukovina to the Black Sea. In the northern part rainfall is considerable, 24.5 inches, diminishing toward the south until in Cetatea Alba it averages only about 10.3 inches annually. The Province is highly agricultural, 61.8 per cent of its area having been under plow before the World War. Its broad fertile plateaus and rolling plains are little broken by woods or pastures. On an average, only 5.7 per cent of the area was under standing timber and 13.5 per cent was grazing lands during 1909-1913. This was a region of surplus production from which about 53.8 per cent of the wheat, 62.9 per cent of the rye, 67.7 per cent of the barley, 28.1 per cent of the oats, and 72.1 per cent of the corn found its way annually into external commerce.

The total area of Greater Rumania is 113,900 square miles, or about the size of the State of Arizona. Greater Rumania is more than double the size of the old Kingdom of Rumania. Not only that, and what is more significant, the areas which can be seeded to field crops are more than twice as great as the areas that formerly produced the great exportable surpluses of cereals of the old Kingdom. (Table 3.)

¹⁰ The question of Bessarabia has been for many years a matter of contention between Rumania and the Union of Socialistic Soviet Republics. . . . A treaty providing for Rumanian suzerainty over Bessarabia was signed after prolonged negotiations on Oct. 28, 1920, by France, England, Italy, and Rumania, and later by representatives of Japan and the British Dominions. This treaty as to cession of Bessarabia was not signed by representatives of the United States (41, p. 4).

TABLE 3.—Utilization of land in the districts of present Rumania before the World War, in 1924, and in 1925

Utilization	Old Kingdom of Rumania ¹	Durostator and Caliacra ²	Transylvania ³	Bessarabia ⁴	Bukovina ⁵	Greater Rumania						
						Before the War		1924 ⁶		1925 ⁷		
						Total	Per cent of total	Total	Per cent of total	Total	Per cent of total	
Plowland:	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent	
Cereals.....	12,581	683	6,336	⁸ 6,061	480	26,141	81.0	25,230	87.0	23,875	85.3	
Leguminous plants.....	132	60	15	46	36	289	.9	283	1.0	386	1.3	
Industrial plants.....	235	3	84	128	20	520	1.6	528	1.8	823	2.7	
Roots, tubers, etc.....	61	(9)	294	50	115	520	1.6	569	2.1	618	2.0	
Vegetables.....	60	15	(¹⁰)	---	1	76	.2	236	.8	227	.8	
Forage plants.....	401	54	668	81	103	1,307	4.1	1,265	4.4	1,412	4.7	
Other plants.....	---	---	73	---	---	73	.2	---	.9	---	---	
Fallow.....	11,514	11,280	1,111	11,419	11,18	3,342	10.4	848	2.9	968	3.2	
Total.....	15,034	1,095	8,581	6,785	733	32,268	100.0	28,989	100.0	30,318	100.0	
All land:	15,034	1,095	8,581	6,785	773	32,268	44.3	28,989	39.8	30,318	41.6	
Plowland.....	15,034	1,095	8,581	6,785	773	32,268	44.3	28,989	39.8	30,318	41.6	
Meadows.....	980	4 ¹²	3,388	186	13	326	4.884	6.7	3,510	4.8	3,014	5.0
Pastures.....	¹⁴ 2,914	¹⁴ 190	¹² 3,166	¹⁵ 1,297	¹³ 319	7,886	10.8	7,062	9.7	7,058	9.7	
Gardens and orchards.....	180	(9)	¹⁶ 511	(¹⁷)	¹³ 20	711	1.0	596	.8	855	.9	
Vineyards.....	216	9	¹⁶ 79	45	¹⁴ 0	349	.5	603	.8	662	.9	
Forests.....	¹⁸ 5,640	¹⁸ 580	¹⁸ 8,848	626	¹³ 1,115	16,818	23.1	17,864	24.0	17,864	24.6	
Unproductive and not otherwise classified.....	²⁰ 7,203	²⁰ 22	²⁰ 662	2,038	²⁰ 27	9,952	13.6	14,214	19.5	12,637	17.3	
Total, all land.....	32,167	1,909	25,235	10,977	2,580	72,868	100.0	72,868	100.0	72,868	100.0	

¹ 1909-1913 average. From (31) except where noted.
² 1909-1912 average. Calculated from (9) except where noted.
³ 1909-1913 average. Calculated from (15) except where noted.
⁴ 1909-1913 average. (25, pp. 11, 12).
⁵ 1909-1913 average. Calculated from (1), except where noted.
⁶ (36, pp. 38-39).
⁷ (33, p. 11).
⁸ (39, Ann. 10, p. 16).
⁹ Less than 500 acres.
¹⁰ Included with other plants.
¹¹ Adjusted to balance total plowland; includes other plants not separately stated.
¹² Estimated by assuming that meadows and pastures are the same proportion to forests as in the Seven Mountain district, as given in (15, 1913).
¹³ (27, 1921, p. 69).
¹⁴ Estimated by assuming that pastures are in the same proportion to forests as in total Bulgaria (8, Ann. 4, p. 127).
¹⁵ Estimated.
¹⁶ Estimated by assuming that "gardens and orchards," and "vineyards" are in the same proportion to plowland as in the Seven Mountain district.
¹⁷ Included in "not otherwise classified."
¹⁸ For 1908 only. Calculated from (8, Ann. 4, p. 175).
¹⁹ For 1912 only. Calculated from (15, [Ed.] 20, pp. 154-155).
²⁰ Adjusted to balance total.
²¹ (36, 1924). Annuaire Statistique du Royaume de Bulgarie (8) gives 1,901,000 acres.

UTILIZATION OF LAND

Greater Rumania is not only an agricultural State but is a country particularly well adapted to cereal production; 83 per cent of the plowlands were seeded to food and fodder crops before the World War, and 94.1 per cent in 1925.¹¹

¹¹ Table 3 shows that the 1925 area classified as plowlands is 1,950,000 acres less than that before the war and that fallow lands are 2,374,000 acres less. These differences are undoubtedly attributable, to a large degree, to the fact that the present statistical organization classifies fallow land somewhat differently than did the former Hungarian, Austrian, and Russian organizations. Increases in unproductive land and forests as well as decreases in meadows and pastures may be accounted for in the same manner.

There were 29,350,000 acres reported to be under field crops in 1925, as compared with 28,926,000 before the World War. However, other field crops had encroached somewhat upon cereal areas which, in 1925, were about 266,000 acres lower than the 1909-1913 average.

Contrasting the pre-war conditions of Greater Rumania with those of the old Kingdom it is seen that in the old Kingdom 46.7 per cent of the total area was plowland, whereas in the territories comprising Greater Rumania approximately 44.3 per cent of the total area, on the average, was under the plow before the World War. The average pre-war areas of meadows, pastures, and forests were over three times as great within the boundaries of Greater Rumania as within the boundaries of the old Kingdom.

As far as soil and other natural conditions are concerned, the agricultural potentialities of greater Rumania are more than double those of the old Kingdom.

The loss of life during the World War fell heavily upon the male farm population, and it is probable that in Rumania, as in other lands, the cities have recovered their population at a more rapid rate than have the rural communities and that, as in France, there has been a drift away from the farm, with a somewhat greater percentage of the total population living in cities than was the case before the war.

POPULATION

In the old Kingdom of Rumania, before the World War, 82.8 per cent of the population lived in small rural communities, whereas 17.2 per cent lived in cities. As indicated in Table 4, the percentage of urban population in Greater Rumania in 1923 was probably considerably greater than was the case in the same territory before the World War, and greater than in the old Kingdom. This fact signifies that the proportion of bread consumers to bread producers has been considerably increased.

TABLE 4.—Population in the old Kingdom of Rumania and in the acquired territories before the World War and in Greater Rumania, 1923

PRE-WAR POPULATION					
Region	Year	Urban	Rural	Total	Percentage urban
		<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Per cent</i>
Old Kingdom of Rumania.....	¹ 1909-1913	1, 221, 221	5, 878, 903	7, 100, 124	17. 2
Transylvania.....	² 1910	678, 423	4, 570, 099	5, 248, 522	12. 9
Bessarabia.....	³ 1911	346, 138	2, 144, 062	2, 490, 200	13. 9
Bukovina.....	⁴ 1910	176, 256	628, 566	804, 822	21. 9
Durostor and Calaisa.....	⁵ 1910	51, 009	229, 261	280, 270	18. 2
Total Greater Rumania.....		2, 473, 047	13, 450, 891	15, 923, 938	15. 5

¹ Total population (36, 1924, p. 10). Urban and rural population estimated by taking the same percentage of total as that given for 1910 in (36, 1923, p. 28).

² (36, 1923, p. 27.)

³ Local population from Yurojal (38, pt. I, p. 63). Urban and rural population estimated by taking the same percentage of total as that given for 1908 in (36, 1923, p. 28).

⁴ Total population (36, 1923, p. 15). Urban and rural estimated by taking the same percentage of total as that given for 1919 (36, 1924, p. 14).

⁵ Total population calculated from (8). Urban and rural estimated by taking the same percentage of total as that given for 1918 in (36, 1924, p. 14).

TABLE 4.—Population in the old Kingdom of Rumania and in the acquired territories before the World War and in Greater Rumania, 1923—Continued

Region	Year	Urban	Rural	Total	Percent- age urban
		Number	Number	Number	Per cent
Old Kingdom of Rumania.....	1923	1,921,094	5,474,192	7,395,286	26.0
Transylvania.....	* 1923	1,011,616	4,476,350	5,487,966	18.4
Bessarabia.....	* 1923	432,733	2,578,323	3,011,056	14.4
Bukovina.....	** 1923	178,408	663,567	841,975	21.2
Durostor and Caliacra.....	(1)				
Total Greater Rumania.....	1923	3,543,851	13,192,432	16,736,283	21.2

* Latest estimate for Bucharest is 800,000 for 1922, as given in (36, 1924, p. 17); other cities for 1912 and 1915, as given in (36, 1925, p. 18), 1,121,094.

** By difference.

* Total population of Greater Rumania, 1923, as given in (36, 1924, p. 10) less sum of estimated populations in the other three departments.

(36, 1925, p. 17.)

* Population in 1922 from (36, 1925, p. 16), plus excess of births over deaths in 1923; rural 50,573, urban 3,549, from (37, p. 72).

** Population for 1919 from (36, 1925, p. 15), plus excess births over deaths during 1920 to 1923; rural 27,382, urban 2,872, as given in (37, p. 72).

(1) Included in the old Kingdom of Rumania.

There were 86 cities in the old Kingdom of Rumania. The metropolis was Bucharest with 347,933¹² inhabitants, according to the official census of 1915. There were 10 other cities in the old Kingdom with populations of over 25,000 each. The metropolis of Bessarabia is Chisinau, with a population in 1922 of 133,000; that of Transylvania is Cluj, with a population of 105,000 in 1923. In Bukovina there was only one large city, Cernauti, with 91,852 inhabitants in 1919. There were 5 cities in Bessarabia and 9 cities in Transylvania (other than the capitals) each with more than 25,000 inhabitants in 1922 and 1923.

The nonagricultural population was found for the most part in the oil districts, in the forest regions, at mines, at certain manufacturing centers, and in the large cities. Even on the outskirts of large cities a considerable number of farmers had their homes and went out long distances to work their fields. In some of the departments of Bessarabia and the other acquired territories a considerable portion of the population of towns as large as 30,000 is directly engaged in field-crop cultivation.

It therefore is not possible to make a classification of the population of Rumania into agricultural and nonagricultural, on the basis of the size of the community in which they live. Since it is probable that more farming peasants live in large towns than nonfarmers in small communities, it is safe to estimate that more than 80 per cent of the population of Greater Rumania is directly engaged in agriculture.

THE FARMING PEASANTS

When slavery became prevalent in the Italian Peninsula in the early centuries of the Christian Era, the native farmers, unable to compete with slave labor, migrated to the towns or sought new homes in the virgin regions on the outskirts of the Roman Empire. Large colonies of these Roman farmers settled in the valley of the Danube, where they intermingled with the local Dacian and other tribes.

¹² The probable population of Bucharest in 1922 has been estimated at 800,000. (36, 1924.)

The ancient Province occupied by this mixture of Romans and Dacians included much of the present administrative district of Transylvania north of the Transylvanian Mountains, crossed the Carpathians, and extended east to the Dniester River. The ruins of the old wall built by the Emperor Trajan to keep back the barbaric hords of the Russian Steppe runs diagonally across southern Bessarabia to the river Pruth. The colonists had always been harrassed by the nomads on the east, who pressed them up into the Carpathian foothills at the downfall of the Roman Empire.

With the coming of the Magyars in the ninth century the Roman-Dacians were forced up into the highlands to the north of the Transylvanian Alps and west of the Carpathians, and this region remained under Magyar rule for more than a thousand years. In the thirteenth and fourteenth centuries Rumanian princes with adventurous bands emerged from their mountain retreats and battled their way eastward and southward against the steppe nomads until they finally established the independent principalities of Moldavia, Oltenia, and Munteniei. With the coming of the Turks they were again driven up into the southern slopes of the Transylvanian Alps.

For these reasons the mountainous districts of Rumania are densely populated, whereas in the plains regions the population is comparatively sparse. Under conditions of almost constant warfare for centuries it was difficult to cultivate the plains regions along the Danube, which were given over largely to grazing in the intermittent times of peace. Agriculture of any kind was possible only under the protection of some war lord.

The peasantry of Greater Rumania is thus made up of the descendants of those who during past ages had been the fighting men collected around one or another of the great overlords or voivodes. In return for his protection to their families, these common men were accustomed to place themselves at the overlord's disposal in times of war. In times of peace the fighting farmers tilled the soil; but since such times of peace were infrequent, most of the farm work fell to the lot of the women and children, and this has remained a characteristic of present-day conditions in Rumanian agriculture. In return for his protection the overlord received a share—often the greater share—of all farm products grown within the domains over which he had jurisdiction.

From time to time, according to the fortunes of war, the overlords were destroyed, or they changed their allegiance and intermarried with conquering races, so that at the outbreak of the World War the blood of the nobility was different from and often alien to that of the local peasantry.¹³ As time went on, these workers' families became more or less attached to the soil as the serfs of one or another of the great domains. A few of them acquired small plots of ground, but the greater number were practically slaves.

About 1864 the serfs of most southeastern European countries were freed, and each estate owner was obliged to place a certain area of land at the disposal of his peasants. Naturally he retained the best fields for his own use and turned over to his peasants the poorest lands that they could be induced to accept.

¹³ At the opening of the World War the overlords of the old Kingdom of Rumania were a mixture of Rumanian and several other races; in Transylvania they were largely Hungarian; in Bukovina they were largely Austrian; and in Bessarabia they were Russian, Polish, and Rumanian.

VILLAGES AND ESTATES

Almost without exception the farming peasants of Greater Rumania live in village communities. Each of these communities consists of a large or small group of huts, usually situated in a ravine in proximity to water. The fields of the peasants are usually located at a considerable distance from the village, which lies in broken ground surrounded by the pasture lands, held as common village property. The fields belonging to any one peasant are seldom consolidated into a farm, according to the American system, but one field may lie as far as 10 miles from the community center, whereas another may lie several miles away in a totally different direction. The waste in time spent going to and from work is enormous.

In the river valleys and on the plains along the Danube the character of the soil on the various plots belonging to any individual family might not vary greatly from those of their neighbors, but in the foothills of the Carpathian and Transylvanian Mountains the land was parceled into narrow strips, and these strips universally extend uphill, the soil at the top being much poorer than the soil at the bottom. Not only that, but whenever the peasant was rich enough to own a plow he invariably plowed up and down hill and finished his dead furrow in the middle line of his strip. After generations of this practice such a strip of land became higher at the margins than in the middle, which was often a barren gully on account of erosion. The strips of peasant lands are usually only a few yards wide and perhaps a hundred yards or more in length. They are usually located on the rougher ground and appear like a ragged fringe on the outskirts of some large estate.

In the foothills and rolling country the large estates occupied the plateaus and valleys, whereas the peasant fields were crowded upon the surrounding hillsides. These large estates, in sharp contrast to the scattered strips of peasant lands, comprised broad and fairly level fields consolidated conveniently about a centrally located group of farm buildings.

In Bessarabia, Bukovina, and Transylvania the estate was often owned and operated by a family of different blood from that of the peasants in the neighboring village. The mother tongue was different and the outlook on life wholly unlike. The peasantry often looked upon the landlords as aliens and the landlords frequently treated the peasants as members of an inferior, if not a conquered race.

The large estates in all the districts that now form Greater Rumania were usually operated under efficient management upon much the same principles as would be the case in Germany or France. The seed bed was carefully prepared in season, well-thought-out systems of crop rotation were employed, improved varieties of seed were used, the poorer soils were fertilized, and modern machinery was employed to a large extent, although at the beginning of the World War much grain was still harvested with a sickle. In regions of uncertain rainfall the most approved methods of moisture conservation were employed. Small grains were sometimes planted in rows with intervening spaces of sufficient width to admit surface tillage during the growing period. On the whole the large estates were operated upon a scientific basis that was more or less up to date.

On the other hand the size and topography of the peasant's fields did not permit him to use machinery except of the simplest type. The methods he employed were primitive, often dating back 2,000 years, to the time the country had been settled by emigrating farmers from Rome. In many localities these methods had undergone little change during the 2,000 intervening years.

HOLIDAYS AND INDUSTRY

The Rumanian peasant is not industrially or commercially inclined. Serban says: "The gypsy works only under stress of hunger; the Rumanian only from need; the Hungarian for a peaceful life; the Slovak and the German for profit" (40 p. 60). National holidays play an important rôle. According to Doctor Busuiocescu (13) (as quoted by Serban) (40, p. 8, 60) there are only 257 workdays a year in Rumania, as there are 56 workless holidays in addition to 52 Sundays. The frequency of national holidays, upon which no work is done, is very significant to farming, because certain field work should be done at a certain time and the interposition of a series of holidays at a critical period in planting or harvesting time may have a serious effect upon production. There is a series of holidays at corn-planting time which seriously retards spring work at a critical period. Other holidays at harvest time cause all work to cease even though the condition of the crop or the weather may demand that the grain be speedily cared for.

In Rumania, there are 108 days during which the peasant feels that he is obligated to do no work. Winter cuts down the number of workdays materially; weather conditions further reduce the work period. It is probable that in Rumania, as in Serbia, the peasant is engaged not more than 75 to 80 days in actual field work. The remainder of his time is spent in meditation and "pottering around."

PRE-WAR CONDITION OF THE PEASANTS

G. Jonescu-Sisesti, the director of agriculture at Bucharest, in 1912, wrote as follows in *Rumâniens Bäuerliche Landwirtschaft* (19):

When the peasants were "freed" in 1864 each was given the right to purchase a small plot of land, but they did not receive enough acreage to support their families and at the same time to meet the installments on the cost of their holdings. They were, therefore, obliged to turn again to the landlord and either rent from him additional land or work for him on shares or for a wage. As a part of the compensation for the liberation of their serfs the landlords had been given at that time a clear title to the lands which they had formerly held as tenants of the State. The new landlords desired that the peasants should work for a wage, but they themselves had little capital, little machinery, and little livestock. They could not farm at all without the help of the peasant, his animals, his plows and wagons, so in the very beginning of this new agricultural system the interests of the landlords and the peasants were set in opposition.

The relationships between the peasants and the landlords became very complicated and many curious systems developed; for example, first, in his need, the peasant often had to borrow money from the landlord as an advance against his summer wages, in which case he became virtually the slave of the landlord; second, when the peasant did not have cash to pay a rental the lord charged the highest possible rate; third, if the peasant paid his rent with labor the rent price was placed too high and his wages too low; fourth, when the landlord let land on shares not only would he take, by agreement, from one-half to one-third of the crop but the peasant must also do a certain amount of work on the lord's other fields; fifth, the peasant was often granted the right to work a certain piece of land, taking all the yield, on the condition that he work an equal piece for the landlord. In such cases the peasant's plot was undersized and the landlord's

was oversized. In all cases the peasant was obliged to do the landlord's work first and his own when he could. If the peasant refused to do the work required by the landlord, he was frequently forced to do so by the State as though it had been military service, or, as a penalty, he was not allowed to use the roads that passed through the estate to haul his crops to market. Often these roads were the only ones in the vicinity. In other cases the peasants were not allowed to use the footpaths across the fields of the estate. When they complained, laborers were brought in from Russia, Bulgaria, and Serbia until the peasants were forced by hunger to make terms. Pasture lands remained in the hands of the estate owners, as did also the watering places. The peasant was not allowed to pasture his stock without paying with both work and money.

This condition was responsible for the peasant uprising in 1907. At this time several reforms were instituted: The villages bought the pasture lands to be held in common, and the rural bank was reorganized for the purpose of extending credit to the peasant. These reforms, however, did not include any additional grants of land; the peasants were still obliged to depend upon the landlords as before; so that the old abuses were soon resumed. It was not until 1918, near the close of the World War, that a genuine land reform was put into effect.

Similar conditions in Russia led to the peasant uprising in Bessarabia in 1905. There are no records of conditions in Transylvania and Bukovina; but when the protection of the Hungarian and Austrian Armies was withdrawn at the close of the World War a large number of estate owners, whose families had held their land for many generations, abandoned their holdings and fled to Budapest or Vienna.

LAND TENURE

The total area of the old Kingdom of Rumania in 1909-1913, before the treaty of Bucharest at the end of the Balkan War, was 32,167,000 acres, of which 1,995,000 acres were covered by water and 5,208,000 acres were nonagricultural lands, including mountains, waste lands, cities, towns, roads, etc. The total productive area was therefore 24,964,000 acres, of which 5,640,000 acres were under standing timber. The remaining 19,324,000 acres comprised permanent pastures, vineyards, orchards, and cultivated lands.

The area of these cultivated lands had remained remarkably constant for generations; thus, before the distribution of land to the serfs in 1864, it was reported to be 19,340,000 acres, at which time 3,367,000 acres were owned by peasants and 15,973,000 acres remained under control of the Crown and in the hands of a few great landlords—descendants of the former voivodes.

TABLE 5.—*Productive land*¹ *in the old Kingdom of Rumania held by peasants and by large estates, 1864, 1881, 1889, and 1912*

Item	Families receiving land	Productive land in—	
		Large estates	Small holdings
	<i>Number</i>	<i>1,000 acres</i>	<i>1,000 acres</i>
Situation prior to 1864.....		15, 973	3, 367
1864.....	458, 461		4, 717
1881.....	6, 686		77
1889.....	106, 714		1, 351
Number of small holdings sold by the rural bank.....			48
Number of small holdings received by peasants in 1912.....			31
Situation before the World War.....		19, 749	9, 591

Information furnished by Centrala Obstilor Statesti (office in charge of land reform), Bucharest.

¹ Total area less forests and unproductive lands. Productive lands include plowlands, meadows, pastures, vineyards, etc.

² In 1913 there were 3,420 heads of families classified as owning large estates.

³ Land-owning peasants were estimated at 1,129,782 heads of families in 1913.

In 1864 and in 1889 large grants of land were made to the peasants, so that at the outbreak of the World War the peasants, as indicated in Table 5, possessed 9,591,000 acres of the cultivated lands, whereas 9,749,000 acres still remained in the hands of the owners of large estates.

Only 4,154,000 acres of large-estate plowlands were operated as large holdings in 1913. (Table 6.) The peasants owned and operated 6,739,000 acres of plowlands in holdings of less than 247.1 acres each and in addition rented 3,539,000 acres almost exclusively from large estates.

TABLE 6.—*Plowland operated by owners and that operated by renters, classified according to size of land holdings, in the old Kingdom of Rumania, 1913*

Size of holdings		Head of families		Area owned by each class	Area rented by each class	Area operated by each class	
Hectares ¹	Acres						
		Number	Per cent	1,000 acres	1,000 acres	1,000 acres	Per cent
Less than 2.....	Less than 4.9.....	478,649	42.1	1,042	372	1,414	9.8
2 to 5.....	4.9 to 12.3.....	441,336	38.9	2,584	1,237	3,821	26.5
5 to 10.....	12.3 to 24.7.....	181,550	14.3	1,800	1,164	2,964	19.2
10 to 25.....	24.7 to 61.8.....	42,996	3.8	980	557	1,537	10.6
25 to 50.....	61.8 to 123.6.....	5,697	.5	349	128	477	3.3
50 to 100.....	123.6 to 247.1.....	1,564	.1	184	81	265	1.8
100 to 500.....	247.1 to 1,235.5.....	2,377	.2	697	755	1,452	10.1
500 and over.....	1,235.5 and over.....	1,043	.1	1,225	1,477	2,702	18.7
Total.....	.....	1,133,202	100.0	8,661	5,771	14,432	100.0

Furnished by The Ministry of Agriculture at Bucharest.

¹ One hectare = 2.471 acres.

² Average plowland during 1909-1913 was 15,034,000 acres. See Table 3.

THE LAND REFORM

During the time that the Rumanian Government had been forced by the Central Powers to abandon Bucharest and establish a temporary capital at Jassy, unrest developed among certain elements of the peasant army which threatened to reach the revolutionary stage. At that critical juncture a sweeping land reform, the provisions of which had not been carefully preconsidered, was promised to the peasants, who consequently remained faithfully at their posts and fought out the war to the end. At the termination of the World War the land reform was put into effect, practically as promised to the men in the trenches, through the decree of December 16, 1918. By the provisions of this decree Ferdinand I directed the expropriation of 5,527,000 acres of the large-estate lands of the old Kingdom of Rumania, including 68,000 acres of forests and unproductive lands and 5,459,000 acres of crop lands, meadows, pastures, and other productive lands.

As indicated in Table 7, expropriation affected the great privately owned estates and the lands of societies and institutions most severely. The State itself did not make an exception of its own lands, and even the Crown estates were included in the reform program.

TABLE 7.—*Expropriated production land, excluding forests, old Kingdom of Rumania, prior to January 1, 1925*¹ (36, 1924, p. 47)

Owners	Owners from whom expropriated	
	Number	Acres
Private.....	3, 886	4, 456, 000
Absentee landlords.....	84	167, 000
Foreigners.....	39	141, 000
Societies and institutions.....	609	1, 046, 000
State.....	312	811, 000
Total.....	4, 930	6, 621, 000

¹ Includes expropriation of land in former Bulgarian territory, if any.

As indicated in Table 7, about 1,162,000 more acres of productive land were expropriated than were provided for by the decree of December 16, 1918. This discrepancy is accounted for in the following manner: According to the letter of the act, on which the land reform was based, the size of the estate to be retained by each large owner was fixed at 494 acres in regions of dense population, at 741 acres in regions of medium density of population, and at 1,236 acres in regions of sparse population—the so-called colonization districts along the Danube River. Many estate owners, however, had estates in more than one of these regions, and it was found that often the holdings retained by such owners totaled more than 1,236 acres. To remedy this, additional land was expropriated in order that the total held by one family should conform to the spirit of the original act. This additional expropriation of 1,162,000 acres may include lands expropriated in former Bulgarian territory if any of the estates in these regions were large enough to come within the jurisdiction of the land-expropriation officials.

As Transylvania, Bukovina, and Bessarabia came under the jurisdiction of Rumania, land reforms were put into effect in each of these administrative districts. The conditions differed in some details from those operative in the old Kingdom, but the final result involved 4,566,000 acres in Transylvania, 189,000 acres in Bukovina, and 3,686,000 acres in Bessarabia.

The liberal Government had planned to hold these expropriated estates under Government control and to operate them through the medium of cooperative societies. The peasants protested against this and forced the division of the land into holdings of which the size of the allotment per family varied according to the density of the population. The peasants demanded actual possession of the land, and where disturbances proved serious the Government hastened the process of making the transfer. Although redistribution of expropriated lands has proved to be a very slow and involved process, by the end of 1924 only a relatively small amount (about 65,000 acres) of the land destined to be turned over to the actual possession of the peasants remained unassigned in the old Kingdom. There were 260,000 acres unassigned in Transylvania and 7,000 acres in Bukovina.

According to the present arrangement, the peasant is allowed 20 years in which to pay for his land, paying only the capital sum. The interest is paid by the Government to the former owner, who has received for the land taken from him bonds payable in full at the end

of 20 years. A premium amounting to the interest for 20 years was awarded to any peasant who paid for his land in full at the time of transfer.

In Bessarabia the land to be retained by the estate owner was fixed at 247 acres; in Transylvania and Bukovina the maximum was 1,236 acres. In addition, the estate owner has been allowed to retain certain vineyards, orchards, etc. Land subject to inundation has not been expropriated.

Up to December 31, 1924, the area of land in Greater Rumania that had passed or was in the process of passing from the control of the large estates into the hands of the peasants was approximately 14,795,000 acres, as indicated in Table 8. Of this area more than 11,690,000 acres consisted of arable land, meadows, and pastures.

TABLE 8.—*Expropriation program prior to January 1, 1925, Greater Rumania*¹
(36, 1924, p. 47)

[In thousands of acres—i. e., 000 omitted]

Region	Arable and meadow land	Pasture land	Forests	Other lands	Expropriated after the agrarian law	In process of expropriation	Total
Old Kingdom of Rumania.....	5, 133	326	36	32	*1, 162	65	6, 754
Transylvania.....	1, 367	811	1, 662	66	-----	260	4, 166
Bukovina.....	129	28	22	3	-----	7	189
Bessarabia.....	-2, 736	-----	490	460	-----	-----	3, 686
Total.....	9, 305	1, 165	2, 210	561	*1, 162	332	14, 795

¹ Expropriation of land leased under law No. 3697/918.

* Arable land and meadows.

Whereas expropriation was abrupt, throwing a large area out of cultivation in 1919, the distribution of these former estate lands, except in Bessarabia, has been gradual, and each year up to 1925 a few hundred thousand acres more have been brought under cultivation than were in crop production the year before.

In 1921 fully 24.1 per cent of the plowland was rented to and operated by farming associations, some of which were cooperatively managed. As shown in Table 9, one of the outstanding trends of farm operations has been the reduction of areas seeded by these associations each year until in 1925 they put only 2.7 per cent of the land into crops, as compared with 84.9 per cent seeded by small peasant farmers. Throughout this period the large estates of Greater Rumania have seeded about 12 per cent of the total area of crop lands each year.

TABLE 9.—*Crop land: Acreage seeded, by holdings, in Greater Rumania; average, 1909-1913 and annual, 1921-1925*

Period	Large estates		Small peasant holdings		Agricultural-association holdings		Total holdings 1,000 acres
	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent	
Pre-war average, 1909-1913.....	-----	-----	-----	-----	-----	-----	1 28, 926
Post-war period:							
1921.....	3, 181	12. 8	15, 668	63. 1	5, 967	24. 1	24, 816
1922.....	3, 105	12. 1	19, 411	76. 0	3, 030	11. 9	25, 546
1923.....	3, 169	12. 0	21, 592	81. 6	1, 708	6. 4	1 26, 469
1924.....	3, 495	12. 4	23, 454	83. 3	1, 192	4. 3	1 28, 141
1925.....	3, 650	12. 4	24, 909	84. 9	791	2. 7	1 29, 350

See Table 3 for source of data for pre-war; 1921-1925 (56, 1925, p. 48).

¹ Does not include fallow land as follows: Pre-war, 3,342,000 acres in 1923; 848,000 acres in 1924, and 968,000 acres in 1925.

The large estates slowly increased their seeded areas a few hundred thousand acres yearly between 1923 and 1925. On the other hand the expropriated land that was at first rented to agricultural associations in 1921 had been almost entirely transferred to peasant owners by 1925. A record of the transfers of plowland to the peasants maintained during 1921 and 1922 showed an increase of 3,743,000 acres in the latter year over the former. During the next three years the record pertained only to the areas seeded. Between 1923 and 1925 the areas seeded by small peasant farmers increased 3,317,000 acres, and the land transferred probably exceeded this amount. In any case the land actually put into crops by the peasants in 1925 was 9,241,000 acres greater than all plowland possessed by them in 1921.

The influence of this shift in the management of more than 9,000,000 acres of crop land upon agricultural production in Rumania was profound, acutely affecting the economic life of the nation.

THE INFLUENCE OF THE LAND REFORM UPON AREAS SEEDED ¹⁴

OLD KINGDOM OF RUMANIA

As far as areas seeded are concerned, the estates and peasants of the old Kingdom of Rumania had developed a routine of planting to such an extent that year after year about the same area was seeded to each of the five chief cereals, as indicated in Table 10.

TABLE 10.—*Cereals: Acreage seeded in the old Kingdom of Rumania, average, 1906-1910 to 1909-1913, and in the old Kingdom including area ceded from Bulgaria, average, 1909-1913 to 1921-1925 (31)*

[In thousands of acres—i. e., 000 omitted]

Region and year	Wheat	Corn	Barley	Oats	Rye
Old Kingdom of Rumania:					
Average—					
1906-1910.....	4,535	5,011	1,377	1,095	389
1907-1911.....	4,489	5,013	1,352	1,075	364
1908-1912.....	4,665	5,088	1,347	1,090	344
1909-1913.....	4,576	5,150	1,319	1,105	316
Old Kingdom, including area ceded from Bulgaria:					
Average—					
1909-1913 ¹	4,961	5,243	1,441	1,147	336
1919-1923.....	2,784	4,807	1,581	1,435	178
1920-1924.....	2,879	4,888	1,903	1,690	164
1921-1925.....	3,250	5,062	2,098	1,775	159
Annual, 1925.....	3,925	5,704	2,095	1,709	159
Percentage of land under chief cereals seeded to each:					
Average, 1909-1913.....	Per cent 37.8	Per cent 39.9	Per cent 11.0	Per cent 8.7	Per cent 2.6
Annual, 1925.....	28.9	42.0	15.4	12.6	1.1

See following tables for area ceded from Bulgaria.

¹ Average for old Kingdom, 1909-1913, plus 1909-1912 average for former Bulgarian territory annexed to Dobruja in 1913, for which year there are no data.

By comparing the percentage of the total area under the five chief cereals seeded to each cereal during 1909-1913 and in 1925 it is evident that the relative areas under wheat and rye had greatly decreased, whereas those under corn, barley, and oats had increased.

¹⁴ One of the striking characteristics of the agriculture of southeastern Europe is the persistence of agricultural customs and habits. Neighboring villages are frequently of different racial origin, and there is a sharp contrast in the methods they employ in planting and harvesting their crops, which differ according to the traditions of tilling the soil that have been handed down from generation to generation, dating back to remote ancestors. It is almost impossible to change these racial habits of centuries by teaching or demonstrating new methods that have come into use only during the past few decades.

The general economic situation, associated with legislation regarding the domestic sale and the exportation of bread cereals, had some influence upon these changes, but the most profound influence was that exerted by the difference between the ways in which the peasants and estate owners seeded their respective holdings.

Records have been kept since 1905 which show the cereal acreage of the old Kingdom of Rumania seeded on large estates and on small holdings. These records, summarized in Table 11, indicate the different rates at which cereals were seeded under the two systems of agriculture.

TABLE 11.—Cereals: Acreage seeded on large estates and on peasant holdings in the old Kingdom of Rumania; average, 1905-1909 and 1909-1913, and annual 1919 and 1921

Holding and cereal	Average				1919 ¹		1921 ¹	
	1905-1909		1909-1913		Acreage	Per-centage of total	Acreage	Per-centage of total
	Acreage	Per-centage of total	Acreage	Per-centage of total				
Large estates:	<i>1,000 acres</i>		<i>1,000 acres</i>		<i>1,000 acres</i>		<i>1,000 acres</i>	
Bread cereals—								
Wheat.....	2,415	58.7	2,341	61.9	842	67.6	545	32.6
Rye.....	46	1.1	39	1.0	23	1.9	11	0.7
Total.....	2,461	59.8	2,380	62.9	865	69.5	556	33.3
Barley.....	347	8.4	335	8.8	75	6.0	279	16.7
Oats.....	373	9.1	377	10.0	98	7.9	303	18.1
Corn.....	933	22.7	691	18.3	207	16.6	532	31.9
Total 5 chief cereals.....	4,113	100.0	3,783	100.0	1,245	100.0	1,670	100.0
Peasant holdings:								
Bread cereals—								
Wheat.....	2,125	25.9	2,235	25.7	2,122	26.6	2,324	24.8
Rye.....	337	4.1	277	3.2	196	2.5	168	1.8
Total.....	2,462	30.0	2,512	28.9	2,318	29.1	2,492	26.6
Barley.....	1,020	12.4	984	11.3	513	6.4	1,474	15.8
Oats.....	657	8.0	728	8.4	499	6.2	1,330	14.2
Corn.....	4,073	49.6	4,459	51.4	4,655	58.3	4,067	43.4
Total 5 chief cereals.....	8,212	100.0	8,683	100.0	7,985	100.0	9,363	100.0
All holdings:								
Bread cereals—								
Wheat.....	4,540	36.8	4,576	36.7	2,964	32.1	2,869	26.0
Rye.....	383	3.1	316	2.5	219	2.4	179	1.6
Total.....	4,923	39.9	4,892	39.2	3,183	34.5	3,048	27.6
Barley.....	1,367	11.1	1,319	10.6	588	6.4	1,753	15.9
Oats.....	1,029	8.4	1,105	8.9	597	6.4	1,633	14.8
Corn.....	5,006	40.6	5,150	41.3	4,862	52.7	4,599	41.7
Total 5 chief cereals.....	12,325	100.0	12,466	100.0	9,230	100.0	11,033	100.0

Acreage in 1905-1913 and 1919 (51, 1909, 1913, 1919).

Acreage in 1921 furnished by the Ministry of Agriculture of Rumania.

¹ Includes Durostor and Caliacra.

Each large-estate operator and each peasant farmer had established a fairly uniform routine in pre-war years as to the proportion of his lands to be seeded to each cereal crop. There was some fluctuation from year to year in the total cereal acreage, but there was remarkably little change in the relative area planted to each crop.

Before the World War the area seeded to winter grains—wheat and rye—was about equal to and in a sense limited by the area seeded to corn. Corn is grown by the Rumanian peasant for food, whereas wheat is produced for sale. In the old Kingdom the area seeded to corn had to be maintained at least at a certain minimum to insure food for the masses. Had there been a shortage in the crop, corn would have had to be imported, as the masses of the peasants are not accustomed to making wheat and rye bread. Their staple diet consists of a thick corn-meal mush called "mamaliga."

The crop rotation on peasant fields in Rumania is almost universally an alternation between corn and wheat or corn and some other cereal. The peasants seeded an average of about 4,500,000 acres to corn during 1909-1913 or more than the area of all other cereals combined. The area seeded to corn is thus almost 1,000,000 acres greater than all the land rented by peasants from the great landlords during 1913. It is stated on the authority of the former director of agriculture, G. Jonescu-Sisesti, that this great area of rented land was seeded to corn by the peasants not only because of the peasants' liking for this cereal but because the landlord required that the rented land be planted to corn. As the corn crop must be hoed, the land was thus better prepared for winter wheat.

In order to get the land at all the peasant was frequently required to work for the landlord. This meant that his own small plot was seeded late, since he must first help to seed the fields of the landlord. He must also get the corn off the land early enough to allow his landlord to sow winter wheat. This meant that the corn was often harvested in an immature condition, reducing the yield and lowering its food value.

Almost all wheat seeded by the large estates was on land that had been rented by the peasants and previously planted to corn by them, since the estate owners themselves planted relatively little of Rumania's corn crop.

Before the World War, a little more than half the wheat area was seeded by the estates and a little less than half by the peasants. As a result of the war and the disorganized economic and social conditions, including the land reform, following the war, these agricultural habits were broken up, and Rumanian field-crop production passed into a state of flux. Increases and decreases in the areas seeded to the different cereals followed the many changing and complex factors that disturbed normality. However, through all these fluctuations in crop seeding both the peasants and the estates have shown a certain tendency to maintain the old order of farming although somewhat modified by the new order of land tenure.

In 1921 the estates, deprived of the peasants' cornfields in which to plant winter wheat, were forced to regulate their wheat acreage to the area of corn that they themselves could plant.

The peasants in 1921 seeded 680,000 acres more to the five chief cereals than was their custom before the World War. Their wheat acreage was about as large as they had previously been accustomed to plant and their corn acreage was about sufficient to meet their own requirements. As they had extra land to plant they seeded barley and oats. It requires more foresight to seed a winter crop in August to be harvested the following summer than it does to put in a spring crop to

be harvested in less than six months. As the average peasant does not possess the foresight of the average manager of a large estate he usually puts off his planting until the last possible minute and then rushes his plowing and seeding. Winter grain is seeded as late as December, and corn is planted as late as July, with consequent poor returns.

Combining the data regarding peasant and estate seedings in 1921 indicates that corn was put in at about the same normal rate, whereas former wheat areas were replaced by barley and oats.

Between 1921 and 1925 the acreage of wheat, rye, barley, oats, and corn of the old Kingdom including Durostor and Caliacra (ceded by Bulgaria in 1913), was increased 2,558,000 acres or to a total of 13,591,000 acres, as compared with 13,128,000 acres in pre-war days. During this 5-year period ended 1925 the rates at which the chief cereals were seeded have varied but little. Corn, barley, and rye were within one-half of 1 per cent in the same relationship to the total acreage of these five cereals at the end of the period that they were in the beginning. Wheat had increased 2.9 per cent, and oats decreased proportionately. The general trend of peasant farming in the old Kingdom of Rumania as compared with estate farming has taken the form of a shift from winter grains (such as wheat and rye) toward spring grains (barley, oats, and corn).

BESSARABIA

The first recorded crop statistics giving details of large-estate and peasant agriculture in Bessarabia after the World War were for the year 1920. In that year the peasants of Bessarabia seeded 4,949,000 acres to the five chief cereals, as contrasted with an average of 3,156,000 acres during 1902-1911 as indicated in Table 12.

TABLE 12.—Cereals: Acreage seeded in Bessarabia on large estates and small holdings; average, 1902-1911, and annual, 1920, and on all holdings in 1925

Cereal	Large estates				Peasant holdings				All holdings					
	Average 1902-1911		1920		Average 1902-1911		1920		Average 1902-1911		1920		1925	
	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent
Bread cereals:														
Wheat—														
Winter.....	583	23.0	22	36.1	465	14.8	1,331	26.9	1,048	18.4	1,353	27.0	1,367	22.2
Spring.....	304	12.0			587	18.6			891	15.7			563	9.2
Rye.....	275	10.8	4	6.6	247	7.8	271	5.5	522	9.2	275	5.5	236	3.8
Total.....	1,162	45.8	26	42.7	1,299	41.2	1,602	32.4	2,461	43.3	1,628	32.5	2,166	35.2
Barley.....	532	20.0	15	24.6	786	24.9	1,822	36.8	1,318	23.1	1,837	36.7	1,682	27.3
Oats.....	127	5.0	11	18.0	52	1.6	270	5.4	179	3.1	281	5.6	418	6.8
Corn.....	719	28.3	9	14.7	1,019	32.3	1,255	25.4	1,738	30.5	1,264	25.2	1,587	30.7
Total 5 chief cereals.....	2,540	100.0	61	100.0	3,156	100.0	4,949	100.0	5,696	100.0	5,010	100.0	6,153	100.0

Acreage 1902-1911 (4).

Acreage in 1920, furnished by Ministry of Agriculture at Bucharest.

Acreage in 1925 (35, pp. 19-15) for Rumania.

This great increase in the area seeded by the peasants is accounted for by the fact that expropriation in Bessarabia was more drastic

and in other ways different from expropriation in the old Kingdom. The peasants of the old Kingdom were crowded into the foothills of the Carpathian and Transylvanian Mountains, more than a day's journey by rail from the thinly populated surplus districts in which the large estates were situated. In Bessarabia the large estates were situated upon the plateaus and were surrounded by the peasants' meager holdings upon the hillsides. To occupy the expropriated lands, it was necessary for the peasants of Bessarabia to close in only a few miles, not farther than they were in the habit of going every day to their work. They took possession almost immediately of their new holdings so that, in 1920, Bessarabia was able to seed 88 per cent of the pre-war (1902-1911) cereal acreage.

The peasants of Bessarabia, before the World War, planted a smaller proportion of their land to winter wheat, rye, and oats and a greater proportion to spring wheat, corn, and barley than did the large estates. In 1920 the peasants increased their acreages of all five cereals, the greatest increases being in the acreages of barley and oats, in sharp contrast to the large estates which planted almost no land, leaving most of their fields fallow.

By 1925, the area under the five chief cereals on all holdings was 457,000 acres greater than during 1902-1911. Rye alone of all the cereals was seeded in less amount than under pre-war conditions. The total acreage of wheat was about average, winter wheat being 319,000 acres more and spring wheat about 228,000 acres less than during 1902-1911, the drought and consequent crop failures in 1922 and 1924 having discouraged the planting of spring wheat in Bessarabia.

Expropriation is complete in Bessarabia, where it is probable that the acreage of corn, barley, and oats will continue higher than before the World War and the acreage of bread cereals lower on account of the reduced acreage of rye. It is improbable that wheat acreage will increase materially above the 1925 level, and the high ratio of winter to spring wheat will tend to decrease to more nearly the pre-war average relationship.

BUKOVINA

Austrian records of pre-war conditions contain no separate information relative to the areas seeded on large estates as compared with conditions of peasant farming. The land reform in Bukovina involved only 129,000 acres of arable lands and meadowlands.

The total acreage under the five chief cereals since 1921 has not equaled the average 1909-1913 area in any year up to 1925.

Bukovina has been cut off from former sources of wheat supply and since the World War appears to have increased the area under this cereal more nearly to meet local demands, though decrease in rye acreage has brought the area under bread cereals to about the pre-war level. Corn has remained about the same as before the war, whereas the acreage of oats has slightly increased and barley has fallen off as indicated in Table 13.

TABLE 13.—Cereals: Acreage seeded in Bukovina; average, 1909-1913, and annual, 1921-1925

Cereal	Average 1909-1913		1921	1922	1923	1924	1925	
	1,000 acres	Per cent					1,000 acres	Per cent
Bread cereals:								
Wheat.....	48	10.1	38	55	49	74	61	13.2
Rye.....	67	14.2	41	62	50	61	50	10.8
Total.....	115	24.3	79	117	99	135	111	24.0
Barley.....	83	17.5	81	80	94	76	69	15.9
Oats.....	118	24.9	88	88	119	113	122	26.5
Corn.....	158	33.3	150	130	143	144	159	34.5
Total, 5 chief cereals.....	474	100.0	398	415	455	468	461	100.0

Acreage for 1909-1913 (27, 1921).
 Acreage for 1921-1925 (31).

These changes in the seeding of the five chief cereals in Bukovina are relatively small and have been without appreciable effect upon the Rumanian agricultural situation.

There are only 7,000 acres of expropriated lands to be readjusted in Bukovina, so it is probable that the seeding data in Table 13 indicate the future trend of agriculture in this district and that little further change may be expected.

TRANSYLVANIA

There is no information relative to the manner in which the large estates of the various departments now comprising Transylvania seeded their lands before the World War. Comparing the estimates of total pre-war area seeded, with those of 1925, shows a decrease of 783,000 acres under the five chief cereals. The acreage of barley is greater than in the pre-war period. There also appears to be a stronger tendency to maintain wheat acreage at former levels than to keep corn areas up to the pre-war average.

Before the World War the administrative District of Transylvania as constituted to-day seeded 2,417,000 acres of wheat, producing annually 32,650,000 bushels (net), of which 5,673,000 bushels were shipped to other parts of the Austro-Hungarian Empire as it then existed, leaving 26,977,000 bushels as the yearly domestic disappearance. In 1925 the area under wheat reached 2,240,000 acres, and net production under unusually favorable conditions reached 33,000,000 bushels, so that, in 1925, Transylvania appears to have regained her pre-war status of having an exportable surplus of wheat to ship to central Europe.

During 1920 and 1921 the population of Transylvania suffered from a shortage of wheat and was unable to get relief either from the old Kingdom or from the plains of Hungary. This probably accounts for the increased ratio of seeding wheat that is indicated in a comparison of the 1925 data in Table 14 with the 1909-1913 average. In Transylvania corn is employed to a greater extent as feed for livestock than was the practice in the old Kingdom, and there has been a tendency to allow this cereal to go out of cultivation more rapidly than the high-priced human food. Other cereals do not seem to have been much affected by postwar conditions.

TABLE 14.—*Cereals: Acreage seeded in Transylvania; average, 1909-1913, and annual, 1921-1925*

Cereal	Average 1909-1913		1921	1922	1923	1924	1925	
	1,000 acres	Per cent					1,000 acres	Per cent
Bread cereals:								
Wheat.....	2,417	38.6	1,917	2,085	1,670	2,214	2,240	40.9
Rye.....	308	4.9	342	226	163	215	223	4.1
Total.....	2,725	43.5	2,259	2,311	1,833	2,429	2,463	45.0
Barley.....	317	5.1	416	347	372	376	365	6.7
Oats.....	763	12.2	724	576	648	678	680	12.4
Corn.....	2,449	39.2	1,911	1,783	1,808	1,827	1,903	35.9
Total, 5 chief cereals.....	6,254	100.0	5,310	5,017	4,661	5,310	5,471	100.0

Acreage, 1909-1913, calculated from (16); acreage, 1921-1925 (31).

In each of the four administrative districts of Greater Rumania there has been a decrease in bread-cereal acreage, comparing the 1925 acreage with the pre-war estimated average given in Table 15. In the old Kingdom and in Transylvania there was a falling off in wheat which was somewhat offset by increased wheat acreages in Bessarabia and Bukovina. The total net result is a decrease below pre-war average of 1,071,000 acres in wheat for the year 1925. There was a small though insignificant increase in 1926 over 1925 of 67,000 acres of wheat and 62,000 acres of rye.

There were 9,713,000 acres under corn in 1925, as compared with 9,742,000 acres before the World War. In 1926, corn acreage was 10,031,000 acres.

Up to 1925 the marked shifts in acreage of cereals in Greater Rumania were from bread cereals to barley and oats; an increase of 709,000 acres in the case of the former cereal and 722,000 in the case of the latter.

In 1926 the acreages of barley and oats decreased perceptibly, resulting in a decrease in total cereal area of 198,000 acres below that of 1925. This was accompanied by an increase of 129,000 acres in bread cereals and 318,000 acres in corn.

TABLE 15.—*Cereals, potatoes, and sugar beets: Acreage seeded in Rumania; average, 1909-1913, and annual, 1925 and 1926*

Crop and year	Old Kingdom ¹	Transylvania	Bessarabia	Bukovina	Rumania	
					1,000 acres	Per cent
Wheat:						
Average, 1909-1913.....	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	Per cent
1925.....	4,961	2,417	1,801	48	9,227	35.6
1926.....	3,925	2,240	1,930	61	8,156	31.8
Rye:						
Average, 1909-1913.....	336	308	516	67	1,227	4.8
1925.....	159	223	236	50	668	2.6
1926.....					730	2.8
Total bread cereals—						
Average, 1909-1913.....	5,297	2,725	2,317	115	10,454	40.4
1925.....	4,084	2,463	2,166	111	8,824	34.4
1926.....					8,953	35.1

¹ Includes Durostor and Caliacra, 1909-1912, calculated from data in (9).

TABLE 15.—Cereals, potatoes, and sugar beets: Acreage seeded in Rumania; average, 1909-1913, and annual, 1925 and 1926—Continued

Crop and year	Old Kingdom	Transylvania	Bessarabia	Bukovina	Rumania	
	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	Per cent
Barley:						
Average, 1909-1913	1,441	317	1,661	83	3,502	13.5
1925	2,095	365	1,682	69	4,211	16.4
1926					3,829	15.0
Oats:						
Average, 1909-1913	1,147	763	178	118	2,206	8.5
1925	1,708	680	418	122	2,928	11.4
1926					2,665	10.5
Corn:						
Average, 1909-1913	5,243	2,449	1,892	158	9,742	37.6
1925	5,704	1,963	1,887	159	9,713	37.6
1926					10,031	39.4
Total, 5 chief cereals—						
Average, 1909-1913	13,128	6,254	6,048	474	25,904	100.0
1925	13,591	5,471	6,153	461	25,676	100.0
1926					25,478	100.0
Potatoes:						
Average, 1909-1913	126	191	42	91	350	
1925	62	191	88	119	460	
1926					442	
Sugar beets:						
Average, 1909-1913	32	31	4	6	73	
1925	76	26	35	22	159	

Acreage in 1909-1913, for old Kingdom of Rumania (31, 1914); for Transylvania, calculated from (15); for Bessarabia (39 Ann., 8-10); for Bukovina, cereals and potatoes (27); sugar beets (1). Acreage in 1925 (53) for Rumania. Acreage in 1926, from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.

1 In addition 56,000 acres were planted in cornfields in old Rumania.

2 In addition, there were 62,000 acres of potatoes planted in cornfields in the old kingdom, 78,000 in Transylvania, 18,000 in Bessarabia, 3,000 in Bukovina, and a total of 161,000 in Rumania.

INFLUENCE OF THE LAND REFORM ON CROP YIELDS

THE OLD KINGDOM OF RUMANIA

From the time they came into possession of their estates in 1864 until the last few years before the World War the operators of large estates were almost entirely dependent upon the peasants, not only for manual labor but for draft animals, carts, plows, and other implements with which to put their crops into the ground and to harvest and haul their products to market. As time passed the situation changed somewhat, and the large estates accumulated modern farm equipment. But this was never sufficient for their needs and they still placed great dependence upon the peasants, particularly at harvest time. The principal differences between the two systems of farming at that time were that the crops on the large estates were put in more nearly on time, were planted with better seed in better-prepared seed beds, and were harvested at more nearly the proper stage of ripening than was the case with the crops of the small peasant farmer.

As indicated in Table 16, wheat on small holdings averaged a yield of 2.4 bushels per acre below that obtained on large estates. Rye yields averaged 4 bushels lower, barley 3.4 bushels, oats 5.9 bushels, corn 4.2 bushels, potatoes 38 bushels, and sugar beets 1 ton lower on small holdings than on the large estates.

TABLE 16.—*Cereals, potatoes, and sugar beets: Yields per acre on the large and small holdings of the old Kingdom of Rumania, 1909–1913 (31, 1914)*

Year	Yield per acre of—							
	Wheat		Rye		Barley		Oats	
	Large holdings	Small holdings	Large holdings	Small holdings	Large holdings	Small holdings	Large holdings	Small holdings
	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>
1909.....	14.9	12.1	12.1	8.6	16.9	13.9	25.7	19.5
1910.....	24.8	21.0	22.9	17.6	24.4	20.7	29.6	25.5
1911.....	20.2	19.0	18.3	15.0	22.7	20.3	30.5	24.4
1912.....	18.5	16.2	16.5	13.2	20.7	16.2	26.7	20.0
1913.....	22.1	19.6	19.7	16.3	22.5	18.7	31.2	24.9
Average ¹	20.1	17.7	18.2	14.2	21.4	18.0	28.8	22.9

	Yield per acre, of—					
	Corn		Potatoes		Sugar beets	
	Large holdings	Small holdings	Large holdings	Small holdings	Large holdings	Small holdings
	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Short tons</i>	<i>Short tons</i>
1909.....	16.2	12.9	183.6	99.6	8.4	7.6
1910.....	25.9	20.4	184.6	138.8	11.2	9.1
1911.....	25.8	20.8	162.6	135.0	9.7	7.2
1912.....	24.4	19.6	141.4	120.9	8.8	9.5
1913.....	24.6	21.2	117.8	95.5	9.9	9.3
Average ¹	23.2	19.0	156.6	118.6	9.6	8.6

¹ Weighted average.

BESSARABIA

Similar conditions were prevalent in Bessarabia in regard to wheat, rye, oats, and corn, but barley and potatoes averaged higher yields per acre on peasant fields during 1909–1913 than on the large estates. As indicated in Table 17 there was a greater difference in yields of winter wheat in Bessarabia than was the case with spring wheat. The peasants and estate owners prepared the land for small spring grains in about the same way, but in the preparation of land for winter wheat there was a great difference in the method of procedure. The estate owner usually held his fields intended for wheat as summer fallow with frequent cultivation until time to seed in August. The peasants on the other hand followed the old Rumanian custom of sowing wheat in the cornfield and hoeing in the seed.

It is evident that one of the immediate effects of the land reforms has been a decrease in production because of the lower yields per acre obtained by peasant methods than were realized under the system of large-estate farming.

TABLE 17.—*Cereals and potatoes: Average yields per acre on large estates and peasant holdings in Bessarabia, 1909–1913 (59, Ann. 10, p. 69)*

Crop	Yields per acre, on—		Crop	Yields per acre, on—	
	Large estates	Peasant holdings		Large estates	Peasant holdings
	<i>Bushels</i>	<i>Bushels</i>		<i>Bushels</i>	<i>Bushels</i>
Wheat:			Oats.....	35.5	28.0
Winter.....	16.7	12.7	Corn.....	22.0	17.7
Spring.....	14.9	11.1	Potatoes.....	87.6	100.3
Rye.....	18.4	14.6			
Barley.....	11.4	18.4			

Agriculture in Bukovina under Austrian tutelage, and in Transylvania under Hungarian rule, although of a lower order than in central Europe was appreciably higher than that in the old Kingdom of Rumania and in Bessarabia. Yields per acre in these two northern administrative districts in 1925 were in some instances higher than before the World War and for all five cereals were more nearly representative of pre-war conditions than was the case in the old Kingdom and in Bessarabia.

Considering Rumania as a whole, the mean yields per acre in 1926 for oats, barley, and corn were somewhat above the 1909-1913 average, whereas the yields of wheat and rye were below that average. (Table 18.)

All things considered, it is probable that the land reform will have less effect upon areas seeded and yields per acre in the two northern administrative districts than in the south. In the south, the reduction in acreage of winter bread grains, the increased area of spring grains, as well as the generally lower yields per acre will continue to depress average annual production considerably below the normal levels indicated by the 1909-1913 averages.

Shifts in acreage and lower yields per acre are not the only factors that have tended to reduce the postwar exportable surpluses of Rumania. Two other factors are operating to reduce the quantities of cereals that Rumania may in the future ship to western Europe. These two factors are increases in human population with increased per capita consumption and increased use of cereal products for feeding livestock.

TABLE 18.—Cereals, potatoes, and sugar beets: Crop yields per acre in Rumania; average, 1909-1913, and annual, 1925-26

Crop and year	Old Kingdom ¹	Transylvania	Bessarabia	Bukovina	Rumania
Wheat:	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>
Average, 1909-1913.....	18.9	16.5	12.0	19.1	16.9
1925.....	14.2	17.7	4.3	17.4	12.8
1926.....					13.5
Rye:					
Average, 1909-1913.....	15.1	19.9	14.8	17.9	16.3
1925.....	12.3	17.0	5.6	18.8	12.0
1926.....					15.4
Total bread cereals—					
Average, 1909-1913.....	18.7	16.9	12.6	18.4	16.8
1925.....	14.1	17.6	4.4	18.0	12.8
1926.....					13.6
Barley:					
Average, 1909-1913.....	18.8	23.2	17.2	26.3	18.6
1925.....	14.8	21.5	4.1	15.2	11.1
1926.....					19.1
Oats:					
Average, 1909-1913.....	26.2	30.4	31.2	42.2	28.9
1925.....	18.6	20.6	3.9	29.7	17.4
1926.....					30.0
Corn:					
Average, 1909-1913.....	19.6	22.9	17.9	17.7	20.1
1925.....	17.8	21.1	8.8	26.9	16.9
1926.....					20.3
Total 5 chief cereals—					
Average, 1909-1913.....	19.7	21.2	16.1	25.5	19.3
1925.....	16.3	19.5	5.7	23.8	14.6
1926.....					18.8
Potatoes:					
Average, 1909-1913.....	130.1	103.4	102.4	156.6	119.1
1925.....	131.6	123.5	40.5	202.0	129.0
Sugar beets:	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>
Average, 1909-1913.....	8.3	11.3	3.5	6.2	9.8
1925.....	6.8	7.6	6.5	6.9	6.8

Calculated from Tables 19 and 24.

¹ Includes 1909-1912 average for Durostor and Caliacra.

As indicated in Table 19, the production of wheat and rye per 100 inhabitants in Rumania in 1926, although showing some improvement over that in 1925, was still 36.7 per cent below the 1909-1913 average, as contrasted with corn, which was about 5.1 per cent below; on the other hand, the production of barley was 2.3 per cent and that of oats 14.2 per cent higher than the pre-war normal.

TABLE 19.—Cereals, potatoes, and sugar beets: Production and acreage per 100 inhabitants¹ in Rumania; average, 1909-1913, and annual, 1925-26

Crop	Average, 1909-1913							
	Old Kingdom ²		Transylvania		Bessarabia		Bukovina	
	Acres	Bushels	Acres	Bushels	Acres	Bushels	Acres	Bushels
Wheat.....	67.2	1,270.9	46.1	758.8	72.3	864.7	6.0	113.8
Rye.....	4.6	68.6	5.9	116.9	20.7	300.2	8.3	149.3
Total.....	71.8	1,339.5	52.0	875.7	93.0	1,170.9	14.3	263.1
Barley.....	19.5	367.6	6.0	139.8	66.7	1,149.5	10.3	271.7
Oats.....	15.5	406.7	14.5	442.4	7.2	223.0	14.7	614.8
Corn.....	71.0	1,393.1	46.7	1,069.1	76.0	1,358.4	19.6	347.7
Total, 5 cereals.....	177.8	3,506.9	119.2	2,627.0	242.9	3,901.8	58.9	1,501.3
Potatoes.....	.4	45.8	3.6	376.2	1.7	172.7	11.3	1,770.3
Sugar beets.....	0.4	4.0	0.6	6.6	0.2	0.6	0.7	6.8

Crop	Rumania					
	Average, 1909-1913		1925		1926	
	Acres	Bushels	Acres	Bushels	Acres	Bushels
Wheat.....	57.9	980.1	47.4	608.4	47.1	635.2
Rye.....	7.7	125.8	3.9	46.4	4.2	64.4
Total.....	65.6	1,105.9	51.3	654.8	51.3	699.6
Barley.....	22.0	410.0	24.4	271.9	21.9	419.5
Oats.....	13.9	400.5	17.0	296.2	15.3	457.4
Corn.....	61.2	1,228.0	56.4	951.1	57.5	1,165.0
Total, 5 cereals.....	162.7	3,144.4	149.1	2,174.0	146.0	2,741.5
Potatoes.....	2.2	261.7	2.7	344.7	.....	.....
Sugar beets.....	0.5	4.5	0.9	6.3	.....	8.0

Calculated from Tables 15 and 20.

¹ For populations, see Table 21.

² Includes 4-year average, 1909-1912, for Durostor and Callacra.

COOPERATION¹⁵

Agricultural co-operation in Rumania started with the foundation of agricultural banks. The law of 1903 established a Central Office of Popular Banks which, two years later, absorbed the agricultural co-operative societies as well. This was a State institution for the purpose of controlling and financing the co-operative movement * * *. Its co-operative functions were allotted to three distinct sections, the Union of Popular Banks, the Union of Producers' and Consumers' Co-operative Societies, and the Union of Tenant and Agricultural Co-operative Associations. These institutions apply the principle of State collaboration in the co-operative movement. They possess independent capital

¹⁵ From Co-operative System In Agriculture, by L. Mladenatz, departmental manager, Union of Co-operative Societies, Rumania (24, p. 87).

and a legal identity. In 1921 and 1923 they were granted legal authority over co-operative societies in the new territories acquired by Rumania, but, except for Russian societies in Bessarabia, it was only those societies formed by Roumanian members which took advantage of this privilege. In the new provinces, therefore, there still exist independent organisations formed by minority races. This minority movement is well organised, though its numerical strength is less than that of the Rumanian movement * * *. The central organisation now controls 1,400,000 members, while the minority groups only possess 300,000 members.

The credit-cooperative associations are the most important element. At the end of 1925 there were 4,207 banks with a membership of 886,745. There was a paid-up capital of 745,400,000 lei,¹⁶ or \$3,602,000, and a turnover of 6,930,000,000 lei, or \$33,486,000.

The tenant-cooperative system was strongly developed before the World War but has dwindled since the land reform. In 1926 there were only 129 societies, with 17,160 members working 135,275 acres.

The land reform also affected the land-purchasing cooperatives, which were originally introduced in 1905. In 1926 there were 312 such societies, with a membership of 29,075.

There has been a rapid growth of a rural system composed of so-called "cooperative societies for consumption, purchasing and communal marketing." Their function is to meet household requirements, to buy implements, seeds, and other farming necessities, to foster production by the communal use of large agricultural machinery, and to market the produce either immediately in bulk or after it is processed. There were 2,646 such societies in 1925. Of these, the 1,829 which reported in that year had 268,000 members, a paid-up capital and reserves of 150,000,000 lei,¹⁷ or \$724,800, and an annual turnover of 1,646,000,000 lei, or \$7,953,472.

The local cooperatives are organized into district unions or *centrella* and these again into a national union, with headquarters at Bucharest. The Union of Producers and Consumers Cooperative Societies aims at controlling and financing the commercial operations of the branch societies. It employs its own capital of 200,000,000 lei,¹⁷ or \$966,400, and the credits granted by the National Bank. It provided the branches with goods to the value of 110,000,000 lei, or \$531,520, in 1925, and sold for these societies goods to the value of 552,000,000 lei, or \$2,667,300.

Under the present system of peasant land ownership the prospect of future progress is particularly bright, for cooperative buying and selling is the only way to confer on small and medium landholders the advantages of large-scale operation.

HANDICAPS TO AGRICULTURAL PRODUCTION

The greater part of the lowlands of the old Kingdom of Rumania and Bessarabia possess soils of exceptional fertility, but these regions were formerly semiarid steppes, and until the last century were utilized chiefly as pasture lands. To-day crops in these regions are subject to the precarious conditions of extremes of precipitations and temperature. Spring and fall are of short duration. Summers are hot, droughts are frequent, and short, torrential rainstorms are followed by rapid evaporation. Under these conditions successful agriculture depends upon the prompt application of moisture-con-

¹⁶ The average value of the leu in 1925 was equivalent to 0.4532 cent.

¹⁷ See footnote 16.

servation methods. The large estates were fairly successful in this direction, but these peasants are ignorant of any but the simplest and crudest methods of plowing and sowing. Very few can read or write, and most of them are indolent. Nor can these handicaps be easily overcome. These peasants can not be taught through bulletins. A change under present conditions could be effected only through the organization of an enormous system of traveling instructors similar to the county agents of the United States and the establishment of demonstration fields among the peasant holdings. Education is being directed toward the training of agricultural leaders in secondary and higher schools, but it will be many years before practical results are attained.

In the hilly country and the mountainous regions the strip system of agriculture practically inhibits the application of modern methods of farming. It is at present almost impossible to remedy this situation.

FARM METHODS

Fall plowing in preparation for a spring crop is almost unknown among the Rumanian peasants and is but little used on estate lands. On the other hand, land is plowed in the fall for winter wheat which is seeded as late as Christmas time. The estates looked upon cultivated fallow as a new progressive step just before the World War, but the peasants seldom kept their fallow lands in tilth. Almost all plowing by these peasants is haphazard with no reference to the conservation of moisture. It usually requires four oxen to plow the soil properly, and few of the peasants have even two oxen. Therefore two or more peasants must join forces to prepare their land, and this delays or hastens spring work too much. Very little plowing or seeding is done in a timely manner.

Plowing in general is too shallow. Usually land for corn is plowed 4.2 to 6.3 inches; and for wheat, rye, and barley even shallower—3.8 to 4.2 inches. Thorn harrows are still in common use. These consist of branches of thorn brush bound together, to which a horse is hitched and on which the peasant stands as it is dragged about the field. Harrows with wooden frames through which spikes have been driven seem to the peasant a very modern implement, but iron-frame or spring-tooth harrows are seldom seen.

Cultivators are seldom used, except occasionally in vineyards. Most cultivation is done with a heavy hoe which has a semicircular blade about 14 inches wide by 8 inches deep, sharp pointed at either side. The depth of hoeing usually exceeds that of the original plowing.

FERTILIZERS

From a rational point of view it might be said that the Rumanian peasant never fertilizes his fields. As few have stalls for cattle, manure lies scattered about the peasant yard. Usually this is taken up, mixed with straw, and molded in a plaque about the size of a pie. These plaques are plastered onto the side of the house to dry. When thoroughly dried they are used for fuel. Horse manure mixed with mud from the roadway is employed to plaster the walls both inside and outside the house.

Peasants are not allowed to let manure accumulate in piles in the village. When the village policeman considers a pile too large he

orders it removed, usually to some rutty place in the road where it temporarily aids traffic. To cart manure into a field to increase production is an almost unknown practice.

COMMUNICATIONS

There were 50,193 miles of wagon roads in Greater Rumania in 1924, or 0.4 mile per square mile. There was 0.5 mile of road per square mile of territory in the old Kingdom as compared with 0.4 mile in Transylvania, 0.2 mile in Bessarabia, and 0.3 mile in Bukovina.

The transportation system of the old Kingdom of Rumania has been constructed with the aim in view of transporting grain from all parts of the country to the Danube River for shipment to the export points, Braila, Galati, and Sulina. There are, including these three export points, 34 ports on the Danube, of which 12 are connected by rail with the interior of the country. At the end of 1925 there were 2,737 miles of railways in the old Kingdom, as compared with 3,483 miles in Transylvania, 750 miles in Bessarabia, and 457 miles in Bukovina.

The railroads of Transylvania were part of the old Hungarian system and center on Budapest, having little economic relationship to the old Kingdom of Rumania. The same is true, though to a less extent, of the Bessarabian system.

In all there are 7,427 miles of railway in Greater Rumania, or about 1 mile to each 15.3 square miles of territory as compared with 1 mile to each 24.4 square miles in Bulgaria, and 1 mile to each 8.3 square miles in France.

Rumania possesses 1,765 miles of navigable waterways, of which the Danube River and its tributaries represent 913 miles. The Dniester River, on the eastern frontier, affords cheap transport from Hotin for 460 miles south to Cetatea-Alba, on a bay of the Black Sea.

AGRICULTURAL TRADE

The administrative district of Transylvania lies west and north of the Carpathian and Transylvania Mountains and it is economically associated with central Europe. This region was part of the Vienna-Budapest commercial system before the World War, and its agricultural products, both raw and processed, were routed toward Austria, the territories now comprising Czechoslovakia, and toward Germany. The great flour mills of this region often imported wheat from the old Kingdom of Rumania, but seldom if ever did any of the farm products cross the mountains toward the south or east. On the other hand the trade of the old Kingdom of Rumania and Bessarabia is associated with western Europe by way of the Black Sea and the Mediterranean.

Agencies of commercial firms in Vienna, Prague, and Budapest buy up the superfluous farm products of Transylvania according to the system that was in vogue in the former Kingdom of Hungary before the World War. Small buyers in local market towns buy direct from peasants and transport their purchases usually by ox team to some market city situated on a railroad. Here the products are sold to an agent of some large firm in Hungary, Austria, or other country, who purchases only such quality of product as his clients require. These purchases are then exported. Other products are dumped on the domestic market for local consumption.

In the old Kingdom of Rumania and in Bessarabia, the system followed is similar to that in use in Transylvania except that there are established export houses with connections in western Europe who ship grain on sample. There are also Belgian and other nationals, who have manufacturing or other interests in Rumania and who buy up agricultural products with the earnings of enterprises. They export these products to their native countries as a surer means of transferring wealth than by cash transactions through banks. Milling and other western European interests also maintain agencies in Rumania to purchase products of the quality they require. Trade in the old Kingdom is typified by the way in which the wheat crop is moved.

MOVING THE WHEAT CROP

Before the World War the old Kingdom of Rumania did not have enough freight cars¹⁸ to move the cereal crop the comparatively short distances between points of production and shipping points on the Danube. A number of cars were hired each fall from Germany. The present situation is acutely worse than that during pre-war days, as the rolling stock of the Kingdom, never sufficient, is inadequate to the task of moving the crop promptly to the Danube ports before the river freezes.

Before the war the bulk of the export wheat in the old Kingdom and in Bessarabia was produced upon large estates in lots of at least one and often of many carloads. This grain was of uniform quality, so that a buyer usually associated with some large bank, could arrange with one or more estate owners for the shipment of grain at a certain time. A train of empties would be placed at certain sidings, to which the great landlords would haul their grain in sacks. These sacks, of grain, of uniform weight, were then loaded into box cars or on flats. It was possible to transport grain within 24 hours from any railway point in the western part of the old Kingdom of Rumania to shipping points on the Danube. Here the grain was carried by hand up the gangplank and dumped into the hold of a river barge or seagoing vessel of small tonnage. Such cargoes were of fairly uniform quality and could be sold on the western European market on the basis of a sample furnished by the selling agent.

The present situation is entirely different. No large trainload or shipload lots of uniformly cleaned grain are now available. Each peasant brings his small surplus, say 2, 5, or 10 bushels, to the local market or to the nearest railway station. This grain is cleaned inadequately and always contains a high percentage of other grains and weed seeds. A small buyer meets the peasant and dickers for his grain. The bargaining consumes much time. As soon as the small buyer has assembled a carload (22,046 pounds) he takes it to the railway yards, where it is stacked in sacks and given an official number. Here it is officially or unofficially sampled. The buyer can usually finance only a single carload, which he consigns to some port. He then negotiates an advance from some bank on the basis of the bill of lading and the sample. Upon receipt of money from the bank he goes out and buys another carload. There are no country elevators.

¹⁸ Rumanian freight cars are small trucks with a capacity of 10 metric tons, or 22,046 pounds, each.

It is impossible for a carload of grain which has been purchased in small lots from many peasants to approach uniformity, so that Rumanian wheat, which before the war enjoyed a certain reputation, has lost much of its standing since the land reform came into operation. Western European buyers are naturally reluctant to handle Rumanian grain except as purchased through their own resident agencies. These agencies finance small local buyers through the sale of foreign drafts for local currency. This often gluts the limited money market with foreign drafts, thus increasing the value of the leu to such an extent as to wipe out the margin of profit on grain transactions, which automatically stops the purchase of export grain.

Stabilization of the currency will relieve this situation; but the awkwardness of assembling many small lots of grain for which actual cash must be paid, as compared with the former system of arranging for large consignments from estate owners whose accounts at their bankers were credited with the equivalent money value without local transfers of cash, has greatly increased the cost of grain transactions in Rumania. The deterioration in the quality of export grain has aroused the Government, and plans for grain standardization are being discussed. It is improbable that much can be accomplished in this direction for many years. There are elevators at Galati and Braila, but they have such small capacities and such low-grade equipment as to be practically negligible as far as grading up the export grain is concerned.

STATUS OF FIELD CROPS AND LIVESTOCK

The livestock situation in Greater Rumania is somewhat obscured by recent droughts in Bessarabia and the economic situations in Transylvania, but as G. Jonescu-Sisesti, Rumanian Minister of Agriculture and Domains, has pointed out, the land reform is bound to be followed by increased livestock production.¹⁹

The destruction of farm animals in the old Kingdom of Rumania during the World War was so heavy that the postwar recovery has been remarkable. The number of horses in 1926 was 1,002,000, as compared with the pre-war number of 895,000. Other classes of livestock in similar comparison were as follows: Cattle 2,529,000 in 1926, as against 2,851,000 before the World War; sheep, 7,691,000, as against 6,073,000; and swine, 1,551,000, as against 1,045,000. These increases in livestock are typical of the increased influence of the peasant system of farming upon the agriculture of the old Kingdom.

The pastures and meadows available to the small peasant farmer are generally held in common by the whole village community. Each peasant is entitled to graze a certain number of animals in proportion to the total area of his privately owned holdings. If he keeps no livestock he loses his chance to realize a benefit from the village commons. Therefore, according to his means, each peasant keeps at his small farmyard in the village and on his share of the village pasture lands a horse or an ox, a cow, and a calf or two, two or three pigs, three or four sheep, and some chickens. He has more domestic animals per acre than has the owner of an estate. His wife and

¹⁹ The importance of the cultivation of plants for forage becomes clearer day by day; the peasants breed numbers of cattle, and one result of the agrarian reform will certainly be a restriction of cereal cultivation, a growth of industrial and forage cultivation, and a development of breeding (20, p. 2).

children care for this livestock (their labor costing him nothing), and he has proportionately more rough feed of greater variety per acre than has the estate owner.

The tendency is to overstock, to crowd pasture rights to the limit, and generally to keep a few more animals than the normal roughage will maintain. This leads to an increased proportion of peasant land under fodder cereals and forage crops and a proportionately decreased seeding of marketable cereals—wheat and sometimes barley—as compared with the planting system employed on large estates.

The tendency to overstock in Bessarabia was as marked as in the old Kingdom up to 1924, when a crop failure in several departments was followed by the wholesale marketing of cattle and hogs. Bessarabia had not yet recovered, in 1926, from this great reduction in livestock numbers.

Transylvania is a country naturally adapted to livestock production. The industry was organized on a commercial basis before the World War. Large numbers of lean swine and cattle in considerable numbers were shipped each year from the Banat and from Crisana to the feed lots near Budapest and in the Hungarian countries west of the Danube. This industry has been handicapped by export taxes, and the demand for feeders has not been so sharp as in the pre-war days because of the slow recovery of the Vienna market. For these reasons the land reform has not been followed by as marked a trend toward increased livestock production in Transylvania as in the old Kingdom and in Bessarabia.

In the country as a whole, cereal production has tended to regain its pre-war status at a more rapid rate than has livestock. In 1926 the number of horses was 98.4 per cent of the pre-war average, the number of cattle 86.4 per cent, the number of sheep 122 per cent, and the number of swine 97.6 per cent of the pre-war average. Bread cereals in 1926 were 85.6 per cent of the pre-war average; whereas corn, oats, and barley were all above the 1909-1913 average. The fact that fodder cereals have increased and bread cereals have decreased indicates that a further expansion of the livestock industry may be awaited.

CEREAL PRODUCTION

The peasants and the owners of large estates exhibited marked differences in their preferences for certain cereals in their planting program. These preferences have undoubtedly had a marked influence upon the changes in areas seeded in greater Rumania to-day, as compared with the areas seeded in the 5-year period before the World War. But great as were these differences in preferences, shown in planting wheat or corn, the differences between the cultural methods employed by the peasants and those in use on the large estates were even greater.

METHODS OF AGRICULTURE

CORN

The most favored cereal in Greater Rumania is corn. Corn forms the basis of the diet of the peasants, who before the war ate wheat or rye bread only infrequently. In the old Kingdom of Rumania the early maturing varieties were favored because the large landowners

demanding that the fields be cleared as early as possible in preparation for the seeding of winter wheat. The varieties usually planted were as follows: Yellow flint, a native peasant corn that ripens in 150 days. It is the variety generally cultivated. Moldavian or Hangan, which ripens two weeks earlier than the yellow flint, but the yield is not usually so high. Pignoletto, a Hungarian variety. Szekely, a variety grown in the mountains and an early ripening corn. Cinquantino, a 50-day corn; an Italian variety with a small flinty kernel. It ripens early and ships well, and is in demand for export. The American varieties have not been developed to meet conditions in Rumania, and the varieties planted do not as a rule give as large returns of marketable grain as do the native varieties.

In the rotation of crops, corn usually alternates with wheat or some other cereal, but is often planted a second year on the same field. Planting takes place late in March or early in April. In Moldavia and Bessarabia the peasants sow corn broadcast upon the unplowed ground and then plow it under. When the corn thus sown is about 3 inches high and the weeds are still higher, the field is hoed with a semicircular hoe, the blade of which is about 14 inches broad by 6 or 8 inches deep. The weeds and superfluous corn are then hoed out, and the plants left standing are hilled. Sometimes the peasants hoe to a greater depth than they had originally plowed, thus severing the horizontal feeding roots and injuring the plants. This deep hoeing and hilling is repeated two or three times during the season. In harvesting, the stalks are cut off short with the hoe and thrown together in rough piles. These piles are often removed from the field too soon and consequently heat badly. Most of the peasants store corn in some sort of a crib; it is usually a basketlike affair made of woven saplings and thatched with straw.

The system of corn culture employed in other parts of Rumania is similar, with the exception that the corn is planted after the ground has been plowed. Even on large estates few corn planters are used. Holes are made with a pointed stick at regular distances from one another, and two or three kernels are dropped into each hole.

WHEAT

Several varieties of wheat have been developed in Rumania to meet the varied soil and climatic conditions of the country. Local varieties are generally favored, although in a few instances improved varieties of Russian, Hungarian, and German wheat have been sown. The winter varieties belong to *Triticum vulgare*; the spring varieties are durum. Two of the leading varieties of spring wheat are called, Armut, which is generally seeded in Dobruja, and Ghirka, which is sown to a greater or less extent in other parts of Rumania.

In rotation wheat usually follows corn, although sometimes it follows other grains. When corn is late in ripening, wheat often is broadcasted among the standing stalks, after which the field is hoed to turn the grain under. Otherwise fields are plowed shallow and are harrowed once before seeding. The peasants almost universally broadcast their wheat, but the large operators use the grain drill to a considerable extent. After seeding, the peasants harrow the fields once with a harrow of the brush type. On the large estates the grain is carefully cleaned and is sometimes sorted and treated for smut, but the peasants clean their grain only superficially.

Among the peasants it is a common practice to pasture the stock in the wheat fields during late fall and winter. In the spring they make little attempt to clean weeds from the fields. The grain is harvested in the full-ripe stage. The peasants, and even many of the large operators, cut grain with a sickle, but on some of the estates there are a few mowing machines, reapers, and binders. On the large estates the grain is bound into sheaves. The peasants sometimes follow this plan, but more often they merely rake the wheat together into cocks.

The peasants seldom use threshing machines of any description, the grain being trod out according to the ancient custom. A circular spot is carefully cleaned in a level place. In the center a tall stake is set up, and the ground is watered and trod until it is packed hard. When the threshing floor is dry and all the cracks are carefully filled, the sheaves are broken and scattered over it to a depth of a foot or more. Then horses, and sometimes cattle, are attached to the stake by a long halter and are driven around and around. When the halter has wound itself about the stake until the animals are drawn to the center of the floor, the animals are turned about and driven in the opposite direction. This process is repeated several times, while the straw is worked over with a fork. At the end, the straw is removed with a fork, and the animals are driven over the grain and chaff very slowly, to effect the final separation without forcing the kernels into the ground. Then the chaff and grain are swept to the center about the stake with a broom (a bundle of twigs bound together at one end). After this, more sheaves are spread about and the process is repeated.

The grain is separated from the chaff by being tossed into the air against the wind. A great deal of dirt becomes mixed with the wheat on the threshing floor, and this is cleaned out by means of a large sieve suspended from a tripod. At the end of the sifting process the screener gives the sieve a whirling motion which collects in the center a portion of the wild oats or other light grains which are always present. This collection is removed with the hands. The grain is then considered ready for marketing. Peasant grain must always be washed before it is milled.

The peasants have no satisfactory place to store their grain and, therefore, must market it as soon after threshing as possible. There is a little space under the thatched roof of their huts where a limited quantity may be kept, but usually they are forced to sell immediately, taking whatever price the buyers offer.

SMALL GRAIN OTHER THAN WHEAT

Other winter grain is seeded in the same manner as wheat. For spring seeding, the ground is prepared by shallow plowing in which the furrow is scarcely turned—the soil is merely shoved over the width of the crude plow bottom. The field is usually harrowed once; then the seed is broadcast and harrowed in. There is usually little or no selection or preparation of the seed. The varieties of rye and oats are locally developed strains. Brewing barley, was formerly imported from Germany and Austria-Hungary; the seed now used is of the same varieties as those formerly imported.

The general trend of peasant agriculture has been toward increased seeding of spring as opposed to winter grain; corn, barley, and oats

are preferred to wheat or rye. These shifts in trends of seeding have affected production in each of the various administrative districts now constituting Rumania somewhat differently, depending for the most part upon the relative importance that large estate farming had formerly assumed in the agriculture of each district. (Table 20.)

TABLE 20.—Cereals, potatoes, and sugar beets: Production in Rumania; average, 1909-1913, and annual, 1925 and 1926

[In thousands—i. e., 000 omitted]

Crop and year	Old Kingdom ¹	Transylvania	Bessarabia	Bukovina	Rumania
Wheat:	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>
Average, 1909-1913.....	93,794	39,828	21,533	916	155,071
1925.....	55,719	39,665	8,296	1,061	104,741
1926.....					110,882
Rye:					
Average, 1909-1913.....	5,066	6,134	7,625	1,202	20,027
1925.....	1,951	3,792	1,316	938	7,997
1926.....					11,243
Total, bread cereals:					
Average, 1909-1913.....	98,860	45,962	29,158	2,118	176,098
1925.....	57,670	43,457	9,612	1,999	112,738
1926.....					122,125
Barley:					
Average, 1909-1913.....	27,133	7,340	28,624	2,187	65,284
1925.....	30,971	7,850	6,967	1,049	46,817
1926.....					73,220
Oats:					
Average, 1909-1913.....	30,019	23,221	5,552	4,980	63,772
1925.....	31,686	14,035	1,639	3,626	50,966
1926.....					79,850
Corn:					
Average, 1909-1913.....	102,819	56,110	33,828	2,798	195,555
1925.....	101,502	41,372	16,582	4,283	163,739
1926.....					203,367
Total five chief cereals:					
Average, 1909-1913.....	258,831	132,633	97,162	12,083	500,709
1925.....	221,829	106,694	34,800	10,957	374,280
1926.....					478,562
Potatoes:					
Average, 1909-1913.....	‡ 3,382	19,743	4,300	14,248	‡ 41,673
1925.....	‡ 8,159	‡ 23,593	‡ 3,566	‡ 24,033	‡ 59,351
1926.....					
Sugar beets:	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>
Average, 1909-1913.....	298	349	14	55	716
1925.....	515	197	226	151	1,089
1926.....					1,391

Production in 1909-1913 in the old Kingdom of Rumania, (51, 1914); that in Transylvania, calculated (15); that in Bessarabia (59, Ann. 8, 10); that in Bukovina, cereals and potatoes (27) and sugar beets (1). Production in 1925 from (36, 1925); and production in 1926 (preliminary), from official sources of U. S. Department of Agriculture, Bureau of Agricultural Economics.

¹ Includes Durostor and Callacra, 1909-1913, calculated from data in (9).

‡ In addition to this 1,188,000 bushels of potatoes were grown with corn.

* In addition, 857,000 bushels of potatoes were grown with corn in the old Kingdom, 1,801,000 bushels in Transylvania, 109,000 bushels in Bessarabia, 160,000 bushels in Bukovina, and 3,027,000 bushels in total Rumania.

WHEAT

Before the war the old Kingdom of Rumania exported (net) 54,434,000 bushels of wheat as grain or flour, representing 72.1 per cent of the net production. This large percentage of the crop available for export was possible only because wheat formed such a small portion of the cereal diet of the masses of the population. The peasantry of the old Kingdom are essentially corn eaters, consuming as human food and feeding to livestock an average of 12.2 bushels per capita per year.* The peasant consumption of wheat is almost negligible; it amounts to about one-fourth of a bushel (0.26 bushel)

per capita per year. City dwellers on the other hand (except peasant-farmers' families and other classes of the very poor) consume practically no corn.

It is estimated that the consumption of wheat in cities averages about 15.5²⁰ bushels per capita per year. The low rate of rural consumption accounts for the low mean disappearance of wheat in the old Kingdom, which averaged 2.97 bushels per capita annually before the World War. As indicated in Table 21, the average per capita disappearance of wheat in Bessarabia and Bukovina, although somewhat greater than that in the old Kingdom, is relatively low because the cereal diet of the masses of the population, just as in the old Kingdom, consists chiefly of corn.

TABLE 21.—Wheat: Statistical balances of Rumania; average, 1909–1913, and annual, 1921–22 to 1926–27

District	Population ¹	Acreage	Seed	Production		Disappearance		Exportable surplus
				Gross	Net	Statistical	Per capita	
	Number	1,000 acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushels	1,000 bushels
Pre-war average 1909–1913:								
Old Kingdom of Rumania ²	7,100,124	4,578	³ 12,263	87,792	75,529	21,095	2.97	⁴ 54,434
Transylvania ⁵	5,248,522	2,417	⁶ 7,178	39,828	32,650	26,977	5.14	5,673
Bessarabia ⁷	2,480,200	1,801	⁸ 3,424	21,533	18,109	¹⁰ 8,366	3.36	9,743
Bukovina ¹¹	804,822	48	144	916	772	2,704	¹² 3.36	¹² –1,632
Durostor and Caliacra ¹⁴	280,270	385	¹⁵ 1,227	6,002	4,775	1,421	¹⁶ 5.07	3,354
Total	15,923,938	9,227	24,236	156,071	131,835	60,563	3.80	71,272
Post-war period: ¹⁷								
1921–22	16,255,000	8,149	¹⁸ 16,172	78,563	62,391	58,897	3.62	¹⁹ 3,494
1922–23	16,500,000	6,547	17,219	92,007	74,788	73,196	4.44	¹⁹ 1,563
1923–24	16,736,000	6,643	17,471	102,120	84,649	75,829	4.53	¹⁹ 8,820
1924–25	16,976,000	7,838	20,614	70,420	49,806	46,667	2.75	¹⁹ 3,109
1925–26	17,216,000	8,156	21,450	104,741	83,291	73,498	4.27	¹⁹ 9,793
Average 1921–22 to 1925–26	16,736,600	7,067	18,585	89,570	70,985	65,623	3.92	5,362
1926–27	17,456,000	8,223	21,626	110,882	69,256	-----	-----	-----

¹ Population, old Kingdom of Rumania, 1909–1913 (36, 1924, p. 10); Transylvania, 1910 (36, 1923, p. 15) Bessarabia, 1911, from Yurojai, (38, pt. 4, p. 63); Bukovina, 1910, (36, 1923, p. 15); Durostor and Caliacra, 1910, calculated from (8); and Rumania, 1921, 1922, and 1923, (36, 1924, p. 10); and that for 1924, 1925, and 1926, estimated.

² Acreage and production (31, 1914).

³ 2.68 bushels per acre. (Estimate by Rumania Department of Agriculture.)

⁴ Net exports of wheat, including wheat flour, for years beginning Aug. 1 (17, 1924–25).

⁵ Acreage and production calculated from (16, Bd. 17–21).

⁶ Estimate by Royal Hungarian Ministry of Agriculture, 2.97 bushels per acre. (22, p. 15).

⁷ (22, p. 13).

⁸ Acreage and production, (39, Ann. 10).

⁹ Seed for 1911, from Yurojai, (38, pt. 1, p. 63; pt. 2, p. 207).

¹⁰ Estimated from 1902–1911 average given in (4). Area, 1,939 acres; production, 24,266,000 bushels; food requirement, 9,366,000 bushels; exported by rail and water, 9,355,000 bushels.

¹¹ Acreage, production, and seed (37, 1921).

¹² Same as for Bessarabia.

¹³ Deficit.

¹⁴ Acreage and production for 1909–1912, calculated from (9).

¹⁵ 3.187 bushels per acre; same as Bulgaria.

¹⁶ Estimated to be the same as Bulgaria, 1912 boundaries.

¹⁷ Acreage and production 1921 to 1926 from official records of the U. S. Department of Agriculture, Bureau of Agricultural Economics.

¹⁸ 2.63 bushels per acre used for 1921 to 1926, as indicated in pre-war average.

¹⁹ Net exports of wheat, including wheat flour, for years beginning Aug. 1 (17, 1924–27).

The fact that the Bulgarian inhabitants of Durostor and Caliacra, as well as the German and Hungarian peoples in Transylvania, are

²⁰ This average includes all city dwellers of all classes. The better classes ate more wheat than this average.

wheat eaters raises the per capita disappearance to about 5.07 bushels in the former district and to about 5.14 bushels in the latter.

Thus, with an estimated net production of 131,835,000 bushels, the pre-war statistical disappearance of wheat in the territories that now are comprised within the boundaries of Rumania averaged approximately 60,563,000, or 3.8 bushels per capita. This left 71,272,000 bushels or 54.1 per cent of the net production as the estimated exportable surplus.

In 1921 the wheat acreage of Rumania was 66.6 per cent of the 1909-1913 average. Since then, until the time this report was written, the recovery of wheat acreage has been continuous each year. In 1924, following the abolishment of the Government monopoly for the exportation of wheat and rye, wheat acreage jumped 1,195,000 acres. In 1925 it rose an additional 318,000 acres. Preliminary reports for 1926 indicate a further slight advance of 67,000 acres. Nevertheless the Rumanian wheat acreage in 1926 was still 10.9 per cent below the pre-war normal. It is probable that this 8,223,000 acres planted in 1926 is the level about which future wheat acreage will fluctuate for some time.²¹ It is highly improbable under the system of peasant farming now established in Rumania that wheat acreage will return to the pre-war level maintained under the former influence of large-estate agriculture.

Between 1921 and 1926 wheat yields fluctuated from 9 to 15 bushels per acre, as compared with an average of 16.9 bushels per acre during the 5-year period ended 1913. Seasonal fluctuations, particularly the succession of droughts in Bessarabia, have affected this mean yield per acre. During a series of years the extremes of such fluctuations, caused by climatic influences, will average out; but there are other influences of a lasting nature that have affected the yield per acre in Greater Rumania.

The average yield of winter wheat in Bessarabia during 1909-1913 was 12.7 bushels, as compared with 16.7 bushels obtained under the conditions of large-estate farming, a difference of 4 bushels per acre. The peasant fields in old Rumania averaged 2.4 bushels of wheat less per acre than did those of the large estates. It is not only probable that the areas seeded to wheat will not return to the normal pre-war levels, but it is certain that present peasant methods of agriculture can not produce the results that were obtained on the large estates. A radical change in peasant farm methods would have to be effected to accomplish this end. Thus the reduction in the exportable surplus, which results from lower yields per acre, will continue for many years.

During the 5-year period ended 1925 the disappearance of wheat averaged 65,623,000 bushels, as contrasted with 60,563,000 bushels, estimated to be the average annual disappearance during 1909-1913. In the first instance the higher wheat disappearance is unquestionably associated with increased population, which averaged 16,736,600 during the postwar period under consideration, whereas official estimates place the pre-war population of the territories comprising Greater Rumania at 15,923,938. On the other hand the average per capita disappearance of wheat has increased from 3.8 bushels annually during 1909-1913 to 3.92 bushels during 1921-1925. Statistical disappearance during 1923-24 even reached

²¹ Preliminary figures for 1927 indicate a drop of 560,000 acres, to a total of 7,663,000 acres.

4.53 bushels per capita. This increased per capita disappearance indicates a higher standard of living, particularly in the rural districts. The Rumanian peasants, who formerly consumed only a fraction of a bushel per capita each year are eating more wheat, whereas city populations have been forced to restrict their wheat consumption. Thus, in February, 1925, Article IV of the New Regime of Wheat, Flour, and Bread states (29):

The mayoralties of urban communes are authorized to fix, if required, weekly days, during which the production of bread of any kind shall be prohibited, the populace during these days shall have to feed with maize flour.

The advanced standard of living adopted by the Rumanian peasants is an established fact. It will be impracticable to restrict their wheat consumption by official proclamation. Only a very slightly increased consumption per capita in rural districts will practically wipe out the exportable surplus now produced.

Taking into consideration decreased wheat areas, decreased yields per acre, increased population, and increased consumption per capita, which are all factors of greater or less permanence, it is improbable that Rumania can, for many years, regain the wheat-exporting status attained during 1909-1913.

FLOUR MILLING

There is a grist mill in practically every village. As is generally the case throughout central Europe, most of these mills are small, primitive wind or water mills. There may be several of these small mills in a single village. It is estimated that more than 7,000 such mills are operating in Rumania. In the Dobruja, the Banat, and a few other localities they are fitted to grind wheat and rye; but in Transylvania, in most of the old Kingdom, and in Bessarabia, the small village mill is equipped to grind corn only for peasant use, since in hundreds of localities there was formerly almost no demand for wheat flour except upon Easter and a few other church holidays.

Many large estates operate fair-sized mills driven by oil, steam, or gas engines, which grind a flour of fair quality for local consumption. These mills, although doing a large custom business, are only semicommercial in character.

Several hundred large commercial mills produce flour of various grades for domestic use and specialized grades for export. In the western part of the old Kingdom the wheat is soft and the flour is of mediocre quality, but Bucharest is a large milling center, and there are also several large mills in the western mountain and Danube districts. The hard wheats of Moldavia and Dobruja produce first-class flour. There are large mills at Galati, Braila, Constanta, and Sulina. These four mills produce a large part of the total export flour of the old Kingdom, of which 65,281 short tons were shipped to Turkey in 1913; 33,582 short tons to Egypt; and 11,990 short tons to Greece.

The flour produced from the hard Bessarabian wheat at the Kogan mills of Chisinau was equal to the best Hungarian grades. There were mills at each of the county seats in this administrative district which shipped large quantities of flour to the interior of Russia before the World War.

There were four milling centers in Bukovina, the most important being at Cernauti. These mills utilized wheat imported from the old Kingdom of Rumania and Bessarabia; they ground flour for domestic consumption and some for export to Galicia (now part of Poland).

There were 21 commercial mills in the Seven Mountain district in Transylvania in 1913. The largest of these mills, located at Alba-Julia, Odorhei, and Cluj, produced flour almost exclusively for domestic use. There were 39 mills in the Banat and Crisana in 1913, the largest centers being at Oradea-Mare, Arad, Deta, Timisoara, and Oravita. The product of these mills, which is of very high grade, was shipped to the interior of the Austro-Hungarian Empire and to central Europe, in competition with Budapest brands of flour.

The pre-war capacity of the mills, both large commercial and small village enterprises, in the present administrative district of Transylvania, was large enough to handle all of the wheat required for domestic consumption, estimated at 26,977,000 bushels. The old Kingdom of Rumania shipped annually 4,001,000 bushels of wheat across the Transylvanian Alps and the Carpathian Mountains to Austria-Hungary during 1909-1913. It is possible that some of this wheat may have found its way to the mills located in present Czechoslovakia but it is more than probable that most of the importation from Rumania was ground at the large commercial mills in the Seven Mountain district, the Banat, and Crisana and was forwarded to central Europe as flour rather than as grain.

Before the World War the large commercial mills in Greater Rumania and the hundreds²² of small village mills ground 60,563,000 bushels of wheat for domestic consumption. In addition, the mills of the old Kingdom ground an average of 3,264,000 bushels of wheat exported annually as flour, and the Transylvanian mills ground probably more than 5,673,000 bushels for export. It is not possible to estimate the wheat equivalents of the export flour produced in Bessarabia, Bukovina, of the territories acquired from Bulgaria.

The export of wheat flour as a private enterprise was prohibited from 1921 until November 24, 1923, at which time a decision was published permitting its export upon payment of a tax of 3,500 lei per metric ton (2,204.6 pounds), equivalent to \$15.88²³ per short ton.

But the millers were unable to take advantage of the provisions of the decision to the fullest extent because the exportation of wheat was also permitted with a relatively much lower tax (see p. 9). As the mills in Hungary were able to buy Rumanian wheat at a figure considerably less than that the Banat mills had previously paid, the latter had great difficulty in competing for their former markets in Czechoslovakia and Austria. The mills in Transylvania will have to contend with this situation unless they are protected by special legislation, because buyers from foreign countries who have agencies in Rumania will continually attempt to gain control of such classes of wheat as are required by the millers of their respective countries.

The mills of Rumania, in 1926, were equipped to grind probably the entire net production of the Kingdom amounting to nearly 90,000,000

²² There were 475 commercial mills and 7,000 small village mills operating in Greater Rumania in 1919.

²³ In November, 1923, the Rumanian lei was equal to 0.5 cent.

bushels, but will now have difficulty in assembling the amount of first-class wheat they require because of the activities of foreign buyers. The proximity of the surplus-producing districts to the Danube and the pre-war customs of the grain trade make it easier to export wheat as grain than in the form of flour. Most of the wheat flour exported in 1923 was shipped to Switzerland, Hungary, Austria, and Czechoslovakia. Smaller shipments were made to Turkey, Germany, and Greece.

It is probable that there will be some improvement in wheat acreage in Greater Rumania and, when seasonal fluctuations are favorable, that production will rise even higher than in 1926. On the other hand, the quality of the product is lower, and more grain than formerly is used in supplying the domestic requirements of flour. With an increasing population and an increasing per capita consumption of wheat bread, all probabilities point toward far lower exportable surpluses in Greater Rumania than were shipped by these districts to other regions before the World War.

As indicated in Table 22, Austria was the chief customer for Rumanian wheat and wheat flour in 1923, followed by Switzerland, Hungary, and France.

TABLE 22.—Wheat, including wheat flour: Net exports of the old Kingdom of Rumania, calendar years, average, 1909-1913, and of Greater Rumania, 1923 (35)

Country to which exported	Average 1909-1913	1923 ¹	Country to which exported	Average 1909-1913	1923 ¹
	<i>Bushels</i>	<i>Bushels</i>		<i>Bushels</i>	<i>Bushels</i>
Austria.....	4, 239, 965	713, 852	Italy.....	7, 800, 179	102
Hungary.....	22, 907, 743	515, 907	Poland.....		3, 662
Belgium.....	29, 001	107, 684	Portugal.....	10, 506	(²)
Bulgaria.....		15	Russia.....	4, 615	(²)
Czechoslovakia.....		75, 931	Serbia.....	12, 249	42
Egypt.....	881, 159	(²)	Spain.....	535, 223	5, 879
England.....	1, 450, 867	41, 289	Switzerland.....	2, 128	559, 832
France.....	3, 583, 569	284, 406	Turkey.....	2, 421, 340	30, 338
Germany.....	1, 194, 172	54, 732	Other countries.....	251, 398	34, 525
Gibraltar.....	1, 552, 021	33, 589			
Greece.....	156, 553	29, 083	Total.....	52, 192, 296	2, 499, 130
Holland.....	5, 217, 622	8, 336			

¹ 1923 is the only postwar year for which data are available by countries.

² Net imports.

³ If any, included in other countries.

⁴ Net imports for Yugoslavia.

RYE

Before the World War the old Kingdom of Rumania exported (net) 2,967,000 bushels of rye, whereas the total estimated exportable surplus of those territories that now form Greater Rumania approximated 8,379,000 bushels. Rye was not an important cereal crop except in Bukovina and, as compared with wheat, the domestic disappearance of rye was low, averaging before the war only about half a bushel per capita. (Table 23.)

TABLE 23.—*Rye: Statistical balances of Greater Rumania, average, 1909-1913, and annual, 1921-22 to 1926-27*

District	Acreage	Seed	Production		Disappearance		Exportable surplus
			Gross	Net	Statistical	Per capita	
	1,000 acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushels	1,000 bushels
Pre-war average, 1909-1913:							
Old Kingdom of Rumania ¹	316	² 831	4, 852	3, 821	854	0. 12	³ 2, 967
Transylvania ⁴	308	⁵ 936	6, 134	5, 198	4, 146	⁷ 7. 79	⁶ 1, 052
Bessarabia ⁸	516	⁹ 1, 108	7, 625	6, 517	¹⁰ 2, 416	¹¹ .97	¹⁰ 4, 101
Bukovina ¹²	67	¹³ 212	1, 202	990	781	¹⁴ .97	¹² 299
Durostor and Caliacra ¹⁵	20	¹⁶ 61	414	353	303	¹⁷ 1. 08	¹⁵ 30
Total Greater Rumania.....	1, 227	3, 148	20, 027	16, 879	8, 500	. 53	8, 379
Post war period: ¹⁸							
1921-22.....	795	¹⁹ 2, 043	9, 081	7, 038	5, 826	.36	¹⁸ 1, 212
1922-23.....	659	1, 694	9, 206	7, 512	7, 493	.45	¹⁹ 19
1923-24.....	668	1, 717	9, 607	7, 800	6, 676	.40	¹⁸ 1, 214
1924-25.....	671	1, 724	5, 963	4, 239	3, 812	.22	¹⁶ 427
1925-26.....	668	1, 717	7, 907	6, 280	6, 160	.36	¹⁸ 120
Average, 1921-22 to 1925-26.....	692	1, 779	8, 371	6, 592	5, 994	.36	598
1926-27.....	731	1, 879	11, 243	9, 364	.....	.....	.....

¹ See Table 21 on wheat for populations.
² See note 2, Table 21.
³ 2.63 bushels per acre. (*17, 1913-14, p. 787*).
⁴ Net exports of rye, including rye flour, for years beginning Aug. 1 (*17, 1925-26*).
⁵ See note 5, Table 21.
⁶ 3.04 bushels per acre. Estimated by Royal Hungarian Ministry of Agriculture (*22, p. 16*).
⁷ (*22, p. 16*).
⁸ See note 8, Table 21.
⁹ See note 9, Table 21.
¹⁰ Estimated from 1902-1911 average given in (*4*). Area, 522,000 acres; production, 7,023,000 bushels; seed, 1,086,000 bushels; food requirement, 2,416,000 bushels; export, 3,521,000 bushels.
¹¹ See note 11, Table 21.
¹² Same rate as in Bessarabia.
¹³ See note 14, Table 21.
¹⁴ 3.042 bushels per acre, same as Bulgaria.
¹⁵ Same rate as Bulgaria 1912 boundaries.
¹⁶ See note 17, Table 21.
¹⁷ 2.57 bushels per acre used for 1921 to 1926 as indicated in pre-war average.
¹⁸ Net exports of rye, including rye flour, for years beginning Aug. 1 (*17, 1924, p. 87*).

In 1921, the rye acreage of Greater Rumania was 64.8 per cent of the estimated pre-war average for the territories comprising the present Kingdom. Since then, acreage of rye has fluctuated considerably, with a downward tendency, and in 1926 only 731,000 acres were seeded, as contrasted with 1,227,000 acres before the World War.

Rye was the least important of the five chief cereals before the war in all districts except Bukovina, where its acreage exceeded that of wheat during 1909-1913, and in Bessarabia, where its acreage exceeded that of oats. Since the organization of Greater Rumania rye cultivation has taken a subordinate place even in Bukovina and Bessarabia.

Before the World War, about 8,500,000 bushels of rye, or 0.53 bushel per capita, was consumed annually in the districts which now comprise Greater Rumania. During the period 1921-1925, total disappearance of rye averaged 5,994,000 bushels, or 0.36 bushel per capita.

Although per capita consumption has decreased, production has fallen off to a much greater degree, so that average net exports of rye during the 5-year period ended 1925 were only 598,000 bushels, or about 7.1 per cent of the estimated pre-war rye surplus, which approximated 8,379,000 bushels annually during 1909-1913.

There has been a strong trend toward the abandonment of rye in recent years not only in Rumania but generally throughout the Danube Basin except in Hungary. It is therefore improbable that rye acreage in Rumania will recover its pre-war level. It is also practically certain that yields per acre will continue to average lower than the pre-war averages. Domestic consumption will probably rise somewhat higher than the low levels indicated by the 1921-1925 average. For these reasons future exportation of rye from Greater Rumania will probably be negligible. (Table 24.)

TABLE 24.—*Rye, including rye flour: Net exports of the old Kingdom of Rumania, average, 1909-1913, and of Greater Rumania, 1923 (55)*

Country to which exported	Average 1909-1913	1923 ¹	Country to which exported	Average 1909-1913	1923 ¹
	<i>Bushels</i>	<i>Bushels</i>		<i>Bushels</i>	<i>Bushels</i>
Austria.....	47, 028	108, 834	Italy.....	104, 225	
Hungary.....		36, 024	Norway.....	40, 129	
Belgium.....	1, 493, 742	134, 838	Poland.....		1, 240
Czechoslovakia.....		3, 105	Russia.....	34, 946	9, 448
Denmark.....	19, 985		Spain.....	5, 545	
England.....	162, 029	12, 539	Turkey.....	18, 281	
France.....	89, 007	9, 448	Other countries.....	34, 702	
Germany.....	96, 226		Total.....	3, 519, 178	407, 190
Gibraltar.....	2, 358	77, 067			
Holland.....	1, 440, 867	14, 647			

¹ 1923 is the only post-war year for which data are available by countries.

² Net imports.

Before the World War Belgium and Holland purchased almost the entire exported surplus of rye from the old Kingdom of Rumania. In 1923 Belgium and Austria were Rumania's best rye customers, followed by Gibraltar. (Table 24.)

BARLEY

One of the striking series of changes in cereal acreages since the World War has been that of barley. During the 1909-1913 period the territories now comprising Greater Rumania seeded annually an average of 3,502,000 acres to barley. In 1921 the area under barley jumped to 3,878,000 acres and continued to increase until 1923, when it was 1,140,000 acres above the pre-war average. (Table 25.)

The domestic sale and exportation of barley have been hampered to a less degree than the domestic sale and exportation of wheat, and this has naturally had a favorable effect upon barley cultivation. Nevertheless the chief factors associated with increased barley acreages have been those attending the land reform.

TABLE 25.—Barley: Statistical balances of Greater Rumania; average, 1909-1913, and annual, 1921-22 to 1926-27.

District	Acreage	Seed	Production		Disappearance		Exportable surplus
			Gross	Net	Statistical	Per capita ¹	
Pre-war average, 1909-1913:	1,000 acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushels	1,000 bushels
Old Kingdom of Rumania ²	1,319	³ 3,690	24,367	21,307	4,566	0.64	⁴ 16,741
Transylvania ⁵	317	⁶ 919	7,340	6,421	8,437	1.61	⁷ -2,016
Bessarabia ⁸	1,661	⁹ 3,455	28,624	25,139	¹⁰ 8,126	3.26	17,013
Bukovina ¹¹	83	¹² 224	2,187	1,963	2,624	¹³ 3.26	¹⁴ -661
Durostor and Caliacra ¹⁵	122	¹⁶ 381	2,146	1,765	528	¹⁷ 1.85	1,247
Total, present Rumania.....	3,502	8,669	65,284	56,595	24,271	1.52	32,324
Post-war period: ¹⁸							
1921-22.....	3,878	¹⁹ 9,617	44,254	34,637	19,215	1.18	²⁰ 15,422
1922-23.....	4,269	10,587	93,778	83,191	43,084	2.61	²¹ 40,107
1923-24.....	4,642	11,512	60,870	49,358	28,166	1.68	²² 21,192
1924-25.....	4,573	11,341	30,759	19,418	11,885	.70	²³ 7,533
1925-26.....	4,211	10,443	46,817	36,374	23,758	1.38	²⁴ 12,616
Average 1921-22 to 1925-26.....	4,315	10,700	55,296	44,596	25,222	1.51	19,374
1926-27.....	3,834	9,508	77,390	67,882			

¹ See Table 21 on wheat, for populations.
² See note 2, Table 21.
³ 2.79 bushels per acre. (17, 1913-14, p. 787).
⁴ Net exports for years beginning Aug. 1 (17, 1925-26).
⁵ See note 5, Table 21.
⁶ 2.90 bushels per acre. Estimated by the Royal Hungarian Ministry of Agriculture (22, p. 22).
⁷ Estimated domestic requirement (22, p. 22, Table 19).
⁸ Deficit.
⁹ See note 8, Table 21.
¹⁰ Seed for 1911 from Yurofal (53, Pt. D).
¹¹ Estimated from the 1902-1911 average given in (4). Area, 1,318,000 acres; production, 19,851,000 bushels; disappearance, 8,126,000 bushels; export, 8,539,000 bushels.
¹² Acreage and production (87, 1921).
¹³ 2.7 bushels per acre. Estimated to be the same as Hotin Uyezd in Russia, from Yurofal (53, Pt. II).
¹⁴ Estimated to be the same as Bessarabia.
¹⁵ See note 14, Table 21.
¹⁶ 3.122 bushels per acre; same as Bulgaria.
¹⁷ Estimated to be the same as Bulgaria, 1912 boundaries.
¹⁸ See note 17, Table 21.
¹⁹ 2.48 bushels per acre used for 1921 to 1926, as indicated in pre-war average.
²⁰ Net exports of barley for years beginning Aug. 1 (17, 1924, p. 87).

During the period of assignment the peasants were usually given their allotments of land in the fall or winter after the previous crop had been removed. They planted their new holdings the following spring.²⁴ The peasants were unaccustomed to planting spring wheat, the seed of which was not available in large quantities except perhaps in Bessarabia. Therefore, each peasant seeded his newly acquired holdings with whatever other spring grain he found at hand—corn, oats, or barley.

The transfers of lands to the peasants were practically concluded by 1926, when only a few hundred acres remained unallotted or in process of adjustment. The peasants will thus no longer be faced with the problem of having land to seed, with no plan as to what to plant. The areas seeded to various cereals are assuming proportions governed by the agricultural habits of the peasants, and estates as modified from year to year by the current economic conditions.

There is no brewing industry of importance south or east of the Carpathian-Transylvanian Ranges of mountains, nor is barley fed

²⁴ In 1922 the peasants seeded 3,743,000 acres more than in 1921 and the following year an additional 2,181,000 acres. These increases in peasant seedings continued yearly until 1925.

to livestock in any appreciable quantities in the old Kingdom, in Bessarabia, or in Bukovina. Corn rather than barley is fed to livestock, particularly to hogs, in Transylvania. But it is probable that with larger areas put under barley from year to year, and with cheaper barley supplies available, this cereal may be utilized more in livestock production in the future than it has been in the past, but it is more than probable that increased production of barley will be accompanied by increased exportation as well as increased internal disappearance.

As indicated in Table 25, the 1926 production has been placed at 77,390,000 bushels. If the per capita disappearance is assumed to be at least equal to that of 1925, the total disappearance, including seed, in greater Rumania during 1926-27 should be not less than 33,597,000 bushels. This would release about 43,793,000 bushels for export. It is improbable that all of this large quantity of barley will be sent abroad. Some of the surplus may be fed to livestock, although the amount that might be thus utilized is uncertain.

Before the World War, Belgium was the leading barley customer of the old Kingdom of Rumania, followed by Holland, England, and Germany. In 1923 Rumania exported 37,875,909 bushels of barley, of which 14,484,000 bushels went to Belgium, 7,041,000 bushels to Germany, 4,079,000 bushels to France, 3,443,000 bushels to Gibraltar, 1,975,000 to Greece, 1,700,000 bushels to Holland, 1,016,000 to Austria, and smaller quantities to other countries. (Table 26.)

TABLE 26.—*Barley, including malt: Net exports of the old Kingdom of Rumania, average, 1909-1913, and of Greater Rumania, 1923 (35)*

Country to which exported	Average 1909-1913	1923 ¹	Country to which exported	Average 1909-1913	1923 ¹
	<i>Bushels</i>	<i>Bushels</i>		<i>Bushels</i>	<i>Bushels</i>
Austria.....	476,986	1,016,438	Italy.....	361,761	133,740
Hungary.....	7,220,767	54,089	Norway.....	10,774	13,995
Belgium.....	7,220,767	14,484,247	Poland.....		61,822
Bulgaria.....	41,406		Russia.....	² 14,110	³ 56,500
Czechoslovakia.....		10,908	Serbia.....		⁴ 28,732
Denmark.....	31,237	(?)	Spain.....	3,730	10,104
Egypt.....	36,028	(?)	Sweden.....	(?)	137,933
England.....	2,600,885	981,735	Switzerland.....		342,887
France.....	162,010	4,079,250	Turkey.....	562,324	185,300
Germany.....	1,323,768	7,040,969	Other countries.....	13,747	2,118,638
Greece.....	11,926	1,975,308			
Gibraltar.....	758,314	3,443,373	Total.....	16,319,651	37,875,909
Holland.....	2,688,704	1,699,941			

¹ 1923 is the only postwar year for which data are available by countries.

² If any, included in other countries.

³ Net imports.

⁴ For Ukraine only.

⁵ For Yugoslavia.

OATS

Before the World War the old Kingdom of Rumania exported (net) 10,421,000 bushels of oats annually. Each of the other administrative districts now comprising Greater Rumania, except Durostor and Caliacra, also produced surpluses of oats, bringing the total up to 18,426,000 bushels. Net production averaged 55,361,000 bushels, leaving 36,935,000 bushels or 19.37 bushels per horse, available for domestic use, as indicated in Table 27.

TABLE 27.—Oats: Statistical balances of Greater Rumania, average, 1909-1913, and annual, 1921-22 to 1926-27

District	Acreage	Seed	Production		Disappearance		Exportable surplus
			Gross	Net	Statistical	Per head of horses ¹	
	1,000 acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushels	1,000 bushels
Pre-war average, 1909-1913:							
Old Kingdom of Rumania ²	1,105	³ 3,702	29,047	25,345	14,924	18.09	⁴ 10,421
Transylvania ⁵	768	⁶ 3,819	23,221	19,902	10,845	32.96	3,057
Bessarabia ⁷	179	⁸ 691	5,532	4,801	3,485	¹⁰ 8.11	1,366
Bukovina ¹¹	118	¹² 526	4,880	4,454	568	¹³ 8.11	3,886
Durostor and Caliacra ¹⁴	42	¹⁵ 173	972	799	1,103	¹⁶ 15.75	¹⁷ -304
Total, Greater Rumania.....	2,206	8,411	63,772	55,361	36,935	19.37	18,426
Post-war period: ¹⁸							
1921-22.....	3,062	¹⁹ 11,672	66,356	54,684	42,092	24.95	²⁰ 12,592
1922-23.....	3,295	12,661	92,073	79,612	58,710	32.58	²⁰ 20,802
1923-24.....	3,324	12,671	62,665	49,994	46,315	25.34	²⁰ 3,679
1924-25.....	3,056	11,649	42,013	30,364	25,240	13.68	²⁰ 5,124
1925-26.....	2,928	11,162	60,986	39,824	38,094	20.99	²⁰ 1,730
Average, 1921-23 to 1925-26.....	3,133	11,943	62,819	50,876	42,091	23.45	8,785
1926-27.....	2,665	10,159	79,850	69,691			

¹ See Table 37 for number of horses.
² See note 2, Table 21.
³ 3.35 bushels per acre (17, 1913-14, p. 727).
⁴ Net exports of oats for the years beginning Aug. 1 (17, 1925-26).
⁵ See note 5, table 21.
⁶ 4.35 bushels per acre. Estimated by the Royal Hungarian Ministry of Agriculture (22, p. 25).
⁷ Estimated requirement (22, p. 25).
⁸ See note 8, Table 21.
⁹ See note 9, Table 21.
¹⁰ Estimated from 1902-1911 average given in (4). Area, 179,000 acres; production, 4,963,000 bushels, export, 1,334,000 bushels; and disappearance, 2,926,000 bushels. Number of horses in Bessarabia in 1906, 361,000.
¹¹ Acreage and production, (27, 1921).
¹² 4.46 bushels per acre. Estimated to be the same as Hotiz Uyezd, Russia; from Yurojai (33, pt. II, p. 213).
¹³ Estimated to be the same as Bessarabia.
¹⁴ See note 14, Table 21.
¹⁵ 4.123 bushel per acre; same as total Bulgaria.
¹⁶ Estimated to be the same as Bulgaria, 1912 boundaries.
¹⁷ Deficit.
¹⁸ See note 17, Table 21.
¹⁹ 3.812 bushels per acre used for 1921-1926, as indicated in pre-war average.
²⁰ Net exports of oats for years beginning Aug. 1 (17, 1924-1927).

During the 5-year period ended 1925 disappearance of oats in Greater Rumania averaged 42,091,000 bushels or 23.45 bushels per horse. Gross production during this period averaged 953,000 bushels below the 1909-1913 average; but increased acreage brought the seed requirement up to 3,532,000 bushels more than before the World War. Consequently net production was only 50,876,000 bushels, as compared with the 1909-1913 average of 55,361,000 bushels. Annual export averaged about 8,785,000 bushels or nearly 10,000,000 bushels below the pre-war normal.

As in the case of barley, the peasants expanded the area seeded to oats very greatly during the years 1921 to 1925. The acreage reached a maximum in 1923; since that year oats production has tended to return to normal pre-war levels.

Before the World War Belgium, Holland, Italy, England, and Austria-Hungary were the principal purchasers of Rumania's oats surplus. In 1923 most of the exported surplus went to Belgium, Austria, and France. (Table 28.)

TABLE 28.—Oats: Net exports of Rumania; average, 1909-1913, annual, 1923 (35)

Country to which exported	Average 1909-1913	1923 ¹	Country to which exported	Average 1909-1913	1923 ¹
	Bushels	Bushels		Bushels	Bushels
Austria.....	1, 170, 979	3, 241, 047	Holland.....	1, 687, 842	210, 023
Hungary.....	3, 539, 238	554, 947	Italy.....	1, 411, 046	682, 975
Belgium.....	19, 491	4, 786, 483	Poland.....		191, 114
Bulgaria.....		(?)	Russia.....	126, 577	(?)
Czechoslovakia.....	1, 405, 154	172, 192	Serbia.....		4 21
England.....	620, 761	134, 701	Turkey.....	43, 928	114, 095
France.....	348, 255	1, 203, 062	Other countries.....	62, 423	46, 779
Germany.....	331, 206	303, 618	Total.....	10, 742, 352	12, 124, 958
Gibraltar.....	215	50, 404			
Greece.....		434, 540			

¹ 1923 is the only postwar year for which data are available by countries.

² If any, included in other countries.

³ For Yugoslavia.

⁴ Net imports.

CORN

Corn is by far the most important cereal crop of Greater Rumania. It forms the chief article of diet of the rural population, who before the World War consumed annually as human food and fed to livestock an average of 10 bushels per capita. During the 5-year period ended 1913, net production averaged 191,773,000 bushels, from which 126,807,000 bushels were consumed domestically in the form of food, for industrial uses, feed for domestic animals, and for reserve stocks, releasing about 64,966,000 bushels for export. (Table 29.)

TABLE 29.—Corn: Statistical balances of Greater Rumania; average, 1909-1913, and annual, 1921-22 to 1926-27.

District	Acreage	Seed	Production		Disappearance		Exportable surplus
			Gross	Net	Statistical	Per capita	
Pre-war average, 1909-1913:	1,000 acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushels	1,000 bushels
Old Kingdom of Rumania ¹	5, 150	² 1, 478	100, 620	99, 142	60, 413	8. 51	³ 38, 729
Transylvania ⁴	2, 449	⁵ 1, 367	56, 110	54, 743	⁶ 53, 073	10. 11	1, 670
Bessarabia ⁷	1, 892	⁸ 814	33, 828	33, 014	⁹ 9, 208	3. 70	23, 806
Bukovina ¹⁰	158	¹¹ 83	2, 798	2, 715	2, 978	¹² 3. 70	¹³ 263
Durostor and Caliacra ¹⁴	93	¹⁵ 40	2, 199	2, 159	1, 135	¹⁶ 4. 05	1, 023
Total, Greater Rumania.....	9, 742	3, 782	195, 555	191, 773	129, 807	7. 96	64, 966
Post-war period: ¹⁷							
1921-22.....	8, 510	¹⁸ 3, 302	110, 638	107, 336	95, 428	8. 87	¹⁹ 11, 908
1922-23.....	8, 411	3, 263	119, 829	116, 566	89, 873	8. 45	²⁰ 26, 693
1923-24.....	8, 412	3, 264	151, 403	148, 139	118, 796	7. 10	²¹ 29, 343
1924-25.....	8, 949	3, 472	155, 461	151, 969	129, 179	7. 61	²² 22, 810
1925-26.....	9, 713	3, 769	163, 739	159, 970	132, 821	7. 71	²³ 27, 149
Average, 1921-22 to 1925-26.....	8, 799	3, 414	140, 214	136, 800	113, 219	6. 76	23, 581
1926-27.....	10, 031	3, 892	224, 458	220, 566			

¹ For populations, see Table 21.

² See note 2, Table 21.

³ 0.287 bushel per acre (17, 1913-14, p. 787).

⁴ Net exports for calendar years (35, 1909-13).

⁵ See note 5, Table 21.

⁶ 0.538 bushel per acre. Estimated by the Royal Hungarian Ministry of Agriculture (22, p. 19).

⁷ Estimated domestic requirement (22, p. 19, Table 16).

⁸ See note 8, Table 21.

⁹ 0.43 bushel per acre. Yurojai (33, pt. II, p. 209).

¹⁰ Estimated from 1902-1911, average given in (4).

¹¹ Acreage and production (27, 1931).

¹² 0.538 bushel per acre; same as for Hotin Uyezd, Russia, from Yurojai (33, pt. II, p. 209).

¹³ Estimated to be the same as Bessarabia.

¹⁴ Deficit.

¹⁵ See note 14, Table 21.

¹⁶ 0.428 bushel per acre. Same as Bulgaria.

¹⁷ Same as Bulgaria, 1912 boundaries.

¹⁸ See note 17, Table 21.

¹⁹ 0.368 bushels per acre used for 1921-1926, as indicated in pre-war average.

²⁰ Calendar years for years following crop year (17, 1925-27).

Between 1921 and 1923 the area of corn changed but little, and then in 1924 it increased almost 536,000 acres. The next year the acreage advanced almost 800,000 acres, followed by a further increase of 300,000 acres in 1926. These sharp advances in corn acreage mark the trend in the reformed Rumanian agriculture in which peasant customs and habits dominate the areas seeded and in which peasant methods will in future determine the rate and amount of production.

The area planted to corn in 1925 reached 9,713,000 acres, as contrasted with the 1909-1913 average of 9,742,000 acres. The following year, 1926, brought corn above the pre-war level, with an area of 10,031,000 acres.

During the 5-year period ended in 1925 the gross production of corn averaged about 140,214,000 bushels and exportation²⁵ about 23,581,000 bushels. This would indicate that about 116,633,000 bushels each year were employed as seed, food, feed, and reserve stocks. During 1909-1913 the disappearance, plus seed, averaged 130,589,000 bushels, indicating that since the World War the domestic use of corn in Greater Rumania has been considerably less than formerly. Per capita disappearance during 1921-1925 averaged 6.76 bushels, as contrasted with 7.96 bushels before the war.

The general trend in corn production in Greater Rumania in 1927 was toward increased acreage, which would probably fluctuate above the high level reached in 1926. Before the World War the leading purchasers of corn from Rumania were Belgium, Austria-Hungary, Italy, Holland, England, Gibraltar, Germany, and France. In 1923 Belgium was the chief buyer of Rumanian corn, followed by Gibraltar, Holland, France, Austria, England, and Italy in the order named. (Table 30.)

TABLE 30.—*Corn, including corn flour: Net exports of the old Kingdom of Rumania, average, 1909-1913, and of Greater Rumania, 1923 (35)*

Country to which exported	Average 1909-1913	1923 ¹	Country to which exported	Average 1909-1913	1923 ¹
	<i>Bushels</i>	<i>Bushels</i>		<i>Bushels</i>	<i>Bushels</i>
Austria.....	7,788,473	2,550,550	Holland.....	3,961,612	3,618,750
Hungary.....		315,409	Italy.....	5,473,638	1,381,272
Belgium.....	10,200,718	5,106,580	Norway.....	105,409	404,254
Bulgaria.....	* 9,447	14	Poland.....		331,109
Czechoslovakia.....		724,517	Russia.....	† 186,248	(²)
Denmark.....	846,696	(³)	Spain.....	477,478	19,684
Egypt.....	18,646	(³)	Sweden.....	6,644	102,852
England.....	3,675,570	2,350,482	Turkey.....	80,607	27,689
France.....	1,206,702	3,153,974	Other countries.....	178,765	1,177,233
Germany.....	1,605,364	553,652			
Gibraltar.....	2,961,767	4,590,802	Total.....	38,728,958	426,707,292
Greece.....	18,564	298,487			

¹ 1923 is the only postwar year available by countries.

² Net imports.

³ If any, included in other countries.

⁴ This total for 1923 differs slightly from that in Table 33, since each is from a different source.

OTHER CEREALS

Millet, buckwheat, and sorghum are seeded in relatively unimportant acreages in Greater Rumania. The area under millet in 1921 was 182,701 acres and in 1925, 181,722 acres. Buckwheat increased from 7,752 acres in 1921 to 16,578 acres in 1925, but the total area

²⁵ Exports are for calendar years 1922-1926 following the crop years.

was so small as to be negligible. The sorghum acreage was 5,500 acres in 1921 and only 798 acres in 1925.

POTATOES

As compared with cereal production, potato production occupies an insignificant position in the agriculture of Rumania. Before the World War potato acreage averaged 359,000 acres, of which the equivalent of 9,000 acres were planted in cornfields. Net production (gross production less seed and less 10 per cent for decay and other losses) averaged approximately 30,869,000 bushels annually. Disappearance was approximately 30,948,000 bushels, or 1.94 bushels per capita. As indicated in Table 31, before the World War a small annual deficit had to be remedied by imports into the territories now constituting Greater Rumania.

TABLE 31.—Potatoes: Statistical balances of Greater Rumania; average, 1909-1913, and annual, 1921-1925

District	Acreage	Seed	Production		Disappearance		Exportable surplus (+) or deficit (-)
			Gross	Net ¹	Statistical	Per capita ²	
Pre-war average 1909-1913:	1,000 acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushels	1,000 bushels
Old Kingdom of Rumania ³	435	4574	4,550	3,521	3,518	0.50	+3
Seven Mountain district, Caras Severin, and Maramuresh ⁴	127	2,082	13,212	9,809	4,218	1.28	+5,591
Banat and Crisana ⁵	64	1,655	6,531	4,223	10 9,068	4.95	-5,445
Bessarabia ⁶	42	688	4,300	3,182	13 3,182	1.28	-----
Bukovina ⁷	91	2,702	14,248	10,121	18 10,348	12.86	-227
Durostor and Caliacra ⁸	(17)	5	20	13	18 14	10 0.05	-1
Total, Greater Rumania.....	359	7,706	42,861	30,869	30,948	1.94	-79
Post-war period: ⁹							
1921.....	420	10,420	50,987	35,468	35,412	2.18	+56
1922.....	356	9,577	41,011	27,333	27,302	1.65	+21
1923.....	454	11,264	71,750	53,311	53,323	3.19	-12
1924.....	503	12,479	61,318	42,707	42,689	2.51	+18
1925.....	483	11,983	62,378	44,157	44,107	2.56	+50
Average, 1921-1925.....	449	11,145	57,489	40,595	40,566	2.42	+29

¹ 10 per cent of gross production also deducted from each district for decay and other losses.

² For populations see Table 21.

³ Acreage and production (31, 1914).

⁴ There were 26,000 acres and 3,362,000 bushels grown without corn, or 129.3 bushels per acre; 1,188,000 bushels were grown with corn at a yield of 129.3 bushels per acre—equivalent to 9,000 acres grown alone.

⁵ Same rate of seed used as that in Bessarabia.

⁶ Net exports for calendar years (17, 1925-26).

⁷ See note 5, Table 21. Seven Mountain district, Caras Severin, and Maramuresh, Banat, and Crisana are now united into a single district called Transylvania.

⁸ Per capita disappearance assumed to equal that in Bessarabia. Population, 3,295,309.

⁹ 25.86 bushels per acre (22, p. 27).

¹⁰ Human consumption, 4.3 bushels per capita, same as for Hungary as given in (27, 1922, p. 615). Population 1,953,213. 30 per cent of net production is fed to livestock and used industrially.

¹¹ See note 8, Table 21.

¹² 16.39 bushels per acre from Yurojai (38, pt. 2, p. 212).

¹³ Disappearance assumed to balance net production; other data not available.

¹⁴ Acreage, seed, and production (27, 1922).

¹⁵ Human consumption, 6.61 bushels per capita; same as for Austria as given in (27, 1922, p. 615). 30 per cent of net production fed to livestock and 1,992,224 bushels used industrially, as given on page 565—same source.

¹⁶ See note 14, Table 21.

¹⁷ Only 188 acres.

¹⁸ 25.59 bushels per acre. Estimated to be the same as Croatia Slavonia (22, p. 27).

¹⁹ Assumed to be the same as Bulgaria.

²⁰ Acreage and production 1921 to 1926 from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.

²¹ The acreage of potatoes grown with corn has been changed to ordinary acreage according to the yield per acre for potatoes grown alone. Potatoes grown alone: 1921, 409,000 acres; 1922, 355,000 acres; 1923, 430,000 acres; 1924, 466,000 acres; 1925, 460,000 acres; 1926, 442,000 acres.

²² 24.81 bushels per acre used for 1921 to 1926, as indicated in pre-war average.

²³ Includes potatoes grown with corn 1921 to 1926. Potatoes grown alone, 1921, 49,606,000 bushels; 1922, 37,691,000 bushels; 1923, 67,920,000 bushels; 1924, 56,815,000 bushels; 1925, 59,351,000 bushels.

²⁴ Net imports indicated by (-) and net exports by (+) for calendar years from (17, 1924-25).

Potatoes were utilized almost exclusively as human food in the old Kingdom of Rumania, in the territories ceded by Bulgaria, in the district of Seven Mountain, Caras Severin, and Maramuresh. Almost no potatoes were fed to livestock in these territories, and only very small quantities were employed in the manufacture of brandy or alcohol. There were 28 distilleries in the old kingdom which utilized prunes, for the most part, in the manufacture of the native strong drink called "tzuika." During the years just preceding the World War small quantities of grain, potatoes, and molasses were also employed by the distilleries.

There are no detailed statistics as to the location of distilleries in Transylvania, but conditions in the mountain regions were similar to those in Rumania proper; on the other hand, in the Banat and Crisana they were similar to conditions in Hungary, where 1.17 quintals (4.3 bushels) of potatoes per capita were consumed as human food and about 30 per cent of the net production was fed to livestock or utilized in the manufacture of alcohol. The Austrian Government estimated that during 1909-1913 the industries of Bukovina utilized annually 1,992,000 bushels of potatoes and that 3,037,000 bushels were fed to livestock. There were 20 distilleries in Bessarabia in 1910 which utilized only 274,000 bushels of potatoes in the manufacture of alcohol. Almost no potatoes are fed to livestock in this district. In the territories constituting the present Kingdom of Rumania the pre-war use of potatoes varied widely according to the different conditions under which potatoes were produced.

Since the World War there has been a tendency toward increased potato production in Greater Rumania, the 1921-1925 area averaging 449,000 acres,²⁶ the net production from which averaged 40,595,000 bushels or nearly 9,726,000 bushels more than the pre-war normal production. Disappearance and net production practically balanced during these five years, only 29,000 bushels having been exported on the average each year.

It is probable that the present potato acreage in Greater Rumania is about that required to meet the domestic food requirements. Only relatively small quantities of potatoes are employed as feed for livestock or for industrial uses.

TABLE 32.—Potatoes: Foreign trade of the old Kingdom of Rumania, average, 1909-1913, and of Greater Rumania, 1923¹ (35)

Country	Average 1909-1913 ²	1923 ³	Country	Average 1909-1913 ²	1923 ³
	<i>Bushels</i>	<i>Bushels</i>		<i>Bushels</i>	<i>Bushels</i>
Austria.....	+18,169	-1	Poland.....		+1,681
Hungary.....	-5,125	+17,940	Russia.....	+2,482	(⁴)
Bulgaria.....		(⁴)	Turkey.....	-17,147	-9,776
Egypt.....	-2,202	(⁴)	Other countries.....	+170	-156
Germany.....	+460	+2,356	Total.....	-3,193	+12,044

¹ 1923 is the only postwar year for which data are available by countries.

² Net imports indicated by + and net exports by -.

³ If any, included in other countries.

Production of potatoes in Greater Rumania may increase somewhat in response to increased domestic consumption rather than in response

²⁶ This included potatoes grown in cornfields and in connection with other crops equivalent to 25,000 acres.

to any export demand, since these territories can not compete with the regions of heavy rainfall in Poland, Germany, and Czechoslovakia where soils and climatic conditions particularly fit them for heavy yields per acre.

Before and since the World War Rumania has imported potatoes from Austria, Hungary, Poland, and Germany, and has exported potatoes to Turkey, but the volume of trade is unimportant. (Table 32.)

SUGAR BEETS AND BEET SUGAR

The beet sugar industry of Greater Rumania is organized around 10 factories and refineries. Five ²⁷ of these factories, under the control of Belgian capital, are located in the old Kingdom of Rumania. Two factories, formerly part of the Austro-Hungarian sugar combine, are located in the southeastern part of the Seven Mountain region in the angle formed by the Carpathian Mountains with the Transylvanian Alps. There is one ²⁷ factory in Bukovina, also formerly a member of the Austro-Hungarian combine. There is one factory in Bessarabia, formerly part of the Russian sugar syndicate, and a factory has recently been built at Oradea-Mare in the sugar-beet growing district of Crisana.

The nine factories that were in operation before the World War, and are still extant had the capacity to handle 8,706 short tons of beets daily. (Table 33.) They worked up 439,640 short tons of beets annually during pre-war years and produced on the average the equivalent of 57,495 short tons of raw sugar.

TABLE 33.—*Sugar beets: Estimated acreage, beets utilized, and sugar produced in nine factories operating in Rumania, 1909–1913*

District and factory	Beets worked per day ¹	Beets utilized at factories		Raw sugar produced
		Acreage	Quantity	
Old Kingdom of Rumania:	Short tons	Acres	Short tons	Short tons
Roman.....	1,653	27,041	248,670	31,227
Sacut Putna.....	551			
Chitila.....	661			
Ripiceni.....	1,102			
Giurgiu.....	1,102			
Transylvania:				
Bod.....	1,102	48,167	(15) 79,348	(15) 11,936
Targu-muresh.....	551	42,770	(15) 26,908	(15) 3,474
Bukovina: Jucica ²	1,653	68,640	(2) 70,428	(2) 8,499
Bessarabia: Zarojani.....	331	73,888	14,286	2,359
Total.....	8,706	50,506	439,640	57,495

¹ Consular report June 3, 1922 from Ely C. Palmer.

² Total acreage and production in the old Kingdom as given in (3f), less one sixth. It is assumed that all beets grown during 1909–1913 were utilized at the 6 factories then extant, one-sixth being deducted as the portion of the product worked up at the factory destroyed during the war.

³ Total production at 6 factories as given in (1f, 1919–1921, p. 18f), less one-sixth. (See note 2.)

⁴ Estimated by assuming that the yield of beets utilized at factories was the same as average yield per acre of all beets grown in the region of Seven Mountains.

⁵ These figures are for 1909–1911 average, since data regarding beets worked in factories and production of sugar for 1912 and 1913 are not available. There was also another factory in Bukovina which was destroyed during the war and is not reported in this table.

⁶ The total area of beets planted in Bukovina during 1909–1911 was 6,333 acres, producing 51,631 short tons of beets as reported in (1f), but the quantity of beets used in the two factories of Bukovina during this period amounted to 140,856 short tons, an excess over production of 89,225 short tons which had to be imported. Assuming the yield per acre for the imports to be the same as total yield per acre of Bukovina, would indicate an acreage of 10,948 acres, or a total of 17,281 acres of beets planted for use in the two factories, half of which is assumed to be for the factory reported.

⁷ (39, Ann. 6, 10.) Acreage for 1913 estimated by assuming that the yield per acre for the beets utilized at the factory was the same as the total yield per acre harvested for the factory, since some of the production for the factory was exported.

²⁷ Before the World War there were six factories in the old Kingdom and two in Bukovina. One factory in each district was destroyed during the war.

The sugar produced, the beets worked at the nine factories now operating in Greater Rumania that were also in operation before the World War, and the acreage equivalent to the beets worked is considerably less than the acreage actually planted to beets and the beets that were actually produced within the territories now comprising the new Rumanian Kingdom. In the first place, two factories with the capacity to work up 120,162 short tons of beets annually have been destroyed. In addition, more than 245,000 short tons of beets produced in the Banat, Crisana, and Seven Mountain region that were formerly parts of the Kingdom of Hungary were shipped annually to factories in Bihar, Csanad, and Torontal Provinces which remained to Hungary or were ceded to Yugoslavia and from which the former producers in the present Rumanian territory are cut off by the new national frontiers and customs barriers.

The factories in Bukovina before the World War shipped in beets from Galicia, now part of Poland, and perhaps from Russia; but on the whole the territories now comprised within the boundaries of Greater Rumania grew more sugar beets than were utilized by the factories now located within those boundaries.

It has been estimated that the territories now comprising Greater Rumania planted 73,000 acres that produced (Table 34), an annual average of 716,000 short tons of sugar beets. The sugar equivalent of this tonnage of beets is 96,513²⁸ short tons of raw sugar, but a part of this sugar was produced in factories now located in Hungary and Yugoslavia and part in two factories that were destroyed during the war.

TABLE 34.—*Sugar beets and sugar: Acreage and production in Greater Rumania, average, 1909-1913; annual, 1921-22, 1926-27*

Year	Sugar beets		Raw sugar production	Year	Sugar beets		Raw sugar production
	Acreage	Production			Acreage	Production	
	<i>Acres</i>	<i>Short tons</i>	<i>Short tons</i>		<i>Acres</i>	<i>Short tons</i>	<i>Short tons</i>
1909-1913.....	73,000	716,000	96,513	1924-25.....	132,722	962,432	98,379
1921-22.....	66,981	387,618	33,069	1925-26.....	158,885	1,088,856	114,829
1922-23.....	63,875	364,893	55,358	1926-27.....	203,600	1,324,000	143,000
1923-24.....	91,908	708,633	81,857				

Acreage and production of sugar beets 1909-1913 from Tables 15 and 19; 1921-1924 (32); 1925, (31); and 1926 (18).

Sugar production 1909-1913, from Table 33; 1921, 1922, 1924, and 1925 (36); 1923 and 1926 (18).

¹ Acreage and production of sugar beets for 1909-1913 will differ from that in Table 33, since these figures are total acreage and production, whereas in Table 33 the figures are for acreage and production in sugar beets used in factories only.

² Includes 8,499 short tons of sugar that was produced in the sugar factory in Bukovina and 6,245 short tons produced in the factory in the old Kingdom that was destroyed during the World War. This is the quantity of sugar that was actually produced in Greater Rumania, but the equivalent of sugar from the 716,000 short tons of beets produced in Greater Rumania is equal to 96,513 short tons, estimated by using the yield of sugar per ton of beets for each division separately, as indicated in Table 33.

The sugar actually produced before the World War at factories now extant and which were in operation before the war in Greater Rumania was approximately 57,495 short tons annually.

SUGAR CONSUMPTION IN GREATER RUMANIA

The six factories in the old Kingdom of Rumania during 1909-1913 produced annually the equivalent of 37,472 short tons of raw sugar

²⁸ Total beets produced in each division times average pre-war yield of sugar as indicated in Table 33.

and exported (net) an average of 2,098 short tons. Domestic disappearance thus averaged about 35,374 short tons, or approximately 10 pounds per capita. The Austrian Government has estimated the pre-war disappearance of sugar in Bukovina at 16.3²⁹ pounds of raw sugar per capita. This indicates an annual disappearance equivalent to 6,559 short tons. The two factories produced annually 16,998 short tons and there was an exportable surplus of about 10,439 short tons. In the present administrative district of Transylvania, the food habits of the populations of Seven Mountains, Caras Severin, and Maramuresh are almost identical with those of the inhabitants of the old Kingdom, the consumption of sugar was at about the same rate or 10 pounds per capita, totaling annually 16,477³⁰ short tons (in terms of raw) or about 1,067 short tons more than was produced at the two factories at Bod Brashor and Targu-muresh. The 1,953,213 inhabitants in the Banat and Crisana consumed sugar at about the same rate as in the provincial counties of Hungary or the equivalent of 19 pounds of raw sugar per capita per year. The total sugar consumption of this region was thus an uncovered deficit of about 18,556 short tons annually.

The disappearance of sugar in Bessarabia was about the same as in other parts of European Russia which, during 1909-10 to 1913-14, averaged 17.7 pounds per capita. This indicates a total consumption equivalent to 22,038 short tons of raw sugar annually in Bessarabia. The factory at Zarojani produced 2,359 short tons, resulting in an average deficit during 1909-1913 of about 19,679 short tons each year. The populations in Durostor and Caliacra (annexed from Bulgaria in 1913) consumed sugar at about the same rate as in Bulgaria, or 12.3 pounds per capita, equivalent to an annual disappearance of 1,724 short tons of raw sugar per annum.

The total pre-war disappearance of sugar in the territories now comprising Greater Rumania was thus equivalent to approximately 100,728 short tons of raw sugar, or 12.7 pounds per capita per year. Production averaged 72,239 short tons, indicating an average annual deficit of 28,489 short tons.

Two sugar factories had been destroyed during the war and the equipment of some of the others had been badly damaged. Repairs were slowly effected with the result that the demand for beets was much less during the reconstruction period than it had been in pre-war days. Beet growing was, consequently, disorganized and acreage was low during 1921 and 1922. Production of sugar was far below the pre-war average. However, importations were not correspondingly increased so that total disappearance during the season 1921-22 was about equivalent to 69,000 short tons of raw sugar (or 8.5 pounds per capita), and during 1922-23 about 84,000 short tons, or 10.2 pounds per capita as compared with the estimated pre-war requirement of 100,728 short tons, or 12.7 pounds per capita.

In the fall of 1922 the sugar factories of Greater Rumania combined into an association to facilitate their dealings with the Government and the growers and to regulate the price to be charged for sugar as well as that to be paid for beets.

²⁹ Disappearance for household purposes only 13.4 pounds refined sugar per capita. Total disappearance 14.3 pounds (including industrial utilization) (*ibid.*, p. 218). Ratio of refined sugar to raw is 100:114.

³⁰ 1910 population of these three districts was 3,295,309.

In 1923-24 there was a marked expansion in beet acreage which exceeded the pre-war area by 19,000 acres. Production of raw sugar jumped to 81,857 short tons. There had been a net importation equivalent to 32,516 short tons of raw sugar during the calendar year 1924 indicating a total supply at the end of the year of approximately 114,373 short tons. This quantity of sugar was greatly in excess of the disappearance during the previous year. The Ministry of Industry and Commerce estimated the normal domestic requirement at about 100,000 short tons. The Government, therefore, consented to the exportation of 11,000 short tons. The exportation of this quantity of sugar, however, never materialized.

The 1923 population had increased to 16,736,000 as compared with 15,923,938 before the World War. Assuming that the per capita disappearance was at least no greater than during pre-war days, or 12.7 pounds, domestic disappearance should have been at least 106,274 short tons, indicating a small carry-over of about 8,000 short tons.

The next season, 1924-25, acreage and production of beets greatly increased, but the factories realized only 98,379 short tons of sugar. A small importation of sugar amounted to 2,218 short tons, which included a small quantity of manufactured sweets not separately stated in Rumanian statistics. This indicates a total supply including the carry-over of the previous year around 108,597 short tons, whereas the 1924 population of 16,976,000 multiplied by the pre-war per capita disappearance indicates a total requirement of 107,798 short tons.

During 1925-26 sugar beet acreage reached 158,885 acres as compared with 73,000 acres before the World War. The factories produced 114,829 short tons. There had been an increase in population that brought the calculated domestic requirement up to 109,322 short tons, indicating a small surplus.

The data for the three sugar seasons indicate that sugar consumption in Greater Rumania ranges above 105,000 short tons per year.

The next season, 1926-27, marked a great expansion of area to 203,600 acres with a beet production of 1,324,000 short tons, yielding the equivalent of 143,300 short tons of raw sugar. This should place Rumania upon an exporting basis.

Preliminary estimates for the 1927-28 season gives the beet area at 209,000 acres, indicating that the era of rapid expansion is at an end and that beet production will in future follow seasonal fluctuations about this new level.

TOBACCO

Rumania lies at the northern limits of the production of small-leaf Turkish tobacco of good quality. The industry was originated by the Turks during the time that the territories now comprising Rumania were parts of the Ottoman Empire. On sheltered hillsides in the old Kingdom of Rumania and in Bessarabia and in the Seven Mountain region small-leaf tobacco of very good quality can be produced, and several local varieties have been developed from the varieties distributed among the peasants by the Turkish beys more than 200 years ago. The best quality of leaf, however, is produced from seed imported by the Rumanian Government from Macedonia

and distributed free among those who grow tobacco under the direction of the State monopolies (*Regia Monopolurilor Statului*).³¹

Although anyone may grow tobacco in Rumania, he must first obtain a permit to cultivate not less than 10 hectares (24.7 acres) for a specified number of years under the regulations and inspections of the State monopolies. This restricts the cultivation of tobacco to the more well-to-do peasants and the estate owners. Since the production of fine-veined, small-leaf tobacco is associated with certain conditions of soil and climate the localities in which it can be profitably grown are restricted to the hill regions, with southern exposures protected from northern winds by forests or windbreaks.

Before the World War, the old Kingdom of Rumania planted an average of 23,736 acres from which 16,426,000 pounds were harvested annually. The old Kingdom exported the greatest quantity of leaf tobacco to Austria-Hungary and France and imported fine grades of cigarette tobacco from Turkey and Greece as well as Sumatra and Habana tobaccos, for cigars, through Germany. This trade resulted in a net export of 1,652,000 pounds annually. Cigars were imported in considerable numbers from Germany and cigarettes were exported to France and Holland, resulting in a net import of 6,000 pounds. Manufactured tobacco and extract were both exported and imported (chiefly from Russia), the net import amounting to 39,000 pounds. On the whole the international trade of the old Kingdom in tobacco showed a net export of 1,607,000 pounds. Average annual consumption was thus about 14,819,000 pounds or 2.09 pounds per capita.

The tobacco grown in the territories ceded to Rumania by Bulgaria in 1913 was poor in quality. During 1909-1912 this area under tobacco averaged 2,663 acres and production averaged 1,699,000 pounds. Assuming that average consumption in this district equaled the per capita average for Bulgaria of 2.2 pounds, the average annual disappearance was approximately 617,000 pounds, resulting in a net surplus of 1,082,000 pounds.

Little tobacco was produced in Bukovina and that was of very poor quality. During 1909-1912 only 208 acres, yielding 204,000 pounds, were devoted to tobacco production. According to estimates of the Austrian tobacco monopoly, during 1909-1912, the average consumption of tobacco was 1,395,000 pounds, or 1.73 pounds per capita. The annual deficit of Bukovina was equivalent to 1,191,000 pounds.

The tobacco grown in Bessarabia was classed as Turkish by the Russian Government before the World War. During 1909-1913 there was an average of 7,529 acres under tobacco in this Province, producing 5,629,000 pounds annually. Comparatively little tobacco was manufactured into cigars or cigarettes in Bessarabia before the war. The use of cigars was confined to a few of the wealthy class. Cigarettes and cut tobacco for making cigarettes were shipped into Bessarabia from factories located in the interior of Russia. Consumption of tobacco averaged somewhere between the Russian per capita disappearance of 1.28 pounds and the Rumanian (2.09 pounds) or approximately 1.68 pounds. This is equivalent to a

³¹ The director general of State monopolies, a department of the Ministry of Finance, has charge of the manufacture and sale of matches, cigarette paper, playing cards, combustible materials, and salt, as well as managing the tobacco industry.

total disappearance of 4,184,000 pounds, indicating a net exportable surplus of 1,445,000 pounds.

Production and consumption of tobacco varies considerably in Transylvania. In the mountains, the varieties of tobacco are similar to the Turkish sorts grown in the old Kingdom and per capita consumption is about the same, averaging around 2.09 pounds. In the lowlands of the Banat and Crisana, large-leaf varieties of tobacco predominate. Consumption is about the same as in the old Kingdom of Hungary (2.53 pounds per capita per year). This would indicate an average annual disappearance of approximately 11,828,000 pounds for the regions constituting the present District of Transylvania, or a per capita disappearance of 2.25 pounds. During 1909-1913 the estimated area under tobacco in Transylvania averaged 19,012 acres, producing 23,075,000 pounds, indicating an exportable surplus of 11,247,000 pounds. (Table 35.)

The total pre-war area under tobacco in the territories now comprising greater Rumania was about 53,148 acres; production about 47,033,000 pounds; disappearance averaged about 32,843,000 pounds; and there was a net surplus of about 14,190,000 pounds.

TABLE 35.—Tobacco: Statistical balance of Rumania, average, 1909-1913, and annual, 1921-1926

District	Acreage	Production	Disappearance		Exportable surplus (+) or deficit (-)
			Statistical	Per capita ^f	
		<i>1,000</i>	<i>1,000</i>		<i>1,000</i>
	<i>Acres</i>	<i>pounds</i>	<i>pounds</i>	<i>Pounds</i>	<i>pounds</i>
Pre-war average 1909-1913:					
Old Kingdom of Rumania ¹	23,736	16,426	14,819	2.09	+1,607
Durostor and Caliacra ²	2,663	1,699	617	2.20	+1,062
Transylvania ³	19,012	23,075	11,828	2.25	+11,247
Bessarabia ⁴	7,529	5,629	4,184	1.68	+1,445
Bukovina ⁵	208	204	1,395	1.73	-1,191
Total Greater Rumania.....	53,148	47,033	32,843	2.06	+14,190
Postwar period: ¹¹					
1921.....	42,911	23,121			
1922.....	52,835	27,750	22,664		+1-2,543
1923.....	43,920	21,356	13,403		+1-3,976
1924.....	77,473	47,290	54,989		+1-7,694
1925.....	90,614	38,089			
Average 1921-1925.....	61,551	31,121			
1926.....	75,100	40,307			

¹ For populations see Table 21.
² Acreage and production (17, 1925-26).
³ Net exports (35, 1909-1913).
⁴ 1909-1912 average calculated from (9).
⁵ Average disappearance assumed to be equal to that of Bulgaria.
⁶ Acreage calculated from (15, Ed. 17-21). Production calculated by using the same yields per acre for separate divisions cited, as those given for total Hungary in (15, Ed. 20, p. 110; 21, p. 82).
⁷ Disappearance in Banat and Crisiana whose population was 1,953,213, estimated to be the same as in Hungary (2.53 pounds). In the mountainous district (Caras-Severin, Seven Mountain district and Maramuresh) where the population was 3,295,309, the disappearance is estimated to be the same as that of the old Kingdom of Rumania.
⁸ Acreage and production (59, Ann. 6, p. 225-10 p. 225).
⁹ Estimated to be an average between Russia and old Rumania. Russia = production (23,615,000 pounds) minus net exports (22,199,000 pounds) = 213,951,000 pounds divided by population (166,949,400) = 1.28 pounds.
¹⁰ Average 1909-1912 for acreage and production (1), 1909-1912 used since total consumption not available later than 1912.
¹¹ (2, Jahrb., 29, p. 225; 30, p. 146; 31, pp. 154, 155).
¹² Acreage and production 1921-1926 from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.
¹³ 1922 and 1923 net exports (35, 1923).
¹⁴ 1924 net imports (35, 1924).

The large estates participated to a great extent in the production of tobacco before the World War. Since the war, yields per acre have fallen off and although acreage has increased, production has been below average except during the season 1924.

Although production has generally ranged far below the 1909-1913 average, the disappearance has also been very low and international trade in tobacco resulted in a net exportation of 3,000,000 to 4,000,000 pounds in 1922 and 1923. In 1924 production rose slightly above the pre-war average. Nevertheless imports of tobacco exceed exports by 7,694,000 pounds. It is probable that this excess import represented standard grades of tobacco that could be purchased advantageously by the monopoly and that reserve stocks were built up, which were larger than usual.

Rumania is not interested in American tobacco or cigarettes, as the popular demand is for a very mildly flavored tobacco.

Exports go largely to Hungary, Austria, Yugoslavia, and Czechoslovakia.

LIVESTOCK

Under the ancient Turkish rule the plains of the Danube and the Pruth Rivers and those of southern Bessarabia were utilized to a large extent as grazing lands for the long-horned gray cattle of the steppes and for buffalo, horses, and sheep. These plains were sparsely populated for the bulk of the Rumanian population had been crowded up into the foothills of the Transylvanian and Carpathian Mountains. The pastures and meadows of these mountains furnished grazing for the sheep (which had long gray wool), for goats, and supplied summer pasture for cattle. On the northern slopes of the mountains and throughout the hill country of the Transylvanian Plateau cattle grazing and sheep herding had been important adjuncts to agriculture for hundreds if not for thousands of years.

In present Rumania distinct mountain types of livestock are distinguishable which exhibit characteristics similar to those of the very ancient races from which they have descended. The horses are small, rugged, and resistant to inclement weather and hard usage. The mountain cattle³² are very small, wiry animals, quick gaited, and though light, are well adapted for work. They are gray in color as a rule; but tawny examples often appear. Mountain sheep are active breeds of the milk and meat type. The peasants slaughter the male lambs when about 5 to 9 days old, for the pelt, from which they make the characteristic Rumanian peaked cap worn both in summer and in winter. Mutton is seldom eaten except in spring, when the carcasses of lambs are consumed in large numbers. The mountain swine have the characteristics of the wild hog—long legs, razor-like back, and erect ears. The peasants keep large numbers of these native swine, although compared with the improved British or Hungarian breeds they are very uneconomical.

These native mountain breeds of livestock extend down into the lowlands, where they have been crossed with many other breeds of divers origin. In the old Kingdom the improved races came from the Turks; in Bessarabia they were largely introduced by the Rus-

³² Compare with description of Serbian and Czechoslovakian mountain breeds, to which these Rumanian breeds are closely related.

sians and Germans; in Transylvania by the Hungarians; and in Bukovina the Austrians were responsible for bringing into Rumanian peasant communities improved races of horses, cattle, hogs, and sheep.

Many different breeds were thus brought into each of the different departments where they have been intermingled with native stock. Some of these races have been maintained in a fairly pure condition upon large estates, as the Simmenthal cattle of the Banat and Crisana and the red German cattle of southern Bessarabia. The large estates also bred horses, and used as their chief market the army organizations of Germany and Austria-Hungary. It was on the estates that most of the flocks of Merinos and herds of Berkshires and Yorkshires were to be found.

The peasants are not natural animal breeders. In the first place the animals of any one peasant are pastured in the common grazing lands together with animals of all the other peasants. As a rule reproduction is haphazard, so that the whole village possesses animals of about the same grade of purity or admixture. The number of animals held by any one peasant is determined by the adjustment for pasturage that he can make with the village elders. These conditions all mitigate against specialization in animal breeding by the peasant farmer.

On the whole, the animal industry of Rumania is a home industry. Cattle and buffaloes are produced for work rather than for meat or milk, which are incidental to the traction power of these animals. Sheep are bred primarily for milk and secondarily for wool and skins from which the peasants make their winter clothing. As in Bulgaria and Yugoslavia, every peasant has a sheepskin or goatskin coat. Hogs alone are bred for meat, and pork almost exclusively forms the meat diet of the peasant although meat is rarely eaten except on holidays and at certain seasons of the year as at lambing time in the spring.

In the old Kingdom of Rumania, before the land reform, most of the land was in the hands of the large estate owners but most of the livestock was in the hands of the peasants—76.7 per cent of the horses, 80.3 per cent of the cattle, 70.8 per cent of the sheep, 80.6 per cent of the goats, 76.9 per cent of the swine, and 79.4 per cent of the bees. Similar conditions were found in Bessarabia, Transylvania, and Bukovina. (Table 36.) The large estate owner directed his attention to the production of cereals, sugar beets, and other crops that could be readily turned into cash. The object of peasant agriculture was, and still is, the maintenance of a home and family and the production of food and clothing. The essential animals are first the sheep and then the ox or the horse. Hogs are of less importance.

TABLE 36.—*Livestock and owners of livestock in 1911, classified according to size of land holdings in the region of Seven Mountains, Maramuresh, and Caras Severin ceded by Hungary*

Size of land holding		Own-ers of animals	Horses	Cattle	Swine	Sheep	Goats	Mules	Don-keys
Arpents ¹	Acres								
		No.	No.	No.	No.	No.	No.	No.	No.
Less than 1.....	Less than 1.4.....	15, 429	3, 336	16, 965	16, 082	24, 695	4, 144	6	115
1 to 5.....	1.4 to 7.1.....	139, 625	32, 303	265, 800	124, 900	420, 954	47, 792	23	559
5 to 10.....	7.1 to 14.2.....	123, 283	45, 153	357, 892	160, 809	664, 976	45, 565	16	349
10 to 20.....	14.2 to 28.4.....	87, 721	57, 725	345, 109	170, 951	718, 449	37, 194	14	240
20 to 50.....	28.4 to 71.1.....	37, 449	44, 918	207, 231	106, 162	470, 205	22, 844	29	188
50 to 100.....	71.1 to 142.2.....	4, 566	9, 033	38, 390	19, 765	97, 050	3, 714	7	72
100 to 200.....	142.2 to 284.4.....	1, 393	3, 638	17, 294	9, 439	45, 533	1, 103	7	84
200 to 500.....	284.4 to 711.....	980	3, 696	25, 051	13, 110	54, 645	631	13	205
500 to 1,000.....	711 to 1,422.....	442	2, 963	20, 968	17, 013	35, 416	251	9	135
1,000 and over.....	1,422 and over.....	416	6, 009	33, 238	32, 283	69, 560	588	40	222
Without land.....		65, 319	20, 013	64, 195	83, 963	92, 401	15, 007	59	791
Total.....		476, 623	228, 787	1, 392, 103	754, 496	2, 693, 884	178, 923	220	3, 039

Calculated from (15, 1912, pp. 126-137).

¹ 1 arpent=1.422 acres.

HORSES

As a rule horse breeding among Rumanian peasants has not been profitable and usually there are only enough horses to maintain the number of work animals permitted to be grazed on the common pastures. Peasant horses are seldom fed oats, corn is not always available, and often hay and straw and cornstalks are the only feed. Mares are bred too early and colts are put to work too young. As a consequence, peasant horses are usually of a very low grade except among the Bulgarians in Dobruja and south Bessarabia, the Germans of south Bessarabia and the Banat, and the Magyars of Transylvania. On some of the large estates very good horses are to be found. Breeding operations for export and the remount requirements of the Rumanian Army are usually restricted to the large landlords and middle-sized farmers.

In the old Kingdom, besides the primitive mountain horse are found the Moldavian, probable descended from the Russian steppe breeds; the Jalomitza, a good draft horse similar to native Magyar breeds; and the Dobruja, which is a fine crossbreed animal of Turkish and Arabian descent, similar to the horses in northern Bulgaria. This breed is also found in the Bulgarian villages scattered throughout southern Bessarabia. In Bessarabia the peasant horses are similar to those in Moldavia, intermixed with Russian steppe and Tartar types. On several of the estates are fine stables of Russian Orloffs, French Ardennes, Anglo-Arabian and other breeds. The native horses of Transylvania are of the Rumanian mountain type in the highlands and of the Magyar type in the lowlands. This latter race is descended from the horses brought in by the Magyars in the ninth century at the end of their migration from the Volga region in Russia. On the estates are found all the best breeds of central Europe.

There are no recent data as to the relation of the numbers of Rumanian horses to agricultural areas. The most recent figures are those of 1900 for the old Kingdom. In that year 726,687 horses

and 1,155,716 bulls, steers, and buffaloes were employed to plow 12,821,532 acres, or an average of 6.8 acres per animal.

As the large estates in Rumania have never had enough animals and agricultural implements to work their fields properly but have always depended upon the peasants to plow and harvest a large part of their crop lands and to haul their grain to market, in 1900 there were 346,416 small peasant farmers who owned nearly half the draft horses in the Kingdom, or an average of not more than 2 head each.

Although conditions were better in Bessarabia than in the old Kingdom, the estates were poorly equipped with draft animals and almost always depended upon the peasants for seasonal work.

Similar conditions prevailed in Transylvania, as indicated in Table 36, for the mountain districts of Seven Mountains, Maramuresh, and Caras Severin. Out of 228,787 horses found in these districts in 1911 the small peasants owned 196,106 whereas only 12,668 were found on the estates.

When the Central Powers retreated from Rumania in 1918 they took with them large amounts of railroad and other equipment as well as all the supplies on which they could lay their hands. The following year the Rumanians retaliated by raiding Hungary and invading the country as far as Budapest. It is reported that when the army withdrew they carried with them considerable supplies and equipment which may have included horses. In any case the year 1921 found the old Kingdom only 98,000 horses short of its pre-war (1911) numbers, as indicated in Table 37. Transylvania was 109,000 short of the 1911 returns. The shortage in Durostor and Caliacra and in Bukovina was 5,000 and 6,000 less than 1910, respectively, whereas conditions in Bessarabia were about normal.

TABLE 37.—Horses: Number in Greater Rumania, pre-war and 1921-1926

[In thousandths—i. e., 000 omitted]

District	Pre-war	1921	1922	1923	1924	1925	1926
Old Kingdom of Rumania.....	825	727	903	866	901	927	1,002
Durostor and Caliacra.....	70	65					
Transylvania.....	511	402	392	377	386	419	421
Bessarabia.....	431	429	435	441	415	389	369
Bukovina.....	70	64	72	74	76	80	85
Total.....	1,907	1,687	1,802	1,828	1,845	1,815	1,877

Pre-war: Rumania 1911 (36, 1918, p. 91); Transylvania 1911, furnished by the Hungarian Ministry of Agriculture (22, pp. 31, 32). Bessarabia 1910 (39, Ann. 6, p. 234). Bukovina 1910 (2, Jahrg. 30, p. 96). Durostor and Caliacra 1910, calculated from (10).

1921 to 1924 (36, 1922, 1924, 1925).

1925 and 1926 from report of E. E. Palmer, United States consul, Bucharest, dated Mar. 25, 1927.

There is no public record of numbers transferred, but, Rumania has received from Bulgaria and Hungary considerable numbers of horses on account of reparation payments. This has tended to offset World War losses so that in the old Kingdom and the Bukovina the number of horses since 1922 has exceeded the pre-war average. There were similar increases in Bessarabia up to the time of the drought in 1924 and 1925. In Transylvania the numbers have fluctuated with feed conditions and the general status of agriculture, but on the whole recovery has been slow. The districts now comprising Rumania were,

in 1925, only 92,000 horses short of the pre-war (1910 and 1911) number, and 30,000 short in 1926.

Horse breeding in the old Kingdom was never important; only a few hundred animals were exported each year before the World War, whereas several thousand were imported. (Table 38.)

The Rumanian Government owns stables scattered throughout the country to provide for the remount requirements of the army. Since the World War some horses of the Turkish-Arab cross are shipped to Constantinople and some horses from the Banat and Crisana are shipped to central Europe each year; but, on the whole, horse breeding in Rumania is not as profitable as is cereal production and will probably remain, in future as at present, of very secondary importance.

TABLE 38.—Horses: Imports and exports of the old Kingdom of Rumania, 1877-1913, and of Greater Rumania, 1922-1925

Year	Imports	Exports	Year	Imports	Exports	Year	Imports	Exports
Old Kingdom:	<i>Number</i>	<i>Number</i>	Old Kingdom—			Old Kingdom—		
Continued.			Continued.	<i>Number</i>	<i>Number</i>	Continued.	<i>Number</i>	<i>Number</i>
1877.....	16,261	5,282	1893.....	8,596	453	1908.....	7,510	196
1878.....	31,775	4,246	1894.....	5,919	812	1909.....	7,662	428
1879.....	14,663	4,016	1895.....	5,211	655	1910.....	5,698	267
1880.....	14,680	2,248	1896.....	6,445	525	1911.....	12,438	662
1881.....	22,976	1,700	1897.....	8,308	280	1912.....	11,703	1,168
1882.....	20,704	1,846	1898.....	6,257	375	1913.....	9,759	102
1883.....	13,227	2,126	1899.....	5,907	567	Greater Ruma-		
1884.....	7,936	3,369	1900.....	2,690	298	nia:		
1885.....	4,099	2,497	1901.....	4,123	237	1922.....	170	329
1886.....	2,369	1,278	1902.....	7,909	233	1923.....	84	1,199
1887.....	690	945	1903.....	8,265	290	1924.....	55	81
1888.....	3,680	680	1904.....	7,221	598	1925.....	69	98
1889.....	12,237	775	1905.....	7,168	376			
1890.....	6,344	456	1906.....	9,511	253			
1891.....	7,570	630	1907.....	6,046	164			
1892.....	7,672	283						

1877-1900 (50). 1901 to 1913 and 1922 to 1925 (56).

CATTLE

The native types of cattle found in all parts of Greater Rumania exhibit the same general characteristics of the primitive Asiatic breeds collectively called "*Bos taurus primigenius*." Throughout the central mountain ranges of Transylvania, Bukovina, and the old Kingdom the small mountain type (already described) predominates. In the foothills and plains regions to the east and south, in the old Kingdom, the Bukovina, and Bessarabia the common breeds belong to the Podolian³³ branch of the gray steppe cattle found generally in southeastern Europe; whereas to the north and west in the Department of Transylvania the Hungarian branch is found. The general characteristics of these two branches of steppe cattle are similar. The animals are large boned, long legged, active, powerful in the forequarters, and tapering in the hindquarters thus making excellent oxen. Their color is white-gray with darker shades often appearing. The Podolian cattle, although not short horned in the American sense of the term, have much shorter horns than do the extraordinarily long-horned Hungarian race.

There are many types of these cattle, named after particular localities, as Podolian, Ukrainian, Moldavian, Buckschan, Jalomitza,

³³ This name is derived from the Russian Province of Podolia.

and Hungarian. All these cattle make excellent yoke oxen (oxen from other breeds can not be compared with them) but they develop slowly, mature late, and are difficult to fatten; they yield relatively little first-class meat and barely enough milk to nourish a calf.

In southern Bessarabia there are large settlements of German colonists who brought with them the red cattle of Germany. The descendants of these cattle now constitute the red Bessarabian breed, Hohnagora, a fairly good dairy breed. Simmenthal cattle are found in all districts, particularly in the Banat and Crisana. Dutch cattle and other lowland dairy breeds have been introduced without great success on account of the sparse pasturage in the Rumanian lowlands.

Oxen of the native races are the chief draft animals in Rumania. Cows are almost never yoked, even when they are not utilized for milk production. The ordinary plains cows give only 3 to 4 quarts of milk daily. The mountain herds yield somewhat more, up to 7 to 8 quarts. Dairies are for the most part found only in the vicinity of large cities to supply these cities with liquid milk and partially to meet the demand for butter and cheese. As compared with Holland or France, there is no dairy industry in Greater Rumania, and considerable quantities of butter and cheese are imported annually.

WATER BUFFALOES

During the time of the migrations of some prehistoric people the water buffalo of India was introduced into the Danube Basin and to-day is found in the valleys of the Danube and its tributaries in the old Kingdom of Rumania, Bulgaria, Yugoslavia, Hungary, and Transylvania. In certain regions these slow but powerful animals, with 30 per cent greater traction strength than the ox, have displaced cattle as work animals among the peasants. They require better feed than cattle and a warm stall in winter. In many instances the cattle are never housed, but are protected against the wind and weather only by a fodder stack or by some rudely improvised, usually roofless, shelter.

According to the census of 1900, fully 61 per cent, or 1,155,716, of the draft animals of the old Kingdom of Rumania were bulls, steers, and draft water buffaloes. There were 2,588,526 head of cattle and water buffaloes of all classes in the old Kingdom of Rumania in 1900. The cattle on Rumanian farms were almost exclusively those engaged in active farm work, and a few cows and such young stock as were essential for replacement or work animals. After a few years of labor, they were sent to the block.

As the estates in the old Kingdom and in Transylvania depended largely upon the peasants' cattle for working the land, only 79,257 cattle were found on the large estates of the mountain regions of Transylvania in 1911 as contrasted with 1,248,651 cattle in the hands of small peasant farmers. Similar conditions were found in Bessarabia.

Before the World War, there were about 5,781,000 cattle in the territories now comprising Greater Rumania. (Table 39.)

TABLE 39.—Cattle, including water buffalo: Number in Greater Rumania, pre-war and 1921-1926

[In thousands—i. e., 000 omitted]

District	Pre-war	1921	1922	1923	1924	1925	1926
Old Kingdom of Rumania.....	2,667	2,447	2,823	2,553	2,553	2,541	2,529
Durostor and Caliacra.....	184	133					
Transylvania.....	2,184	2,266	2,119	2,029	1,967	1,804	1,705
Bessarabia.....	518	662	765	821	721	654	534
Bukovina.....	228	214	234	216	215	210	224
Total.....	5,781	5,722	5,932	5,739	5,583	5,219	4,992
Cows.....	2,250	2,335	2,437	2,426	2,360	2,236	.....

Same sources as in Table 37.

1 Cows for old Kingdom and Bessarabia were estimated.

2 Not including water buffalo cows (54).

Under the conditions prevailing before the World War, the cattle of Rumania were largely owned by the peasants. As the peasants increased their holdings of land after expropriation it was to be expected that the numbers of cattle would be appreciably increased. By 1921, the total number cattle was only 59,000 below the pre-war estimate and in 1922 there were 151,000 more cattle than before the war. The next year, probably on account of feed conditions, there was a falling off in all parts of the Kingdom except Bessarabia. This falling off continued during 1924, 1925, and 1926, at which time total cattle numbered 789,000 below pre-war.

The number of cattle and of livestock in general that can be carried in Rumanian villages will always be limited by the quantity of feed available. Under conditions of peasant farming available feeding stuffs will fluctuate greatly from year to year. The decrease of cattle in 1925 to 5,219,000 as compared with 5,583,000 in 1924 was probably attributable to shortage in feed because although the number of cattle exported during 1925 was twice as many as in 1924 these cattle shipments to foreign countries have not been large. (Table 40.)

TABLE 40.—Cattle: Imports and exports of the old Kingdom of Rumania, 1877-1913, and of Greater Rumania, 1922-1925

Year	Imports	Exports	Year	Imports	Exports	Year	Imports	Exports
	Number	Number		Number	Number		Number	Number
Old Kingdom:			1877	237	2,928	1907	355	3,525
1877	1,645	57,941	1883	1,628	1,984	1908	1,408	10,063
1878	1,382	43,667	1894	574	22,797	1909	570	9,360
1879	4,006	30,654	1895	746	24,374	1910	184	22,481
1880	5,579	20,503	1896	81	20,551	1911	209	24,756
1881	6,909	20,732	1897	1,066	6,309	1912	605	14,125
1882	3,753	2,260	1898	3,285	8,526	1913	338	10,044
1883	2,129	3,276	1899	1,525	16,398	Greater Ruma-		
1884	580	3,209	1900	156	8,972	nia:		
1885	338	11,821	1901	353	13,680	1922	170	151,141
1886	531	18,060	1902	642	11,484	1923	6	106,324
1887	291	17,371	1903	394	12,774	1924	77	43,061
1888	1,737	6,394	1904	235	17,391	1925	247	86,178
1889	2,336	2,009	1905	216	6,194			
1890	1,226	8,496	1906	328	2,360			
1891	461	3,464						

1877-1900 (50). 1901-1913 and 1922-1925 (55).

Before the World War, a very considerable percentage of the cattle sent to the northwest by Hungary originated in the Banat, in Crisana

and in the region of Seven Mountains. Since the war, the commission merchants of Vienna, Budapest, and Prague have reestablished their contacts with their former sources of supply. Although now separated from these former free markets by the customs barriers of the Rumanian frontiers, the Transylvanian departments have sent several thousand head of cattle abroad each year.

But this trade has been hampered by the enormous export taxes levied on cattle which, according to the report of Consul E. E. Palmer under date of April 24, 1925, amounted to as much as \$40 per head at that time.

On May 20, 1926, this export tax was reduced to practically 4,000 lei or \$14.80³⁴ per head for oxen, bulls, cows, and water buffaloes, regardless of weight and 600 lei or \$2.22 on hogs. At the same time, the State railroads canceled their supertax on freight rates applying to livestock intended for export, which had previously been 30 per cent in addition to the straight freight paid.

TABLE 41.—Beef produced at slaughterhouses in Greater Rumania, 1923 (37, p. 91)

District	Animals slaughtered	Live weight	Estimated meat produced ¹	Amount ² per capita
	Number	1,000 pounds	1,000 pounds	Pounds
Old Kingdom.....	495,290	596,145	274,227	37.1
Transylvania.....	503,331	518,543	238,530	43.5
Bessarabia.....	101,088	117,117	53,874	17.9
Bukovina.....	117,471	117,812	54,193	64.4
Total.....	1,217,180	³ 1,349,617	620,824	⁴ 37.1

¹ Dressed meat estimated to be 46 per cent of live weight.

² See Table 4 for populations.

³ This is the sum of the weights of animals slaughtered in each department as given above. The total given in (37) is equivalent to 1,350,720,000 pounds.

⁴ Comparing the quantity of meat (beef, pork and mutton) to the population [1925] the result is an annual consumption of 51.35 kilograms (113.2 pounds) per town citizens and 3.50 kilograms (7.7 pounds) per rural inhabitant. (30, p. 9).

CONSUMPTION OF BEEF

The consumption of beef in Rumania is confined almost entirely to inhabitants of cities. The farming peasants seldom eat beef. There are no meat markets in the villages, where ice in summer is unknown, and therefore the fresh meat supply is restricted to small animals that can be consumed within a relatively short period. Within the cities themselves the rate of beef consumption varies greatly in different parts of the Kingdom. It is greatest in Bukovina and least in Bessarabia.

There were 1,217,180 mature cattle and calves slaughtered in Greater Rumania during 1923. Of this number, 503,331 were slaughtered in Transylvania and only 101,088 in Bessarabia.

As indicated in Table 41, the quantity of beef produced at slaughterhouses throughout Greater Rumania in 1923 was approximately 620,824,000 pounds, or about 37.1 pounds per capita.

There were no importations of fresh beef during the year, but 4,061,358 pounds were exported; 2,689,206 pounds of this quantity going to Austria, 985,108 pounds to Hungary, and 340,254 pounds to Czechoslovakia.

³⁴ The average value of 1 leu during May, 1926, was 0.37 cent.

This would indicate that the actual domestic consumption of beef in Greater Rumania during 1923 was 616,762,000 pounds, or 36.9 per capita.

SHEEP

Sheep raising in Rumania constitutes a relatively more important part of farming than is the case in more highly developed countries. The native sheep are of the fat-tail or long-wool breeds producing lambs whose hair at 5 to 10 days after birth assumes the tight-curl characteristic of Astrakan or Karakul fur. These sheep have been indigenous to the country since ancient times. They have been improved, particularly in Bessarabia, by importations of Karakul sires from Bukhara.

The best Rumanian astrakan comes from Bessarabia.

The Karakul sheep of Bessarabia, the Czurcana of the old Kingdom, and the Raczka and the Czigaja of Transylvania are milk-producing breeds of great importance in the peasant household. A ewe yields from 8 to 10 gallons of milk during a lactation period, from which 11 to 12 pounds of cheese can be made. This cheese called "brinza," together with corn-meal mush (mamaliga) and fruits and vegetables laid down in brine, form the basic diet of the peasant. In the spring of the year, at lambing time, the carcass of the young animals slaughtered for their pelts varies the monotony of this diet; but, with the exception of an occasional pig on holidays and fat salt or smoked pork, little meat is eaten in the rural districts.

An Asiatic breed of sheep similar to the Merino, called the "Czi-gaia," is found in the old Kingdom of Rumania. This breed has been crossed by full-blood Merinos with good results.

All the foregoing breeds would be classed as coarse-wool sheep, although the last two produce a better, finer quality than do the others. Colors vary from dirty white, through gray to red, brown, and black. The average mature sheep yields from 4 to 7 pounds of unwashed wool. Rumanian wool is utilized almost exclusively in home industries. A housewife is seldom seen without her distaff and spindle. She spins yarn even while walking to and from her daily work in the fields. Almost every household has a loom upon which cloth and carpets are manufactured from the brightly dyed wool. Every peasant has an astrakan cap and a coat of sheep pelt with the wool turned inside. The soft tanned skin outside is brilliantly colored with the decorative pattern emblematic of the locality in which he lives. Sheep are more nearly indispensable to the peasant than are any other farm animals, as they supply both food and clothing.

There were only 270 flocks of more than 1,000 head of sheep in the old Kingdom, according to the census of 1900. The most common size of flock comprised 10 head or less. Peasants possessed 270,358 of these small flocks.

In the mountain region of Transylvania there were 2,693,884 sheep in 1911 of which only about 159,621 were found on large estates. Full-blood Merinos, and various English breeds, as well as the better strains of native sheep were found only in the large flocks on the estates.

By 1921, the flocks of Greater Rumania had recovered to their pre-war status as indicated in Table 42.

TABLE 42.—*Sheep: Number in Greater Rumania, pre-war and 1921-1926*

[In thousands—i. e., 000 omitted]

District	Pre-war	1921	1922	1923	1924	1925	1926
Old Kingdom	5,269	4,793	} 6,197	{ 5,560	6,524	} 6,869	7,691
Durostor and Calliaca	804	621						543	529
Transylvania	3,529	3,416	3,691	3,695	3,897	3,624	3,476
Bessarabia	1,342	2,180	2,297	2,450	2,362	2,143	2,096
Bukovina	189	184	236	233	300	314	320
Total	11,133	11,194	12,321	12,481	13,612	12,950	13,582

Same sources as Table 37.

It is easier for the peasant to increase his numbers of sheep than his horses or cattle because of restrictions in the grazing privileges on the village commons. Sheep produce milk for cheese and it is simpler for the peasant to visualize the benefits to be derived from an assured return of a few pounds more food than the benefits from the uncertain return of a margin of profit on the larger and later maturing classes of livestock.

In Transylvania, Bessarabia, and Bukovina increase in sheep numbers was steady until 1924. During this time the numbers of sheep in Bessarabia nearly doubled.

In 1925, the numbers of sheep on Rumanian farms in all districts except Bukovina show a decrease as compared with the previous season probably because of the dry season of 1924 and consequent shortage of feed.

There was great destruction of the sheep-herding establishments in the Dobruja during the World War and there was a reduction of pasturage in this region. As indicated by the data for Durostor and Calliaca, the recovery of the sheep industry southeast of the Danube has been slow.

WOOL

Little of the wool produced in Rumania is suited to the commercial textile industry of the country which employs for the most part cotton, flax, and hemp. The peasants spin and weave at home almost all the fabrics used in making their clothing from home-produced flax and wool. In recent years, however, they have been wearing factory-made cotton goods in increasing quantities. The export wool of Rumania is the coarse, long sort suitable only for carpets and felt. The textile mills import wool and yarn of the finer grades.

From 1888 to 1900 the export of wool from the old Kingdom had been fairly regular, ranging between 1,000 and 1,500 short tons annually. (Table 43.) With increased production it is probable that greater quantities of wool will be available for export.

TABLE 43.—Wool: Imports and exports of the old Kingdom of Rumania, 1876-1913, and of Greater Rumania, 1922-1925

[In thousand pounds—i. e., 000 omitted]

Year	Im-ports	Exports	Year	Im-ports	Exports	Year	Im-ports	Ex-ports
Old Kingdom:			Old Kingdom—Continued.			Old Kingdom—Continued.		
1876.....	40	5,365	1892.....	720	2,815	1907.....	1,164	2,545
1877.....	39	7,073	1893.....	1,577	2,991	1908.....	1,832	1,978
1878.....	89	7,357	1894.....	1,162	3,365	1909.....	1,433	2,675
1879.....	14	5,640	1895.....	870	4,192	1910.....	1,406	2,923
1880.....	13	9,127	1896.....	1,156	2,924	1911.....	2,200	3,051
1881.....	16	8,390	1897.....	1,362	2,158	1912.....	2,818	2,119
1882.....	42	8,098	1898.....	1,663	2,485	1913.....	2,266	3,387
1883.....	21	7,104	1899.....	1,188	4,097	Greater Rumania:		
1884.....	205	6,921	1900.....	1,050	2,780	1922.....	1,835	62
1885.....	57	7,364	1901.....	1,368	2,163	1923.....	5,704	13
1886.....	107	4,678	1902.....	1,604	2,729	1924.....	602	155
1887.....	57	3,768	1903.....	2,208	2,921	1925.....	1,763	677
1888.....	34	2,660	1904.....	1,462	3,593			
1889.....	78	2,876	1905.....	924	5,112			
1890.....	132	3,304	1906.....	1,917	4,876			
1891.....	66	1,014						

1876-1900 (30).

1901-1913 and 1921-1925 (35).

PRODUCTION OF MUTTON

The peasants slaughter few mature sheep for home use during the summer months when the ewes are being milked, but during the summer, lambs of all ages are sent to the city markets. In winter, mature animals that are not suitable for milk production or reproduction are slaughtered at home or are shipped to the cities. In the spring of the year, large numbers of young lambs, 5 to 10 days old, are slaughtered for their pelts. There is no estimate of the number of such lambs that are killed in the spring or of home slaughterings of more mature sheep. Municipal slaughterings have been estimated at 1,321,928 head during 1923, as indicated in Table 44.

TABLE 44.—Mutton produced at slaughterhouses in Greater Rumania, 1923¹ (37, p. 91)

District	Animals slaughtered	Live weight	Estimated meat produced ²	Amount per capita ³
	Number	1,000 pounds	1,000 pounds	Pounds
Old Kingdom.....	722,721	24,373	11,212	1.52
Transylvania.....	472,071	20,666	9,506	1.73
Bessarabia.....	94,441	2,674	1,230	.41
Bukovina.....	32,695	1,686	776	.92
Total.....	1,321,928	49,399	22,724	1.36

¹ Does not include lambs slaughtered for their pelts at 5 to 10 days of age. This class of meat is plentiful in spring. Under ordinary conditions, sheep are seldom slaughtered by the farming peasantry for their own consumption except in late fall.

² Dressed meat estimated at 46 per cent of live weight.

³ See Table 4 for populations.

⁴ This is the sum of the animals slaughtered in each department as given above. The total given (37) is 1,311,928.

The mutton produced at city slaughterhouses in 1923, was estimated at 22,724,000 pounds, indicating an average per capita supply for all classes of the population of only 1.36 pounds.

No fresh mutton was exported or imported during 1923, but, as indicated in Table 45, 27,055 live animals were sent abroad. Of this number, 23,935 went to Turkey and a few hundred head to Hungary, Italy, Germany, Czechoslovakia, and Austria.

TABLE 45.—*Sheep and goats: Imports and exports of the old Kingdom of Rumania, 1877-1913, and of Greater Rumania, 1922-1926*

Year	Im-ports	Ex-ports	Year	Im-ports	Ex-ports	Year	Im-ports	Ex-ports
Old Kingdom:	<i>Number</i>	<i>Number</i>	Old Kingdom—Continued.	<i>Number</i>	<i>Number</i>	Old Kingdom—Continued.	<i>Number</i>	<i>Number</i>
1877	1,567	178,826	1892	3,832	55,835	1907	3,211	4,656
1878	42,448	142,228	1893	4,264	25,895	1908	222	1,405
1879	15,816	200,899	1894	1,280	46,021	1909	404	9,151
1880	40,742	103,216	1895	3,287	57,370	1910	178	12,375
1881	23,137	114,857	1896	1,763	30,404	1911	122	4,344
1882	56,291	139,070	1897	2,603	11,532	1912	111	2,393
1883	25,602	159,579	1898	2,325	35,834	1913	11	11,751
1884	24,786	170,692	1899	2,438	24,126	Greater Ruma- nia:		
1885	23,285	117,809	1900	1,011	22,305	1922	97	25,281
1886	34,256	60,041	1901	3,677	24,271	1923	136	27,055
1887	6,408	75,094	1902	2,471	20,010	1924	12	3,414
1888	9,853	74,187	1903	4,423	19,009	1925	27	48,463
1889	8,595	57,333	1904	1,048	11,951			
1890	6,644	51,107	1905	2,639	12,040			
1891	8,033	71,253	1906	749	15,552			

1877-1900 (30).
1901-1913 and 1922-1926 (35).

SWINE

The native swine in the mountain regions of Transylvania, the old Kingdom, and Bukovina are the small, almost wild, razorback hogs called "Stocli." In the lowlands is found the swamp hog, Baltaret, which is an unimproved animal of ancient origin. In Bessarabia under the Russians, the native breeds have almost disappeared, having been much improved by the introduction of modern English breeds. In the lowlands of Transylvania is found the Hungarian Mangalica hog. This hog occurs in the old Kingdom under the name of Mangolitz, where are also found an Asiatic breed called Palatin.

The reproduction of these swine is largely a matter of accidental mating. Every peasant household has its quota of pigs that scavenge around under foot everywhere. On Christmas, according to ancient custom, every household has a fat pig for dinner. In the fall hogs are slaughtered and the flesh is salted and smoked for summer use.

On the estates the best improved breeds of swine are to be found. Yorkshires and Berkshires are most common.

Before the World War, or in 1910 and 1911, the territories now comprised within the boundaries of Greater Rumania carried about 3,249,000 swine. In 1921 there was a decrease below the pre-war normal numbers in Transylvania and Bukovina; whereas increases in other parts of the Kingdom brought the total up to 97 per cent of pre-war. During the next five years there have been seasonal changes in different parts of the Kingdom, as indicated in Table 46.

TABLE 46.—*Swine: Number in Greater Rumania, pre-war and 1921-1926*
[In thousands—i. e., 000 omitted]

District	Pre-war	1921	1922	1923	1924	1925	1926
Old Kingdom	1,021	1,285	1,448	1,283	1,474	1,436	1,551
Durostor and Caliacra	24	51					
Transylvania	1,510	1,245	1,070	962	1,015	1,101	1,171
Bessarabia	475	473	608	513	480	415	328
Bukovina	219	96	121	123	128	136	118
Total	3,249	3,150	3,147	2,925	3,133	3,068	3,168

Same sources as in Table 37.

Numbers of swine in Transylvania have tended to decrease since the World War, being 230,000 less in 1924 than in 1921. This decrease has probably been due to the poor condition of the hog market in central Europe. Before the war a considerable portion of the heavy shipments of swine from Hungary to the Vienna market originated in the corn belt of the Banat and Crisana. In the mountainous regions of Transylvania almost all of the swine were found on the small land holdings in 1911, (Table 36) but, in the lowlands, middle-sized and large farms carried on pork production (Table 47) on a commercial scale, either shipping their finished product directly to the Vienna or Prague markets or semifinished hogs to the feeding establishments about Budapest or in western Hungary. As indicated in Table 47, the largest estates (more than 1,422 acres) averaged more than 250 head of hogs each in 1911. When conditions of the market are unfavorable, these commercial establishments reduce the number of swine on feed. It is probable that when conditions of trade in central Europe improve the lowlands of western Transylvania, which also produce large surpluses of corn, will revive their former hog industry.

TABLE 47.—Livestock and owners of livestock in 1911, classified according to size of land holdings in the lowlands of Crisana¹ and Banat¹ ceded by Hungary to Rumania

Size of holding		Own- ers of ani- mals	Horses	Cattle	Swine	Sheep	Goats	Mules	Don- keys
Arpents ²	Acres								
		<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Less than 1.....	Less than 1.4.....	16,766	5,708	15,775	29,369	8,528	2,630	.....	116
1 to 5.....	1.4 to 7.1.....	68,779	35,681	112,534	92,893	80,264	24,508	9	457
5 to 10.....	7.1 to 14.2.....	48,154	45,827	119,962	84,453	97,412	11,309	10	191
10 to 20.....	14.2 to 28.4.....	35,062	58,638	112,628	98,382	126,077	5,206	2	136
20 to 50.....	28.4 to 71.1.....	19,928	60,774	84,965	99,391	129,251	2,472	3	163
50 to 100.....	71.1 to 142.2.....	3,073	18,357	25,636	30,443	46,263	2,373	3	68
100 to 200.....	142.2 to 284.4.....	1,115	6,784	13,178	15,992	30,447	133	2	52
200 to 500.....	284.4 to 711.1.....	827	6,298	22,484	25,167	61,387	209	15	104
500 to 1,000.....	711.1 to 1,422.....	371	5,121	23,058	33,780	45,517	68	2	154
1,000 and over.....	1,422 and over.....	442	13,214	67,772	113,665	166,042	86	64	308
Without land.....	.....	63,968	23,193	59,575	146,431	42,595	8,517	13	707
Total.....	.....	258,485	279,615	657,627	767,956	835,783	55,411	123	2,486

Calculated from (15, 1912, pp. 126-137).

¹ Includes territory ceded from the Provinces of Ugocea, Szatmar, Bihar, Arad, Csanad, Szilagy, Temes, and Torontal.

² 1 arpent=1.422 acres.

In the old Kingdom, pork was produced almost exclusively for household use. In 1900, there were 730,260 households that possessed 1 to 5 head of swine. Only 29,473 households possessed 6 to 20 head. There were 1,399 establishments with 21 to 50 and only 887 proprietors with more than 50 swine each.

During the late seventies and early eighties of the last century, the old Kingdom of Rumania, as indicated in Table 48, exported between 100,000 and 200,000 hogs each year.³⁵ But the industry had rapidly dwindled, so that just before the World War only a few animals were sent abroad.

³⁵ An average of 54,671 hogs were sent to the commercial feeding establishment of Kőbánya near Budapest each year between 1876 and 1880. Under pressure of Serbian competition and the development of the Hungarian swine industry this business finally discontinued in 1896.

TABLE 48.—*Swine: Imports and exports of the old Kingdom of Rumania, 1877-1913, and of Greater Rumania, 1922-1925*

Year	Imports	Exports	Year	Imports	Exports	Year	Imports	Exports
Old Kingdom:	<i>Number</i>	<i>Number</i>	Old Kingdom—Con.	<i>Number</i>	<i>Number</i>	Old Kingdom—Con.	<i>Pounds</i>	<i>Pounds</i>
1877	3,173	195,962	1892	72	10,799	1906	215,863	5,644
1878	1,314	142,506	1893	72	18,557	1907	258,311	33
1879	812	153,607	1894	364	25,141	1908	8,719	6,182
1880	939	92,143	1895	486	14,252	1909	13,459	53,781
1881	715	178,430	1896	425	39,048	1910	848,515	16,116
1882	1,030	136,317	1897	94	15,511	1911	288,558	1,332
1883	190	143,654	1898	227	40,804	1912	16,182	939
1884	239	73,648	1899	95	7,423	1913	2,134	331
1885	183	36,275	1900	38	2,192	Greater Rumania:		
1886	68	45,648	1901	47	3,121	1922	4,176	58,308,253
1887	25	22,276	1902	34	679	1923	1,936	29,782
1888	85	18,662	1903	70	59	1924	1,206	26,320,278
1889	66	14,956	1904	100	39	1925	8,660	66,791,664
1890	77	3,887	1905	1,435	17			
1891	251	5,237						

1877-1900 (30). 1901-1913 and 1922-1925 (35).

Since the World War, pork production in these regions has fluctuated somewhat with the amount of the corn crop, so that the exportable surplus of pork has also varied greatly from year to year. The consuming centers in Hungary, Austria, Czechoslovakia, and central Europe have reestablished contacts with their former sources of pork supply in western Transylvania and weekly shipments of hogs are made to the western markets.

In other parts of Rumania, it is probable that swine production will be restricted more nearly to the requirements of farm families and the demands of local markets. But in the Banat and Crisana, pork production on a commercial scale can be confidently awaited as a future development.

PORK CONSUMPTION

Pork is the staple meat diet of the Rumanian peasant. It is not possible to estimate the number of swine slaughtered on farms. In comparison with cattle and sheep, only a small number of hogs are killed for city consumption. As indicated in Table 49, a total of 401,758 hogs were butchered at municipal slaughterhouses in 1923. The pork equivalent of this number of hogs has been estimated at 71,643,000 pounds, which, prorated over the entire population of the Kingdom, amounts to only 4.28 pounds per capita.

TABLE 49.—*Pork produced at slaughterhouses in Greater Rumania, 1923¹* (37, p. 91)

District	Animals slaughtered	Live weight	Estimated meat produced ²	Amount per capita ³
	<i>Number</i>	<i>1,000 pounds</i>	<i>1,000 pounds</i>	<i>Pounds</i>
Old Kingdom	141,010	36,463	25,888	3.50
Transylvania	199,579	52,473	37,256	6.79
Bessarabia	34,707	8,948	6,353	2.11
Bukovina	26,462	3,022	2,146	2.55
Total	401,758	100,906	71,643	4.28

¹ This probably represents urban consumption only, as almost every peasant family has roast pork on Christmas; and in the fall almost every household cures pork by salting or smoking for summer use. It is a common practice to kill pigs at the suckling stage and to roast them whole. The amount of pork consumed per capita by the peasants in Greater Rumania is doubtless more than here indicated for the mean of the total population.

² Dressed meat estimated at 71 per cent of live weight.

³ See Table 4 for populations.

MULES, DONKEYS, AND GOATS

The use of mules and donkeys in Rumania is restricted to a few thousand occurring incidentally on larger farms and in cities. There is no well-developed mule production as in Spain, France, or Italy. The influence of these animals upon the agricultural situation in greater Rumania is negligible.

Goats are found in considerable numbers among the poor peasants in the mountain districts and the poorer class of laborers in cities. Before the World War, as indicated in Table 50, there were about 528,000 goats in the territories now comprising Greater Rumania. Since the war, goat numbers had run higher than during 1909-1913 until 1925, when there was a decrease of a few thousand, bringing the total down to 494,000. In 1926 there was a further decrease to 477,000.

TABLE 50.—Goats, mules, and donkeys: Number in Greater Rumania, pre-war and 1921-1926

[In thousands—i. e., 000 omitted]

District	Goats	Mules	Donkeys	District	Goats	Mules	Donkeys
Old Kingdom, 1911.....	187	14	(?)	Greater Rumania:			
Durostor and Caliacra, 1910.....	104	(?)	3	1921.....	574	2	11
Transylvania, 1911.....	208	(?)	5	1922.....	552	3	10
Bessarabia, 1910.....	26	(?)	(?)	1923.....	585	3	11
Bukovina, 1910.....	3	(?)	(?)	1924.....	531	4	9
Total, pre-war.....	528	4	8	1925.....	494	2	10
				1926.....	477	2	11

Same sources as in Table 37.

¹ Includes donkeys.

² Not separately stated but included with mules.

³ Less than 500.

⁴ Not separately stated.

Goats are maintained for milk production. As a rule all kids are slaughtered except those intended for replacement. There is no record of the numbers of kids and goats slaughtered for home use; but in 1923, city slaughterhouses reported 78,150 goats killed, from which 4,734,000 pounds of meat were obtained. Prorated over the entire Rumanian population this is equivalent to only 0.28 pound per capita. (Table 51)

TABLE 51.—Goat meat produced at slaughterhouses in Greater Rumania, 1923 (37, p. 91)

District	Animals slaughtered	Meat produced	
		Total	Per capita ¹
		1,000 pounds	Pound
Old Kingdom.....	35,912	1,582	0.21
Transylvania.....	39,752	3,037	.55
Bessarabia.....	982	56	.02
Bukovina.....	1,504	50	.07
Total.....	78,150	4,734	.28

¹ See Table 4 for populations.

FEEDING LIVESTOCK

Before the World War the area of meadows and pastures in Greater Rumania was estimated to be 12,770,000 acres and there were 1,307,000 acres of forage plants or a total of 14,077,000 acres of grasslands.²⁶ This would indicate for each 100 acres 13.5 horses; 41.1 cattle; 23.1 swine; 79.1 sheep; and 3.8 goats or 161 animals in all.

Livestock also have the run of fallow lands and stubble fields, and some portions of the forest lands, but the forests are uncertain sources of grazing. The meadows and pastures are unimproved and of poor quality. In the old Kingdom of Rumania, the pastures have been common village property since 1908. Livestock are grazed on these commons from early spring until late fall. In the cities some grain is given to horses, cattle, and sheep, but in the country the peasant usually feeds straw and cornstalks and occasionally some hay.

Swine are given a little grain a few weeks before they are slaughtered. In summer, they live on pasture or forage in the village streets and yards. In winter they are underfed and suffer from hunger.

Livestock are seldom kept in a 4-walled shelter and often run in the open during winter. The use of straw as bedding material would usually be considered a waste.

Since peasant livestock receive little or no grain in winter they are turned out in spring in a half-starved condition. The meadows and pastures are kept so closely cropped that they are practically barren when the drought of summer comes. There is no reserve grass, and if drought is protracted the villagers are obliged to sacrifice their reserve stock. Often the poorer peasants are reduced to selling their work animals. Thus in 1924 the general shortage of feed throughout Rumania was followed by a sharp reduction in livestock. The enumeration in 1925 shows 364,000 fewer head of cattle than in 1924; 662,000 fewer sheep, 37,000 fewer goats, and 30,000 fewer horses.

MEAT PRODUCTION AND CONSUMPTION

Meat consumption in Rumania is very restricted; that of the old Kingdom has been estimated at 20.9 pounds per capita before the World War, by G. Jonescu-Sisesti in *Rumäniens Bäuerliche Landwirtschaft* (19). Jonescu-Sisesti has also estimated the post-war consumption of meat in cities of Greater Rumania at 113.2 pounds as contrasted with 7.7 pounds in the rural districts. If these consumption rates be applied to the rural and urban population as reported in 1923, the mean consumption for all classes was about 30 pounds per capita. In 1923 meat production of the old Kingdom amounted to 658,563,000 pounds, according to previous tables. Even subtracting 4,061,000 pounds, the exports of meat from total Greater Rumania during 1923 would indicate a consumption of 654,502,000 or 39.1 pounds per capita, which is about one-third higher than Jonescu-Sisesti's post-war estimate and almost twice the pre-war estimate for the old Kingdom. This figure does not include sheep and hogs slaughtered by peasants for home use.

²⁶ Fallow lands produce grass for hay and grazing but with changes of boundaries there has been a change in the manner in which fallow lands are classified so that it is not possible to compare post-war with pre-war fallow areas.

A great advance in the standard of living among all classes of Rumanian society is thus indicated.

Before the World War, almost all the cattle slaughtered in the old Kingdom were unfattened or, at best, were only grass fed. Distilleries fattened a few head of cattle annually for city demand, and occasionally a peasant or an estate owner stall-fed a few head in the fall after the season's work had been completed. But these cases were rare, and usually the slaughter weights of cattle were low. (Table 52.)

TABLE 52.—*Live weights of cattle marketed in the old Kingdom of Rumania, pre-war (19, p. 86)*

Classification	Unfattened	Fattened on grass	Stall fed
Oxen:	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Moldavian.....	428 to 1,036	525 to 1,100	992 to 1,367
Mountain.....	351 to 772	450 to 1,036	772 to 948
Different crossbreeds.....	373 to 1,323	483 to 1,102	604 to 739
Cows:			
Moldavian.....	397 to 728	474 to 974	661 to 772
Mountain.....	344 to 628	417 to 772	485 to 750
Crossbreeds.....	331 to 617	364 to 794	617 to 573
Calves:			
Moldavian.....	66 to 287	99 to 397	198 to 441
Mountain.....	55 to 243	104 to 309	132 to 287
Crossbreeds.....	62 to 216	119 to 320	159 to 220

CONCLUSIONS REGARDING RUMANIAN AGRICULTURE

It is probable that the general trend of agriculture in Greater Rumania will be away from the extensive production of cereals, particularly wheat, with its large marketable surpluses, and will probably be toward a so-called "intensive agriculture." This does not mean intensive in the western sense of the term. It merely means that the general tendency in peasant agriculture is to maintain more domestic animals per acre of land holding than is the case on large estates. The natural consequence of the land reform will thus culminate in somewhat larger numbers of livestock in Greater Rumania than were customary before the World War. Although little grain is fed to livestock, except in the western lowlands of the Banat and Crisana, a general increase in livestock numbers will tend toward somewhat larger quantities of field crops being fed on the farms and smaller surpluses of field crops being available for market.

There appears to be an increase in meat consumption in Greater Rumania in keeping with the higher standard of living adopted since the war. This should stimulate meat production and will tend to absorb large numbers of animals between livestock enumeration periods, so that a considerable expansion of the animal industry may not be proportionately discernable from published statistics. At the same time, the effect upon reducing the amounts of marketable surpluses of cereals might be appreciable.

There appears to be a trend toward increased wheat consumption in Greater Rumania; which should also depress marketable surpluses. However, the great falling off in cereal exports from Rumania is the result of the shift from commercial production of cereals on large estates to small peasant-farming practices following the sweeping

land reform. The most apparent effect of the land reform upon cereal production has been a positive shift from seeding winter grain to increased seeding of spring grains. The fall seeding for the wheat crop of 1927 was 1,234,381 acres less than for the crop of 1926; rye was 81,457 acres less, and barley 10,880 acres less. This decrease is attributable to a certain extent to the drought of September and October, which hindered plowing. At the same time it requires greater foresight and initiative to seed grain in the fall to be harvested the following year than it does to rush any sort of crop into the ground in spring. The Rumanian peasant lacks both foresight and initiative, and consequently there is a greater tendency toward haphazard spring seeding than formerly.

The peasant is a very mediocre farmer as a rule, and in Rumania the peasant methods of agriculture are archaic. Consequently, yields per acre up to 1926 have been much lower than the very modest yields obtained before the World War. In 1926, as indicated in Table 18, barley, oats, and corn ranged somewhat above pre-war, but the mean yield per acre for all five chief cereals was still half a bushel less than the 1909-1913 average.

Thus not only has there been a shift from wheat and rye production toward increased corn, barley, and oats production, but because of low yields per acre the exportable surpluses of bread cereals are not so large as they otherwise would be.

The quality of peasant products is very low. Under the estate system of farming, a large proportion of export grain was of uniform and high quality and Rumania enjoyed a certain reputation for the excellence of its exports. Under the present retrogressive system of peasant agriculture, it is difficult to assemble a cargo of standard grades of grain, and foreign buyers are having recourse to establishing resident agencies in Rumania to buy in place such grain as will meet their specific requirements. This, however, is expensive and the cost of handling the crop is ultimately chargeable against the profit obtainable by the producer.

As with grain, the quality of livestock is poor. There is no such thing as a beef breed of cattle in Rumania and dairy stock is mediocre, except in the western departments of Transylvania, where the quality of beef, pork, and mutton produced compares favorably with that fattened in central Europe. But in the departments south and east of the central mountain ranges the quality of meat animals sent to market would hardly fit them to meet the requirements of the western European demand.

It is probable that increased population and changes in living standards, together with postwar retrogression in agricultural production have so depleted potential surpluses that the territories now constituting Greater Rumania will not for many years exercise the influence upon western markets that they enjoyed before the World War.

THE AGRICULTURAL SITUATION IN BULGARIA

Bulgaria suffered less, territorially, in consequence of the World War than did any of Germany's other allies. In fact the area of the country as fixed by the provisions of the treaty of Neuilly is 2,626 square miles greater than it was at the outbreak of the war of the Balkan allies against Turkey. Nevertheless Bulgaria has undergone pronounced territorial changes that have had a profound influence upon the economic life of the nation.

The present area of Bulgaria, according to the terms of the treaty of Neuilly, comprises 39,825 square miles, and is thus about the size of the State of Ohio.³⁷

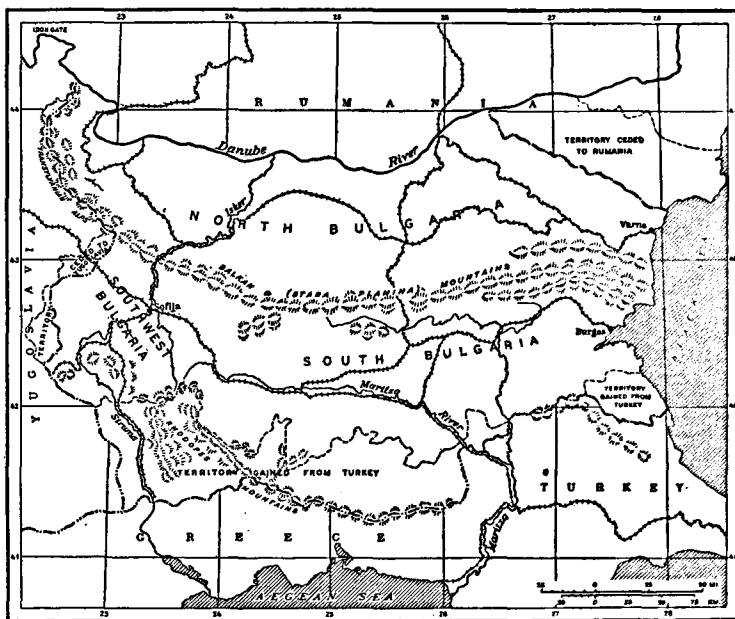


FIGURE 3.—MAP OF BULGARIA

Bulgaria ceded to Rumania in 1913 parts of its richest cereal-producing Provinces along the northeastern frontier, but acquired a very considerable territory from Turkey on the south. This acquired territory is a tobacco region not producing sufficient cereals to meet local demands. Consequently Bulgaria occupies a less significant status among European wheat-exporting countries than was the case before the World War.

Between 1913 and 1919 the area of Bulgaria fluctuated considerably with the vicissitudes of war. At the close of the campaign against Turkey, Bulgaria acquired territories which extended the southern frontiers of the Kingdom to the Aegean Sea. This newly acquired territory, to the south is mountainous in character and consists, for the most part, of barren stretches. There were also extensive forests and pastures, but only a small percentage of the total area could be profitably cultivated to field crops. At the same

³⁷ The Kingdom of Bulgaria, occupying the north-central portion of the Balkan Peninsula, lies between the parallels $41^{\circ} 12' 48''$ and $44^{\circ} 12' 30''$ north latitude, or at about the same distance from the Equator as the State of Iowa. In longitude it lies between the meridians $20^{\circ} 21' 14''$ and $23^{\circ} 3' 54''$ east (Greenwich).

time that this agriculturally poor territory was acquired to the south, Bulgaria ceded, in the way of compensation to Rumania, portions of five of the richest grain surplus producing Provinces along the northeastern frontier in the Dobruja.

By a special convention with Turkey, in 1915, Bulgaria, before entering the World War, acquired additional territory on the south and, invading Dobruja, immediately reoccupied the counties that had so recently been ceded to Rumania. At the end of the World War Bulgaria withdrew from the ceded Rumanian territories and, according to the terms of the treaty of Neuilly, relinquished to Yugoslavia 990 square miles and to Greece 3,364 square miles of territories on the south and west. This left the present area of the Kingdom 39,825 square miles. (Fig. 3.)

The extent of these changes is shown in the following statement.

Modifications in the territory of the Kingdom of Bulgaria (8, Ann. 15-16, p. [XXXIII])

1. After the war of 1912-13. Treaty of Bucharest:	
Area of Bulgaria—	Square miles
Before the war.....	37, 199
Ceded to Rumania.....	2, 971
	<hr/>
Less ceded territory.....	34, 228
Area gained from Turkey.....	8, 952
	<hr/>
Total in 1913.....	43, 180
2. After the convention of 1915 with Turkey:	
Area gained from Turkey.....	999
	<hr/>
Total in 1915.....	44, 179
	<hr/>
3. After the treaty of Neuilly in 1919:	
Area ceded to Yugoslavia—	
Old territory.....	596
New territory.....	394
	<hr/>
Total.....	990
Area ceded to Greece—	
New territory.....	3, 364
	<hr/>
Total area ceded to Greece and Yugoslavia.....	4, 354
	<hr/>
Present area of Bulgaria.....	39, 825
Old territory retained (residual Bulgaria).....	33, 632
New territory gained.....	6, 193
	<hr/>
Total area.....	39, 825

PHYSICAL CHARACTERISTICS OF THE COUNTRY

The low Balkan Mountain range, the Stara Planina (Old Mountain) traverses Bulgaria from the Black Sea westward to the frontier of Yugoslavia. Between this mountain range and the Danube River lies a broad, fertile, rolling plain sloping to the north, which is well watered by the Isker, Osma, Jantra, and Lom Rivers. This is called the district of north Bulgaria. It occupies 16,757 square miles. Its soil is a deep, black, fertile loess. Average annual rainfall ranged between 23.97 and 24.89 inches during the 5-year period ended 1923. This is the greatest cereal surplus-producing region of the Kingdom.

To the south of the Balkan Mountains, the coastal plains of the Black Sea and the central valley of the Maritsa extend to the foothills of the Rhodope Range of mountains. These coastal plains and the valley, together with the mountainous regions acquired from Turkey as far west as the Mesta River, form the district of south Bulgaria, which has an area of 16,316 square miles. The soils of the plains and valleys are fertile. The average rainfall during the 5-year period ended 1923 ranged from 22.67 to 27.62 inches annually.

The famous rose-oil industry is located on the southern slopes of the Balkan Mountains. To the south and in the mountainous valleys of the Rhodope Mountains tobacco is the most important crop. The valleys and plains of south Bulgaria are devoted to the production of cereals, the surpluses of which are sufficient to balance the deficit production of the newly acquired territories and to leave a considerable margin for export abroad.

The western portion of Bulgaria, south of the Balkan Range, is a broad plateau broken to the south by the ranges of the Rhodope Mountains. This is the district of southwest Bulgaria, which has an area of 6,752 square miles. It includes the upper basins of the Struma and the Mesta, as well as the upper valley of the Maritza (which flows into the Aegean Sea) and the upper valley of the Isker (which flows into the Danube River). The soils of these elevated regions are not so well adapted to wheat as are those of the districts of the north and south. Rainfall averages 26.36 inches. The production of tobacco in the south and of fruit in the north are important industries. The district as a whole does not produce sufficient cereals to cover local requirements.

About 25,708 square miles, or 64.6 per cent of the total area of Bulgaria, lie between sea level and an altitude of 500 meters (1,640 feet), within the range best adapted to intensive agriculture.

UTILIZATION OF THE LAND

There is no record of the manner in which the lands acquired from Turkey were utilized before the Balkan Wars. An approximate estimate of the agriculturally potential value of the ceded territories, as contrasted with acquired territories, can be obtained by comparing the manner in which the lands of the ceded districts and the residual counties of Bulgaria were utilized in 1912 with the manner in which lands were utilized in these residual counties and in the acquired districts in 1923.

Peasant agriculture predominates in all these districts. It is the characteristic of the peasant to conduct his farm operations on about the same scale from year to year. He may rotate the crops on his plowlands, but the extent of these plowlands in relation to meadows and forests remains remarkably constant year in and year out until some disrupting series of events breaks up the routine, after which he again settles down to a seasonal round.

TABLE 53.—Utilization of land in Bulgaria, 1912, 1923, and 1924

Utilization of land	1912 (8, Ann. 15-16, p. XXVIII, B 12; 9, 1912)						1923 (9, 1923)						1924 (8, Ann. 17, p. 127)																																																																																																																																																																																																																																																																															
	Old Kingdom of Bulgaria		Ceded territory		Residual territory		Residual territory		Acquired territory		Total Bulgaria		Total Bulgaria																																																																																																																																																																																																																																																																															
	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent	1,000 acres	Per cent																																																																																																																																																																																																																																																																														
Plowland:															Cereal.....	6,337	70.5	796	64.6	5,541	71.5	5,169	65.7	227	59.9	5,396	65.4	5,592	66.3	Leguminous plants.....	212	2.4	79	6.4	133	1.7	138	1.8	4	1.1	142	1.7	191	2.3	Industrial plants.....	83	.9	3	.2	30	1.0	155	2.0	37	9.8	192	2.3	188	2.2	Roots and tubers.....	17	.2	(1)		17	.2	67	.8	5	1.3	72	.9	86	1.0	Vegetables.....	100	1.1	15	1.2	85	1.1	87	1.1	2	.5	89	1.1	95	1.1	Forage plants and temporary meadows.....	530	5.9	66	5.3	404	6.0	516	6.5	8	2.1	524	6.4	602	7.1	Fallow.....	1,710	19.0	276	22.4	1,434	18.5	1,735	22.1	96	25.3	1,831	22.2	1,688	20.0	Total.....	8,989	100.0	1,235	100.0	7,754	100.0	7,867	100.0	379	100.0	8,246	100.0	8,442	100.0	All land:															Plowland.....	8,989	37.8	1,235	54.1	7,754	36.0	7,867	36.5	379	9.5	8,246	32.4	8,442	33.1	Natural meadows.....	885	3.7	34	1.5	851	4.0	767	3.6	21	.5	788	3.1	796	3.1	Pastures.....	22,256	91.5	* 224	9.8	2,032	9.4	* 1,930	9.0	* 367	9.3	2,297	9.0	* 2,297	9.0	Vinyards.....	152	.6	8	.3	144	.7	136	.6	3	.1	139	.6	156	.6	Orchards and gardens.....	29	.1	2	.1	27	.1	36	.2	2	.1	38	.1	44	.2	Rose gardens.....	20	.1			20	.1	11	.1			11		12	.1	Forests.....	37,004	20.4	* 694	30.4	6,310	29.3	75,993	27.8	11,139	28.7	7,132	28.0	7,132	28.0	Unproductive.....	4,472	18.8	* 86	3.6	4,386	20.4	4,784	22.2	22,053	51.8	46,837	26.8	46,607	25.9	Total.....	23,807	100.0	2,283	100.0	21,524	100.0	21,524	100.0	3,964	100.0	25,488	100.0	25,488	100.0
Cereal.....	6,337	70.5	796	64.6	5,541	71.5	5,169	65.7	227	59.9	5,396	65.4	5,592	66.3																																																																																																																																																																																																																																																																														
Leguminous plants.....	212	2.4	79	6.4	133	1.7	138	1.8	4	1.1	142	1.7	191	2.3																																																																																																																																																																																																																																																																														
Industrial plants.....	83	.9	3	.2	30	1.0	155	2.0	37	9.8	192	2.3	188	2.2																																																																																																																																																																																																																																																																														
Roots and tubers.....	17	.2	(1)		17	.2	67	.8	5	1.3	72	.9	86	1.0																																																																																																																																																																																																																																																																														
Vegetables.....	100	1.1	15	1.2	85	1.1	87	1.1	2	.5	89	1.1	95	1.1																																																																																																																																																																																																																																																																														
Forage plants and temporary meadows.....	530	5.9	66	5.3	404	6.0	516	6.5	8	2.1	524	6.4	602	7.1																																																																																																																																																																																																																																																																														
Fallow.....	1,710	19.0	276	22.4	1,434	18.5	1,735	22.1	96	25.3	1,831	22.2	1,688	20.0																																																																																																																																																																																																																																																																														
Total.....	8,989	100.0	1,235	100.0	7,754	100.0	7,867	100.0	379	100.0	8,246	100.0	8,442	100.0																																																																																																																																																																																																																																																																														
All land:															Plowland.....	8,989	37.8	1,235	54.1	7,754	36.0	7,867	36.5	379	9.5	8,246	32.4	8,442	33.1	Natural meadows.....	885	3.7	34	1.5	851	4.0	767	3.6	21	.5	788	3.1	796	3.1	Pastures.....	22,256	91.5	* 224	9.8	2,032	9.4	* 1,930	9.0	* 367	9.3	2,297	9.0	* 2,297	9.0	Vinyards.....	152	.6	8	.3	144	.7	136	.6	3	.1	139	.6	156	.6	Orchards and gardens.....	29	.1	2	.1	27	.1	36	.2	2	.1	38	.1	44	.2	Rose gardens.....	20	.1			20	.1	11	.1			11		12	.1	Forests.....	37,004	20.4	* 694	30.4	6,310	29.3	75,993	27.8	11,139	28.7	7,132	28.0	7,132	28.0	Unproductive.....	4,472	18.8	* 86	3.6	4,386	20.4	4,784	22.2	22,053	51.8	46,837	26.8	46,607	25.9	Total.....	23,807	100.0	2,283	100.0	21,524	100.0	21,524	100.0	3,964	100.0	25,488	100.0	25,488	100.0																																																																																																																																							
Plowland.....	8,989	37.8	1,235	54.1	7,754	36.0	7,867	36.5	379	9.5	8,246	32.4	8,442	33.1																																																																																																																																																																																																																																																																														
Natural meadows.....	885	3.7	34	1.5	851	4.0	767	3.6	21	.5	788	3.1	796	3.1																																																																																																																																																																																																																																																																														
Pastures.....	22,256	91.5	* 224	9.8	2,032	9.4	* 1,930	9.0	* 367	9.3	2,297	9.0	* 2,297	9.0																																																																																																																																																																																																																																																																														
Vinyards.....	152	.6	8	.3	144	.7	136	.6	3	.1	139	.6	156	.6																																																																																																																																																																																																																																																																														
Orchards and gardens.....	29	.1	2	.1	27	.1	36	.2	2	.1	38	.1	44	.2																																																																																																																																																																																																																																																																														
Rose gardens.....	20	.1			20	.1	11	.1			11		12	.1																																																																																																																																																																																																																																																																														
Forests.....	37,004	20.4	* 694	30.4	6,310	29.3	75,993	27.8	11,139	28.7	7,132	28.0	7,132	28.0																																																																																																																																																																																																																																																																														
Unproductive.....	4,472	18.8	* 86	3.6	4,386	20.4	4,784	22.2	22,053	51.8	46,837	26.8	46,607	25.9																																																																																																																																																																																																																																																																														
Total.....	23,807	100.0	2,283	100.0	21,524	100.0	21,524	100.0	3,964	100.0	25,488	100.0	25,488	100.0																																																																																																																																																																																																																																																																														

1 Less than 500 acres.
 2 Data for 1908 from (8, Ann. 4, p. 127).
 3 Estimated to be the same ratio of pastures to forests as for the old Kingdom of Bulgaria.
 4 Estimated to be the same ratio of pastures to forests as for residual territory, 1912.
 5 Estimated to be the same as estimate for 1923.
 6 Estimated from data given in (8, Ann. 4, p. 175).
 7 Data for 1924, from (8, Ann. 15-16, p. B 55).
 8 Adjusted to balance total.

The outstanding differences to be found in land utilization when comparing the old Kingdom of Bulgaria with present Bulgaria are that there were about 547,000 acres less plowland and 2,135,000 more acres of unproductive land in 1924 in the territories comprising present-day Bulgaria than in the old Kingdom in 1912. (Table 53.)

Bulgaria gained from Turkey on the south 3,963,000 acres, of which only 9.5 per cent was reported to have been plowland in 1923; whereas 51.8 per cent was reported to be nonproductive. On the other hand, Bulgaria ceded to Rumania, on the northeast, and to Yugoslavia, on the west, 2,283,000 acres, of which 54.1 per cent was plowland and only 3.8 per cent of which was reported to be unproductive in 1912. These differences have been of profound significance.

If we compare the utilization of the land in 1912 in the residual portion of Bulgaria (that is, that portion of the old Kingdom remaining after deducting the territories ceded to Rumania and Yugoslavia) with the utilization of the land in 1923 in this same territory, it will be noted that there was a decrease in cereal lands, although plowlands were reported in somewhat greater acreage than formerly, and there was a marked increase in fallow lands.

The trend of these changes indicates a decreased potential cereal production in proportion to the area of the country. This is particularly significant since the bulk of the acreage of cultivated crops in Bulgaria is devoted to cereals.

POPULATION

The old Kingdom of Bulgaria had a population of 4,337,513 in 1910, or 116.6 per square mile. In 1920 there were 4,846,971 inhabitants³⁸ within the new boundaries of Bulgaria, or 121.7 per square mile.

There are no large cities in Bulgaria. Sofija, the capital and metropolis, had only 154,025 inhabitants in 1920. Plovdiv (Philippopolis) came second with 63,415, followed by Varna with a population of 50,810, and Russe with 41,652 inhabitants.³⁹ There were 75 seats of state, province and township governments and 17 other cities which did not have administrative functions. The total city population in 1920 comprised 966,375 Bulgarian citizens, Russian immigrants, 74,174 refugees from the former Turkish territories to the south that have been incorporated into the Kingdom of Greece, and other individuals.

The 966,375 city dwellers lived in 241,659 family groups or households, averaging about 4 persons to each establishment. The households in the rural districts, on the other hand, were larger, averaging 5.7 persons each. The native rural population, which lived in 4,214 villages and 1,353 hamlets, was reported at 3,880,596 persons who lived in 675,593 family groups, in 1920. There were also 68,133 Bulgarian refugees from the south, Russian immigrants, and others living outside of cities.

Those living in rural districts in 1920 constituted 80.1 per cent of the total population; but all of those living outside of cities were not engaged in agriculture. A large number of the city dwellers, however, earned their livelihood by farming, so that 81.3 per cent of those actively employed in 1920 were classified as agricultural workers, hunters, and fishermen. (Table 54.) As the latter two classifications include very few, it is probable that the actual farming population is fully 80 per cent of the total.

TABLE 54.—*Population of Bulgaria actively employed, classified by occupation, 1910 and 1920 (8, Ann. 15-16, pp. 94, 98)*

Occupation	Old boundaries 1910		New boundaries 1920	
	Number	Per cent	Number	Per cent
Agriculture, hunting, and fishing.....	1,820,801	81.1	2,143,121	81.3
Mining, etc.....	1,947	.1	5,544	.2
Industry.....	178,437	8.0	204,862	7.8
Communication and transport.....	27,990	1.2	33,958	1.3
Commerce, bank, and credit.....	69,109	3.1	79,699	2.7
Public service and liberal professions.....	54,312	2.4	72,900	2.8
Public force.....	34,999	1.5	41,207	1.5
Landed proprietors.....	15,362	.7	27,726	1.0
Domestic servants.....	22,439	1.0	18,812	.7
Day laborers.....	14,722	.7	9,493	.4
Unknown.....	4,062	.2	7,007	.3
Total.....	2,244,180	100.0	2,635,389	100.0

Compared with agriculture other occupations engage very insignificant numbers of the population, who for the most part live in self-supporting homes based upon the tillage of the soil.

³⁸ The number of inhabitants in December, 1925, was 5,105,800 or 128.2 per square mile.

³⁹ Some of the larger cities with their populations in 1920 were: Sliven, 28,590; Pleven, 27,446; Stara Zagora, 25,314; Sumen, 23,753; Burgas, 21,170; Yambol, 19,875; Khaskovo, 19,418; and Pazardzik, 19,562.

The Bulgarians, like the Greeks and the Rumanians, are a mixed people. Before the Christian era the peninsula between the Black and Adriatic Seas was successively overrun by the Odrissae, the Macedonians, and the Celts. In the first century B. C. it was conquered by the Romans, and Romanized Wallachians, from north of the Danube, settled in large numbers in what is now north Bulgaria. During the great migration of the nations the Balkans were penetrated by the Slavs. In the seventh century a horde of Fino-Tartars called "Bolgars" or "Bol-Agalars" crossed the Danube, conquered the scattered Slavic clans, and welded them into a united whole. This Tartar element, although giving governmental direction to the newly organized nation, was numerically weak and their language was finally absorbed by the Slavs. The basic element in the Bulgarian nation is Slavic, but there are strong admixtures of Greek, Celt, Roman, Wallachian, and Mongolian. The Bulgarians are the most energetic and industrious people in the Near East and possess the characteristics to utilize to the utmost the elements of soil and climate with which nature has endowed their country.

LAND TENURE

In most countries the pre-war contrast between the size of the vast estates of the ruling classes and the scattered fields of the peasants was so great that any land owned by a single individual up to 100 hectares (247.1 acres) was considered to be a "small holding." According to the latest report (1908), the peasants of Bulgaria owned and operated about 94 per cent of the plowland of holdings of 247.1 acres or less. Only about 4 per cent of the privately owned plowlands was operated as large estates. Most of the remaining plowland belonged to the State and to various institutions. These lands were customarily rented to the peasants on shares or for cash, and were consequently farmed according to peasant traditions. This custom brought about 96 per cent of the plowland of the Kingdom under the peasant system of agriculture. (Table 55.)

Bulgaria was so decidedly a country of small farmers that, before the World War, any holding of more than 30 hectares (74.1 acres) was considered large. Fully 86 per cent of the plowland was operated as holdings of 74.1 acres or less. There are few large estates because the Kingdom of Bulgaria had been so recently established (1879) that there had not been time for a large landed nobility to become established. The former nobility, which was Turkish, had fled the country.

Up to 1879, and during the five preceding centuries, Bulgaria had been a Province of the Ottoman Empire whose Government was conducted, theoretically at least, according to the principles laid down in the Koran. According to the Koran, the earth belonged to Allah, who conceded the possession of portions of it to the faithful. The sultans, descended direct from Mahomet the Prophet, distributed the lands of conquered peoples to certain of these faithful ones, according to the importance of their services rendered to the cause of Islam. Under this system the conquering faithful had jurisdiction over vast domains and the conquered unfaithful were reduced to serfdom. This was the condition of Bulgaria for about 500 years. The Moslems were the overlords and the Christian Slavic-Bulgars were practically slaves.

TABLE 55.—*Productive land in Bulgaria, classified by size of holdings, 1908*
(8, Ann. 5-14, sec. B, p. 4, 17)

Class and size of land holding		Proprietors		Plots	Area		Total cultivated fields
Hectares	Acres	Total	Per centage		Total	Per centage	
Privately owned land:							
Less than 2.....	Less than 5.....	<i>Number</i> 424, 898	45. 5	<i>Number</i> 1, 157, 087	<i>Acres</i> 794, 593	<i>Per cent</i> 7. 0	<i>Acres</i> 481, 452
2 to 5.....	5 to 12.....	212, 618	22. 8	2, 320, 645	1, 761, 914	15. 4	1, 508, 197
5 to 10.....	12 to 24.7.....	174, 110	18. 7	3, 240, 007	3, 068, 531	26. 8	2, 577, 223
10 to 20.....	24.7 to 49.4.....	94, 328	10. 1	2, 306, 836	3, 155, 413	27. 6	2, 333, 440
20 to 30.....	49.4 to 74.1.....	17, 304	1. 9	507, 007	1, 019, 023	8. 9	708, 389
30 to 40.....	74.1 to 98.8.....	5, 017	. 5	163, 618	423, 922	3. 7	297, 975
40 to 50.....	98.8 to 123.6.....	1, 933	. 2	65, 223	213, 002	1. 9	162, 000
50 to 100.....	123. 6 to 247.....	2, 223	. 2	77, 891	365, 442	3. 2	262, 927
100 to 200.....	247 to 494.2.....	592	. 1	22, 507	197, 048	1. 7	146, 995
200 to 300.....	494.2 to 741.1.....	154	(¹)	7, 031	92, 770	. 8	66, 343
300 to 500.....	741.1 to 1, 235.5.....	99	(¹)	4, 502	92, 148	. 8	59, 945
500 and over.....	1, 235.5 and over.....	91	(¹)	4, 165	246, 512	2. 2	63, 131
Total.....		933, 367	100. 0	9, 876, 519	11, 430, 318	100. 0	8, 768, 917
PROPERTIES							
Unclassified:							
State lands.....		1, 035	10. 9	9, 159	1, 879, 209	22. 7	20, 174
County lands.....		12	. 1	62	3, 152	(¹)	155
Village lands.....		3, 639	38. 2	18, 758	5, 973, 614	72. 0	18, 575
School lands.....		1, 281	13. 4	8, 224	171, 018	2. 1	30, 352
Church lands.....		1, 100	11. 5	5, 008	35, 616	. 4	8, 861
Monastery lands.....		321	3. 4	3, 913	139, 186	1. 7	7, 983
Mosque lands.....		392	4. 1	1, 339	10, 224	. 1	4, 101
National-bank lands.....		149	1. 6	2, 445	6, 013	. 1	5, 062
Agricultural-bank lands.....		1, 427	15. 0	33, 916	65, 611	. 8	52, 940
Various societies lands.....		174	1. 8	1, 189	10, 616	. 1	(²)
Total.....		9, 530	100. 0	84, 013	8, 294, 319	100. 0	148, 203
Grand total.....				9, 960, 532	19, 724, 637		8, 929, 639

¹ Less than 0.05 per cent.² In addition there were 21,919 acres of private household gardens, plowed fallow lands and cultivated fields of various societies.³ Not separately stated; included in the 21,919 acres stated in note 2.⁴ In addition, there were 4,082,336 acres classified as unproductive.

Following the liberation of Bulgaria from the Turkish yoke, by the armies of Russia, various laws were passed to ameliorate the position of the peasant. But it was not until December 15, 1890, that a general expropriation of former Turkish estates went into effect. The land was distributed at that time among those by whom it had been worked. The first census was taken in 1897. At this time 93.4 per cent of the privately owned land was worked as small or peasant holdings of less than 247 acres, and 77.7 per cent of the land was in holdings of from 5 to 74.1 acres. The holdings of less than 5 acres amounted to 6.6 per cent (7, p. 57).

The census of 1908 reveals but little change, 94.5 per cent of the privately owned land being in holdings of 247.1 acres or less; whereas 78.8 per cent was in holdings between 5 and 74.1 acres; and 7 per cent in holdings less than 5 acres.

More than four-fifths of the pasture lands (80.8 per cent) as well as 58.8 per cent of the forests were owned by the villages as common property. (Table 56.) The greater portion of the lands controlled by the Crown and by large private land owners consisted of forests. Schools, religious orders, and banks controlled only relatively small acreages of plowland.

TABLE 56.—Utilization and ownership of land in Bulgaria, 1908 (8, Ann. 5-14)

Utilization of land	Privately owned lands ¹	Village property	Schools, churches, monasteries, etc.	State and county	Banks	Total
	Acres	Acres	Acres	Acres	Acres	Acres
Plowlands.....	8,780,836	18,575	51,297	20,329	58,002	8,929,039
Meadows.....	962,373	4,487	14,930	1,679	3,479	986,948
Pastures.....	253,606	1,822,386	81,607	93,297	5,327	2,256,223
Vineyards.....	232,493	45	1,002	296	878	234,714
Gardens and orchards.....	55,241	844	2,012	289	215	58,601
Rose gardens.....	19,346		9	2	71	19,428
Forests.....	1,084,063	4,118,659	203,771	1,594,154	3,385	7,004,032
Other lands.....	52,976	8,618	1,416	172,375	267	235,652
Total.....	11,440,934	5,973,614	356,044	1,882,421	71,624	19,724,637

¹ Privately owned lands also include 10,616 acres of various lands belonging to different societies, etc.
² In addition there were 4,082,336 acres not classified.

In 1921 the land in Bulgaria was, for the most part, already in the hands of the peasants. Large estates were rare, consequently a land reform accompanied by a redistribution of the few large holdings that did exist could be expected to have but relatively little effect upon the agriculture of the country.

THE LAND REFORM

The recent land reform in Bulgaria was effected through the law of May 9, 1921, and was modified by the law of December 20, 1922,⁴⁰ which provided that no family could own more land than it could work by itself. The average limit of the holding of plowland was fixed at 30 hectares (74.1 acres) provided the holding was worked by the proprietor himself and his family. Invalids of war and orphan minors who could not work the land themselves were allowed 10 hectares (24.7) acres each.

According to the purposes declared in the law of July, 1924, the final amount of land expropriated for the use of poor peasants amounted to 568,330 acres, as indicated in Table 57.

TABLE 57.—Expropriation of land in Bulgaria (7, p. 102)

Class of land	Land expropriated prior Dec. 31, 1923	Land allotted for expropriation by provisions of law of July 21, 1924 ^a
	Acres	Acres
State lands.....	20,740	370,650
Communes.....	50,043	61,775
Monasteries.....	5,924	7,413
Agricultural banks.....		2,471
Privately owned lands.....	119,553	123,550
Land in litigation between communes and individuals.....	2,521	2,471
Other lands.....	2,981	
Total.....	201,762	568,330

^a Original law was effected May 9, 1921; modifications occurred in December, 1922, and July, 1924.
^b Includes 263 acres of forests.
⁴⁰ Later modified by the act of July, 1924.

Actual transfers of land have proceeded slowly. The latest available data are of December 31, 1923. Up to that time, only 201,762 acres had been turned over to needy peasants.

Compared with the land reform in greater Rumania, involving a change in ownership of 14,798,000 acres, the changes in land tenure in Bulgaria are not of far-reaching significance.

It will be noted from Table 56, that the State possessed only 20,329 acres of plowlands in 1908, whereas according to the reports made in 1923 (Table 57) the area of State lands not in forests that had been expropriated totaled 20,477 acres. The communes were dispossessed of 61,775 acres by the provisions of the law. At the end of 1923 transfers of these lands to the peasants equaled 50,043 acres. By the end of 1923 there remained only about 4,000 acres of privately owned lands, 1,500 acres of monastery lands, and 2,500 acres of bank lands, or 8,000 acres in all of the unexpropriated lands that might consist of plowlands.

The remaining 349,910 acres of State lands, and 11,732 acres of commune lands yet to be expropriated, probably consisted for the most part of forest and pasture lands.

It is probable that the full effect of the land reform in Bulgaria had been realized by 1925. As far as is observable from published data, the land reform does not appear to have been associated with any material changes in the Bulgarian agricultural system or in the general organization of Bulgarian farms.

FARM ORGANIZATION

By far the greater portion of Bulgarian farmers live in villages or hamlets, the most common size of which ranges between 501 and 750 inhabitants or 90 to 130 households. Each community has a pasture plot held in common, comprising lands which are usually too poor to be tilled or rough land broken by gullies, in the vicinity of the village. The cultivated fields of the peasant families surround the village and central pasture lands. Individual households possess different acreages of land just as in other countries. The unit plots of land comprising a holding are usually too small to be called a "field" in the American sense of the term and are seldom if ever consolidated into a single holding, but are scattered at varying distances and in various directions from the village. Only on the large estates were land units large enough to be cultivated with modern agricultural implements.

There were 429,565 households that did all the work on their own land in 1905 as contrasted with 160 large landowners and 485 large farmers who employed most of their labor. According to data assembled in 1908 the average size of the fields of a large landowner ranged around 4.08 hectares, or about 10 acres. The average size of a field of a middle-class landowner was 2.52 hectares, or 6.2 acres, whereas various groups of the small landowners possessed fields averaging from 3.6 acres down to 0.3 acre in each respective group.

AGRICULTURAL MACHINERY

It has been practically impossible to employ modern machinery in Bulgaria except on the fields of the large landowners, consequently the numbers of such machines have been limited. Thus in 1910 there

were for each 1,000 farms or land holdings the following equipment as given in *La Bulgarie Economique, 1879-1911, (25, p. 156)*:

Farm equipment in Bulgaria for each 1,000 land holdings:	
Carts, wagons, etc.....	849
Plows.....	41 231
Seeding machines.....	2
Harvesting machines.....	14
Threshers.....	2
Rakes and farming machines.....	134
All other machines.....	25

A large amount of farm work in Bulgaria is done by hand spading the land, broadcasting the seed, cutting the grain with a sickle, and beating out the kernels with a hand device or with animals, according to the ancient system described in the Bible.

The Americans were pioneers in introducing modern agricultural machinery into Bulgaria through their agencies established in Varna. The people, particularly those in north Bulgaria, still hold American-made implements in high esteem. But the necessity of disposing of Bulgaria's large reserves of tobacco has led to negotiating the sale of tobacco to Czechoslovakia, and in return the Agricultural Bank of Bulgaria, in 1927, purchased agricultural machines and implements from Czechoslovakia to the value of 35,000,000 leva (\$252,000).

According to the data in Table 58 the principal purchases of farm machinery during 1921-1925 consisted of plows followed by threshing machines.

TABLE 58.—*Agricultural machinery: Value of imports, average 1921-1925*

Item	Value	
	Leva	Dollars ¹
Plows, all sorts.....	23,920,000	181,792
Threshing machines.....	22,620,000	171,912
Pulls, hay balers, etc.....	13,420,000	101,992
Scythes, sickles, hoes, forks, rakes, etc.....	12,920,000	98,192
Tractors.....	9,620,000	73,112
Winnowers, screeners, etc.....	6,980,000	53,048
Reapers, mowers, hay rakes.....	1,940,000	14,744
Total.....	91,420,000	694,792

Averaged from total 5 years given in excerpt from Annual Report upon Commerce and Industries for 1924, from Consul Stuart Lupton, Sofia, Bulgaria, Mar. 24, 1927.

¹ Average value of the lev during 1921-1925 was about 0.76 cent.

There is little prospect of any considerable extension in the use of agricultural machinery or of a radical change in the present system of agriculture in Bulgaria unless the holdings of the peasants are consolidated into fields of larger size. It is, moreover, necessary to obtain the consent of a large percentage of the villagers before steps toward consolidation can be taken. Many of the peasants are passionately attached to their particular plots of land. Although it is desirable to have larger unit fields, the difficulties in the way of accomplishing the consolidation of each peasant's scattered parcels of land are almost insurmountable.

The Bulgarians are an intelligent and energetic race who work hard. The men rather than the women, as is the case in some countries

² These are probably plows with iron shares. In 1920 the number of plows of modern type was placed at 237,000. In addition there were 449,000 orals—that is, plows of the primitive wooden type with a V-shaped piece of iron at the tip.

of eastern Europe, do the heavy field work. The size of the farm is so small that most households are organized on very frugal lines and family life is reduced to simplest proportions. Almost every farm family has a few sheep and pigs; most have a cow or two, and the more well-to-do have a horse. Practically everything that is found in the house, including clothing and furniture, is made at home or in the neighborhood.

The Bulgars, unlike the Rumanians and the Serbians, did not submit to the régime of a corn-meal⁴² diet imposed by the Turks upon most of the peoples they reduced to serfdom. Instead they retained their wheat-and-rye-eating customs, developed in south-eastern Russia before their migration from the steppes of Russia. As a result, the Bulgarian peasant produces wheat and rye for his own consumption. His basic articles of diet are wheat or rye bread and milk from cows, water buffaloes, sheep or goats that has been soured by a special process. The quantity of wheat and rye consumed as food in Bulgaria is equivalent to the total cereal diet of about 70.1 per cent of the population. The corn consumed as human food is equivalent to the total cereal diet of 27.1 per cent of the population and the remaining 2.8 per cent represents the total consumption of barley and oats as human food.⁴³ This is just the reverse of conditions in Rumania, in which country the corn consumed is equivalent to the total cereal diet of 77.9 per cent of the population, whereas the quantity of wheat and rye consumed is equivalent to the cereal diet of 22.1 per cent of the population.

In Bulgaria the peasants are in the habit of seeding a certain proportion of their land to wheat and rye for their own food supply, consequently the export of wheat and rye consists largely of the surplus which exists after the food and seed requirements have been provided. The Rumanian peasants, on the other hand, seed a certain proportion of their lands to corn for food, whereas the seeding of wheat is of secondary consideration, depending upon the need of cash for taxes and the need for obtaining the bare necessities incidental to their primitive existence.

Most Bulgarian farms are so small that they are barely self-supporting. If there are any marketable surpluses, they consist of a few eggs, a little cheese or wool, a few chickens, a pig or two, and an occasional larger animal. The larger farms market cereals in addition to animal products. The cereal surplus ranges from 1 to perhaps 10 sacks of grain. Formerly a few of the rich peasants produced considerable surpluses of wheat or corn, but since the land reform this type of farmer has disappeared and grain is now marketed only in small lots. Surplus grain is sold in a near-by market town to a small buyer who has no grain-handling equipment except a shed with a clay floor, a wooden shovel or two, a large hand sieve with which to sift out dirt, and brooms. Only wealthy merchants have so modern a machine as a hand-power fanning mill.

⁴² Corn is commonly known as Turkish grain in the Balkans except in Bulgaria, where it is called "tzarevitzza" (the czar of grains).

⁴³ The food ration of the Bulgarians varies greatly in different parts of the country. The late chief of the Bulgarian statistical service, Kiril Popoff, has made a special study of the food consumption in Bulgaria, which shows, for example, that in Samokov 90 per cent of the population eat only rye, 5 per cent eat wheat and rye, and 5 per cent eat wheat and corn. In Kazanlik the cereal consumption is 45 per cent wheat, 25 per cent corn, 25 per cent rye, and 5 per cent barley. In northwest Bulgaria, where the population is largely of Wallachian origin, in the district of Lom the cereal consumption is 70 per cent corn, 10 per cent wheat, and 20 per cent mixed corn and wheat. Doctor Popoff has in this way worked out the cereal ratio for each Province in the Kingdom.

The small buyer purchases a sack or two from this peasant and a few sacks from that peasant until he has accumulated 10 metric tons, or one carload.⁴⁴ This he hauls, in sacks, to the nearest railway station, where it is officially sampled and turned over to the Government transportation agent. The grain is sold upon the basis of this sample and is finally consigned to a port or milling center. There are no elevators either in the country or at the ports. All grain is handled in sacks and by hand.

PRE-WAR CEREAL EXPORTS

During the 25-year period before the World War there had been a tendency toward a decrease in the exportation of wheat, barley, and oats from the old Kingdom of Bulgaria and a definite increase in the corn and rye exports, as indicated in Table 59.

TABLE 59.—Cereals: Exports from Bulgaria, averages for specified periods, 1886-1910 (25, p. 177)

[In thousand bushels—1. e., 000 omitted]

Cereal	Average		
	1886-1895	1896-1905	1906-1910
Bread cereals:			
Wheat.....	10,801	11,008	8,224
Rye.....	1,618	1,374	1,656
Total.....	12,419	12,382	9,880
Barley.....	1,169	2,245	1,975
Oats.....	363	1,276	1,165
Corn.....	4,253	5,681	6,019
Millet.....	22	179	182

This decrease in the exportable surplus of wheat had been accompanied, at least during the latter part of the period, by an increase in the area seeded to wheat, thus indicating a trend toward increased wheat consumption within Bulgaria itself.

Under normal conditions the export wheat originates in a well-defined region along the banks of the Danube River, on the plains and valleys near the port of Varna in north Bulgaria, as well as on the Black Sea plain near the port of Burgas in south Bulgaria. In other parts of the Kingdom the areas of surplus and of deficit are rather evenly balanced. Any surplus in one district is as a rule absorbed by a neighboring deficit district. Wheat and rye are produced, to some extent, in every part of Bulgaria, but the mountainous country in the center and southwest of the Kingdom are deficit areas. In the mountain districts the population engages chiefly in fruit growing, wine making, sheep and cattle raising, in the lumber industry, in mining, and to a very minor extent in manufacturing.

Sofija, the capital city, has a population of 154,000 and is located in a valley, which produces a surplus of agricultural products slightly above the needs of the rural population, but not enough to fully supply the city itself. The capital is provisioned by shipments of

⁴⁴ 1 carload equals 22,046 pounds.

cereals, animals for slaughter, and other products from the north and east.

In *La Bulgarie Economique*, Popoff (25) gives the average exportation of cereals from each of the geographical regions in Bulgaria during the period 1897-1910. (Table 60.)

TABLE 60.—*Cereals: Exports from Bulgaria by geographical regions, average, 1897-1910 (25, p. 173)*

[In thousand bushels—i. e., 000 omitted]

Cereal	North	North-west ¹	South-west	South
Wheat.....	5, 011	1, 668	25	3, 791
Rye.....	1, 004	344	1	284
Barley.....	1, 323	626	1	259
Oats.....	816	32	4	383
Corn.....	3, 788	1, 836	75	485

¹ Now included in north Bulgaria.

The chief surplus-producing district since the World War is the district of north Bulgaria, which, together with the former district of the northwest, lies along the Danube River opposite the chief surplus-producing district in Rumania. Some of the surplus grain of this district is shipped by rail south to the mountain counties and to Sofia and other cities. The export grain is sacked and shipped on barges either up the Danube to central Europe or down the river to Russe, thence usually by rail to the Black Sea port of Varna. Some grain continues down the river to Galati or Braila in Rumania whence it goes by steamer to western Europe.

In recent years the southern Black Sea port of Burgas has been growing at the expense of Varna in the north, which, having lost the possibility of handling the surplus grain formerly produced in the territories ceded to Rumania, is losing its significance as an export center.

A project to equip Bulgaria with a system of elevators for handling its entire grain trade has been discussed, but no practical development has resulted.

The decrease in cereal acreage (that is, the loss of lands that were normally devoted to cereals) and the consequent loss to Bulgarian foreign trade of the large exportable surpluses of cereals that were formerly available from these lands, placed the country in an even more precarious position, as regards balancing international trade, than was the case before the World War. Even before the World War, since 1907,⁴⁵ Bulgaria had had an adverse trade balance that had to be compensated for by the negotiation of foreign loans. It was only by this means that the exchange value of the lev could be maintained at par. Immediately following the World War, it was impossible for Bulgaria to obtain a foreign loan so that, when surpluses of cereals for export did not materialize and importations of necessities built up an unfavorable trade balance, the affairs of the country were thrown into confusion and the lev depreciated in value.

Internal conditions were such that the direct taxation of the peasants had been reduced to almost negligible proportions. In

⁴⁵ Importation of war materials was largely responsible for this adverse trade balance.

the hope of realizing an income from the exportation of cereals, which had constituted the chief source of the country's revenue before the World War, the Government established a State grain-exporting monopoly. The low price that the monopoly paid for grain had a depressing effect upon agricultural acreages and there was a tendency, on the part of peasants, to withhold from the market much of the grain that was produced.

The interallied commission arrived in Sofija in February, 1921, to supervise the administration of the country, in order to insure the payment of reparations. One of the first acts of the commission was to abolish the grain-export monopoly. This was followed by the imposition of export duties. Although the export duties that had been placed upon cereals and other products were heavy, export continued, and by the end of 1922 the international trade balance was favorable to Bulgaria for the first time since 1907 (except the abnormal World War years 1915-1917).

When the total values of commodities exported in 1922 are compared with those exported in 1912 (Table 61), it is found that a marked change is to be noted in the position of relative importance that they occupy.

TABLE 61.—Value of principal exports from Bulgaria during 1912 compared with 1922 and 1925 (8, Ann. 4, p. 240; 17, p. 269)

[In thousands—1. e., 000 omitted]

Item		1912 ¹		Item		1922 ²		Item		1925 ³	
		<i>Leva</i>	<i>Dollars</i>			<i>Leva</i>	<i>Dollars</i>			<i>Leva</i>	<i>Dollars</i>
Wheat.....		44, 698	8, 627	Tobacco (un- m a n u f a c - tured).		1, 168, 870	8, 065	Tobacco (un- m a n u f a c - tured).		2, 239, 023	16, 333
Corn.....		39, 884	7, 698	Wheat.....		855, 887	5, 906	Eggs.....		738, 439	5, 403
Eggs.....		14, 261	2, 752	Eggs.....		483, 396	3, 335	Corn.....		638, 901	4, 675
Rose oil.....		11, 621	2, 243	Corn.....		327, 080	2, 257	Livestock.....		356, 906	2, 611
Wheat flour.....		9, 185	1, 763	Wheat flour.....		199, 534	1, 377	Wheat.....		279, 910	2, 048
Rye.....		7, 398	1, 428	Haricots.....		181, 867	1, 255	Wheat flour.....		223, 280	1, 634
Livestock.....		3, 668	708	Barley.....		172, 364	1, 189	Cocoons.....		209, 657	1, 533
Colza.....		3, 176	613	Cocoons.....		115, 208	795	Barley.....		105, 443	772
Barley.....		2, 642	510	Livestock.....		97, 577	673	Rose oil.....		83, 732	649
Cheese.....		2, 172	419	Cheese.....		91, 978	635	Haricots.....		70, 443	515
Hay and feed.....		1, 951	377	Rye.....		74, 614	501	Hay and feed.....		38, 332	284
Haricots.....		1, 638	316	Rose oil.....		63, 112	435	Colza.....		22, 983	168
Tobacco (un- m a n u f a c - tured).		1, 431	276	Hay and feed.....		4, 706	67	Cheese.....		6, 757	49
Cocoons.....		1, 420	274	Colza.....		136	1	Rye.....		4, 155	30

¹ Value of the lev at par, 19.3 cents.
² Average yearly value of the lev, 1922, 0.69 cent.
³ Average yearly value of the lev, 1925, 0.7317 cent.

SHIFT FROM WHEAT TO TOBACCO EXPORT

In 1912 wheat was the article of greatest value to the export trade of Bulgaria, whereas tobacco was relatively unimportant. In 1922 the value of the tobacco exported superseded that of wheat, and tobacco has continued to be the article of highest export value up to the time of writing this bulletin.

Bulgaria succeeded in balancing the national budget for the first time since 1916 during the financial year 1924-25. This was effected only by the practice of strictest economies. Among other means of restricting expenditures for public works a system of conscript public labor was put into force, by which each male citizen was obliged to

contribute his services free to the State for a certain period. Much needed improvements in roads, bridges, and buildings have been made by this means and new construction has been undertaken.

Nevertheless, in spite of prohibitions against the importation of any articles except those of strictest utility, the balance of trade, which had been favorable to Bulgaria in 1922 and 1923, became unfavorable in both the years 1924 and 1925. This resulted in further depressing the already unfavorable situation.

AGRICULTURE THE MOST IMPORTANT INDUSTRY

There are deposits of coal and other minerals as well as extensive forests in Bulgaria, but these have not been exploited to any great extent. The industries of the country are for the most part directly dependent upon agriculture and animal industry for their raw materials. For these reasons, field-crop production and livestock production are the mainsprings of Bulgarian economic life. The physical adaptability of the country to the pursuit of agriculture is thus of first importance. (Table 62.)

TABLE 62.—*Value of industrial production in Bulgaria, 1909 and 1921 (8, Ann. 17, pp. 169–171)*

Industry	1909		1921	
	<i>Leva</i>	<i>Dollars</i> ¹	<i>Leva</i> ²	<i>Dollars</i> ¹
Agricultural:				
Flour milling, sugar, brewing, distilling, etc.....	40,480,644	7,812,764	65,873,789	12,713,641
Textiles.....	17,445,262	3,366,935	12,663,896	2,444,126
Tanning, etc.....	4,538,689	875,967	3,677,091	709,679
Total.....	62,464,595	12,055,666	82,214,746	15,867,446
Semiagricultural:				
Chemicals, soap, rose oil, etc.....	2,463,428	475,442	3,142,527	606,508
Nonagricultural:				
Mining.....	1,406,108	271,379	2,713,499	523,796
Metallurgy.....	2,146,624	414,298	2,744,605	529,708
Ceramics.....	1,792,062	345,568	3,900,830	752,890
Forestry.....	2,698,962	520,900	1,823,209	351,879
Paper.....	460,941	88,962	728,951	149,688
Electrical energy production.....	928,139	179,131	79,043	15,255
Total.....	9,432,836	1,820,538	11,990,137	2,314,066
Grand total.....	74,380,859	14,351,646	97,347,410	18,789,050

¹ Value of the lev at par, 19.3 cents.

² Gold leva.

MILITARY AGRONOMS

During the war the agriculture of Bulgaria was placed under the direction of so-called "military agronomes," whose duties consisted in mobilizing every resource of man and animal power and machinery, in order to maintain food production at the highest possible level. In most other countries the agriculture was demoralized by calling too large a proportion of the man power into military service. In Bulgaria men were called from the military camps to perform the necessary work of plowing, seeding, and harvesting. This sustained effort in Bulgaria, to maintain the food supply at a level of national self-sufficiency, resulted in a stabilization of agricultural production in those portions of the country not affected by territorial changes. Even when the statistics pertaining to agricultural areas and production in the newly acquired territories are included with

those of residual Bulgaria, no such radical differences between pre-war and postwar condition of cereals are found as was the case in Rumania, Austria, or many other succession States.

FERTILIZERS

There is no record of the sale or use of commercial fertilizers in Bulgaria. The Bulgarians utilize the natural manure obtained from their animal industry. In 1910 the value placed upon animal manure was nearly \$5,000,000. (See Table 81 for details.)

BULGARIAN REFUGEES

During the almost continuous fighting, from the outbreak of the Balkan War in 1912 to the end of the World War in 1918, and throughout the postwar period until 1925, a total of 221,191 refugees have arrived and remained within the frontiers of Bulgaria. These refugees include Bulgarians and Armenians from Turkish territories and Russians expatriated during the Bolshevik régime. About 36 per cent of these refugees were believed, in 1925, to be entirely destitute and 20 per cent had means of subsistence for only a few months, 17 per cent had acquired a house, and 27 per cent had a house and some implements. The economic disposition of these refugees was too great a problem for the Bulgarian Government to settle with its own resources and on May 3, 1925, formal application was made to the League of Nations for assistance.

It was estimated that 50,000 leva⁴⁶ (\$366) were required to cover the provision of a house, an ox or a cow, one-half use of a plow and a cart, and one-fourth use of a harrow, minor implements, seed, and subsistence for eight or nine months. It was the plan of the Government to settle 30,180 families on the land and 5,000 families in town. The standard allowance of farm land is 5 hectares (12.3 acres) per family. However, 10 per cent of the families will be settled in the regions of intensive farming (vineyards, tobacco, orchards, silk-worms, etc.) where only half that acreage will be required. The total land required has been estimated at 326,172 acres of which 88,956 acres must be deforested and 98,840 acres must be drained.

This project, when completed, will put 60,000 heads of families into productive employment.

COOPERATIVE ORGANIZATIONS

There were 310 cooperative organizations reported to have been affiliated with the Central Cooperative Bank of Bulgaria in 1925. Of this number, 11 were agricultural, 88 engaged in production, 73 handled products of consumption, 7 were for purchase and sale, 3 were unions of various cooperative organizations, 15 were not classified, and 113 were cooperative banks.

One of the best-organized groups of cooperatives is the Central Union of the Cooperative Societies of Tobacco Planters, chartered in 1925. There are 29 cooperative societies comprising the union with a total membership of about 24,000 and a combined capital of 3,000,000 leva⁴⁷ or \$21,951.

⁴⁶ The average value of the lev in 1925 was equivalent to 0.7317 cent.

⁴⁷ See footnote 46.

COMMUNICATIONS

The first line of railroad, about 129 miles in length, was built from Russe on the Danube to Varna on the Black Sea in 1868. The Bulgarian section of Vienna-Constantinople Railway through Sofija was built between 1873 and 1888. In 1890 the port of Burgas was connected with Sofija by way of Jambol and nine years later Varna was connected with Sofija by a railway through north Bulgaria to Shumen. In 1912, north and south Bulgaria were united by a railway from Gorna-Orjechovica to Stara Zagora. In all there were 1,730 miles of standard and narrow gauge railways in operation in Bulgaria in 1927 or 4.3 miles for each 100 square miles of area and there were 627 miles of railways under construction.

At the end of 1925 there were 4,397 miles of State roads with 538 miles under construction. There were 3,483 miles of country roads with 3,035 miles under construction. Total of wagon roads was 7,880 miles or 19.8 miles per 100 square miles of area.

The Danube River flowing along the northern frontier of Bulgaria offers cheap water transportation through nine river ports, the chief of which are Lom, Vidin, and Russe. The capacity of these ports is limited and their equipment primitive. The major part of the Bulgarian shipments of grain, via the Danube, are transferred to rail at Russe for export through the port of Varna, although some grain continues down the river to Braila, in Rumania, for reexport to western Europe.

There are eight ports on the Black Sea of which only Varna and Burgas are important. Burgas is gradually becoming the major port of Bulgaria.

RELATIVE STATUS OF FIELD CROPS AND LIVESTOCKS

The latest official census of livestock was taken in 1920. At this time the numbers of horses were 398,000 or 93.6 per cent of the pre-war estimated number. In similar comparison, cattle were 111.9 per cent, sheep 104 per cent, and swine 199.6 per cent.

On the other hand, by 1921 the acreage of wheat had regained 93.6 per cent of its 1909-1912 average, rye 84.9 per cent, barley 102.5 per cent, oats 79.4 per cent, corn 95.1 per cent, potatoes 181.8 per cent, and sugar beets 83.3 per cent.

These data indicate that during the World War and the succeeding years up to 1921, at least, there was a tendency among Bulgarian peasants to maintain livestock more nearly at the pre-war level than was the case with reference to field crops.

CEREALS

If unproductive land, forests, and fallow land be deducted from the total area of Bulgaria (present boundary), and the percentage of the productive land under each crop is determined, it will be found that in 1924 two groups of farm crops are thrown into sharp relief. Cereals occupied 55.6 per cent of the productive land in that year (Table 53), forage plants, including natural grasses 36.7 per cent, and all other crops occupied 7.7 per cent.

Similarly, the pre-war situation in the old Kingdom of Bulgaria was: Cereals 59.7 per cent, grass and forage 34.6 per cent, and other crops 5.7 per cent.

Changes in territory and in the economic situation resulted in a somewhat smaller percentage of the land under cereals, and more land under grass and other crops, in the present Kingdom of Bulgaria, in 1924, than in the old Kingdom before the Balkan War (1912).

Considering the five chief cereals alone, there were, before the Balkan War, an average of 5,886,000 acres under wheat, rye, barley, oats, and corn, in the old Kingdom, as contrasted with 5,357,000 acres in the territories now comprising the present Kingdom of Bulgaria. In 1921 the cereal acreage had decreased to 4,975,000 acres; but there has been a steady, yearly increase until, by 1926, not only had the area under the five chief cereals recovered its former acreage but was 25,000 acres above the estimated pre-war average. (Table 63.)

TABLE 63.—Cereals, potatoes and sugar beets: Area seeded in Bulgaria, present boundaries, average 1909-1912, 1921-1925, and annual, 1921-1926

Year	Five chief cereals							Pota- toes	Sugar beets
	Bread cereals			Barley	Oats	Corn	Total		
	Wheat	Rye	Total						
Average:	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres	1,000 acres
Average— 1909-1912	2,385	549	2,394	511	417	1,495	5,357	11	36
1921-1925	2,358	440	2,798	535	357	1,427	5,117	23	34
1921	2,233	466	2,699	524	331	1,421	4,975	20	30
1922	2,226	442	2,668	534	352	1,313	4,867	20	25
1923	2,303	425	2,728	544	370	1,364	5,006	24	50
1924	2,492	413	2,905	529	376	1,505	5,315	24	64
1925	2,537	453	2,990	544	354	1,531	5,419	27	3
1926	2,587	460	3,047	546	319	1,470	5,382	24	49
Percentage of total chief ce- reals—	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Average— 1909-1912	44.5	10.3	54.8	9.5	7.8	27.9	100.0	-----	-----
1921-1925	46.1	8.6	54.7	10.4	7.0	27.9	100.0	-----	-----
1921	44.9	9.4	54.3	10.5	6.6	28.6	100.0	-----	-----
1922	45.7	9.1	54.6	11.0	7.2	27.0	100.0	-----	-----
1923	46.0	8.5	54.5	10.9	7.4	27.2	100.0	-----	-----
1924	46.9	7.8	54.7	9.9	7.1	28.3	100.0	-----	-----
1925	46.8	8.4	55.2	10.0	6.5	28.3	100.0	-----	-----
1926	48.1	8.5	56.6	10.2	5.9	27.3	100.0	-----	-----

For sources see tables on separate commodities in following text.

¹ For 1914 only. Other years not significant.

A comparison of the average acreages estimated to have been seeded in 1909-1912 with those for the 5-year period ended 1925, shows that little change has occurred in the rate at which cereals are seeded in Bulgaria except for the shift from rye to wheat. The rate of planting corn has remained unchanged, and the differences in barley and oats are no more than those to be expected from seasonal fluctuations.

In Rumania, the 1921-1925 average shows a decrease in the production of bread cereals, wheat and rye, whereas, in Bulgaria, there has been no such change, when the areas of the two cereals are considered together.

Production of cereals in Bulgaria has fluctuated somewhat from year to year, responding to changes of acreage and the fluctuations of the climate. Comparing the 1921-1925 averages with those of

1909-1912, it is noted that the acreages of wheat, rye, oats, and corn during the latter period were somewhat below those during the former, whereas barley was somewhat higher.

As indicated in Table 64, the reduction in the average production of wheat, rye, oats, and corn, shown by a comparison of these two periods, was about proportional to the differences in acreage.

During the seasons 1923, 1924, and 1925 production of the seven most important field crops in the territories comprising the present Kingdom of Bulgaria was greater than in these same territories before the World War.

TABLE 64.—*Cereals, potatoes and sugar beets: Production in Bulgaria, present boundaries, average 1909-1912, 1921-1925, and annual, 1921-1926*

[On thousands—i. e., 000 omitted]

Year	Five chief cereals							Potatoes	Sugar beets
	Bread cereals			Barley	Oats	Corn	Total		
	Wheat	Rye	Total						
Average:	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Short tons</i>
1909-1912.....	36,308	8,318	44,626	10,069	8,679	25,487	88,861	654	1,210
1921-1925.....	35,501	6,720	42,221	10,642	8,318	22,328	83,809	1,571	272
1921.....	29,239	8,095	35,334	8,489	6,657	16,380	60,800	1,040	129
1922.....	37,704	7,453	45,157	11,941	9,144	15,479	81,721	1,300	166
1923.....	36,223	6,862	43,085	11,063	9,188	26,806	90,202	1,220	352
1924.....	24,698	4,303	29,001	7,067	6,371	24,756	67,195	1,819	446
1925.....	49,643	8,889	58,532	14,652	10,228	28,158	111,570	2,418	18
1926.....	41,064	8,008	49,072	11,969	7,413	29,018	97,472	1,811	331

For sources see tables on separate commodities in following text.

¹ For 1914 only. Other years not significant.

The yields of cereals per acre in Bulgaria during 1921-1925 as indicated in Table 65, averaged nearly the same as during 1909-1912, varying no more than 0.2 bushel, except in the case of oats which ranged 2.5 bushels above normal and of corn which dropped to 1.4 bushels below normal. Contrast this with the conditions in Rumania. When the 1921-1925 average yields per acre are compared with those of 1909-1913 they show a decrease of 4.2 bushels per acre in the case of bread cereals, 5.8 bushels for barley, 8.8 bushels for oats, and 3.9 bushels per acre for corn. Although seasonal climatic conditions had an influence, the falling off in yield in Rumania was largely a consequence of the changes from large-estate to peasant farming, following the land reform.

There had been a land reform, also, in Bulgaria, but the effects of this reform are not markedly noticeable either as to the manner in which field crops have been seeded or as to yield.

The territories comprised within the present confines of Bulgaria produced more cereals in each of the years 1923, 1925, and 1926 than these same areas produced, on the average, before the World War. However, when total production is divided by the total population for the pre-war and post-war periods, it is found that only, in 1925, did the per capita production exceed the average production per inhabitant during 1909-1912.

TABLE 65.—Cereals, potatoes and sugar beets: Yields per acre in Bulgaria, present boundaries, average 1909-1912, 1921-1925, and annual, 1921-1926

Year	Five chief cereals							Potatoes	Sugar beets
	Bread cereals			Barley	Oats	Corn	Total		
	Wheat	Rye	Total						
Average:	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Short tons</i>
1909-1912.....	15.2	15.2	15.2	19.7	20.8	17.0	16.6	59.5	15.8
1921-1925.....	15.1	15.3	15.1	19.9	23.3	15.6	16.3	68.3	6.5
1921.....	13.1	13.1	13.1	16.2	20.1	11.5	13.4	52.0	4.3
1922.....	16.9	16.9	16.9	22.4	26.0	11.8	16.8	68.0	6.6
1923.....	15.7	16.1	15.8	20.3	24.8	19.7	18.0	50.8	7.0
1924.....	9.9	10.4	10.0	13.4	18.9	16.4	12.6	75.8	7.0
1925.....	19.6	19.6	19.6	26.9	28.9	18.4	20.6	89.6	6.0
1926.....	15.9	17.4	16.1	21.9	23.2	19.7	18.1	75.5	6.8

For acreage, total production, and sources see table on separate commodities in following text.
 † 1914 only.

During the 5-year period ended 1912, Bulgaria (present boundaries) produced 2,038 bushels of cereals for each 100 inhabitants. During 1925, production reached 2,185.2 bushels, an increase of 1.47 bushels per capita. (Table 66.) In 1926, total production had fallen off to 1,891.5 bushels per 100 inhabitants and during the 5-year period ended 1925 annual production has averaged only 1,666.6 bushels per 100 inhabitants, a drop of 371.4 bushels below the pre-war average. Comparing conditions within present boundaries with those of the old Kingdom, the production per 100 inhabitants during 1921-1925 averaged 616.6 bushels below the pre-war average.

TABLE 66.—Cereals, potatoes and sugar beets: Acreage and production per 100 inhabitants in Bulgaria, present boundaries, average 1909-1912, 1921-1925, and annual, 1921-1926

Year	Five chief cereals							Potatoes	Sugar beets
	Bread cereals			Barley	Oats	Corn	Total		
	Wheat	Rye	Total						
Average:	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
Average—									
1909-1912.....	54.7	12.6	67.3	11.7	9.6	34.3	122.9	0.3	10.8
1921-1925.....	47.0	8.8	55.8	10.7	7.1	28.5	102.1	.5	.7
1921.....	45.4	9.5	54.9	10.7	6.7	23.9	101.2	.4	.6
1922.....	44.9	8.9	53.8	10.8	7.1	26.4	98.1	.4	.5
1923.....	45.9	8.5	54.4	10.9	7.4	27.2	99.9	.5	1.0
1924.....	49.3	8.2	57.5	10.4	7.4	29.8	105.1	.5	1.3
1925.....	49.7	8.9	58.6	10.6	6.9	30.0	106.1	.5	.1
1926.....	50.2	8.9	59.1	10.6	6.2	28.5	104.4	.5	1.0
Production:	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Short tons</i>
Average—									
1909-1912.....	832.7	190.8	1,023.5	230.9	199.1	584.5	2,038.0	15.0	14.8
1921-1925.....	708.5	134.1	842.6	212.4	166.0	445.6	1,666.6	31.4	4.4
1921.....	594.7	124.0	718.7	172.7	135.4	333.2	1,360.0	21.2	2.6
1922.....	759.7	150.2	909.9	240.6	184.2	311.9	1,646.6	27.4	3.3
1923.....	723.0	137.0	860.0	220.8	183.4	536.2	1,800.4	24.4	7.0
1924.....	488.3	85.1	573.4	139.7	126.0	489.4	1,328.5	36.0	8.5
1925.....	972.3	174.1	1,146.4	287.0	200.3	551.5	2,185.2	47.4	.4
1926.....	796.9	155.4	952.3	232.3	143.8	563.1	1,891.5	35.1	6.4

For population see Table 67.
 † 1914 only.

This is the crux of the present export situation in Bulgaria. The territories ceded to Rumania produced large surpluses of grain in proximity to the exporting port of Varna. These surpluses have been lost to Bulgaria's export trade. On the other hand, the territories acquired from Turkey are cereal deficit regions and require shipments of grain from North and South Bulgaria which cuts down still further the export potentialities of the surplus districts.

There have been steady increases in native population amounting, by 1926, to about 800,000 which includes 221,000 refugees.

Furthermore, an analysis of the statistics indicates an increased per capita disappearance of wheat, rye, and oats.

The land reform in itself has probably been without appreciable effect upon the agricultural production in Bulgaria, but the combined influences of the other factors, summarized above, have resulted in a reduction of the post-war exports from Bulgaria (present boundaries). These exports have ranged far below the normal pre-war exports of the old Kingdom, averaging, during the 5-year period ended 1925, about 2,496,000 bushels of wheat, as compared with the average of 11,149,000 bushels from the old Kingdom during 1909-1912. The other cereals in similar comparison are: Rye, 199,000 bushels against 2,033,000 bushels; barley, 773,000 bushels against 2,091,000 bushels; oats, 105,000 bushels against 377,000 bushels; and corn 4,298,000 bushels against 8,728,000 bushels.

WHEAT

In proportion to the quantity produced, the old Kingdom of Bulgaria was a considerable exporter of wheat. The average net exportation was 11,149,000 bushels, equivalent to 33.6 per cent of the total net production. In 1913, Bulgaria ceded to Rumania and Yugoslavia certain territories that on an average produced a surplus of 3,276,000 bushels, equivalent to about 29.4 per cent of the total average pre-war wheat exportation from the old Kingdom.

The newly acquired territories to the south do not produce enough wheat to satisfy the bread requirements of the local population, resulting in a wheat deficit. This deficit has been estimated to have averaged 1,477,000 bushels annually during the 4-year period ended 1912.

Taking into consideration the loss of territories on the northeast and northwest, whose annual surplus was practically 3,276,000 bushels, and the acquisition of territories on the south, whose annual deficit was practically 1,477,000 bushels, the pre-war surplus production of Bulgaria, (present boundary) may be considered to have been approximately 6,396,000 bushels, equivalent to 22.3 per cent of the estimated net production. When this estimated surplus is compared with the average pre-war actual export from the old Kingdom of 11,149,000 bushels it is easy to understand the catastrophic effect that the changes in boundaries has had upon the export trade of Bulgaria and upon the international financial standing of the new Kingdom.

Comparing the pre-war estimates of acreage for the territories comprising the present Bulgarian State with the post-war reported data as indicated in Table 67, it appears that there was not a pronounced falling off during the World War in the area under wheat. The wheat area in 1921 was 2,233,000 acres, or 93.6 per cent of the 1909-1912 average.

TABLE 67.—Wheat: Statistical balances of Bulgaria, average 1909–1912, 1921–1925, and annual, 1921–22 to 1926–27

District and year	Population ¹	Acreage	Seed	Production		Disappearance		Surplus (+) or deficit (-)
				Gross	Net	Statistical	Per capita	
Pre-war average, 1909–1912:								
Old Kingdom minus ceded Territory ²	Number 3,984,830	1,000 acres 2,331	1,000 bushels 7,427	1,000 bushels 35,691	1,000 bushels 28,264	1,000 bushels 20,391	Bushels 5.12	1,000 bushels +7,873
Newly acquired territory	375,334	54	172	617	445	1,922	5.12	-1,477
Present territory.....	4,360,164	2,385	7,599	36,308	28,709	22,313	5.12	+6,396
Post-war period: ¹⁰								
1921–22.....	4,916,300	2,233	7,114	29,239	22,125	17,649	2.59	+4,476
1922–23.....	4,963,000	2,226	7,092	37,704	30,612	26,922	5.42	+3,690
1923–24.....	5,010,200	2,303	7,337	36,223	28,896	26,462	5.28	+2,424
1924–25.....	5,057,800	2,492	7,940	24,698	16,758	18,453	3.65	-1,695
1925–26.....	5,105,800	2,537	8,083	49,643	41,560	37,266	7.30	+4,294
Average, 1921–1925.....	5,010,620	2,358	7,513	35,501	27,988	25,350	5.06	+2,638
1926–27.....	5,153,205	2,587	8,242	41,064	32,822			

¹ Population for pre-war is 1910; old Kingdom of Bulgaria; 4,337,513 (8, Ann. 4); ceded territories, 352,683, calculated from (8, Ann. 4); newly acquired territory estimated, assuming that the same increase had occurred between 1910 and 1920 as in the old Kingdom, minus ceded territories. 1921 to 1925 (8, Ann. 17, p. 16). 1926 estimated by adding to 1925 the average yearly increase between 1921 and 1925.

² Acreage, production and seed for old Kingdom (9, 1909–1912); ceded territories calculated from (9, 1909–1912).

³ 2,728,000 acres minus 397,000 acres ceded to Rumania and Yugoslavia. See Tables 21 and 96.

⁴ Total seed for Bulgaria, minus seed used in ceded territories. See Tables 21 and 96.

⁵ 41,842,000 bushels, minus 6,151,000 bushels produced in ceded territories. See Tables 21 and 96.

⁶ 11,149,000 bushels, net export of the old Kingdom for calendar years from (17, 1909–1921), minus 3,276,000 bushels, statistical surplus produced in ceded territories.

⁷ Area and production of newly acquired territory, estimated.

⁸ 3.187 bushels seed per acre, same as old Kingdom of Bulgaria.

⁹ Estimated to be the same as old Kingdom, minus ceded territories.

¹⁰ Acreage and production for 1921 to 1926 from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.

¹¹ 3.186 bushels seed per acre used, 1921 to 1926, as indicated in pre-war average.

¹² Net exports (+) and net imports (-) for years beginning Aug. 1 (17, 1924–1927).

The acreage under wheat has steadily increased since 1922, reaching a maximum of 2,587,000 acres in 1926 or 108.5 per cent of the estimated pre-war average for these territories, but this gain in acreage is more than offset by the natural growth of the population.

The estimated population for 1926 is 118.2 per cent of what it was in 1910, so that the wheat acreage, of recent years, averages less per capita than before the World War. Total domestic disappearance of wheat has increased under these conditions. There is even an indication of increased consumption per capita, although this is obscured by the poor crop year of 1924, during which time the nation went on short rations and international trade resulted in a net importation of 1,695,000 bushels of wheat.

Exports of wheat from present Bulgarian territory in surplus-producing years, since 1921, have been disappointing when contrasted with the pre-war exportations of the old Kingdom or even when compared with the estimated pre-war exportable surplus of the new Kingdom.

Although preliminary estimates place the 1927 acreage at 2,508,000 acres, somewhat below that of the previous year, it is probable that wheat acreage in Bulgaria will increase and may even equal that of the old Kingdom before the World War. The most fertile fields in present Bulgaria are already under wheat, so that production from any additional areas, which must necessarily be more or less marginal

in character, can not equal that of an equivalent area of the unusually rich soils found in the wheat belt of the Dobruja that have passed under Rumanian control. Population has increased and will continue to increase. It is probable that domestic consumption of wheat per capita is increasing.

Taking all these factors into consideration, it is improbable that the future exportable surplus of Bulgaria will exceed the pre-war average of 11,000,000 bushels from the old Kingdom although in good years it may exceed the estimated surplus of 6,396,000 produced before the war in the territories now comprising the new Kingdom.

FLOUR MILLING

The total pre-war export of wheat from the old Kingdom of Bulgaria averaged 11,149,000 bushels, of which 8,698,000 were exported as grain and the equivalent of 2,451,000 bushels as flour. In addition to the wheat ground in the commercial mills for export, an annual average of 22,000,000 bushels were ground for domestic consumption.

In 1910, there were 12,004 mills in Bulgaria. Of this number, 99 were engaged, under the patronage of the State, in the production of high-grade export flour as well as the lower grades demanded for peasant consumption. These great mills were located at Tirново, Gorna Orjechovica, Pleven, Stara Zagora, Sofija, Russe, and Shumen. The great majority of all other mills was of the wind or water type, grinding coarse flour and meal.

There were 121 commercial flour mills, including a few mills equipped for processing rice, in operation in 1921. These mills are reported to have manufactured products to the value of 43,989,824 gold leva⁴⁸ or \$8,490,036 as compared with products valued at \$2,444,126 manufactured by the textile industry; \$1,906,358 worth of sugar produced by the sugar industry and the return of \$5,947,530 by all other industries.

TABLE 68.—Wheat and wheat flour: Quantity and destinations of exports from Bulgaria, 1922-1925 (8, Ann. 17, pp. 271, 273)

Country to which exported	1922		1923		1924		1925	
	Wheat	Wheat flour	Wheat	Wheat flour	Wheat	Wheat flour	Wheat	Wheat flour
	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>
Austria.....	6,293	449	8,997	1,009	(¹)	2,815	44	(¹)
Czechoslovakia.....	552	16	1,296	181	(¹)	27	(¹)	1,979
Egypt.....	(²)	380	(²)	22	(²)	367	13	552
France.....	1,610	(¹)	1	56	(¹)	2	(¹)	(¹)
Germany.....	18,828	3,913	10,515	4,850	2,192	9,079	24,532	16,042
Greece.....	4,240	(¹)	3,717	(²)	(²)	2	(²)	(²)
Hungary.....	7,063	(¹)	1,130	341	17	461	(¹)	75
Italy.....	11,522	857	486	1	1	1	1	1
Russia.....	52,087	14,890	47,219	4,181	10,709	9	4,951	82
Turkey.....	2,110	1,071	177	529	9	15	(¹)	2
Yugoslavia.....								
Other countries and undetermined destination.....	11,253		12,134	20		33	9,152	1,934
Total.....	115,628	21,576	87,916	12,250	13,294	13,154	38,692	20,666

¹ Less than 500 pounds.

² If any, included in other countries.

⁴⁸ Value of the lev at par, 19.3 cents.

Compared with other manufactures, flour milling was the most important industry in Bulgaria. Previous to 1879 the Turkish Empire drew upon Bulgaria for a considerable portion of its food supplies, but for some years after the war of freedom this source of wheat was neglected until 1899. At this time trade relationships were reestablished and, during 1909-1912, about 80 per cent of the flour exported from Bulgaria went to Turkey.

The export of flour has ranged between 12,250 and 21,576 short tons annually, during the 4-year period ended 1925. In 1925 the bulk of the flour exported went to Greece and Egypt. (Table 68.)

By far the greater portion of wheat exported in the form of grain in recent years went to Greece and Turkey. Bulgaria shipped little wheat to western Europe in 1924 and 1925.

RYE

More rye was planted in the territories acquired from Turkey than was sown in the territories transferred to Rumania and Yugoslavia. Thus the territories now comprised within the frontiers of Bulgaria planted annually before the World War 549,000 acres to rye or somewhat more than was planted in the old Kingdom. But the newly acquired territories did not produce sufficient rye to meet their own food requirements, and yields per acre were lower than those obtained in the territories transferred to Bulgaria's neighbors on the north and west. For these reasons, instead of an annual export of 2,033,000 bushels which the old Kingdom sent abroad each year, it is estimated that the annual rye surplus of the territories constituting present Bulgaria was approximately 1,883,000 bushels. (Table 69.)

TABLE 69.—Rye: Statistical balance of Bulgaria, average 1909-1912, 1921-1925, and annual, 1921-22 to 1926-27

District and year	Acreage	Seed	Production		Disappearance		Surplus(+) or deficit(-)
			Gross	Net	Statistical	Per capita ¹	
	1,000 acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushels	1,000 bushels
Pre-war average, 1909-1912:							
Old Kingdom minus ceded territory ²	503	1,532	7,806	6,274	4,354	1.09	+1,920
Newly acquired territory ³	46	140	512	372	409	1.09	-37
Present territory.....	549	1,672	8,318	6,646	4,763	1.09	+1,883
Post-war period: ¹⁰							
1921-22.....	466	1,419	6,095	4,676	4,413	0.90	+263
1922-23.....	442	1,346	7,453	6,107	5,577	1.12	+530
1923-24.....	425	1,295	6,862	5,567	5,438	1.09	+129
1924-25.....	413	1,258	4,303	3,045	3,026	1.40	+19
1925-26.....	453	1,380	8,889	7,509	7,421	1.45	+88
Average 1921-1925.....	440	1,340	6,720	5,380	5,175	1.03	+205
1926-27.....	460	1,401	8,008	6,607			

¹ For populations see Table 67.
² See note 2 in Table 67.
³ 533,000 acres less 80,000 ceded to Rumania and Yugoslavia. See Tables 23 and 100.
⁴ Total seed for Bulgaria minus seed used in ceded territories. See Table 23 and 100.
⁵ 8,341,000 bushels less 535,000 bushels produced in the ceded territories. See Tables 23 and 100.
⁶ 2,033,000 bushels, net export of rye and rye flour of the old Kingdom for calendar years (17, 1924-25), minus 113,000 bushels, statistical surplus produced in ceded territories. See Tables 23 and 100.
⁷ Acreage and production of newly acquired territory, estimated.
⁸ 3.042 bushels seed per acre, same as the old Kingdom of Bulgaria.
⁹ Same rate as the old Kingdom less ceded territory.
¹⁰ Acreage and production for 1921 to 1926 from official records of the U. S. Department of Agriculture, Bureau of Agricultural Economics.
¹¹ 3.046 bushels seed per acre for 1921 to 1926 as indicated in pre-war average.
¹² Net exports for years beginning Aug. 1 (17, 1924-27).

The acreage of rye in 1921 was 84.9 per cent of the pre-war estimated average. This is a significant decrease in view of the fact that in this year the Bulgarians seeded more than 93 per cent of their former wheat acreage. During the next three years, rye acreage decreased to 413,000 acres, and then increased somewhat. By 1926, the area under rye was 460,000 acres or 83.8 per cent of the pre-war average. Preliminary estimates indicate the 1927 area at 442,000 acres.

Production has been proportionately low until the good harvests of 1925 and 1926 brought net production somewhat above the pre-war average in the former year and about equal to the 1909-1912 average in the latter. Except during the poor crop year, 1924-25, disappearance has been about normal, and consequently exportation has been low. Most of the surplus rye produced in Bulgaria is exported to Greece and Turkey. It is probable that rye will not recover its pre-war status since in Bulgaria, as in other countries in southeastern Europe, there seems to be a trend toward increased consumption of wheat. Wheat acreage is being given the preference on those lands set aside for the cultivation of bread cereals.

BARLEY

The net exportation of barley from the old Kingdom of Bulgaria averaged 2,091,000 bushels, of which 1,277,000 bushels were produced in the territories ceded to Rumania and Yugoslavia. The estimates for the territories acquired from Turkey indicate a statistical deficit of 496,000 bushels annually. If this deficit had been covered, the pre-war exportable surplus of Bulgaria (present boundaries) would have been approximately only 318,000 bushels. (Table 70.)

TABLE 70.—Barley: Statistical balance of Bulgaria, average 1909-1912, 1921-1925, and annual, 1921-22 to 1926-27

District and year	Acreage	Seed	Production		Disappearance		Surplus (+) or deficit (-)
			Gross	Net	Statistical	Per capita ¹	
	1,000 acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushels	1,000 bushels
Pre-war average, 1907-1912							
Old Kingdom minus ceded territory ¹	490	1,530	9,797	8,267	7,453	1.87	+814
Newly acquired territory ²	21	66	272	206	702	1.87	-496
Present territory.....	511	1,596	10,069	8,473	8,155	1.87	+318
Post-war period: ³							
1921-22.....	524	1,636	8,489	6,853	6,034	1.23	+819
1922-23.....	534	1,668	11,941	10,273	9,003	1.81	+1,270
1923-24.....	544	1,699	11,063	9,364	8,880	1.77	+484
1924-25.....	529	1,652	7,067	5,415	4,883	.97	+532
1925-26.....	544	1,699	14,652	12,953	11,850	2.32	+1,103
Average 1921-1925.....	535	1,671	10,642	8,971	8,130	1.62	+841
1926-27.....	546	1,705	11,969	10,264	.....	.....	.....

¹ For populations see Table 67.

² See note 2, Table 67.

³ 620,000 acres minus seed used in ceded territories see Tables 25 and 101.

⁴ Total seed for old Bulgaria minus seed used in ceded territories. See Tables 25 and 101.

⁵ 12,059,000 bushels minus 2,262,000 bushels produced in ceded territories. See Tables 25 and 101.

⁶ 2,091,000 bushels, net export for calendar years for the old Kingdom (17, 1924-25) minus 1,277,000 bushels, statistical surplus produced in ceded territories. See Tables 25 and 101.

⁷ Acreage and production of newly acquired territories, estimated.

⁸ 3.122 bushels seed per acre, same as the old Kingdom of Bulgaria.

⁹ Same as the old Kingdom less ceded territory.

¹⁰ Acreage and production for 1921 to 1926 from official records of J. S. Department of Agriculture, Bureau of Agricultural Economics.

¹¹ 3.122 bushels seed per acre used 1921 to 1926 as indicated in pre-war average.

¹² Net exports for years beginning Aug. 1 (17, 1924-1927).

In 1921 there were 15 breweries operating in Bulgaria which produced beer and other products to the value of 6,230,247 gold leva, or about \$1,202,438.⁴⁹ This is between 6 and 7 per cent of the total value of the industrial output of the entire Kingdom during that year. Little beer is exported from Bulgaria, and the local demand for brewing barley is gaged largely by the domestic consumption of beer, which is fairly constant from year to year.

Since the World War both acreage and production of barley in Bulgaria have averaged well above the estimated pre-war normal for present boundaries. Disappearance, on the other hand, has averaged somewhat lower than the pre-war estimates and thus the actual net exports have ranged considerably higher than the surplus estimated to be available for export from these territories during the 4-year period 1909-1912. It is probable that the average export of 841,000 bushels during the 5-year period ended 1925-26 indicates with fair accuracy the new level (somewhat higher than pre-war) about which Bulgarian barley exports will fluctuate in the future.

As shown in Table 71, most of the barley exported from Bulgaria in 1924 and 1925 went to Belgium, Germany, Greece, and England.

TABLE 71.—Barley: Exports from Bulgaria by countries, 1922-1925 (3, Ann. 17, p. 271)

Country to which exported	1922	1923	1924	1925
	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>	<i>Bushels</i>
Austria.....	40,856	17,755		
Belgium.....	215,875	61,203	269,866	474,446
England.....	9,158		2,704	22,700
France.....	86,103	41,434		
Germany.....	48,778		11,682	177,157
Greece.....	121,067	108,028	86,081	58,097
Italy.....	43,338	1,411	360	
Turkey.....	225,031	19,225		
Yugoslavia.....	94,290	7,968		
Other countries and designation not determined.....	445,910	391,774	202,030	200,696
Total.....	1,330,376	648,788	572,723	933,096

OATS

Oats constitute the least important of the cereal crops in Bulgaria. The old Kingdom produced a small exportable surplus before the World War, averaging 377,000 bushels annually. The territories ceded to Rumania and Yugoslavia (according to statistical calculation) did not produce enough oats annually to meet local requirements which necessitated the purchase of 267,000 bushels each year to supplement home production. The newly acquired territories were also deficit regions, requiring 322,000 bushels of oats annually in addition to local production.

The pre-war surplus production of oats in Bulgaria (present boundaries) may thus be considered to have been about 55,000 bushels less than the pre-war average export from the old Kingdom, or 322,000 bushels annually. (Table 72.)

⁴⁹ The par value of the lev is 19.3 cents.

TABLE 72.—Oats: Statistical balance of Bulgaria, average 1909-1912, 1921-1925, and annual, 1921-22 to 1926-27

District and year	Acreage	Seed	Production		Disappearance		Surplus (+) or deficit (-)
			Gross	Net	Net	Per horse ¹	
Pre-war average, 1909-1912:							
Old Kingdom minus ceded territory ²	1,408	1,082	8,374	6,892	6,248	15.62	+644
Newly acquired territory ⁷	9	37	105	68	390	15.62	-322
Present territory.....	417	1,719	8,679	6,960	6,638	15.62	+322
Post-war period: ¹⁰							
1921-22.....	331	1,364	6,657	5,269	5,274		+19
1922-23.....	352	1,451	9,144	7,693	7,206		+497
1923-24.....	370	1,525	9,188	7,663	7,659		+4
1924-25.....	376	1,550	6,371	4,821	4,811		+10
1925-26.....	354	1,459	10,228	8,769	8,766		+3
Average 1921-1925.....	357	1,470	8,318	6,848	6,743		+105
1926-27.....	319	1,315	7,413	6,068			

¹ For number of horses see Table 83. Not available for postwar.

² See note 2, Table 67.

³ 464,000 acres less 56,000 that were ceded to Rumania and Yugoslavia. See Tables 27 and 102.

⁴ Total seed for Bulgaria minus seed used in ceded territories. See Tables 27 and 102.

⁵ 9,818,000 bushels less 1,244,000 bushels that were produced on ceded territories. See Tables 27 and 102.

⁶ Net exports for calendar years for the old Kingdom of Bulgaria, 377,000 bushels (17, 1924-25) plus 267,000 bushels, statistical deficit of ceded territories. See Table 27 and 102.

⁷ Acreage and production of newly acquired territory, estimated.

⁸ 4.123 bushels per acre, same as the old Kingdom of Bulgaria.

⁹ Same as in the old Kingdom less ceded territories.

¹⁰ Acreage and production for 1921 to 1926 from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.

¹¹ 4.122 bushels seed used per acre, 1921 to 1926, as indicated in pre-war average.

¹² Net exports for years beginning August 1 (17, 1924-1927).

Since the World War the area and production of oats have ranged below the 1909-1912 average estimated for the territories comprised within the present boundaries of Bulgaria. On the other hand, disappearance has ranged somewhat above the estimated pre-war average. As a consequence the export of oats has dwindled to insignificance.

It is not clear what the future trend of the production of oats will be, but since total acreage is so small any changes that may come about will not be of great importance to the market of western Europe.

CORN

Corn is the second most important cereal crop produced in Bulgaria, ranking next to wheat. The net export of the old Kingdom averaged 8,728,000 bushels during the 4-year period ended 1912. Of this surplus, about 1,024,000 bushels are estimated to have been produced in the territories ceded to Rumania and Yugoslavia, whereas the territories acquired from Turkey show an indicated statistical deficit of 492,000 bushels. From these data it is estimated that the pre-war exportable surplus produced within the present frontiers of Bulgaria averaged approximately 7,507,000 bushels. (Table 73.)

TABLE 73.—*Corn: Statistical balance of Bulgaria, average 1909-1912, 1921-1925, and annual, 1921-22 to 1926-27*

District and year	Acreage	Seed	Production		Disappearance		Surplus (+) or deficit (-)
			Gross	Net	Statistical	Per capita ¹	
Pre-war average, 1909-1912:							
Old Kingdom minus ceded territory ¹	1,000 acres 1,429	1,000 bushels 611	1,000 bushels 24,457	1,000 bushels 23,846	1,000 bushels 15,847	Bushels 3.98	1,000 bushels +7,969
Newly acquired territory ²	66	28	1,030	1,002	1,494	3.98	-492
Present territory.....	1,495	639	25,487	24,848	17,341	3.98	+7,507
Post-war period: ¹⁰							
1921-22.....	1,421	607	16,380	15,773	13,558	2.76	+2,215
1922-23.....	1,313	561	15,479	14,918	10,735	2.16	+4,183
1923-24.....	1,364	592	26,866	26,294	17,973	3.59	+8,311
1924-25.....	1,605	643	24,756	24,113	19,530	3.86	+4,583
1925-26.....	1,531	654	28,158	27,504	23,623	4.63	+3,881
Average, 1921-1925.....	1,427	609	22,328	21,719	17,084	3.41	+4,635
1926-27.....	1,470	628	29,018	28,390			

¹ See Table 67 for populations.

² See note 2 in Table 67.

³ 1,541,000 acres less 112,000 acres ceded to Rumania and Yugoslavia. See Tables 29 and 103.

⁴ Total seed for Bulgaria minus seed used in ceded territories. See Tables 29 and 103.

⁵ 26,974,000 bushels less 2,517,000 bushels produced on ceded territories. See Tables 29 and 103.

⁶ 8,728,000 bushels, net exports for old Kingdom of Bulgaria for calendar years (17, 1909-1911), minus 1,024,000 bushels, statistical surplus produced in ceded territories. See Tables 29 and 103.

⁷ Acreage and production of newly acquired territories, estimated.

⁸ 0.428 bushel seed per acre, same as the old Kingdom.

⁹ Same as the old Kingdom less ceded territory.

¹⁰ Acreage and production for 1921 to 1926 from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.

¹¹ 0.427 bushel seed per acre used 1921 to 1926, as indicated in pre-war average.

¹² Net exports for calendar years following the crop years (17, 1886-1887).

Corn acreage, since the World War, has averaged somewhat lower than pre-war estimated area until 1924. Production since 1923 has been above the pre-war average except for a slight falling off in 1924. Total disappearance, during the 5-year period ended 1925, has averaged slightly lower than that estimated for 1909-1912. Exports have averaged 4,635,000 bushels as compared with 7,507,000 bushels, the estimated pre-war surplus. It is probable that corn production and exportation will fluctuate in about the same manner as before the war although increased population may tend to increase the domestic disappearance somewhat above the pre-war normal.

Most of the corn exported from Bulgaria, in recent years, has been shipped to western Europe, France being the heaviest importer in 1924 and Holland in 1925. This is in contrast with the exportation of wheat and rye which were for the most part shipped to Greece, Turkey, and the Orient. (Table 74.)

TABLE 74.—*Corn: Exports from Bulgaria, by countries, 1922-1925 (8, Ann. 17, p. 272)*

Country to which exported	1922	1923	1924	1925
	Short tons	Short tons	Short tons	Short tons
Austria.....	11,766	6,242	19,850	
Belgium.....	1,605	6,421	17,842	17,218
Czechoslovakia.....	915		1,045	
Denmark.....				4,335
England.....		1,047	3,520	
France.....	1,794	30,640	75,637	20,714
Germany.....	2,743	935	15,316	10,951
Greece.....	8,358	7,261	15,435	5,112
Holland.....		719	8,172	31,460
Hungary.....	8,392	4,073	7,993	
Italy.....	639	10,049	3,440	1,461
Rumania.....	869		2,069	(¹)
Russia.....	4,313	(¹)		
Turkey.....	14,436	4,918	2,352	554
Yugoslavia.....	3,095	357	187	
Other countries and undetermined destination.....	3,102	44,644	59,852	35,726
Total.....	62,027	117,124	232,719	128,337

¹ Less than 1,000 pounds.

POTATOES

The production of potatoes was relatively unimportant before the World War and the use of potatoes as a substitute for bread had developed slowly in Bulgaria as in most of southeastern Europe. Before the Balkan war, the net production of potatoes in Bulgaria reached only 304,000 bushels. (Table 75.) A statistical surplus was, however, available for export approximating 81,000 bushels annually during the 4-year period ended 1912.

TABLE 75.—*Potatoes: Statistical balance of Bulgaria, average 1909-1912, 1921-1925, and annual, 1921-1926*

District and year	Acreage	Seed	Production		Disappearance		Surplus (+) or deficit (-)
			Gross	Net ¹	Statistical	Per capita ²	
	1,000 acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushel	1,000 bushels
Pre-war average, 1909-1912:							
Old Kingdom minus ceded territory ³	47	181	416	193	204	0.05	7-11
Newly acquired territory.....	4	103	238	111	19	10.05	+92
Present territory.....	11	284	654	304	223	.05	+81
Post-war period: ¹¹							
1921.....	20	516	1,040	420	363	.07	11 + 57
1922.....	20	516	1,360	708	581	.12	12 + 127
1923.....	24	620	1,220	478	452	.09	12 + 26
1924.....	24	620	1,819	1,017	1,013	.20	13 + 4
1925.....	27	697	2,418	1,479	1,479	.29	(¹²)
Average, 1921-1925.....	23	594	1,571	820	777	.16	+43
1926.....	24	620	1,811	1,010	1,008	.20	13 + 2

¹ 10 per cent of gross production also deducted for decay and other losses.² For populations see Table 67.³ Acreage and production for old Kingdom (⁹); ceded territories calculated from (⁸).⁴ 7,000 acres seeded in old Bulgaria. Less than 500 acres in territories ceded to Yugoslavia, and Rumania. See Tables 31 and 106.⁵ 25.82 bushels per acre—estimated to be the same seed per acre as Croatia Slavonia (²², p. 27).⁶ 442,000 bushels minus 26,000 bushels produced on ceded territory. See Tables 31 and 106.⁷ Net imports for calendar years for the old Kingdom of Bulgaria (¹⁷, 1924-25). It is assumed that the ceded territories consumed the total net production.⁸ Estimated.⁹ Estimated by assuming that the yield per acre in this territory was the same as in the old Kingdom less ceded territories.¹⁰ Same as in the old Kingdom less ceded territories.¹¹ Acreage and production for 1921 to 1926 from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.¹² 25.82 bushels seed per acre used 1921 to 1926 as indicated in pre-war average.¹³ Net exports for calendar years (¹⁷, 1924-27).¹⁴ Less than 500 bushels net export.

Since the World War the potato area in Bulgaria has more than doubled and there has been a proportional increase in production. Average disappearance during the 5-year period ended 1925 is more than three times that estimated as normal during 1909-1912. A small surplus has been exported each postwar year. This is beyond doubt a permanent development in Bulgarian agriculture. Nevertheless climatic conditions are unfavorable to building up the potato-growing industry to the extent reached in the regions of light soils and abundant rainfall of north central Europe.

SUGAR BEETS AND BEET SUGAR

The beet-sugar industry of Bulgaria is built around five factories and refineries, all of which are operated for the most part with foreign capital (French, Belgian, and Czechoslovak) and without governmental control. Although these factories had a combined capacity sufficient to supply the needs of the country, their pre-war production averaged only about one-third capacity⁶⁰ so that, before the Balkan War, Bulgaria was obliged to import sugar to a considerable extent.

The disappearance of sugar in Bulgaria during the year 1914 has been estimated to be equivalent to 29,706 short tons of raw sugar, or an average of 12.3 pounds (raw) per capita.

Bulgaria exported no sugar before the Balkan War. The import during the sugar year 1914 amounted to the equivalent of 12,353 short tons of raw sugar.

Since the World War the sugar factories have operated under the handicap of a shortage of beets. The peasants have held out for higher prices, which the factories have claimed they were unable to pay. At the same time it was reported that some of the factories made a clear profit as high as 140 per cent on the capital invested (44). After much agitation, the factories agreed to pay 820 leva⁶¹ for each metric ton of beets produced, to which were added 4.4 pounds of refined sugar and half the beet pulp. This resulted in an expansion of beet acreage and a production of sugar above the domestic requirements of the country in 1924. But the price paid for beets was so high that the factories could not export sugar in competition with Czechoslovakia on a basis of profit comparable with their former internal operations. The sugar cartel petitioned the Government for an increase in import duties and demanded a bounty on the sugar exported. This the Government refused to grant and, as the factories had on hand sufficient sugar to cover domestic demand for about a year, they shut down and the whole industry was brought to a standstill.

In recent years the statistical disappearance of sugar in Bulgaria had increased each year until 1925, when it reached a maximum of 35,806⁶² short tons. In 1926, there was a decrease to 31,912 short tons. As production increased, the importation of sugar had steadily fallen off between 1922 and 1924 but, after the factories had shut down

⁶⁰ The principal drawback to the Bulgarian sugar industry has been the conservatism of the peasants in taking up the cultivation of a crop with which they were unfamiliar and which required much hand labor. The industry is comparatively new. Only one plant operated between 1898 and 1913, at which time two new plants were put into operation. In 1914, two additional factories were installed. The daily capacity of these factories is: Russe, 1,543 short tons of beets; Sozija and Gorna Orjeschovica, 1,102 short tons of beets each; Kayali, 882 short tons; and Plovdiv, 551 short tons. In 1925 a concession was granted to establish a factory at Pleven to be run on cooperative lines with the assistance of local authorities.

⁶¹ At the 1924 average yearly value of the lev (0.728 cent), this would be equivalent to \$5.42 per short ton.

⁶² All sugars reduced to terms of raw sugar, calculated at the ratio of 100 refined = 114 raw.

for the season of 1925, there was a sharp increase in imports, totaling 11,009⁵² short tons, during that calendar year. Toward the close of the year the Government increased the import duty on sugar and the factories contracted for nearly 50,000 acres of beets for the season 1926-27. The area harvested was 49,400 acres, producing 330,700 short tons of beets. There was a falling off in area to 39,000 acres in 1927 (Table 76).

TABLE 76.—*Sugar beets and sugar: Acreage and production of beets, production, import, and disappearance of sugar in Bulgaria, 1914 and 1921-1926*

Year	Sugar beets		Raw sugar ¹			
	Acreage	Production	Production	Released by factories	Import	Disappearance
	<i>Acres</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>	<i>Short tons</i>
1914.....	38,810	209,984	26,602	17,353	12,353	29,706
1921.....	30,030	129,494	16,008	17,046	3,040	20,086
1922.....	25,201	165,538	22,040	17,499	5,442	22,241
1923.....	49,670	352,468	33,329	23,654	3,319	26,973
1924.....	64,113	445,635	48,034	26,005	1,979	27,984
1925.....	² 2,600	17,800	1,971	24,797	11,009	35,806
1926.....	49,400	330,700	40,000	31,912	0	31,912

1914-1925, sugar production, amount released by factories, import, and disappearance (*S. Ann. 17, p. 300*); 1926 from report of Consul Stuart Lupton, dated Sept. 9, 1927.

Sugar beet area and production 1921-1924 (*S. Ann. 17, p. 129*); 1925 and 1926 (*ibid.*); and 1914 (*S. Ann. 5-14*).

¹ Converted from refined on the basis raw equals: refined :: 114 : 100.

² Largely seed beets and breeding plots in connection with factory development.

The Bulgarian peasants are well adapted to the development of specialized industries just as are the Czechs. They can easily develop sugar production to the full needs of the country and to create a surplus for exportation.

As a sugar-exporting country Bulgaria can not compete with Czechoslovakia. Each year during the 4-year period ended 1924-25 Czechoslovakia planted an average of 596,133 acres, producing 6,049,941 short tons of beets, from which 1,057,680 short tons of raw sugar were obtained. During the same period Bulgaria averaged 42,254 acres, 273,284 short tons of beets, and 29,853 short tons of raw sugar. The yield of beets per acre in Czechoslovakia was 10.1 short tons against 6.5 in Bulgaria. One ton of beets yielded 0.175 short ton of sugar in the former country against 0.109 short ton in the latter. Of necessity, export trade must be developed with those countries (probably to the south) that offer to the Bulgarian sugar industry the advantage of proximity of markets or advantageous trade relationships.

TOBACCO

The most pronounced change in the agricultural situation in Bulgaria, since the World War, has been the advance in the exportation of tobacco, which has increased from a position of relative unimportance in value, to first place among the native products sent abroad. The old Kingdom of Bulgaria exported about 4,492,000 pounds of tobacco annually during 1909-1912. This tobacco export was valued at 1,746,067 leva or \$336,991.⁵³ In 1925, the shipment of

⁵³ All sugars reduced to terms of raw sugar, calculated at the ratio of 100 refined=114 raw.

⁵⁴ The par value of the lev was 19.3 cents.

leaf tobacco from Bulgaria reached 74,179,000 pounds, valued at 2,329,022,621 leva or \$17,041,459.⁶⁴ In addition, shipments of manufactured tobacco totaled 98,105 pounds valued at 3,913,415 leva or \$28,634.⁶⁴

Foremost among the several factors associated with this increase in the quantity of tobacco exported from Bulgaria was the acquisition of extensive tobacco-producing districts from Turkey at the close of the Balkan War.

The most important district for the production of those small leaved, highly aromatic sorts of tobaccos generally known as "Turkish" has centered for many years in the former Ottoman Provinces of Macedonia and Thrace. The belt in which "Turkish" tobacco could be cultivated, extended northward beyond the boundaries of the former Turkish Empire into the southern provinces of the old Kingdom of Bulgaria and Serbia, west into Herzegovina and Montenegro, south into the old Kingdom of Greece (both mainland and islands) and across the *Ægean Sea* into Asia Minor.

At the end of the World War, the very heart of this rich tobacco-producing area, which had formerly been part of Turkey in Europe, was annexed by Greece. A portion of Macedonia, now included in the district called south Serbia, was incorporated in Yugoslavia, and the northern parts of Thrace and Macedonia were annexed by Bulgaria. Although the tobacco produced in this newly acquired territory was not of the very high "aromatic" quality produced about Xanthe or Mahala in Greece, it was greatly superior to the grades formerly produced in the old Kingdom of Bulgaria.

For many years before the World War, tobacco growing in the old Kingdom of Bulgaria had been an important industry in the counties of Plovdiv and Starazagora in south Bulgaria and in Kyustendil in south west Bulgaria. In the hill regions the better grades of "basma"⁶⁵ were practically equal in quality to the better grades of similar Turkish export tobacco. Much of the tobacco produced in the southern counties of the old Kingdom was of the coarser bachel-bali grade or of even lower quality not suitable to meeting the requirements of the export trade. In the northeastern counties of Varna and Sumen an inferior quality of tobacco was produced, practically all of which was consumed domestically.

Before the Balkan war the total area under tobacco in the old Kingdom averaged 21,159 acres, producing 14,512,000 pounds, of which about 4,492,000 pounds were exported and 10,020,000 pounds were consumed domestically.

Bulgaria transferred to Rumania and Yugoslavia territories in which the pre-war tobacco area averaged 2,807 acres, producing 1,794,000 pounds. The local inhabitants consumed about 1,249,000 pounds annually, releasing approximately 545,000 pounds for shipment to other parts of the Kingdom. Little or none of this tobacco was suitable for export.

The estimated area under tobacco in the newly acquired territories averaged 9,505 acres, which was equivalent to 44.9 per cent of the acre-

⁶⁴ During 1925, the average value of the lev was 0.7317 cent.

⁶⁵ These tobaccos are "manipulated" after drying; that is, they are assorted, leaf by leaf, according to size, shape, and color. The small leaves of an oval or oblong form with extremely fine stems and veins are called "basma". The next grade called "bachel-bali" (Turkish for thick head) includes different sized leaves with coarse veins and stems.

age formerly planted in the old Kingdom and more than three and one-third as great an area as was devoted to tobacco in the ceded districts. Annual production averaged 6,210,000 pounds of which the local population consumed 826,000 pounds, releasing 5,384,000 pounds for export.

Based upon these estimates the pre-war area under tobacco in the territories comprising the present Kingdom of Bulgaria is computed to be, as indicated in Table 77, approximately 27,857 acres. Production averaged about 18,928,000 pounds and disappearance 9,607,000 pounds or approximately 2.2 pounds per capita. The pre-war exportable surplus thus averaged about 9,321,000 pounds each year.

TABLE 77.—Tobacco: Statistical balance of Bulgaria, average 1909–1912, 1921–1925, and annual, 1921–1927

District and year	Acreage	Production	Disappearance		Exportable surplus
			Statistical	Per capita	
Pre-war average, 1909–1912:		1,000 lbs.	1,000 lbs.	Pounds	1,000 lbs.
Old Kingdom minus ceded territory.....	1 18,352	12,718	8,781	2.20	3,937
Newly acquired territory.....	9,505	6,210	826	2.20	5,384
Present territory.....	27,857	18,928	9,607	2.20	9,321
Post-war period:					
1921.....	57,914	35,923			44,561
1922.....	83,098	58,077			64,244
1923.....	147,316	118,951	81,058	16.18	37,893
1924.....	121,896	108,447	38,406	7.59	70,041
1925.....	126,021	89,948	15,671	3.07	74,277
Average 1921–1925.....	107,249	82,269			58,203
1926.....	78,000	59,942			61,068
1927.....	63,000	34,811			

Acreage and production for 1901–1912, old Kingdom less ceded territory, calculated from (9).

1909–1912, newly acquired territory estimated.

1921–1924 (9, 1924, p. 66).

1925 (17, 1925–26).

1926 and 1927 (18), (8).

Exports 1921–1924 (11); and 1925 (16).

1926 preliminary, from Economic and trade note by Wm. E. Nash, American trade commissioner, Mar. 18, 1927.

¹ Total acreage for old Kingdom, 21,159 acres, and production, 14,512,000 pounds (9).

² Estimated by assuming the exports to be the same proportion to production as in the old Kingdom.

New exports for old Kingdom, 4,492,000 pounds (11).

³ Estimated to be the same as the old Kingdom less ceded territory.

⁴ 1921 includes 128,000 pounds cigarettes and manufactured tobacco; 1922 includes 255,000 pounds; 1923, 85,000 pounds; 1924, 78,000 pounds; and 1925, 98,000 pounds.

Not only did Bulgaria acquire actual territory from Turkey at the close of the Balkan War in which tobacco growing was the chief occupation; but, during and after that war many refugees from the battle sites in Macedonia and Thrace emigrated to Bulgaria. As a large number of these immigrants into Bulgaria had been engaged in tobacco production, they brought with them special knowledge acquired in the southern Turkish tobacco districts as well as seeds of new varieties. These they put to use in the tobacco-growing districts of Bulgaria.

In the meantime the former Turkish tobacco industry had been disrupted. Extensive areas had been devastated, population had been decimated, and production curtailed. Prices were good and, under the stimulus of profitable demand and ready markets, acreage in Bulgaria increased. By 1921, the acreage⁶ under tobacco in the

new Kingdom was more than double what it had been in these same territories during 1909-1912. In that year, the actual exportation of tobacco was nearly five times as large as had been the average surplus available for export before the Balkan War.

Tobacco areas continued to increase, until the bumper year of 1923, when the maximum of 147,316 acres was reached. This large acreage and production were coincident with a practical suspension of tobacco shipments from Greece.⁵⁶ During the year 1924, fully 70,041,000 pounds of leaf and manufactured tobacco were exported and the following year 74,277,000 pounds were shipped abroad.

Before the Balkan War the old Kingdom of Bulgaria exported leaf tobacco to Egypt, Austria-Hungary, Germany, Turkey, Belgium, Italy, and even to Samos and Syria. The tobacco grown about Khaskovo was much sought after by the factories in Samos.

In 1925 leaf tobacco exports went to Germany, 26,388,213 pounds; 14,022,372 pounds; Czechoslovakia, 9,910,347 pounds; Austria, 9,793,365 pounds; Poland, 5,779,017 pounds; Belgium, 2,230,389 pounds; Holland, 2,113,570 pounds; Hungary, 1,857,391 pounds; and 2,084,044 pounds to other countries, including 713,966 pounds to the United States.

In addition to exports of leaf tobacco, Bulgaria exported 94,606 pounds of cigarettes. Austria, Turkey, Rumania, and Germany were the chief customers. A small quantity of manufactured tobacco, (3,499 pounds) was sent to Austria and other countries.

Up to 1923, there was no effort on the part of the State to regulate the tobacco industry of the Kingdom, but in that year a tobacco law was enacted, regulating every phase in the industry, which was already loaded with district and township taxes and high export duties. It became increasingly difficult for Bulgaria to meet the competition of Greece and Turkey and only the finest grades of leaf found a ready market. The industry suffered from overproduction of the medium and low grades and by the end of 1925 about 88,000,000 pounds of old crops remained in the country unsold, in addition to the 90,000,000 pounds harvested in that year.

Merchants and manufacturers were so overtaxed and overregulated that the entire tobacco industry became stagnant. Several firms moved their businesses to Turkey. Before the close of the year a law was passed, which cut the export duties on the crop of 1925 in half and permitted free export in 1926. In spite of these modifications of the regulations, the 1926 area of tobacco dropped to 78,000 acres and preliminary estimates indicated a further drop to 63,000 acres in 1927. This indicates that the spectacular flurry in the Bulgarian tobacco industry is at an end, and that future areas and production will be more in keeping with the world demand for such grades of tobacco that Bulgaria can produce. The crises in the Macedonian and Turkish industries created an artificial demand for northern-grown tobacco; but, now that these crises are over, the countries to the south are again competing for the American and European trade.

Little if any of the tobacco produced in Bulgaria is of the cigar or pipe-tobacco types. It is strictly a cigarette tobacco and as such must

⁵⁶ In 1922 the Greek Government required that 40 per cent of the foreign money received in payment for tobacco exportations be sold to the treasury at a rate of exchange much below that current in business transactions. At the end of 1923 much of the 1921 crop and practically all of the 1922 crop was still stored in warehouses and no offers of purchase were made for the crop of 1923. There was practically no movement of tobacco from Grecian ports until April, 1924, after the export law had been greatly modified. Only 42,000,000 pounds were exported during that year.

compete with the Grecian and Turkish products. This northern-grown tobacco can not compete with the prime classes of the highly aromatic varieties produced in Greece, but can meet on a plane of equality only the second and low-grade sorts. It was reported, in 1924, that Bulgarian and Virginia tobaccos had superseded Grecian tobacco in the Baltic States and was meeting with favor in Germany.

In 1926 Germany was the chief purchaser of Bulgarian tobacco followed by Italy, Czechoslovakia, and Holland in the order named. As shown in Table 78, total exports reached 61,068,000 pounds.

TABLE 78.—*Tobacco: Exports from Bulgaria by countries, 1922-1926*

[In thousand pounds—i. e., 000 omitted]

Country to which exported	1922	1923	1924	1925	1926
Germany.....	33,347	6,666	24,102	26,396	20,553
Italy.....	16,397	8,745	10,257	14,028	11,262
Czechoslovakia.....	5,030	5,182	13,973	9,912	8,539
Hungary.....	2,326	753	2,560	1,859	(¹)
Holland.....	1,363	889	3,306	2,115	5,464
Austria.....	1,488	14,245	7,121	9,856	3,080
United States.....	1,168	872	787	714	(¹)
Belgium.....	1,047	311	2,039	2,231	2,231
Egypt.....	459	117	426	442	1,018
Poland.....	286	52	4,538	5,779	3,454
Great Britain.....	51	1	104	288	251
France.....	40	1	102	110	494
Switzerland.....	1	11	1	49	94
Other countries.....	1,241	48	725	500	4,628
Total.....	64,244	37,893	70,041	74,277	61,068

1922-1925, compiled from (*S. Ann. 17, p. 276*).

1926, from economic and trade note March 18, 1927, Wm. E. Nash, American trade commissioner.

¹ If any, included in other countries.

After the tobacco is sun dried, the producer assorts the leaves according to color and size, binding six selected leaves of similar quality into a packet called a "pastal." The pastals are then piled into the form of an oblong bale in such a way that they can be readily examined. Burlap is placed at each end of the bale, which is so bound that four sides are left uncovered to permit free circulation of the air and easy examination of individual pastals.

When these bales of pastals are received at a merchant warehouse the leaves are moistened by an expert to minimize breakage during the process of sorting and classification which follows. The pastals are first roughly classified according to size and color into piles, from which expert graders take each leaf separately. The tobacco is then examined leaf by leaf and packed, with the stem toward the center, into the pressing frame. After the frame is full, the leaves are pressed and bound into a compact bale with a protection of burlap at the ends only, four sides being left open to permit of circulation air and inspection of the leaf. Usually two girls handle the basma grades to each five or six handling the bachi-bali or common grade.

During transportation from the producer to the merchant's warehouse there is a shrinkage of about 2 per cent. During manipulation, there is a shrinkage of 2 to 5 per cent; and, between that time and exportation, from 2 to 4 per cent. Normal shrinkage is about 6 to 10 per cent. From 2 to 8 per cent of the tobacco becomes scrap, most of which is consumed locally.

In a broad sense the tobacco industry of Bulgaria (as far as the exportation of the basma and bachi-bali grades is concerned) is a part of, or is intimately associated with, the tobacco industry of Greece, Turkey, and Yugoslavia.

The production of tobacco in this Balkan-Asiatic region in 1923 was nearly double and in 1924 was more than double that of 1920. (Table 79.)

TABLE 79.—Tobacco: Production in specified countries, 1920-1926

[In thousand pounds—i. e., 000 omitted]

Country	1920	1921	1922	1923	1924	1925	1926
Bulgaria.....	64,599	35,923	58,077	118,951	108,447	89,948	59,942
Yugoslavia.....	17,210	26,046	20,704	38,231	78,663	26,590	32,682
Greece.....	69,850	49,863	56,857	127,358	75,469	129,243	120,169
Turkey.....	31,305	113,889	(¹)	57,298	115,415	118,356	88,184
Total.....	182,964	125,721	-----	341,838	377,994	364,137	300,977

1920-1926 for Bulgaria, Yugoslavia and Greece, compiled from (17, 1923, 1925-26; 18 [p.] 18).

1920 and 1921 for Turkey, compiled from Consular Report No. 37153, June 30, 1921.

1923-1926 from Commerce Report No. 49018, Athens, dated Feb. 3, 1927.

¹ Falling off in 1921 on account of war in Anatolia.

² Not available.

COTTON

There were 7,640 acres of cotton reported under cultivation in Bulgaria in 1925-26, 7,000 acres in 1926-27, and 22,000 acres in 1927-28. Production during these three years was 815,482 pounds, 1,500,000 pounds, and 4,600,000 pounds, respectively.

In 1925 Bulgaria imported 486,736 pounds of raw cotton. (Table 80.)

TABLE 80.—Cotton, raw: Imports into Bulgaria by country of origin, 1922-1925
(8, Ann. 17, p. 248)

Imported from—	1922	1923	1924	1925
	Pounds	Pounds	Pounds	Pounds
Greece.....	19,321	51	-----	-----
Turkey.....	14,156	22,648	-----	-----
Italy.....	10,582	43,569	13,228	436,321
Egypt.....	3,135	-----	-----	-----
United States.....	893	-----	-----	-----
England.....	-----	1,122	-----	50,413
Germany.....	-----	122	-----	12
Czechoslovakia.....	-----	-----	13,370	-----
Total.....	48,067	67,412	26,598	486,736

¹ Probably samples received by mail.

LIVESTOCK

Field-crop production predominates in the farming operations conducted in Bulgaria. The livestock maintained by each peasant is usually restricted to those animals that are economically essential to the conduct of farm work or to supply the immediate simple food and clothing requirements of the peasant family. Bulgarian agriculture is characterized by small holdings of crop lands divided into minute, irregularly shaped, scattered plots, which are unfenced. The pasture lands that are owned as common property by the village

community afford very poor grazing. Except in rare cases, it is impracticable for a peasant to graze large animals on his little parcels of land, and the number of animals that he is allowed to graze in the common village pasture is limited by the regulations of the village council.

These conditions inhibit the general development of an animal industry throughout Bulgaria. In a few instances a peasant is so situated that it is possible to maintain livestock on a commercial scale. There are a few farms on which sheep herding or cattle breeding or (more seldom) hog production are the chief sources of income. Among 494,950 owners of livestock in 1905, only 8,752 are reported as engaged in animal industry as their principal occupation.

The Bulgarian peasants rarely eat beef. Their staple meat diet is pork interspersed with lamb at certain seasons of the year; occasionally a sheep or goat is slaughtered for food. Only in Sofija and certain other of the larger cities is a regular supply of fresh meat on sale. The consumption of meat is restricted even in the cities. The demand for prime cuts is so low that there is little incentive to feed animals exclusively for slaughter and much less encouragement to breed high-grade beef and mutton types. Consequently, the breeding of livestock (particularly cattle) is at a very low stage in Bulgaria.

Cattle are produced in Bulgaria almost exclusively for work. As shown in Table 81, the value of the work done by cattle in 1910 was estimated at \$33,408,000, whereas the beef and veal produced amounted to only \$2,663,000. Even though dairying is at a very low stage of development, the value of milk produced in this year exceeded that of meat in the case of cattle, water buffaloes, and goats and was about equal to the value of meat in the case of sheep.

Work constituted about 57 per cent of the value returned to Bulgarian farmers by their livestock in 1910. Meat was considered of secondary importance being 16.3 per cent of the total income derived from animals, followed by milk at about 12.2 per cent.

TABLE 81.—Income derived from specified livestock and livestock products, old Kingdom of Bulgaria, 1910 (25, p. 227)

[In thousands—1. e., 000 omitted]

Class	Meat, and live animals exported		Milk		Wool, hair, and bristles		Eggs		Manure		Work		Total	
	Leva	Dolls.	Leva	Dolls.	Leva	Dolls.	Leva	Dolls.	Leva	Dolls.	Leva	Dolls.	Leva	Dolls.
Horses									4,800	925	102,600	19,802	107,400	20,728
Mules									100	19	2,200	425	2,300	444
Asses									300	58	6,900	1,332	7,200	1,390
Cattle	13,800	2,663	21,300	4,111					8,000	1,544	173,100	33,408	216,200	41,726
Buffaloes	5,200	1,004	12,000	2,316					2,100	405	26,400	7,025	55,700	10,750
Sheep	20,900	5,192	26,200	5,057	17,800	3,435			8,700	1,679			79,600	15,363
Goats	4,600	888	9,100	1,756	600	116			1,500	290			15,600	3,050
Swine	29,800	5,751			400	77							30,200	5,829
Fowls	10,200	1,969					26,900	5,192					37,100	7,161
Bees													3,400	656
Silkworm													1,500	289
Fish	1,500	289												
Total	92,000	17,756	68,600	13,240	18,800	3,628	26,900	5,192	25,500	4,921	321,200	61,992	563,300	108,717

Value of the leva at par used, 19.3 cents.

¹ For honey.

² For cocoons.

³ Includes the value of honey and cocoons.

The old Kingdom of Bulgaria was surpassed, in Europe, only by Greece in the number of sheep and goats per 100 inhabitants in 1910; by Denmark and Sweden in the number of cattle (including water buffaloes); and by Denmark, Rumania, and Russia in the number of horses.

During the later centuries that Bulgaria was under Turkish domination, considerable attention was paid to horse breeding, and a fairly characteristic breed was developed through systematic crossing of Arabian blood on the sturdy ponylike horses that the Bulgars had brought with them from the steppes of Russia. In recent years, before the World War, the Bulgarian Government attempted in a small way to stimulate breeding by extending credits to private purchasers of pedigreed stock and by maintaining breeding stations under the direction of the State. But these undertakings were inadequate to the needs of the country, though the status of horse breeding was somewhat better than that of cattle. In many villages not even a bull of the native unimproved breeds was to be found. During the recent Balkan War with Turkey and subsequently during the World War, the best animals were requisitioned for military purposes.

Since the World War Bulgaria has been compelled, by the terms of the treaty of Neuilly, to surrender to Rumania and Yugoslavia many thousands of animals, which naturally were selected from the best individuals remaining after the inroads of military requisitions. As a result, Bulgarian stocks of animals are greatly depleted and the average quality is far below that of the low level of pre-war days. Efforts are now being made to improve conditions and two commissions have been sent to purchase breeding animals in Switzerland, Germany, Austria, and Hungary.

Reparation payments do not appear in the official statistics of Bulgaria so that the exportation of live animals, as shown in Table 82, are in addition to those sent to the countries of the Allies in payment of reparations. Between 1922 and 1925, live animals were exported almost exclusively to Greece and Turkey.

TABLE 82.—*Livestock: Exports from Bulgaria, 1922-1925 (8, Ann. 17, p. 269)*

Livestock and destination	1922	1923	1924	1925
Buffaloes:	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Greece.....	15	.....	826	3,393
Turkey.....	587	170	370	337
Total.....	602	170	1,196	3,730
Cattle:				
Greece.....	288	2	10,823	18,830
Turkey.....	2,393	842	2,951	1,898
Total.....	2,681	844	13,774	20,718
Sheep:				
Greece.....	8,335	1,844	55,590	140,617
Turkey.....	79,668	32,387	57,029	139,352
Rumania.....	27	.....	.....	.....
Yugoslavia.....	.....	.....	.....	255
Total.....	88,030	34,231	112,589	280,224
Lambs:				
Greece.....	2,477	167	1,657	22,508
Turkey.....	5,385	3,402	3,062	3,700
Austria.....	.....	.....	.....	1
Russia.....	2	.....	.....	.....
Total.....	7,864	3,569	5,020	26,208

TABLE 82.—*Livestock: Exports from Bulgaria, 1922-1925 (8, Ann. 17, p. 269)*—Continued

Livestock and destination	1922	1923	1924	1925
Goats:	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Greece.....	520	147	17,914	40,583
Turkey.....	7,020	1,348	4,555	4,034
Austria.....			1	
Total.....	7,540	1,495	22,470	44,617
Pigs:				
Greece.....	661		646	1,327
Turkey.....	2,279	1,882	569	626
Rumania.....	1	4	9	3
Yugoslavia.....			3	2
Other countries.....	2	7	42	17
Total.....	2,943	1,893	1,269	1,975

HORSES

The agricultural use of horses in Bulgaria had been increasing before the outbreak of the World War. Horse breeding was carried on extensively for several hundred years, under the Turks, during which time the characteristics of the mixture of native horses brought into the country by the Slavs and other peoples were greatly modified and improved. A fairly uniform type of horse has been developed. In north Bulgaria the average run of village horses is far superior to those found in Rumanian or Serbian villages. At the time of the liberation of Bulgaria from the Turkish yoke horse breeding was disrupted. The Bulgarian Government imported a few purebred horses and established several breeding stations throughout the country before the World War, but not of the magnitude of the breeding operations of the former Turkish rulers. At present the Ministry of Agriculture directs the work of improving draft animals whereas the Ministry of War has charge of improving the quality of native horses for remounts and artillery uses.

In 1920 there were 1,182 horses of foreign origin in Bulgaria and only 2,123 offspring of foreign-bred horses crossed on native stock. There were 7,767 stallions registered as breeding animals. There were 10,152 unregistered stallions used as saddle horses and 27,142 used as pack and draft animals. Under the conditions prevailing in Bulgaria, these inferior animals undoubtedly produced offspring.

Horses are used almost exclusively for field work in north Bulgaria, whereas, in the districts of the south and southwest oxen are still favored by the peasants. However, most of the progress that had been made during the 35 years of freedom from the Turks was nullified by the ravages of the Balkan and the World Wars.

In 1910 there were 197,910 households possessing horses; ⁵⁷90,171 proprietors had only 1 horse; 35,218 possessed 2 to 3 horses; the remainder owned 4 or more horses each. The value of the work done by horses in the old Kingdom of Bulgaria in 1910 was estimated at 102,600,000 leva or \$19,802,000.⁵⁸ This was 31.9 per cent of the value of all work performed by farm animals in that year. There were 478,222 horses in the old Kingdom in 1910 of which 78,222 were found in the territories later ceded to Rumania and Yugo-

⁵⁷ There were 770,000 households in Bulgaria in cities and rural communities in 1910.

⁵⁸ Converted at par value of 19.3 cents to the lev.

slavia. The pre-war number of horses in the newly acquired territories has been estimated at 25,000. (Table 83.) The number of horses in present-day Bulgarian territory, before the World War, was thus approximately 425,000.

The ravages of war were not as severe upon the numbers of horses in Bulgaria as might have been expected since in 1920 there were only 27,000 fewer horses in the country than in 1910.

No official figures have been issued since 1920.

TABLE 83.—Horses: Number in the old Kingdom of Bulgaria and in the present Kingdom, specified years

Territory and year	Horses	Per 1,000 acres	Per 1,000 inhabitants
Old Kingdom of Bulgaria:	<i>Number</i>	<i>Number</i>	<i>Number</i>
1892.....	343,946	14	104
1900.....	494,557	21	132
1905.....	538,272	23	133
1910.....	478,222	20	110
Old Kingdom minus ceded territory: 1910.....	400,000	19	100
Newly acquired territory: 1910.....	25,000	6	67
Total, present boundaries:			
1910.....	425,000	17	97
1920.....	398,000	16	82

1892-1910, old Kingdom, compiled from (25, p. 232).

1910 ceded territory, calculated from (10).

1910, territory acquired from Turkey estimated from (3, Ann. 5-14, sec. B, pp. 70-71).

1920, from same source as 1910 acquired territory.

During the 5-year period ended 1910, Bulgaria exported on the average 4,508 horses, mostly to Turkey, Greece, and Rumania. On the average, 2,433 horses were imported each year.

There is no record of the exportation of any horses since the war.

CATTLE

The whole economic and philosophic life of the Bulgarian peasant centers in his cattle, which are always bred as beasts of burden. There are two local races, the Isker and the Pleven. The various peoples who preceded the Slavs in their migrations into the Balkans probably each brought with them some sort of domesticated cattle, but these have disappeared. The Slavs, as well as the Tartar Bulgars (a corruption of the word Volgar) brought with them the large, rangy, gray, steppe cattle of southern Russia. Neither during the centuries under the Ottoman Empire, nor during the past 48 years of Bulgarian freedom, has the Government done much toward the systematic improvement of these native breeds.⁶⁹

In recent years there have been attempts to increase the milk supply through the introduction of Swiss and other northern breeds but the results have not been greatly significant. The low stage of cattle breeding is indicated by the fact that, in 1920, there were only 2,209 bulls among 1,877,108 cattle, excluding water buffaloes, in present Bulgaria as compared with 100,907 bulls among 1,940,516 cattle in present Hungary. In Bulgaria only 966 animals were of foreign origin and only 5,521 were crosses between native and foreign stock.

⁶⁹ According to an inquiry made by the Ministry of Agriculture in 1911, out of 1,115 agricultural communities, 333 had no bull. There were 1,496 bulls and bull water buffaloes in the other communities of which 1,100 were of native breeds, 24 were Simmenthals, 12 were Montafon, and 4 were of English breeds,

Before the introduction of the distillation of alcohol practically all cattle intended for slaughter were grass fed or, in rare instances, they were given a little corn. Later, distilleries bought up lean cattle to which they fed the refuse from alcohol manufacture. In recent years the pulp from sugar factories has been used to fatten cattle. It is estimated that, before the World War, not more than 200 to 300 cattle, destined for exportation to Turkey, were fattened on commercial by-products each year. In 1920 it is reported that 4,848 steers and 2,648 cows were being stall-fed for slaughter.

There was a total of 775,000 households in the cities and rural districts of Bulgaria in 1910, among which 356,178 possessed 1 or more steers or water buffaloes. There were 28,040 households which possessed only 1 work animal, whereas, 256,435 households owned 2; 59,889 owned 3 or 4; and 11,814 owned 5 or more.

The value of the work done by cattle in 1910 was estimated at 209,500,000 leva or \$40,433,000.⁶⁰ This is 65.2 per cent of the total value of all work done by farm animals in the entire Kingdom.

Between 1900 and 1910 the numbers of cattle in Bulgaria remained practically stationary. It has been reported, however, that more and more of the farm work, particularly in north Bulgaria, was being done by horses. There were 2,019,000 cattle and water buffaloes in 1910 in the old Kingdom of Bulgaria.

There were 212,000 cattle and buffaloes in 1910, in the territories that were later ceded to Rumania and Yugoslavia. On the other hand, the 1910 estimate for cattle and water buffaloes in the newly acquired territories has been placed at 244,000. Thus, before the World War there were approximately 2,051,000 cattle and water buffaloes in the territories now comprised within the frontiers of Bulgaria.

The ravages of war do not appear to have affected the numbers of cattle in Bulgaria. As shown in Table 84, the returns for 1920 indicate 2,295,000 cattle and water buffaloes or an increase of 244,000 above the pre-war estimates.

No official statistics have been published as to numbers of cattle since 1920.

TABLE 84.—Cattle, including water buffaloes: Number in the old Kingdom of Bulgaria, and in the present Kingdom, specified years

Territory and year	Cattle, including buffaloes	Per 1,000 acres	Per 1,000 inhabitants
	Thousands	Number	Number
Old Kingdom of Bulgaria:			
1892.....	1,768	74	534
1900.....	2,027	85	541
1905.....	2,173	91	538
1910.....	2,019	85	465
Old Kingdom minus ceded territory: 1910.....	1,807	84	453
Newly acquired territory: 1910.....	244	62	650
Total, present boundaries:			
1910.....	2,051	80	470
1920.....	2,295	90	473

1892-1910, old Kingdom, compiled from (25, pp. 242, 248).

1910, ceded territory, calculated from (10).

1910, territory acquired from Turkey, estimated from (8, Ann. 5-14, sec. B, pp. 70-71).

1920 from same source as 1910 acquired territory.

⁶⁰ Converted at par value of 19.3 cents to the lev.

DAIRYING

Dairying in Bulgaria is incidental to supplying Sofia and a few other cities with butter and liquid milk. In 1910 there were 426,664 cows and 154,420 female water buffaloes in the old Kingdom. In that year 9,910 city households kept 1 cow or milk water buffalo, 4,930 kept 2, and 1,204 kept 3. There were only 181 dairies within city limits that maintained 9 or more cows, 232 with 6 to 8 cows, and 756 with 4 to 5 cows. Milk is produced and distributed under the most primitive conditions. It is generally considered unsafe to use milk for drinking until it has been sterilized by boiling. Certified bottled milk is unknown.

In the country cows were kept for work, for breeding, and for replacement, milk production having been entirely incidental. There were 250,978 households in 1910, that possessed only 1 or 2 cows and 32,501 households with 3 cows each. In the vicinity of cities there were some 1,040 farms with 9 or more cows. Few if any, of these farms were exclusively devoted to dairying. On 19,241 farms, 4 to 5 cows were maintained and 6 to 8 cows were found on as many as 4,054 farms. Almost without exception, the main purpose of cows was the replenishment of farm power.

Even under these primitive conditions, the quantity and value of the milk produced in 1910 was greater than that of beef and veal. It was estimated that 367,723 cows produced 220,341,200 pounds of milk valued at 21,300,000 leva or \$4,111,000,⁶¹ whereas there were only 143,326 head of cattle slaughtered or exported, equivalent to 33,840,600 pounds of meat, valued at 13,800,000 leva or \$2,663,000.⁶¹

Similarly, 120,000 water buffalo cows produced 121,643,655 pounds of milk valued at 12,000,000 leva or \$2,316,000⁶¹ as contrasted with 38,000 slaughtered or exported, equivalent to 14,352,000 pounds of meat valued at 5,200,000 leva or \$1,004,000.⁶¹ As sources of meat, cattle and water buffaloes combined are excelled by hogs and by sheep. The quantity of milk yielded by sheep and goats exceeds that produced by cows and water buffaloes.

In 1920, there were 234,280 cows classified as breeding animals, 225,915 as breeding and draft animals. Only 82,629 were classed as milk cows and 2,648 were being fattened for beef.

TRADE IN CATTLE AND DAIRY PRODUCTS

There was a net export of a few hundred pounds of fresh milk during 1909-1913, whereas, since the World War, there has been no international trade in fresh milk except in the single year of 1923, when it was reported that a few hundred pounds were imported. On the other hand, an increasing quantity of condensed milk has been imported in recent years. Before the Balkan War, Bulgarian importations of condensed milk averaged around 29,000 pounds yearly. Between 1922 and 1925, importations increased from 4,899 pounds to 94,055 pounds. (Table 85.)

⁶¹ Converted at par value of 19.3 cents to the lev.

TABLE 85.—*Condensed milk: Imports into Bulgaria, average 1909-1913, and annual, 1922-1925 (8, Ann. 17; 17, 1925-26)*

Year	Imports	Year	Imports
Average 1909-1913.....	<i>Pounds</i> 1 29, 101	1924.....	<i>Pounds</i> 53, 358
1922.....	2 4, 899	1925.....	94, 055
1923.....	19, 215		

¹ Former boundaries.

² The only year in which Bulgaria exported condensed milk was 1922, when 8,818 pounds are reported to have left the country.

The condensed milk imported into Bulgaria was reported in 1925 to have come from Holland, Italy, and Great Britain in the order named. It may be probable that the recent reported reduction in the number of cattle has cut down the milk supply of Bulgarian cities and stimulated a demand for condensed milk. This demand will probably fall off somewhat when Bulgarian herds return to normal numbers, as they undoubtedly will. Nevertheless there should continue to be a permanent demand in Bulgaria for a considerable quantity of condensed milk because of the convenience of having on hand a supply of milk that has not soured.

The exportation of a small quantity of butter has been reported since the World War but, from all indications, this butter is made from sheep's milk rather than from cow's milk.

The exportation of cattle from Bulgaria, before the Balkan War, had been declining. During the 10-year period ended 1895 some 15,801 cattle were sent abroad annually. The average export between 1896-1910 was 14,742; but during the last five years of this period, only 9,442 animals were sent abroad each year. Almost without exception the cattle exported from Bulgaria were shipped to Greece and Turkey.

The postwar exports of cattle, exclusively to Turkey and Greece, have ranged between 2,681 in 1922 to 20,718 in 1925. (Table 82.)

It is reported that large numbers of the best individuals of all classes of livestock have been sent to Rumania and Yugoslavia in payment of reparations. For this reason, not only have cattle numbers been reduced but the quality of the livestock remaining in Bulgaria is below the average pre-war standard, although this standard was low.

Nevertheless, cattle are so essential to farm operations in Bulgaria that it is only a question of time before Bulgarian herds of cattle and water buffalo will return to their pre-war normal status.

SHEEP

All of the Slavic clans that migrated from Russia over the Carpathian Mountains into the plains of Hungary, and south into the Balkans, until checked by the Byzantine armies, were nomadic clans living almost exclusively on their flocks of sheep, from which they obtained food and clothing—milk, cheese, meat, wool, and skins. When they could migrate no farther they finally settled down to village life and slowly took up field cultivation. As the production of field crops prospered and the population became more dense, sheep herding tended to decrease. In recent years, before the World War, it was the practice of villages to hold pasture lands as common prop-

erty, and the restrictions placed on the use of forest lands had further tended to hold sheep raising at a remarkably constant level in proportion to the population. (Table 86.)

TABLE 86.—*Sheep: Number in the old Kingdom of Bulgaria and in the present Kingdom, specified years*

Territory and year	Sheep	Per 1,000 acres	Per 1,000 inhabitants
Old Kingdom of Bulgaria:	<i>Thousands</i>	<i>Number</i>	<i>Number</i>
1892.....	8,868	288	2,074
1900.....	7,015	295	1,874
1908.....	8,131	342	2,015
1910.....	8,669	364	1,999
Old Kingdom minus ceded territory: 1910.....	7,718	359	1,937
Newly acquired territory: 1910.....	863	218	2,299
Total, present boundaries:			
1910.....	8,581	337	1,968
1920.....	8,923	350	1,841

1892-1910, old Kingdom, compiled from (25, p. 261).
 1910, ceded territory, calculated from (10).
 1910, territory acquired from Turkey estimated from (8, Ann. 5-14, sec. B, pp. 70-71) 1920, from same source as 1910 acquired territory.

Between 1892 and 1910 the numbers of sheep per 1,000 inhabitants in Bulgaria tended to remain remarkably constant. The numbers of sheep per 1,000 inhabitants in the ceded and in the acquired territories were practically the same, so that the situation was not materially affected by the changes in territory following the World War.

Only 8,210 farms were devoted exclusively to sheep herding before the Balkan War. Most of these farms raised milk sheep, and milk cheese (kachkaval) was the principal product sold. In 1920, 369,239 Bulgarian households kept sheep. Almost without exception these sheep were the coarse, rangy, long-wool or one of the fat-tail varieties descended from the migrating flocks brought in by the ancestors of the Bulgarian Slavs from their former grazing lands on the Russian steppes.

The most common breed is called "Czigaja".⁶² The male lambs are usually slaughtered at 5 to 9 days of age, at which time the hair has assumed a tight curl similar to Persian lamb or karakul. The pelts of these lambs are cured and used in making caps and for trimming garments. Every peasant has a coat and other articles of clothing made from sheepskin or lamb pelts with the wool turned to the inside. The outside surface of the skin is decorated with some distinctive design that probably, in ancient times, was emblematic of the local clan. In the spring the carcasses of the baby lambs are consumed locally.

It is estimated that 2,420,000 lambs and 600,000 sheep were consumed in 1910, equivalent to 50,529,000 pounds of meat. On the other hand, sheep produced 314,693,000 pounds of milk which, soured by a special process or made into cheese, constitutes one of the chief articles of diet of the Bulgarian people. The value of sheep's milk exceeded that produced by cows. In 1910, the Bulgarians consumed only about two-thirds as much beef as mutton and lamb.

The income from the sheep industry in 1910 was estimated at 79,600,000 leva or \$15,363,000, whereas expenses were placed at

⁶² This breed is found in Rumania, Yugoslavia, Hungary, and eastern Czechoslovakia.

52,800,000 leva or \$10,190,000, leaving a gross profit of about \$5,173,000, or about 60 cents per head. This average profit was so small that the pre-war sheep industry had not developed on a commercial scale, but was maintained very closely to the requirements of individual households. Although this was the case, the number of sheep per 1,000 inhabitants in 1910 was 1,968, which was greater than in any other European country except the old Kingdom of Greece. Although in 1920 there was an increase of 342,000 sheep over the pre-war estimated number, the proportion per 1,000 inhabitants had diminished to 1,841.

In 1920 only 1,778 sheep are reported to be of improved foreign breeds and only 5,249 the result of crossing foreign blood on native strains.

No official report has been made on sheep numbers since 1920.

WOOL

The most common size of flock in Bulgaria in 1910 ranged from 21 to 50 sheep. There were only 223 flocks in 1910 with more than 500 head. There is no special breeding of sheep in Bulgaria, reproduction being more or less haphazard. Colors range from white through gray and brown to black; the darker colors predominate. The wool is coarse and long, of the general type called "Czigaia", which is found as far north as Slovakia, Ruthenia, and southern Poland. In 1910 the estimated wool production was placed at 19,228,000 pounds, as each animal sheared yields about 2.6 pounds.

Spinning and weaving wool in Bulgaria is a household industry. The women spin incessantly, employing the ancient distaff and spindle. Many households are equipped with crude looms upon which are manufactured cloths of various grades, blankets, and carpets. The coarse peasant cloth and homemade rugs constituted the principal form in which wool was exported from Bulgaria before the World War. It is reported that before the Balkan War an average of 13,889 pounds of washed and 105,159 pounds of unwashed wool were exported annually, almost exclusively to Serbia.

Since Turkish times the woollen industry has centered at Sliven and Gabrovo. At the former town there were 9 mills in 1924 with 10,652 spindles and 331 looms, and at the latter town there were 17 mills with 15,338 spindles and 301 looms. There were 6 mills at Samokov, Trievna, Kazanlik, and Karlovo with a total of 11,294 spindles and 125 looms. Other mills exist but no data are available.

Since the World War there has been no exportation of wool. On the other hand considerable quantities of washed and unwashed wool have been imported. (Table 87.) These are coarse and fine wools from Great Britain, France, Greece, Turkey, Holland, Italy, and Belgium.

TABLE 87.—Wool: Imports into Bulgaria, average 1909–1913, and annual, 1922–1925 (8, *Ann.* 17; 17, 1925–26)

Year	Washed	Unwashed	Year	Washed	Unwashed
Average 1909–1913.....	<i>Pounds</i> 1,308,108	<i>Pounds</i> 1,869,053	1924.....	<i>Pounds</i> 1,667,263	<i>Pounds</i> 1,419,804
1922.....	943,745	2,104,955	1925.....	1,347,573	1,291,250
1923.....	2,460,358	2,512,360			

¹ Former boundaries.

Since the World War coarse peasant cloth and finer stuffs from commercial mills have been exported to Yugoslavia, Turkey, and Greece in minor quantities and a few tons of rugs have been sent abroad each year largely to the United States.

During the 5-year period ended 1910 Bulgaria exported annually to Turkey and Greece an average of 282,244 sheep, 30,556 lambs and 106,807 lambs under 6 months of age. In 1925, the exports to Turkey and Greece were: Sheep, 280,224; all lambs, 26,208.

During the period 1906-1910 the exports of sheep products averaged 208 short tons of prepared meats, 236 short tons of butter, 613 short tons of ordinary white cheese (similar to brinza), and 2,409 short tons of kachkaval cheese (made from boiled milk).

In 1925, shipments abroad were 5 short tons of butter, 14 short tons of ordinary cheese and 85 short tons of kachkaval.

SWINE

The production of pork in Bulgaria is as ancient as the country itself but it has never constituted an important commercial branch of the nation's animal industry. Hogs are raised for home consumption as it is a custom of the country to have a roast pig in each home at Christmas time. The commercial fattening of hogs for market has been rare. There were only 8 households out of 708,814 in Bulgaria, in 1905 that were engaged in the commercial production of pork. Between 1905 and 1910 the number of swine reported on farms varied but little, although there appears to have been a trend toward increased total numbers as well as more hogs per 1,000 inhabitants, as indicated in Table 88.

TABLE 88.—Swine: Number in the old Kingdom of Bulgaria and in the present Kingdom, specified years

Territory and year	Swine	Per 1,000 acres	Per 1,000 inhabitants
	Thousands	Number	Number
Old Kingdom of Bulgaria.			
1892.....	462	19	140
1900.....	368	15	98
1906.....	465	20	115
1910.....	527	22	121
Old Kingdom minus ceded territory: 1910.....	486	23	122
Newly acquired territory: 1910.....	60	15	160
Total, present boundaries:			
1910.....	546	21	125
1920.....	1,090	43	225

1892-1910, old Kingdom compiled from (25, p. 264). 1910, ceded territory, calculated from (10). 1910 territory acquired from Turkey, estimated from (8, Ann. 6-14, sec. B, pp. 70-71). 1920 from same source as 1910 acquired territory.

The swine of Bulgaria are almost exclusively the progeny of the aboriginal hogs that have been native to the country for centuries. In 1920, there were only 1,166 purebred swine of western origin and only 10,228 crossbred hogs among a total of 1,090,000.

An insignificant number of hogs and milk-fed pigs were imported each year, during the period before the World War, from Serbia and an equally insignificant number were exported to Rumania.

A concession was granted in 1926 to a British company for a monopoly of the export of all pork products. The concession provides for the construction of packing plants at Gorna Ojehovitca and warehouses at Varna and Burgas, for the erection of cold-storage works, and the maintenance of transport between Bulgaria and Great Britain.

In 1920, there were 1,090,000 swine in Bulgaria or about twice the pre-war estimate. There has been no official report on swine numbers since 1920. It is probable that swine numbers in Bulgaria will increase and, should the British enterprise prove successful, exports of pork products which, since the World War, have been insignificant, may tend to become a considerable item in the international trade of the country.

GOATS

The number of goats in Bulgaria changed very little during the period 1890 to 1910, at which time 1,411,610 were reported in the old Kingdom.

About 1,000,000 kids were produced each year, of which number about 500,000 were slaughtered. Some 220,000 mature goats were also killed as food, the total goat and kid meat produced annually being placed at approximately 13,536,000 pounds. Goats also produced 123,610,000 pounds of milk and 824,300 pounds of hair in 1910.

During 1906-1910 an average of 21,630 goats were exported each year. The number of goats decreased to 1,332,000 in 1920 which, as shown in Table 89, is 309,000 below the number reported in 1910. No official report has been made on the number of goats since 1920.

It is probable that the number of goats in Bulgaria will tend to recover their pre-war normal.

TABLE 89.—Goats, mules, and donkeys: Number in the old Kingdom of Bulgaria, and in the present Kingdom, specified years

[In thousands—i. e., 000 omitted]

Territory and year	Goats	Mules	Donkeys
Old Kingdom of Bulgaria minus ceded territory: 1910.....	1,332	12	115
Newly acquired territory: 1910.....	309	13	33
Total 1910.....	1,641	25	148
Total 1920.....	1,332	26	156

Old Kingdom of Bulgaria, (8, *Ann. 4, p. 167*). Ceded territories to Yugoslavia and Rumania, calculated from (10). Newly acquired territory from Turkey, estimated from (8, *Ann. 6-14, sec. B, pp. 70-71*). 1920 census figures (8, *Ann. 5-14, sec. B, pp. 70-71*).

MEAT PRODUCTION

There was practically no international trade in meat in Bulgaria before the World War. All meat produced was consumed within the country itself. Comparing the per capita consumption of various countries (Table 90), the Bulgarian people ate little meat, consuming about 41.2 pounds annually, as compared with 145.3 pounds in the United States and 105.4 pounds in France.

TABLE 90.—*Meat: Total and per capita production in the old Kingdom of Bulgaria, 1910, and pre-war disappearance per capita in specified countries, 1912, and average, 1909-1913*

Kind	Production in Bulgaria, 1910		Per capita disappearance			
	Total	Per capita	1912		Average 1909-1913	
			United States	Germany	Great Britain	France
	<i>1,000 pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Pork.....	66,469	15.32	69.1	71.6	38.0	45.7
Mutton and lamb.....	50,529	11.65	8.1	3.0	30.4	9.5
Goat and kid.....	13,536	3.12				
Beef and veal.....	33,840	7.80	68.1	29.9	62.7	49.2
Buffalo.....	14,352	3.31				
Total.....	178,726	41.20	145.3	114.5	131.1	105.4

Compiled from (33, 35).

CONCLUSIONS REGARDING BULGARIAN AGRICULTURE

The agriculture of Bulgaria was not vitally affected by the land reform as was the case in Rumania. Nor did the World War particularly affect the agricultural situation. The status of Bulgaria as an exporting country was affected by the changes in boundary following the Balkan and the World Wars. Bulgaria ceded to Rumania, in 1913, parts of several highly productive counties along the northeastern frontier and annexed from Turkey a relatively large area along the southern frontier that did not produce enough cereals to meet local needs. But this district was part of the Turkish tobacco region of the former Ottoman Empire, consequently tobacco has supplanted cereals as an article of export from Bulgaria. Tobacco production was carried to extremes between 1923 and 1925 but in recent years has tended to assume proportions more nearly in keeping with the requirements of the world market.

The agriculture of Bulgaria is organized to supply the farmers' families with food and to provide feed for their domestic animals. Few farm units are operated on a commercial basis. The surpluses that are marketed are small in volume, lack uniformity, and are poor in quality compared with western standards.

There appears to be a trend toward increased wheat consumption in Bulgaria which has been partially met by increased acreage. Exports of wheat have averaged (1921-22 to 1925-26) about 40 per cent as large as the estimated pre-war surplus. The exportation of corn is also far below the pre-war average. The international trade in other cereals is unimportant.

There appears to be a trend toward increased livestock production which, together with increased bread consumption, should tend to keep cereal exports below those that, before the World War, were normal to the territories now comprised within the frontiers of Bulgaria. On the other hand, the potentialities of the country as a hog-producing territory have attracted the attention of British capitalists, who propose to commercialize the swine industry by

erecting packing plants and to organize direct lines of steamers to western Europe. If this venture should prove successful these packing plants could draw upon neighboring Rumanian and Yugoslavian territories for large numbers of hogs. If this industry is developed to the proportions that are evidently practicable, it would certainly affect the European market for American pork and pork products.

Bulgaria ships flour to Constantinople and other southeastern points, and is now in a position to export sugar to the Orient, but this competition with American products will probably not assume serious proportions.

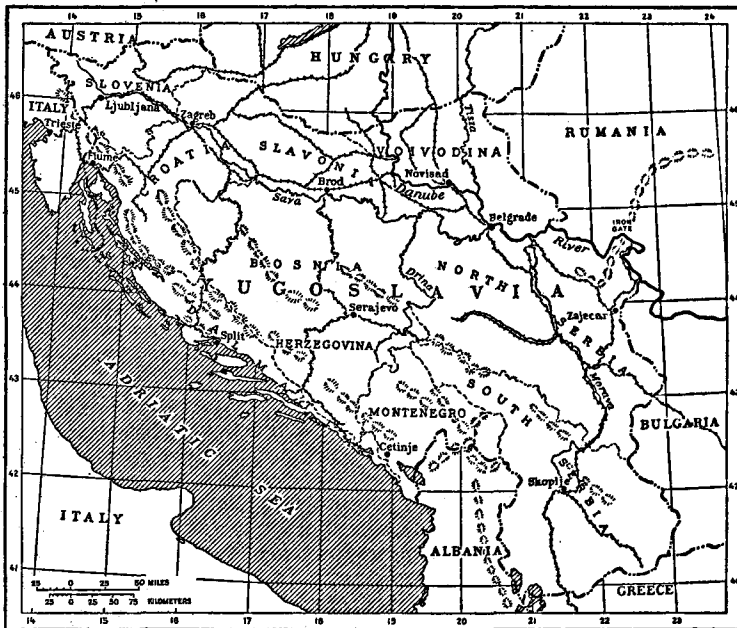


FIGURE 4.—MAP OF YUGOSLAVIA

Yugoslavia comprises Slavonia (Carniola), Bosnia, Herzegovina, and Dalmatia, ceded by Austria-Hungary; Croatia-Slavonia and Voivodina, ceded by Hungary; parts of two small districts ceded by Bulgaria; south Serbia annexed from Turkey; and Montenegro organized about the old Kingdom of Serbia as a nucleus. Voivodina, eastern Slavonia, northeastern Bosnia, and northern Serbia situated in the watershed of the Danube River and its tributaries is a surplus producing region that exports field crops as well as animal products. The rest of the country is little more than self-supporting and many localities do not produce sufficient to supply local requirements.

THE AGRICULTURAL SITUATION IN YUGOSLAVIA

Yugoslavia, the Kingdom of the south Slavs (that is, the Kingdom of the Serbs, Croats, and Slovenes) was organized out of parts of the old Austrian Empire, parts of the former Kingdom of Hungary, parts of the Ottoman Empire, and all of Montenegro, grouped about the old Kingdom of Serbia as a nucleus.⁶³ Not only had this nucleus been penetrated and shattered by the Central Powers, but their armies had overrun all of the other territories that were later combined

⁶³ The Union of Serbs, Croats, and Slovenes was declared December 1, 1918, by the Prince Regent Alexander. The constitutional monarchy was proclaimed on June 28, 1921.

to form the new Kingdom. Montenegro had been devastated during the World war as had south Serbia and Macedonia, annexed by Serbia from Turkey in 1913.

With the exceptions of Montenegro and the old Kingdom of Serbia the affairs of these territories had for many years been administered by foreign Governments (Austria, Hungary, or Turkey) although Croatia and Slavonia had enjoyed a certain amount of autonomy and was therefore not so unaccustomed to local governmental administration as were the people of Bosnia, Herzegovina, and Dalmatia. At the time when these territories were combined to form the new Kingdom, the official machinery that had directed the political life of the greater part of Yugoslavia was withdrawn. Administrative officials and many owners of estates whose families had operated large holdings of land in these southern Districts for generations abandoned their homes and followed the retreating armies and civil officials to Vienna or Budapest.

The administrative problems that Yugoslavia was called upon to solve, at the time of its organization, were among the most varied and complex of those faced by any of the succession States, newly formed after the World War. At the outset of the new nation's existence, the central administrative functions were performed by the official governmental machinery of the old Kingdom of Serbia; which had to be stretched to the breaking point in order to cover the emergency situation until a more nearly representative administration could be organized.⁶⁴

In common with all of the succession States, Yugoslavia has had difficulty in balancing the national budget. National income was precarious. Four systems of taxation were in force—the Serbian, Austrian, Hungarian, and Bosnian. By 1926, these systems of collecting taxes had not yet been unified.

Before the World War systems of affiliated banks throughout the entire territory of the Yugoslavs had been controlled by the powerful moneyed groups in Vienna or Budapest, which in turn were closely associated with financial groups in Berlin. As is customary in south-eastern Europe, the larger number of these banks maintained a commercial and an industrial department, which engaged in trade and manufacture or other forms of enterprise. Thus, before the World War the trade relationships of even the old Kingdom of Serbia, as regards both imports and exports, had been dominated by the financial interests of Austria-Hungary and Germany. Each of the other Districts, except Montenegro, had been directly under the industrial and commercial, as well as financial and political, control of either Austrian, Hungarian, or Turkish groups.

⁶⁴ This feat could never have been accomplished had it not been for the powerful, instinctive group-loyalty of these southern Slavic peoples who, though separated for decades from political and commercial cooperation, were strongly bound together by ties of blood relationship and common customs. One of the most powerful of these customs was, perhaps, obedience to an hereditary or elected central authority. This is illustrated by the form of family life peculiar to the Serbians. The Serbians formerly lived in groups called "zadruga," which included not only parents and children but all kinsmen of various degrees of relationship and sometimes distant relatives, who lived together in the same house or group of houses. The group activities were directed by a "starshina" generally the eldest member, or one who had distinguished himself by his conduct and his wisdom. Women have been elected to direct the affairs of the "zadruga." In the beginning of the nineteenth century "zadrugas" were numerous among the south Slavs, some including as many as 80 persons. But in recent times this form of group life has been dying out and, as young men have married, they have asked for separate allotments of land and have set up independent households. The good will and family feeling has continued and voluntary group action called a "moba" of one or more former "zadrugas" is common. This is similar to a house-raising bee, a threshing bee, or a quilting bee in American pioneer life. In Serbia a moba of men is assembled to harvest fields, or of women to card wool and spin. The spirit of cooperation is instinctive in the Serbian and, therefore, the formation of large cooperative organizations will be a natural development of the national life of Yugoslavia.

The trade routes of all of these territories had been developed in a northwesterly direction toward Vienna or Budapest, or in a southeasterly direction toward Istanbul (Constantinople). Lines of communication were designed to connect outlying local trade centers or seats of provincial government with the capitals and trade centers of the great empires to the north and the southeast. There had been little or no establishment of transverse channels of intercourse. The physical features of the country rendered this difficult. Furthermore, the policies of the Central Powers and their Turkish allies had tended to keep these southern Slavic peoples isolated, as far as possible, from each other and linked, as closely as possible, to the control centers of the Dual Monarchy.

One of the most striking anomalies of the first years of Yugoslavia's existence was the exportation of wheat from the northeastern surplus districts of the Kingdom to north central Europe at a time when Montenegro, Dalmatia, and parts of Slovenia (Carniola), which are normally regions of deficit production and which experienced a crop failure in 1922, were forced to import supplies of cereals from overseas. Channels of trade and rail communication, had not yet been sufficiently organized to make it practicable to ship grain into these western districts from the surplus-producing districts of the east.

Before the World War, a considerable part of the surplus agricultural products produced in the old Kingdom of Serbia had been shipped south to Turkey, Greece, and the Orient through Istanbul (Constantinople) and Salonika. It is probable for hundreds of years, dating back to the rise of the Roman Empire, the territory now constituting Italy had drawn part of its food supply from Illyria, the territory east of the Adriatic.

With the coming of the Slavs and the Turks, this ancient trade had been disrupted, but as Rome is a natural market for the surplus production of the western part of the Balkan Peninsula, during a few years preceding the World War there had been a growing trade between Serbia and the cities of Italy. The bulk of all products, not only those of Serbia but of all of this south country, had been handled by Austrian, Hungarian, and German intermediaries. These southern-grown products lost their identity in Vienna, Budapest, or Berlin and appeared upon the markets of western Europe under trade names usually disassociated from the locality of their origin.

It was obvious from the first that the successful development of the new Kingdom of Yugoslavia depended upon elimination of Vienna and Budapest, as far as possible, from their former status as intermediaries. In practice, however, it has been difficult to establish direct relationships with customer countries. One of the first steps in this direction was made by obtaining from Greece the free use of the port of Salonika to facilitate trade with the Orient. In recent years the city of Zagreb has developed into the commercial nucleus of the southern Slavic countries, and foreign buyers from central and western Europe are establishing agencies at this center. Nevertheless, in 1924, the exports of Yugoslavia to Hungary, Austria, and Germany amounted to 36.4 per cent of the total international trade of the Kingdom. Nearly 29 per cent went to Italy, with which country Yugoslavia has been steadily developing trade relationships up to 1926.

In spite of the difficulties to be overcome, Yugoslavia succeeded in establishing a favorable trade balance in 1924, the value of exports

reaching 671,271,951 gold dinars or \$129,555,487⁶⁶ exceeding imports by about 16 per cent. The following year exports reached 783,-349,517 gold dinars or \$151,186,457⁶⁶ and exceeded imports by the narrow margin of 1.8 per cent.

This was possible because Yugoslavia is one of the richest countries of Europe in natural resources of timber, minerals, water power, and agricultural lands. But its industries,⁶⁶ including agriculture, are undeveloped and primitive. The industries of Yugoslavia have suffered on account of heavy taxation and the difficulties of financing local enterprises. The rates of interest charged by Yugoslavian banks are very high (25 to 30 per cent is usual), and even higher rates are paid from time to time. The development of industry has thus been slow but, on the other hand, most of the population produce their own food. This has been fortunate for the country during the formative period just passed through and is in sharp contrast with the situation in Austria where an excessive proportion of city and industrial population has demanded the costly importation of bread and meat with disastrous effect upon the international trade balance.

LOCATION AND EXTENT

The Kingdom of Yugoslavia lies in the western part of the Balkan Peninsula. It is bounded on the north by Austria and Hungary, on the east by Rumania and Bulgaria, on the south by Greece and Albania, and on the west by Italy and the Adriatic Sea. The total area is 96,134 square miles, or approximately as large as the State of Oregon. Its capital, Belgrade, located near the forty-fifth parallel of north latitude, is approximately the same distance from the Equator as St. Paul, Minn.

PHYSICAL CONDITIONS

Yugoslavia, cut by six mountain complexes, is a mountainous country with an average elevation of 300 meters (984 feet). Low-lying plains are found in the valleys of the Danube and its tributaries in the northeastern part of the Kingdom. These, together with river valleys and plains in other parts of the Kingdom, comprise some 60,000 square kilometers (23,166 square miles), or about 24 per cent of the total area.

Slovenia (Carniola) lies in the upper valleys of the Sava and the Drava Rivers and the mountainous regions between the headwaters of these rivers—the so-called Stony Alps. This is a heavily wooded district, 42.64 per cent of the total area being covered by forests. Mining and lumbering are important industries. Field-crop production is confined to the valleys, 19.7 per cent of the total area of Slovenia having been under plow. There are numerous parks and pastures in the forested hills as well as meadow lands in the valleys, 12.58 per cent of the total area being classified as pasture lands and 16.02 per cent as meadows in 1922. Rainfall is more plentiful in these upper valleys than in the lower Sava regions so that this dis-

⁶⁶ One gold dinar is equivalent to 19.3 cents.

⁶⁶ As a result of the long Turkish domination, followed by wars and internal difficulties, industry has been but little developed in Serbia and Bosnia. Croatia and Slavonia, Slovenia and Vojvodina are better endowed with factories, but here, too, a shortage of fuel and the competition of other parts of the former Austro-Hungarian Empire have restricted development. * * * Apart from agricultural and timber manufactures, manufactured goods in 1923 amounted to only 4 per cent of the total exports. (5, p. 114).

trict is better adapted to livestock production than any other in Yugoslavia.

In Dalmatia and western Croatia the mountains rise abruptly from the sea, which renders rail communication with the rest of Yugoslavia extremely difficult. The climate in the southern part of this district is subtropical, and olive production is a leading industry. Tobacco is also grown extensively, but the mountain slopes can be utilized for little but sheep and goat herding. A large part of the population is supported by fishing along the coasts. Only 9.9 per cent of the area of Dalmatia was classified as plowland in 1922, as contrasted with 27.3 per cent forests, 45.1 per cent pastures, and only 0.7 per cent meadows. The mountains are of limestone formation, consequently there is a lack of ground water near the surface. A greater percentage of the total area is classified as pastures in Dalmatia than is true in any other district of Yugoslavia, but the quality of these grazing lands is extremely poor. There are practically no meadows in this region and the livestock industry is at a very low level. Cultivated fields are small and are often terraced upon a steep hillside. The status of agriculture and of the farmer is lower in Dalmatia than in any other part of the Kingdom of Yugoslavia.

The limestone mountains of Dalmatia, which extend into Herzegovina and northern Montenegro and which are for the most part stony, waterless, unproductive wastes, constitute the first of three ranges of the Dinaric Alps. These ranges running in a northwest to southeast direction traverse Croatia and Bosnia, and parts of Serbia, south Serbia, Herzegovina, and Montenegro.

Crop lands in Montenegro, lying almost wholly in the valley extending north from Lake Scutari (Skadar), constitute only 2.9 per cent of the total area of the District whereas 19.93 per cent of the total area was classified as forests in 1922 as compared with 1 per cent pastures and 2.2 per cent as meadows. Fully 71 per cent was unproductive.

There are many isolated fertile basins in the central range of the Dinaric Alps in which are found most of the population of Bosnia. There are no long, contiguous valleys, and for that reason communication between the different settled areas is very difficult. The third range slopes toward the Sava Valley, and the country lying to the northeast is made up of rolling plains and broad valleys of great fertility, which gradually descend to the northeast and merge into the great plain of Hungary.

A little less than half of Bosnia-Herzegovina (49.7 per cent) was forested in 1922 as contrasted with 24.9 per cent crop lands. The crop lands for the most part lie in the northeastern part in the watershed of the Sava River. About 8.2 per cent of the total area was in meadows in 1922 and 14.3 per cent pastures. A greater percentage of the land of Bosnia-Herzegovina was classified as pasture than in any other district of Yugoslavia except Dalmatia. Animal industry in these regions is one of the most important branches of agriculture.

In the western part of south Serbia, are found the Pindaric Mountains, which stretch along in narrow, heavily wooded ranges toward the Albanian frontier. This District, including Serbian Macedonia, is penetrated from the east by the Rhodope Ranges, that also form the highlands of southwest Bulgaria. Fully 23.5 per cent of the total

area of south Serbia was under forests in 1922 as compared with 12.3 per cent under plow, 1.9 per cent meadows, and 3 per cent pastures.

In southern Serbia there are broad plains well suited to the cultivation of cereals, whereas in the hill country large areas are adapted to the production of tobacco. The Rhodope and Dinaric Ranges are separated by the broad, fertile valleys of the Morava and Vardar Rivers. These constitute the heart of the surplus cereal regions of south Serbia and the old Kingdom of Serbia. The plateaus and rolling hills are covered with forests and dotted with orchards. Extensive meadows and pastures supply grazing facilities for relatively large numbers of livestock. Rainfall fluctuates widely, the annual precipitation at Skopje averaging 19 inches, at Bitolj 28.3 inches, and at Belgrade 24.3 inches.

The Danube River has forced a passage through the Transylvanian Alps called the "Iron Gate." From this point southward these mountains form the eastern frontier of Yugoslavia until they meet the Balkan Ranges, which extend with an east-to-west trend from the Black Sea through Bulgaria into the old Kingdom of Serbia.

There was 24.15 per cent of the total area of the old Kingdom of Serbia classified as plowland in 1922 as contrasted with 20.35 per cent forests, 5.2 per cent meadows, and 4 per cent pastures. Before the World War the old Kingdom of Serbia was a surplus-producing region of growing importance, which exported appreciable quantities of most farm products to the southeast to Turkey and Greece or to the northwest to central Europe.

The region of greatest surplus production in Yugoslavia is Voivodina in the northeastern corner of the Kingdom in the valleys of the Danube and the Tisza (Theiss). In 1922, nearly 69.8 per cent of the total area of Voivodina was classified as plowland, whereas only 12.72 per cent was under forests, 2.9 per cent meadows and 9.6 per cent pastures.

The western portion of Croatia lies in the ranges of the Dinaric Alps. Toward the east, in Slavonia, the country slopes to the Danube River. There is thus great variety in the topography and in the agriculture. Taking the district of Croatia-Slavonia as a whole, 33.9 per cent was classified as plowland in 1922. There was 34.03 per cent under forests, 10.3 per cent meadows and 13.4 per cent pastures.

Most of the southern part of the old Kingdom of Serbia, south Serbia, central Bosnia, central Croatia-Slavonia, and Slovenia (Carniola) are more or less independent as regards food supplies, since they produce enough cereals and animal products in good years to meet their own requirements.

Western Croatia, Dalmatia, Herzegovina, and Montenegro are deficient in field-crop production and their local output has to be supplemented by shipments of foodstuffs from other parts of the Kingdom or from abroad.

The northern part of the old Kingdom of Serbia, northwestern Bosnia, eastern Croatia-Slavonia, and all of Voivodina constitute the great agricultural surplus, producing region of Yugoslavia.

UTILIZATION OF THE LAND

The records of the way in which land was utilized in different parts of Yugoslavia differ greatly. There are practically no Turkish records covering pre-war conditions in south Serbia, and in other

districts many details are obscure. The pre-war data given in Table 91 is, therefore, only approximately correct. Peasant agriculture predominated in the greater part of the Kingdom, but in the north estate farming played an important rôle. For this reason, in many respects the agricultural situation in Yugoslavia has been similar to that of other southern countries, in which a land reform has been put into effect. Thus, although the total acreage of cereals has decreased, there has been an increase in the acreage under corn, making greater supplies of feed available to the peasants' hogs and for exportation. As indicated in Table 91, there has also been the usual increase in meadows and pastures, providing greater grazing facilities for the peasants' cattle and sheep.

TABLE 91.—Utilization of land in Yugoslavia, before the war compared with 1920 and 1925

[In thousand acres—i. e., 000 omitted]

Item	Pre-war	1920	1925
Flowland:			
Cereals.....	12,623	10,822	12,240
Leguminous plants.....	170	204	229
Industrial plants.....	199	198	291
Roots and tubers.....	498	509	647
Vegetables.....	208	553	210
Forage plants.....	715	533	514
Fallow.....	1,547	2,339	737
Total.....	15,960	14,715	14,868
Meadows.....	3,868	3,732	4,054
Pastures.....	6,468	6,322	6,817
Vineyards.....	532	428	440
Orchards and gardens.....	927	533	930
Forests.....	19,037	18,988	18,224
Reeds.....	143	176	16,068
Unproductive land and marshes.....	14,545	16,586	16,068
Grand total.....	61,480	61,480	1 61,401

Pre-war and 1920 (*ib.*, p. 94).

1925 from consular report of K. S. Patton, Oct. 25, 1926.

¹ Figures for total area as revised by the Ministry of Agriculture.

POPULATION

It is estimated that 84.23 per cent of the total population of the old Kingdom of Serbia was occupied before the World War, in tillage of the soil and in herding cattle and sheep. Conditions in other parts of the new Kingdom were similar; only a very small percentage of the population lived in cities. There are only 19 cities of more than 5,000 inhabitants in Yugoslavia. The largest of these, the capital city of Belgrade, had a population of about 111,740 in 1921. In that year, the total population of the Kingdom was placed at 12,017,323 and of this number only 1,006,964 lived in towns of more than 10,000 inhabitants. Outside of these towns, the predominating occupation of the south Slavs is agriculture.

The original home of the Serbs, Croats, Slavonians, and Slovenes was in Galicia (now part of Poland). Toward the middle of the sixth century clans of these Slavic peoples began to cross the Carpathians and settle on the great plain between the Danube and the Tisza (Theiss), the Alföld of present Hungary. The Slovenes drifted into the highlands west of the Danube and into the foothills of the Alps south of the territories occupied by the Czechs and the Slovaks, and

penetrated as far west as the site of present-day Trieste. This country was occupied by Celts who had been driven south by the Germans who, in turn, had been driven south by the Czechs. The Slovenes are thus intermixed with the aboriginal Celts to a greater degree than are the Croats, whereas the Serbs are the purest in Slavic blood. The Croats, followed by the Slavonians, moved in south of the Slovenes, settling between the Drava and Sava Rivers, and west in the northern part of Dalmatia of to-day. The Serbs, numerically the most powerful, occupied the valley of the Danube and the country to the south between the Adriatic and the Ægean Seas.

With the coming of the Magyars in the tenth century the south Slavs were crowded to the southern limits of present-day Hungary. The Slovenes fell under the domination of the Germans in the ninth century and the Croats and Slavonians were forced to enter into a union with the Magyars two centuries later. The Serbs maintained their independence until the battle of Kossovo in 1389, when they came under Turkish domination.

The south Slavs, although related by ties of blood and race characteristics, differ considerably in their adaptability to agriculture. None of these races compare favorably with the Germans or with the Czechs as tillers of the soil. The Slovenes have been under German tutelage for a thousand years, yet they do not possess the technical training to make them good farmers. The lack of the ordinary learning of the common school has left their thought processes so undeveloped that they cling tenaciously to the farming customs of their ancestors (21, p. 251). The Croats and Slavonians made greater progress in farming under the Hungarians than did the Slovenes under the Austrian-Germans. The Serbs were the latest arrivals in the Balkan Peninsula, and the latest to settle down to field cultivation, so that the Serb, although said to be the best fighting man in Europe, leaves much to be desired as a tiller of the soil.

LAND TENURE

The old Kingdom of Serbia is a land of small peasant farms. More than 96.3 per cent of the land holdings in 1897 had a combined area of less than 49.5 acres each. Only 0.059 per cent of the holdings comprised over 247.1 acres. (Table 92.)

TABLE 92.—Size of land holdings in the old Kingdom of Serbia, 1897 (41, p. 5)

Area		Properties	
Hectares ¹	Acres	Total	Percentage of total
		Number	Per cent
Less than 3.....	Less than 7.4.....	98, 253	33. 479
3 to 5.....	7.4 to 12.4.....	62, 620	21. 337
5 to 10.....	12.4 to 24.7.....	80, 822	27. 540
10 to 20.....	24.7 to 49.4.....	40, 780	13. 896
20 to 30.....	49.4 to 148.3.....	10, 277	3. 502
30 to 60.....	148.3 to 247.1.....	550	. 187
60 to 100.....	247.1 to 741.3.....	160	. 055
100 to 300.....	741.3 and over.....	12	. 004
300 and over.....			
Total.....		293, 474	100. 00

¹ 1 hectare=2.471 acres.

Conditions in Montenegro were similar. In south Serbia, the peasants were reduced to a condition even below that of the serfs of Bosnia-Herzegovina, where the feudal system of land tenure prevailed up to the time of the formation of Yugoslavia. Bondage to the soil was hereditary and it was practically impossible for any individual to escape from its conditions. The serf was obliged to pay to his "beg" or feudal lord a third, a fourth, or a fifth of his crops. In addition, he was compelled to render personal services and dues. The peasants are Christians; whereas nearly 90 per cent of the former feudal lords were Moslems, though of Serbian blood. Under such conditions it was impossible to establish farming on a rational basis.

THE LAND REFORM

Farms in the old Kingdom of Serbia were almost exclusively of the small peasant type. Most of those that comprised 100 hectares (247.1 acres) or more belonged to peasant family cooperatives. There were no feudal institutions in Montenegro, but the infertility of the soil had created a large class of poor peasants, who possessed most of the arable fields. Feudalism had been abolished in south Serbia and Macedonia but had been replaced by the "serfdom of personal relations," in which the peasant had to bargain with his overlord for the right to till a piece of land. This practice was subject to greater abuse than the old system.

In Bosnia-Herzegovina the feudal system was continued when the country came under Austrian control, but the great lords were listed as proprietors of the land. Later the serfs were given the privilege of buying themselves free after coming to an agreement with the proprietor. The peasants had to pay the redemption price themselves.

In Dalmatia a most complicated mixture of systems prevailed. The mediaeval institutions of Serbian and Croatian origin were entangled with the agrarian system of Turkish feudalism and the institutions of the ancient Venetian Republic. In all of the Districts south of the Danube and Sava Rivers peasant types of farming had been the rule for centuries so that the land reform consisted simply in a change in the title to the land without affecting the manner in which the land was cultivated. The peasants of south Serbia and Macedonia, realizing the strength of their new position after the formation of the Kingdom of Yugoslavia, refused longer to pay dues and retained as their own the plots of land that they had formerly worked in subjection to their landlords under the Turkish régime.

Before the World War, about a third of the plowlands of Bosnia-Herzegovina were held by feudal tenure. On July 21, 1919, the Government directed the registration of the serfs in the "land book." On May 19, 1921, the sum of 255,000,000 dinars (\$49,215,000 according to normal par exchange)⁶⁷ was set aside for the compensation of the feudal lords. This involved 1,915,600 acres of land which were transferred to 111,000 households comprising 650,000 persons who had been freed from serfdom.

Aside from these hereditary serfs or bondmen, there were bondmen of another kind under the old régime, who held land from the lords under contract. About 546,000 acres were so held. These quasiserfs were also freed, and, if they were bound by contracts running only 10 years, were permitted to buy directly the land they had previously

⁶⁷ Par value of the dinar was 19.3 cents; but in July, 1921, had fallen to 2.56 cents.

cultivated. In other cases, in which the contracts ran for 40 years or more, the State bought the lands on behalf of the peasants.

None of these changes in title to the land affected agricultural production to any appreciable extent, since practically all of the acreage involved had been previously tilled by the present owners, according to traditional peasant methods.

In Slovenia (Carniola) also the land reform was without appreciable effect upon production. Under the Austrian régime there were 230 large estates aggregating about 469,500 acres, of which about 89 per cent was forest and waste land, 5 per cent meadows, and only 6 per cent cultivated land. These lands had been leased for the most part to peasant cultivators and for this reason little or no change in farm methods followed when the peasants obtained final possession.

In Voivodina, 1,147 large estates, totaling 956,000 acres, were subject to the land reform. Of these, 242,000 acres were distributed among farmers and 50,000 acres to those who had volunteered in the Serbian Army during the Balkan and World Wars. The owners of these estates were extensive breeders of horses and consequently required large quantities of oats. The small farmers produced swine and therefore grew corn. The redistribution of the estates in this district is reflected in a decrease in the areas under wheat and oats and an increase in the corn acreage.

There were 363 large estates totaling 609,000 acres in Croatia and Slavonia that came within the scope of the land reform. In the beginning of 1921, about 215,000 acres were distributed among peasants and 33,000 acres were allotted to ex-service men who had volunteered to serve against the Central Powers. Here, also, there has been a slight trend toward increased corn production. On the other hand, regions like south Serbia, Bosnia, and Montenegro, that formerly received a considerable portion of their bread cereals from the surplus-producing regions of the north were cut off from these sources of supply during and after the World War. There has been a tendency on the part of the inhabitants of these deficit production regions to make themselves more nearly independent of their former sources of supply. These attempts at self-sufficiency have resulted in increasing the total acreage under wheat in Yugoslavia at the expense of rye as indicated in Table 93.

TABLE 93.—Cereals, potatoes, and sugar beets: Acreage, production, and yield per acre in Yugoslavia, average 1909-1913, and annual, 1926

Crop	Average 1909-1913 ¹			1926		
	Acreage	Production	Yield per acre	Acreage	Production	Yield per acre
Bread cereals:		1,000 bushels	Bushels	1,000 acres	1,000 bushels	Bushels
Wheat.....	4,010	67,759	16.9	4,178	71,428	17.1
Rye.....	718	11,983	16.7	500	7,454	14.9
Total.....	4,728	79,742	16.9	4,678	78,882	16.9
Brewing and fodder cereals:						
Barley.....	1,247	22,601	18.1	867	17,275	19.9
Oats.....	1,381	35,628	25.7	871	24,645	28.3
Corn.....	4,773	116,108	24.3	4,929	134,251	27.2
Total 5 chief cereals.....	12,129	253,979	20.9	11,345	255,053	22.5
Potatoes.....	455	46,908	103.1	548	34,539	63.0
		1,000 short tons	Short tons		1,000 short tons	Short tons
Sugar beets.....	35	381	10.9	86	652	7.6

¹ 1909-1911 average, for the old Kingdom of Serbia and south Serbia; 1911-1913 average, for Bosnia and Herzegovina. See Table 96, notes 2 and 10.

In Croatia-Slavonia the large estates were chiefly devoted to extensive cereal production, whereas the great majority of farm animals were found on the small holdings. Taking into consideration only the livestock in the possession of landowners, the peasants owning 71.1 acres or less in 1911, as indicated in Table 94, owned 94.1 per cent of the cattle on farms, 93.5 per cent of the horses, 92.5 per cent of the swine, and 90.5 per cent of the sheep in these districts.

TABLE 94.—*Livestock: Number in Croatia-Slavonia, by size of land holdings, 1911 (15, 1912, p. 132)*

Size		Owners of live-stock	Cattle		Horses		Swine	
Arpents ¹	Acres		Number	Per cent	Number	Per cent	Number	Per cent
On farms:								
Less than 1.....	Less than 1.4.....	8,081	7,087	0.6	2,250	0.7	11,709	1.1
1 to 5.....	1.4 to 7.1.....	120,846	236,016	21.4	39,205	11.7	188,643	17.4
5 to 10.....	7.1 to 14.2.....	110,073	334,876	30.3	93,535	28.0	267,762	24.8
10 to 20.....	14.2 to 28.4.....	70,780	312,890	28.4	115,964	34.7	317,497	29.3
20 to 50.....	28.4 to 71.1.....	22,011	147,415	13.4	61,483	18.4	215,719	19.9
50 to 100.....	71.1 to 142.2.....	1,894	19,608	1.8	8,560	2.6	35,824	3.3
100 to 200.....	142.2 to 284.4.....	433	6,472	.6	2,530	.8	8,365	.8
200 to 500.....	284.4 to 711.....	258	7,951	.7	2,113	.6	6,796	.6
500 to 1,000.....	711 to 1,422.....	162	10,115	.9	2,981	.9	7,492	.7
1,000 and over.....	1,422 and over.....	137	21,372	1.9	5,447	1.6	27,256	2.1
Total.....		334,675	1,103,832	100.0	334,074	100.0	1,081,943	100.0
Not on farms.....		28,870	31,025		12,582		82,079	
Grand total.....		363,545	1,134,857		346,656		1,164,022	

Size		Owners of live-stock	Sheep		Goats		Mules	Don-keys
Arpents	Acres		Number	Per cent	Number	Per cent		
On farms:								
Less than 1.....	Less than 1.4.....	8,081	7,209	0.9	2,516	2.7	174	210
1 to 5.....	1.4 to 7.1.....	120,846	95,311	11.4	21,812	23.3	541	692
5 to 10.....	7.1 to 14.2.....	110,073	173,124	20.7	27,859	29.7	122	219
10 to 20.....	14.2 to 28.4.....	70,780	252,229	30.1	26,581	28.4	42	221
20 to 50.....	28.4 to 71.1.....	22,011	229,644	27.4	13,833	14.8	7	419
50 to 100.....	71.1 to 142.2.....	1,894	44,755	5.4	993	1.0	3	170
100 to 200.....	142.2 to 284.4.....	433	10,040	1.2	67	.1	1	56
200 to 500.....	284.4 to 711.....	258	3,364	.4	33	(?)		44
500 to 1,000.....	711 to 1,422.....	162	5,005	.6	18	(?)		60
1,000 and over.....	1,422 and over.....	137	16,131	1.9	3	(?)		73
Total.....		334,675	836,812	100.0	93,716	100.0	899	2,164
Not on farms.....		28,870	13,671		1,853		5	107
Grand total.....		363,545	850,483		95,569		904	2,271

¹ 1 arpent=1.422 acres.

² Less than 0.1 per cent.

It is probable that one of the direct effects of the land reform in Croatia, Slavonia, and Voivodina will be an increase in the number of animals held on farms. It is the natural tendency of the peasant as he obtains more land to increase his livestock to the limit of the rough forage produced. Professor Nedeljkovitch, wrote in *Agrarian Reform*, 3, p. 145:

The agrarian reforms in Yugoslavia have been bitterly criticised on many sides. The main criticisms are (1) that the whole reform was carried out without the previous preparation of any systematised plan, without any list of the lands to be expropriated, nor of the families among whom they were to be divided; consequently that expropriation and colonisation were done by guess work; (2) colonisa-

tion was without organization; the settlers were not provided with lodgings, implements, seed, or food to carry them until the next harvest, very often being cast upon bare land, which was only temporarily granted to them. Further, that the colonists often neglected the land given to them or cultivated it quite irrationally, or finally let it to speculators for a mere song; in every case with the result that production fell off, and social and national purposes were frustrated; (3) both expropriation and colonization were carried out on insufficient bases, and on changing regulations, which gave every opportunity for all kinds of evil influences and corruption.

All these criticisms may be qualified as criticism of detail. In estimating these large social reforms, the movement must be viewed from a distance and in its historic perspective. It was executed in haste, without a previous systematic plan, and not always in the most efficient manner. But all this was inevitable, for circumstances demanded an urgent carrying out at least of the main principle, leaving the details to later laws.

The final effect of the land reform will depend upon the manner in which the different ethnic types of peasants handle the widely divergent soils in the widely varying regions that they occupy.

AGRICULTURAL PRACTICES

If a line is drawn from Zajecar, on the Bulgarian frontier, to the Drina River, thence north to the River Sava and west to Fiume the territories of the south Slavs will be roughly divided into two regions as regards agricultural practices. South of this imaginary line are found most of the old Kingdom of Serbia and all of Bosnia, Herzegovina, Montenegro, and south Serbia. The life of the peasantry of these regions is similar to that of the peasants of Rumania and Bulgaria—that is to say, farming is organized not along commercial lines for financial profit, but to furnish the means of livelihood to the peasant and his family. The production of enough to eat, drink, and wear, and to pay taxes and interest, is the aim of the year-round farm occupation. The production of marketable surpluses is incidental to the satisfaction of the requirements of the household.

As in Bulgaria and Rumania, so in the southern districts of Yugoslavia, the excessive number of holidays has a stagnating influence upon field-crop production, because so many of these days on which no manual labor may be done occur at critical periods of the seeding and harvesting seasons. The philosophy of the peasant is that the harvest does not depend wholly upon his individual efforts; it is, as he says "As Providence wills". Therefore the needs of farming are universally neglected on holidays. The Yugoslav peasant spends perhaps 75 days out of the 365 in actual field work. The remainder of his time is spent in pottering around doing odd jobs, which add to his comfort but which do not add to the productivity of his farm. During the winter he hibernates doing little or nothing that is constructive.

The agriculture of all these regions is of the most primitive peasant type. No regular system of crop rotation is practiced; the land is allowed to lie fallow one or more years after being cropped for a season or two. Animal husbandry has developed but little above the pastoral stage of the time when the southern Slavs were roving clans drifting southward before the invading Magyar hordes. Except in certain valleys of north Serbia, no special effort has been directed toward scientific or even rational breeding and feeding.

Since the formation of Yugoslavia as an independent kingdom interest in agriculture has been aroused in governmental circles. It

is generally recognized that production is far below the potentialities of soil and climate, "barely two-fifths of what it might easily become", according to K. S. Patton, United States consul at Belgrade.

The chief factors associated with underproduction in field crops in southern Yugoslavia to-day are: (1) Poor seed; (2) poor and shallow farming with inadequate cultivation (corn) after seeding; (3) generally no fertilizers; and when used, wrongly chosen and poorly applied; (4) little or no understanding of the significance of crop rotation; and (5) primitive methods and lack of machinery.

The peasant farmer is intelligent, but he lacks imagination and training and is conservative to the point of having reduced his farming operations to certain habits based upon the ancient customs of his forefathers. His methods are usually sufficiently productive to provide for the simple creature comforts essential to the existence of himself and his family. There is little incentive for him to produce more.

Should the peasant produce a surplus there is no immediate market among his neighbors, each of whom farms and lives under conditions similar to his own. Each farm unit is sufficient unto itself. It produces all of the family's food, both vegetable and animal, yields corn and wheat which are ground into meal or flour at a near-by mill, and produces feed for his animals. From these he clips the wool, which the women of the household manufacture into cloth for winter clothing, just as they spin and weave flax for summer wear. He tans his own raw leather from which he makes sandals (opantsi) for himself and his family. Even his wagons and carts are usually made on his own farm, often from his own timber. There is no nonproducer in his village with money to buy his products and no specialist in any particular line of farming who demands the things he produces. If he has a surplus he hauls it to some market town and takes for it whatever the buyer will give.

North of the Danube and the Sava the practices of agriculture, particularly on the large estates of Voivodina, Croatia, and Slavonia, under pre-war conditions, were more nearly modern and were far superior to those ancient customs and habits that actuated the farming in the southern districts. Agricultural machinery was employed to a fair extent, seed was selected and planted in carefully prepared fields.

In Croatia-Slavonia, the native gray cattle brought by the migrating clans from the Russian steppes had been replaced to a large extent by Swiss breeds and, although conditions were not so far advanced, in Voivodina, less than half the cattle were of the gray aboriginal breeds. Mangolica swine had practically superseded the native breeds in these northern regions. Only in the matter of sheep had these northern farmers exhibited conservatism; they clung to the ancient milk sheep which were brought into the country from western Russia, and have not followed the example of the Magyars by breeding Merino sheep from Spain for their fine wool.

FERTILIZERS

The agriculture of each of the districts in Yugoslavia is characterized by the extent to which commercial fertilizers are employed in farming. About 50 per cent of the commercial fertilizers used in Yugoslavia in 1925 were employed in Voivodina. Croatia-Slavonia

utilized 25 per cent and Slovenia 15 per cent. Although there was a hydro-electrolytic nitrogen plant in Dalmatia only about 2 per cent of the cyanamid produced in 1925 was consumed in the country itself whereas 98 per cent was exported or held in reserve. In the south of Yugoslavia, the use of even stable manure is very restricted.

Agricultural production in the south was severely affected by the disrupting influences of the World War; but being of the primitive type, recuperation was rapid. In the north, return to normal has been slower. These were the regions of the large estates which, through the provisions of the land reform, have been divided and reorganized into smaller holdings. Added to the disorganization consequent upon the war, changes in the manner in which former large estate lands are being worked have affected agricultural production, particularly in Croatia-Slavonia, and Voivodina.

COMMUNICATIONS

The surplus-producing districts of Yugoslavia lie in the valleys of the Danube River and of its tributaries, the Sava, the Drava, and the Tisza, which furnish 1,118 miles of river navigation within the Kingdom itself. There are 102 river ports and quays but these are primitive, with no special accommodations for storing goods and no mechanical contrivances for loading or unloading. This river system has a connection down the Danube through the Iron Gate with Braila in Rumania, thence to western Europe, and up the Danube to Budapest, Vienna, and Bavaria, thence to central Europe. On the other hand, there are no special connections between the ports and the local railways. This makes the movement of crops and livestock products more difficult and expensive than in central European countries, with their better organizations and facilities. The movement of goods by rail and water is further complicated by the fact that there is no unity in the railway system itself.

North of the Sava and the Danube Rivers, the former Austrian and Hungarian territories now constituting the Districts of Slovenia, Croatia, Slavonia, and Voivodina are fairly well served by six lines of standard-gauge railways that were parts of the Austro-Hungarian system. There is a trunk line in the west from Vienna to Zagreb, whence two lines run to the Adriatic—one to Trieste and the other to Fiume. A trunk line in the east runs from Budapest through Novisad to Belgrade, thence via Nis in the old Kingdom of Serbia, and Sofija in Bulgaria to Istanbul (Constantinople). From Nis a branch line runs south through south Serbia to Salonika. The two trunk lines are connected by a line running transversely through Croatia-Slavonia from Belgrade to Brod and thence to Zagreb.

There are 3,500 kilometers (2,175 miles) of narrow-gauge (2 feet 6 inches) railway in Bosnia-Herzegovina connecting Brod, Serajevo, Mostar, Ragusa, Castelnio, and Zelenika on the Adriatic in south Dalmatia. This line can handle only 474,000 short tons of shipping between Herzegovina and Dalmatia per year and is inadequate to the needs of the country.

In 1925 another connection with the sea was established by a line linking Grachats and Knin, thus bringing Zagreb in connection with Split (Spalato) and Sibenik (Sebenico). There is great inequality in the distribution of railways. There is 1 mile of railway to 6.8 square miles of territory in Voivodina, 1 mile to 8 square miles in Slovenia

and Croatia-Slavonia, 1 to 20.5 square miles, in Bosnia-Herzegovina 1 to 23.6 square miles in Dalmatia, and 1 to 29.8 square miles in Serbia (north and south) and Montenegro. The mean for the country as a whole is 1 mile for each 14.2 square miles of area.

Slavonia, Voivodina, northeastern Bosnia and the northern part of the old Kingdom of Serbia may be said to be fairly well served with transportation facilities, including rail, waterways, and wagon roads. Slovenia, Croatia, central Bosnia, and the central part of the old Kingdom are not so well provided with transportation. South Bosnia, the southern part of the old Kingdom and south Serbia have little transportation facilities. In the mountainous regions of southwestern Croatia, western Bosnia, Herzegovina, Montenegro, and Dalmatia there are practically no transportation facilities aside from pack animals.

There are 43,625 kilometers (27,107 miles) of roads in Yugoslavia, or 0.3 mile per square mile of territory. There are 6,240 miles in north and south Serbia, 5,963 miles in Croatia-Slavonia, 4,533 miles in Slovenia, 4,325 in Bosnia-Herzegovina (of which 1,472 miles are pack trails), 2,948 miles in Voivodina, 982 miles in Dalmatia (of which 76 miles are pack trails), and 511 miles in Montenegro.

The unsolved problems of transportation in Yugoslavia have a more vital bearing upon the development of the agriculture of the country than, perhaps, in any other of the Danube States. The lack of communicating roads and adequate organized means of transportation results in a relatively high cost of moving goods within the Kingdom and consequently reduces the price receivable by the producer.

SELLING FARM PRODUCTS

On account of the small size of peasant farms and the fact that most products are consumed at home, no large surpluses of farm products of uniform quality are available for purchase in most parts of Yugoslavia. As a rule, lots offered for sale are very small and, although there is a general similarity in the kind of grain, wool, swine, plums, etc., grown in any one district, the products of individual peasants vary considerably in quality.

According to an investigation conducted by Mihailo Avramovitch, the father of the Serbian cooperative movement, the quantity of surplus marketed varied greatly according to the size of the land holding. (Table 95.)

TABLE 95.—*Farm production by peasants: Percentage consumed at home and sold, classified by size of holding (9, p. 169)*

Size of holding		Percentage of production	
Hectares †	Acres	Consumed at home	Sold
		Per cent	Per cent
Less than 1.....	Less than 2.5.....	89.0	11.0
1 to 2.....	2.5 to 4.9.....	81.0	19.0
2 to 5.....	4.9 to 12.4.....	80.0	20.0
5 to 10.....	12.4 to 24.7.....	78.0	21.0
10 to 15.....	24.7 to 37.1.....	73.0	22.0
15 to 30.....	37.1 to 74.1.....	74.0	26.0
30 to 50.....	74.1 to 123.6.....	68.5	31.5
50 to 70.....	123.6 to 173.0.....	59.0	41.0

† 1 hectare=2.471 acres.

Before the World War, commercial quantities of agricultural products were usually assembled by agents of some bank or trading concern, who were located at market towns, from which their spheres of activity extended into adjacent territories. Sometimes these purchasing agents were in the employ of an export organization but as a rule it was the custom of Austrian, Hungarian, and German importers to send their buyers into those districts, in which were produced the particular grades of products suited to the requirements of their patrons. This meant bargaining with individual peasants, who had brought a few bushels of grain, a few pounds of prunes, wool, or silk cocoons, or perhaps a homemade rug to the market place.

Although somewhat modified, much the same system of purchase that was in vogue before the World War persists to-day.

AGRICULTURAL COOPERATIVE SOCIETIES

The traditional family organization of the south Serbs was along cooperative lines, and for that reason the cooperative movement has had marked success in Yugoslavia. It is estimated that before the World War there were, in the territories now comprising Yugoslavia, 3,890 Slav cooperative societies with 447,060 members, 390 Hungarian societies with 113,000 members, and 130 German societies with 52,000 members. These societies are of various kinds including societies for credit facilities, mutual help, consumers' societies, societies for the sale of agricultural products, wine-growers' societies, etc. It is customary for the local cooperatives to combine into district and provincial unions, through which the membership sells a large part of farm surpluses of its constituents and purchases a large part of all the commodities required by the member farmers.

The leading cooperative unions of Yugoslavia have pooled their interests and have formed the Central Federation of Cooperative Unions. These unions purchase goods with their individual resources and on the collective responsibility of their members. None are guaranteed or supported by the Government as the whole movement has developed without State aid. Products are assembled and graded for sale but, as yet, the movement has not developed enough to be an appreciable factor in export trade.

There were 22 unions in Yugoslavia in 1922 combining 4,862 cooperatives, with a total membership of 784,443. Of these cooperatives, 2,649 or 55 per cent were credit organizations, whereas 2,213 or 45 per cent performed various functions of buying, selling, manufacturing, and producing. Transactions in goods in 1922 comprised 8,168 carloads⁶⁸ of agricultural necessities and foodstuffs, 112,661 machines, 1,220,000 implements, 1,750 cases of various goods, 64,050 meters (70,045 yards) of textiles, and 19,876 pairs of shoes. The agricultural necessities were as follows: Wheat, 1,552 carloads; seed, 24 carloads; cattle fodder, 526 carloads; commercial fertilizers, 401 carloads; copper sulphate and other substances, 345 carloads; foodstuffs, 1,696 carloads; groceries, 842 carloads; and wicker goods and wood, 2,782 carloads.

As stated by Ljudevit Prohaska (3, p. 176): The above "figures relate to the position of the cooperative movement in 1922, and are

⁶⁸ One carload is 10 metric tons or 22,046 pounds.

based on the statistical data from the cooperatives for 1921." Based on Prohaska's statement, it appears that out of a total number of 4,862 cooperatives, reports were received from 3,656. The total number of members amounted to about 784,443; which is 6.53 per cent of the total inhabitants. Hence, the cooperatives comprise 3,922,215 persons or 32.64 per cent of the population, reckoning a member's family as five persons.

The total capital amounted to 31,640,000 dinars⁶⁰ [or \$588,504]; deposits, 365,685,000 [\$6,801,741]; loans to members, 195,970,000 [\$3,645,042]; shares in unions, 105,129,000 [\$1,955,399]; credits to cooperatives given by the union, 85,212,000 [\$1,584,943]; management expenses, 13,950,000 [\$259,470]. The total turnover was 4,029,027,000 dinars [\$74,939,902].

The cooperatives average 161 members, and one cooperative exists for each 2,472 inhabitants.

FARM IMPLEMENTS AS WAR REPARATIONS

In July, 1927, it was reported that the Ministry of Agriculture and Waters had transmitted to the Ministry of Foreign Affairs a list of various agricultural tools, implements, and machinery which were to be delivered by Germany to the Kingdom of Yugoslavia on account of war reparations. This list includes sprayers, presses, filterers, etc., for use in vineyards, plows, planters, cultivators, harvesting machines, threshers, etc. Most of these implements will be distributed in the old Kingdom of Serbia. Their use will be restricted to large fields, both private and those worked in common. Most of the fields in the old Kingdom are too small to carry the overhead of an equipment of farm implements or even to admit of their use. The practical application of farm machinery to agriculture on an extensive scale can not be accomplished without the consolidation of tiny holdings into fields of larger size. As in most countries, in southeastern Europe the difficulties to be overcome before this can be done are almost insurmountable.

STATUS OF FIELD CROPS AND LIVESTOCK

The destruction of livestock during the World War in the old Kingdom of Serbia, was tremendous and the depletion of the numbers of domestic animals in each of the other Districts occupied by the South Slavs was very great. Nevertheless the census of 1921 does not show an inordinate decrease when compared with pre-war estimates. In 1922 and in 1923 there were serious droughts, which forced a large exportation especially of meat and meat preparations. In spite of the fact that very considerable reparations in kind have been paid by Germany, Hungary, and Bulgaria to Yugoslavia, and that these animals have been employed in building up the flocks and herds of the country, the enumeration of 1925 shows the numbers of horses employed in agriculture to be 93.9 per cent of the pre-war estimate for total horses; cattle employed as work animals, 74.3 per cent of the pre-war estimate for total cattle; swine found only on farms, 71.4 per cent of total pre-war number of swine; sheep, 75.3 per cent and goats, 62 per cent. The post-war numbers reported do not represent the total numbers of domestic animals in Yugoslavia. There are considerably greater numbers in the Kingdom than have

⁶⁰ The average value of the dinar during the last 6 months of 1921 was equivalent to 1.86 cents.

been reported so that the status of livestock in 1925 was better than indicated by these percentages.

The acreages of rye, barley, and oats were below the pre-war average in 1925, whereas the areas under wheat and corn were above. The total area devoted to these five cereals was 11,836,000 acres as compared with 12,129,000 acres or only 2.4 per cent below the pre-war status.

Of this area, 4,875,000 acres were under bread cereals in 1925 as compared with 4,728,000 acres before the World War—an increase of 147,000 acres. There was also an increase in corn acreage from 4,773,000 acres to 5,222,000 in 1925. The increase in the acreage of wheat took place chiefly in those districts of Bosnia and western Croatia that had suffered from want of bread during the World War. The increases in corn were for the most part in the districts of the northeast that were affected by the land reform. On the other hand, areas seeded to oats and barley showed a general tendency to decrease.

It is probable that after the changes associated with the postwar adjustment of frontiers, the rearrangement of market centers, the land reform, and other postwar disturbing factors have run their course, the peasants of Yugoslavia will readjust themselves to the new order of things and will settle down to a routine of farming similar to that followed before the war.

It is probable that in regards to areas of field crops, future operations will fluctuate about the acreages indicated by the crop reports of 1925 and 1926. Livestock numbers will tend to increase at least to the 1921 levels and with the exception of sheep will probably exceed the pre-war levels, particularly in Croatia-Slavonia and in Voivodina.

CEREALS

WHEAT

Before the World War the old Kingdom of Serbia exported as grain and flour 35.3 per cent of its net wheat production up the Danube to Germany (Bavaria) and Austria-Hungary, south by rail to Turkey (probably to south Serbia as well as to Istanbul), and east down the Danube to Rumania (probably for reshipment to western European points). The District of Voivodina is estimated to have shipped to northern points within the Austro-Hungarian Empire 69.6 per cent of its net production, a large part of which was first ground into flour by the local mills. Eastern Slavonia between the Sava and the Danube Rivers was a region of wheat surplus; but its surplus was more than offset by deficits of the western districts and Croatia. Similarly, the northeastern districts of Bosnia shipped wheat up the Danube, whereas the western districts and Herzegovina imported wheat flour from Budapest. South Serbia, Montenegro, Dalmatia, and Slovenia were regions of deficit wheat production.

The rate at which wheat was consumed by local populations before the World War varied greatly in different parts of the Kingdom. The mountaineers of Montenegro eat less wheat than do any of the other southern Slavs, averaging 1.65 bushels per capita each year, as contrasted with 5.14 bushels per capita in the surplus wheat-producing District of Voivodina.

As shown in Table 96, the total annual pre-war area under wheat in Yugoslavia averaged 4,010,000 acres producing 67,759,000 bushels of wheat. Seed requirements averaged 11,879,000 bushels and sta-

tistical disappearance has been estimated at 44,094,000 bushels annually, leaving 11,786,000 bushels as the approximate surplus available for export each year.

TABLE 96.—Wheat: Statistical balance of Yugoslavia, pre-war average, and annual, 1921-22 to 1926-27

District	Years	Popula- tion ¹	Acre- age	Seed	Production		Disappearance		Surplus (+) or deficit (-)
					Gross	Net	Statistical	Per capita	
Pre-war period:									
Old Kingdom of		<i>Number</i>	<i>1,000 acres</i>	<i>1,000 bushels</i>	<i>1,000 bushels</i>	<i>1,000 bushels</i>	<i>1,000 bushels</i>	<i>1,000 bushels</i>	<i>1,000 bushels</i>
Serbia ²	1909-1911	2, 011, 701	944	³ 3, 009	14, 746	11, 737	7, 595	2. 61	⁴ +4, 142
South Serbia ⁵	1909-1911	1, 664, 807	390	³ 1, 201	6, 090	4, 889	6, 360	⁷ 3. 82	-1, 471
Montenegro ⁸	1909-1913	238, 423	12	³ 38	151	113	394	1. 65	⁹ -281
Bosnia - Herzegovina ¹⁰	1911-1913	1, 931, 802	262	779	3, 257	2, 478	4, 963	2. 57	¹¹ -2, 485
Dalmatia ¹²	1909-1913	¹³ 631, 610	74	¹⁴ 236	992	756	1, 547	¹⁵ 2. 45	-791
Croatia, Slavonia, Medjmurje, Krk, and Kastav ¹⁶	1909-1913	2, 731, 738	833	¹⁷ 2, 366	13, 516	11, 150	13, 358	¹⁷ 4. 89	-2, 208
Slovenia and Pre- kmurje ¹⁸	1909-1913	1, 063, 767	139	¹⁹ 395	2, 158	1, 763	2, 734	¹⁴ 2. 57	-971
Voivodina ²⁰	1909-1913	1, 352, 844	1, 344	²⁰ 3, 817	26, 700	22, 883	6, 954	²¹ 5. 14	+15, 929
Ceded by Bul- garia ²²	1909-1912	²² 72, 413	12	³ 38	149	111	189	²⁴ 2. 61	-78
Total.....		12, 599, 105	4, 010	11, 879	67, 759	55, 880	44, 094	3. 50	+11, 786
Post-war period ²⁵									
	1921-22	12, 017, 323	3, 699	²⁶ 10, 949	51, 809	40, 860	37, 427	3. 11	²⁷ +3, 433
	1922-23	12, 176, 000	3, 673	10, 872	44, 472	33, 600	33, 457	2. 75	²⁷ +143
	1923-24	12, 334, 000	3, 842	11, 372	61, 068	49, 696	44, 979	3. 65	²⁷ +4, 717
	1924-25	12, 492, 000	4, 244	12, 562	57, 770	45, 208	38, 112	3. 05	²⁷ +7, 096
	1925-26	12, 650, 000	4, 382	12, 971	78, 646	65, 675	56, 456	4. 46	²⁷ +9, 219
Average, 1921- 1925.....		12, 334, 000	3, 968	11, 745	58, 753	47, 008	42, 086	3. 41	+4, 922
	1926-27	12, 808, 000	4, 178	12, 367	71, 428	59, 061	.....	.....	.....

¹ Pre-war population is for 1910. 1910 and 1921 (47). 1924 (17, 1924-25). 1922, 1923, 1925, and 1926, estimated.

² Acreage and production (17, 1909-1911). Engaged in Balkan War in 1912-13.

³ 3.187 bushels per acre; same as Bulgaria.

⁴ Net exports for calendar years (17, 1909-1921).

⁵ Acreage and production estimated by taking the same percentage of old Kingdom as acreage harvested during 1921 and 1922.

⁶ 3.08 bushels per acre; midway between Bulgaria and Bosnia-Herzegovina.

⁷ Midway between Bulgaria, 1912 boundaries (5.07) and Bosnia-Herzegovina.

⁸ Acreage and production, estimated by taking the same percentage of Bosnia-Herzegovina as acreage harvested during 1921 and 1922.

⁹ Import for 1912 reported in (16, p. 95).

¹⁰ Acreage, production, and seed (27, 1921, pp. 59-60). Data not available for 1909-10.

¹¹ Average 1911-1913, net import of wheat and wheat flour. 1911 and 1912 (5, Jahrg. 14-15); 1913 (16, p. 59).

¹² Acreage and production (1).

¹³ Population for Dalmatia including Zara 645,666, from (27, 1921, p. 60). Population of Zara, 14,056 (1).

¹⁴ At same rate as Bosnia-Herzegovina.

¹⁵ Acreage and production for Croatia-Slavonia (15). Medjmurje, calculated from same source, area and production being proportional to that of total area of Zala. Krk and Kastav being proportional to total area of coast land. Coast-land area and production given in (27, 1921, p. 58).

¹⁶ 2.84 bushels per acre, as estimated by the Royal Hungarian Ministry of Agriculture for Croatia-Slavonia (22, p. 13).

¹⁷ At same rate as estimated for Croatia-Slavonia, by Royal Hungarian Ministry of Agriculture (22, p. 13).

¹⁸ Acreage and production for Slovenia calculated from (1). Prekmurje, calculated from (15).

¹⁹ Acreage and production calculated from data in (15, [Bd.] 17-21), according to areas indicated in (47).

²⁰ 2.84 bushels per acre as estimated by the Royal Hungarian Ministry of Agriculture (22, p. 13).

²¹ At same rate as in (22, p. 13).

²² Calculated from (9, 1909-1912).

²³ Calculated from (9, Ann. 4).

²⁴ At same rate as old Kingdom of Serbia.

²⁵ Acreage and production, 1921 to 1926, from official records of U. S. Department of Agriculture, Bureau of Agricultural Economics.

²⁶ 2.96 bushels per acre, used 1921 to 1926, as indicated in pre-war average.

²⁷ Exports of wheat and wheat flour for years beginning Aug. 1 (17, 1924-1927). Imports not stated for years beginning Aug. 1, estimated by taking averages of calendar years, indicated in Table 97.

The territories of the old Kingdom of Serbia, south Serbia, and Montenegro were the sites of actual war operations, and were badly devastated by the forces of the Central Powers between 1914 and 1918. The presence of these forces in other Districts greatly reduced

the food supplies of the native populations, large numbers of whom were often at the verge of starvation.

During 1921, although the consumption of wheat in Yugoslavia was considerably below the pre-war normal, supplies in most parts of the Kingdom were more nearly sufficient to meet the food requirements of the people than had been the case when the country was actually engaged in the operations of war. Particularly is this true in the cases of the old Kingdom of Serbia, Macedonia, and Montenegro. This also applies to certain of those Districts, which normally did not produce sufficient wheat to supply their local needs and, which were cut off from their customary sources of bread supply during the World War as, for example, Herzegovina and parts of Bosnia. Seeding in 1921 had approached within 311,000 acres the average wheat area of 1909-1913, but the spring was exceptionally dry, a shortage of food was foreseen, and, since exportation from the northwestern Districts during the first three months of the year had been brisk, a decree was issued on April 11 prohibiting the exportation of all cereals, hay, and straw. This decree continued in force until the fall of 1922.

Acres decreased in 1922 but from then on increased until in 1924, when the pre-war average was exceeded. A maximum of 4,382,000 acres was reached in 1925. Since the World War, production has fluctuated from year to year ranging below the pre-war normal until the seasons of 1925 and 1926.

The organizations for trading in the wheat of northeastern Yugoslavia that, before the World War had been directed from Budapest and Vienna have continued more or less effective since the war and heavy shipments of grain up the Danube have been made each year from these districts, although some of the western districts have been forced to import flour from abroad, and other sections of the country have been reduced to restricting their wheat consumption. Nevertheless, the international wheat trade has resulted in a net export each year which, in the crop year 1925-26, amounted to 9,219,000 bushels, as compared with the pre-war estimated surplus of 11,786,000 bushels. Complete reports for the trade of the year 1926-27 were not available at the closing of this report. Returns had been made on exports only for the 10 months August 1, 1926 through May 31, 1927 which indicate that wheat and wheat flour equivalent to 9,364,000 bushels were exported as compared with 10,290,000 bushels during the similar period of the previous season.

The heavy exports of wheat and wheat flour forced the western districts to import more flour by 14,453 short tons during the calendar year 1925 than was exported by the northeastern districts. (Table 97.)

TABLE 97.—Wheat and wheat flour: Imports and exports of Yugoslavia, 1921-1926

Year	Wheat flour		Wheat		Year	Wheat flour		Wheat	
	Imports	Exports	Imports	Exports		Imports	Exports	Imports	Exports
	Short tons	Short tons	Short tons	Short tons		Short tons	Short tons	Short tons	Short tons
1921.....	234	33,667	991	51,888	1924.....	23,646	65,119	3,041	190,039
1922.....	11,656	25,041	6,566	27,090	1925.....	44,634	42,181	28,382	157,345
1923.....	14,319	42,154	2,336	106,836	1926.....	14,604	36,178	14,061	327,607

1921-1925 compiled from 17, 1944-46; 1926, compiled from report of Consul Stewart E. McMillin, dated Mar. 28, 1927, Belgrade, Yugoslavia.

¹ "Quoted as milled products"; may include other flours than wheat flour.

Yugoslavia has been sorely in need of funds and consequently has heavily taxed the wheat and flour exports as well as exports of all other agricultural products. Although the harvest of 1922 was poorer than that of the preceding year, the export prohibition was removed. A net exportation equivalent to only 143,000 bushels of wheat went abroad. In 1922, nearly half as much flour was imported by the western districts as was exported from the commercial mills in the northeast. Although net exportations of wheat and flour expressed as bushels of wheat increased from 4,717,000 bushels in 1923-24 to 7,096,000 bushels in 1924-25 the imports of flour increased during this time so as to exceed exports.

This is the result of a peculiar situation that has developed in the milling industry in Yugoslavia. On August 16, 1923, the export tax on grain was reduced, but as this did not apply to flour, the milling industry and particularly the mills in western Croatia-Slavonia were placed in a critical position.

FLOUR MILLING

Flour milling is one of the most highly developed industries in Yugoslavia. The great majority of these mills are small village establishments that grind coarse wheat flour and corn meal for local consumption, employing wind, water, and even animals as power. Apart from these small mills, there are some 700 steam and motor mills in the larger centers of which about 200 engage in export as well as domestic trade.

There are 270 commercial mills in Voivodina, the largest of which, at Kikinda, has a daily capacity of 276 short tons as compared with a total daily capacity of 3,580 short tons for all the commercial mills of the District. There are 225 commercial mills in Croatia-Slavonia with a total daily capacity of 1,790 short tons, of which 165 short tons are accounted for by the large mills at Subotica. A large proportion of the export flour of the old Kingdom of Hungary originated in these two Districts north of the Danube and the Sava Rivers.

Thirty-five commercial mills are scattered throughout other parts of the Kingdom. Thirty of these mills are reported to have an annual capacity of 448 short tons each.

The old Kingdom of Serbia has 170 steam and motor mills that are equipped to grind about 896 short tons per day. There is one mill at Belgrade which grinds about 100 short tons daily, whereas the other mills are of relatively small capacity. Before the World War the export flour from the old Kingdom of Serbia was shipped south into Turkey, whereas most of the bran and other by-products went north into Austria-Hungary.

The milling capacity of the country has been estimated to range from 3,200,000 to 3,600,000 short tons of flour of which about 1,000,000 short tons represents the capacity of 50 of the largest mills. The maximum milling capacity is equivalent to 165,000,000 bushels of wheat or nearly twice the net production of the entire Kingdom during 1925-26. It must be borne in mind that the village mills in most parts of Yugoslavia are equipped to grind corn meal only as there is little local demand for wheat flour. However that may be, it is probable that the milling industry of Yugoslavia could grind all of the wheat produced in the country in addition to the corn meal required for human food.

Since the World War, the commercial mills of Yugoslavia have been so hampered by regulations, restrictions, and market conditions in customer countries that there has been little possibility of their resuming operations on a scale approaching their pre-war magnitude. In 1924, the export taxes on flour were rescinded; but, unfortunately, the world price was so low that the mills were unable to gain any advantage by their liberation from restrictions. Mill operations were slowed down to meet local day-to-day requirements and in 1925 many plants suspended operations altogether. Domestic production, particularly in the west, was so low that flour had to be imported to meet city requirements,⁷⁰ and the international trade of the entire Kingdom in 1925 resulted in a net importation of flour.

More wheat was exported from Yugoslavia during the calendar year 1926 than ever before in the history of the country, yet east-to-west transportation and trade relationships were so inadequately organized that many mills in the western part of the Kingdom were unable to secure grain enough to keep them profitably operating at full capacity. Their overhead was thus so high in proportion to their output that they found it difficult to compete with foreign flour. This crisis through which the milling industry in Yugoslavia is passing is similar to that affecting the industry in Hungary and Rumania because the former consumer countries, particularly Austria and Czechoslovakia, have maintained a higher tariff on flour than on wheat in order to encourage their own milling industries. There is also easily accessible and cheap water transportation facilitating the export of wheat to these northern countries and the trade in wheat is well organized.

The milling situation in Yugoslavia has been aggravated further by the lack of financial strength of the industry and on account of the attempt of the grain dealers of the country to liberate their operations from the speculative influences of the central European grain exchanges which have traded in the products of the south Danube States for decades. A grain market has been opened at Zagreb where, in 1925, several western European firms established branch agencies. These agencies are well supplied with cash to buy up grain of the particular quality required by their milling patrons at home. Both French and German agents bought grain in 1925 to be shipped on barges down the Danube to Braila for reshipment to Hamburg and Marseilles. Local mills, unless well financed, can not compete with these agencies and, if unable to get the best grades of wheat for their own use, will not be able to produce flour of the former pre-war excellence. They will thus not be able to compete with American and other foreign flours in their foreign markets in central Europe,⁷¹ reached by river transportation up the Danube, or their Oriental markets reached through Istanbul and Salonika.

The bulk of all wheat shipments in 1926 went up the Danube to Czechoslovakia; or to Italy through Fiume; or down the Danube to Braila for reshipment to Western Europe. Most of the export flour was shipped to Salonika, for Turkish or other Oriental destinations.

⁷⁰ The sale of domestic flour in Dalmatia and other Districts along the Adriatic coast is further seriously handicapped by high freight rates and the limited capacity of the narrow-gauge railroads connecting the interior of the Kingdom with the sea. Until these handicaps have been removed it will be difficult for the mills of Yugoslavia to capture the markets of the Adriatic coast from the Italian and United States millers.

⁷¹ The commercial mills north of the Danube and the Sava Rivers formerly marketed their flour under Hungarian trade names.

It was reported that the exchange value of the dinar during 1925 strengthened from 1.28 cents to 1.89 cents,⁷² and that domestic grain prices fell off in proportion. It is claimed, as a consequence of the fall in wheat prices, that the 1925 crop was grown without profit to the farmer. Whatever the cause, wheat areas, although exceeding the pre-war average, fell 204,000 acres in 1926 below the post-war maximum reached in 1925.

TABLE 98.—Wheat flour: Imports into Yugoslavia by countries of origin, 1922–1925

Country from which imported	1922	1923	1924	1925
	Short tons	Short tons	Short tons	Short tons
Italy ¹	6,867	14,962	22,489	31,486
United States.....	3,241	1,303	641	2,449
Hungary.....	(²)	45	79	3,739
Czechoslovakia.....	203	26	15	2,671
Greece.....	33	(²)	26	3,162
Other countries.....	1,312	1,983	306	13,127
Total.....	11,656	18,319	23,646	56,634

From report of Assistant Trade Commissioner John A. Embrey, dated Mar. 28, 1927, Vienna, Austria.

¹ May include reexports of flour received at the port of Trieste from the United States and other countries.

² Less than 500 pounds.

³ Adjusted to agree with 1925 figure in Table 97.

THE POSITION OF THE UNITED STATES

In 1925 the United States sent directly to Yugoslavia 2,449 short tons of flour (Table 98) as compared with 31,486 short tons shipped from Italy through Trieste. It is probable that a considerable portion of this import of flour from Italy was reexported to Yugoslavia, having originated in the United States.

There is no logical reason why Yugoslavia, a great wheat surplus-producing region with a well-developed milling industry, should not fully supply its own wheat-flour requirements. The present situation is the result of poor transportation facilities and the lack of organization in the east-to-west trade. The eastern districts have been accustomed to sell their surplus to the markets of northern Europe. The western districts have been accustomed to look to Vienna commission houses to supply their requirements. This practice is continuing. As soon as the deficit districts get into proper trade relationships with the surplus districts the importation of wheat flour into Yugoslavia will dwindle to negligible proportions.

TABLE 99.—Wheat: Exports and average export price per bushel, 1920–1926

Year	Exports	Average export price		Dinars per United States dollar	Year	Exports	Average export price		Dinars per United States dollar
		Per kilogram	Per bushel				Per kilogram	Per bushel	
	Short tons	Dinars	Dollars	Number		Short tons	Dinars	Dollars	Number
1920.....	45,848	2.70	2.52	29.2	1924.....	190,038	3.90	1.35	73.9
1921.....	51,888	3.20	1.89	46.2	1925.....	187,345	3.00	1.39	58.9
1922.....	27,090	4.75	1.73	74.8	1926.....	327,697	2.90	1.39	56.6
1923.....	106,328	4.00	1.16	93.7					

From report of Consul Stewart E. McMillin, dated March 28, 1927, Belgrade, Yugoslavia.

⁷² According to the official reports the exchange value of the dinar increased from 1.6 cents to 1.77 cents. However, the fluctuations of actual operations are usually wider than those reported as official.

RYE

Rye was not a crop of great importance in Yugoslavia before the World War, although the territories now comprised within the Kingdom of Yugoslavia produced an exportable surplus of approximately 1,238,000 bushels. As shown in Table 100, annual per capita disappearance averaged only 0.68 bushel. Since the war, although consumption has been far below the pre-war normal, rye exports have dwindled to insignificance.

TABLE 100.—Rye: Statistical balance of Yugoslavia, pre-war average, and annual, 1921-22 to 1926-27

District	Years	Acreage	Seed	Production		Disappearance		Surplus (+) or deficit (-)
				Gross	Net	Statistical	Per capita	
Pre-war period:		1,000 acres	1,000 bushels	1,070 bushels	1,000 bushels	1,000 bushels	Bushels	1,000 bushels
Old Kingdom of Serbia ¹	1909-1911	74	² 225	1,613	1,388	1,131	0.388	⁴ +257
South Serbia ³	1909-1911	129	⁵ 404	2,820	2,416	1,182	⁷ .71	+1,234
Montenegro ⁶	1909-1913	6	⁸ 19	67	48	48	.20	(10)
Bosnia-Herzegovina ¹¹	1911-1913	45	145	485	340	¹² 642	.332	-302
Dalmatia ¹³	1909-1913	17	¹⁴ 52	200	148	210	¹⁴ .332	-62
Croatia, Slavonia, Medjumurje, Krk, and Kastav ¹⁵	1909-1913	270	¹⁶ 821	3,731	2,910	3,879	¹⁶ 1.42	-969
Slovenia and Prekmurje ¹⁷	1909-1913	107	¹⁸ 325	1,640	1,315	353	¹⁸ .332	+962
Vojvodina ¹⁹	1909-1913	60	²⁰ 182	1,306	1,124	1,069	²⁰ .79	+55
Ceded by Bulgaria ²¹	1909-1912	10	²² 30	121	91	28	²² .368	+53
Total.....		718	2,203	11,983	9,780	8,542	.678	+1,238
Post-war period ²³								
	1921-22	461	²⁴ 1,415	5,816	4,401	4,312	.359	²⁵ +89
	1922-23	487	1,495	4,523	3,028	3,027	.249	²⁶ +1
	1923-24	462	1,418	5,906	4,488	4,474	.363	²⁷ +14
	1924-25	483	1,483	5,541	4,058	3,811	.305	²⁸ +247
	1925-26	493	1,514	7,864	6,350	6,103	.482	²⁹ +247
Average, 1921-1925.....		477	1,465	5,930	4,465	4,345	.352	+120
	1926-27	500	1,535	7,454	5,919			

¹ See Table 96 in wheat for populations.
² Same as note 2 in Table 96.
³ 3.042 bushels per acre; same as Bulgaria.
⁴ Net exports for rye for calendar years (17, 1909-1921).
⁵ Same as note 5 in Table 96.
⁶ 3.132 bushels per acre; midway between Bulgaria and Bosnia-Herzegovina.
⁷ Midway between Bulgaria and Bosnia-Herzegovina.
⁸ See note 8 in Table 96.
⁹ Same rate as Bosnia-Herzegovina.
¹⁰ It is assumed that net production and disappearance balanced.
¹¹ Same as note 10 in Table 96.
¹² The seed and food requirement of Bosnia-Herzegovina was estimated at 787,000 bushels (16, p. 59).
¹³ Same as note 12 in Table 96.
¹⁴ Same rate as Bosnia-Herzegovina.
¹⁵ Same as note 15 in Table 96. Includes maslin.
¹⁶ At same rate as estimated by the Royal Hungarian Ministry of Agriculture for Croatia-Slavonia. (22, p. 16).
¹⁷ See note 18 in Table 96.
¹⁸ At same rate as in Croatia-Slavonia, etc.
¹⁹ See note 19 in Table 96. Includes maslin.
²⁰ At same rate as used in (22, p. 16).
²¹ See note 22 in Table 96.
²² At same rate as old Kingdom of Serbia.
²³ See note 25 in Table 96.
²⁴ 3.07 bushels per acre used for 1921 to 1926, as indicated in pre-war average.
²⁵ Net exports of rye for years beginning Aug. 1 (17, 1924-1927).

Before the World War the southern Slavic races seeded 718,000 acres of rye ²³ chiefly in Croatia-Slavonia, south Serbia, and Slovenia. Since 1921 rye areas have fluctuated about the 1921-1925 average of 477,000 acres, increasing to 500,000 acres in 1926.

Most of the rye produced in Yugoslavia is consumed locally with the exception of a small surplus produced in south Serbia, which is sent to northern markets. The quality of this rye is poor and the quantity unimportant. As in most other parts of southern and southeastern Europe, rye cultivation in Yugoslavia is giving place to that of wheat or corn wherever soil and climatic conditions admit.

²³ Includes maslin, a mixture of wheat and rye, which is planted, harvested, and milled as a mixture for home use.

BARLEY

Barley is not an important crop in Yugoslavia. It is far more profitable to grow corn as a fodder grain than barley in these southern Districts. The brewing barley produced does not compare with that grown in Czechoslovakia and is not in demand as an export cereal.

There are 40 breweries ⁷⁴ in Yugoslavia with an annual capacity of 1,600,000 hectoliters (42,267,000 gallons). The capacity of the breweries is more than double the average consumption of beer in Yugoslavia, which is about 700,000 hectoliters (18,492,000 gallons). Locally produced barley is utilized at most of these breweries and barley is seeded in proportion to local demand or according to local soil conditions.

During 1909-1913 the annual area under barley averaged 1,247,000 acres in all Yugoslavia. (Table 101.) Net production averaged 18,781,000 bushels, of which 16,387,000 bushels, or 1.3 bushels per capita, were consumed locally for industrial purposes or for feeding livestock. This left approximately 2,394,000 bushels as a surplus to be exported to foreign countries.

TABLE 101.—Barley: Statistical balance of Yugoslavia, pre-war average, and annual, 1921-22 to 1926-27

District	Years	Acreage	Seed	Production		Disappearance		Surplus (+) or deficit (-)
				Gross	Net	Statistical	Per capita ¹	
Pre-war period:								
Old Kingdom of Serbia ²	1909-1911	268	1,000 bushels 1,837	1,000 bushels 4,997	1,000 bushels 4,100	1,000 bushels 2,454	0.84	+1,706
South Serbia ³	1909-1911	367	1,146	6,846	5,700	3,313	1.99	+2,387
Montenegro ⁴	1909-1913	7	22	109	87	87	3.65	(?)
Bosnia-Herzegovina ⁵	1911-1913	221	600	3,244	2,554	3,993	2.02	-1,349
Dalmatia ⁶	1909-1913	47	147	697	550	1,276	2.02	-726
Croatia, Slavonia, Medjmurje, Krk, and Kastav ¹¹	1909-1913	165	478	2,580	2,102	2,102	.77	(?)
Slovenia and Prekmurje ¹²	1909-1913	48	139	834	695	2,149	2.02	-1,454
Voivodina ¹³	1909-1913	116	336	3,178	2,842	1,042	1.77	+1,800
Ceded by Bulgaria ¹⁴	1909-1912	8	25	116	91	61	1.84	+30
Total		1,247	3,820	22,601	18,781	16,387	1.30	+2,394
Post-war period¹⁵:								
	1921-22	910	2,785	13,378	10,593	10,039	.84	+554
	1922-23	927	2,837	11,069	8,232	8,229	.66	+3
	1923-24	891	2,726	14,065	11,339	11,121	.90	+218
	1924-25	899	2,751	13,479	10,728	9,583	.77	+1,145
	1925-26	883	2,702	18,145	15,443	14,359	1.14	+1,084
Average, 1921-1925		902	2,760	14,027	11,267	10,666	.86	+601
	1926-27	867	2,653	17,275	14,622			

¹ See Table 96 for populations.

² See note 2 in Table 96.

³ 3.122 bushels per acre; same as Bulgaria.

⁴ Net exports of barley for calendar years (17, 1909-

21).

⁵ See note 5 in Table 96.

⁶ Midway between Bulgaria and Bosnia-Herzegovina.

⁷ See note 8 in Table 96.

⁸ It is assumed that net production and disappearance balanced.

⁹ Acreage and production from (27, 1921).

¹⁰ The seed and food requirement of Bosnia-Herzegovina is estimated at 4,593,000 (16, p. 37).

¹¹ See note 12 in Table 96.

¹² At same rate as Bosnia-Herzegovina.

¹³ See note 15 in Table 96.

¹⁴ At rate estimated for Croatia-Slavonia by the Royal Hungarian Ministry of Agriculture (22, p. 22).

¹⁵ See note 18 in Table 96.

¹⁶ Same rate as Croatia-Slavonia, etc.

¹⁷ Same as note 19 in Table 96.

¹⁸ At same rate as estimated in (22, p. 22).

¹⁹ At same rate as Croatia-Slavonia, etc.

²⁰ Same as note 22 Table 96.

²¹ At same rate as Old Kingdom of Serbia.

²² See note 25 in Table 96.

²³ 3.06 bushels per acre used 1921 to 1926 as indicated in pre-war average.

²⁴ Net exports of barley for years beginning Aug. 1 (17, 1924-27).

Barley areas in Yugoslavia have fluctuated about the 1921-1925 average of 902,000 acres, producing an average of 11,267,000 bushels

⁷⁴ There are 14 breweries in Croatia, in north and south Serbia and Montenegro 13, in Voivodina 5, in Slovenia 5, and in Bosnia 3.

(net). Disappearance has averaged about 10,666,000 bushels or 5,721,000 bushels below the pre-war normal. The small exportable surplus of 601,000 bushels has been negligible. Barley is not a popular grain among the Yugoslavs, being seeded, usually, on land too poor for wheat. There appears to be a tendency to replace barley with corn in Voivodina and in Croatia-Slavonia.

OATS

Before the World War, the south Slavs seeded about 1,381,000 acres to oats, nearly half of which was planted in Croatia-Slavonia and in Voivodina. The District of Batchka, in northwestern Voivodina, was famous for the quality of its oats exported to Vienna. Most of the oats from the old Kingdom of Serbia went up the Danube to Austria-Hungary and Bavaria in south Germany. Lesser quantities were shipped to Sofija and Istanbul. Bosnia-Herzegovina produced a net surplus of over 1,000,000 bushels of oats annually.

Gross production of oats before the World War averaged 35,528,000 bushels. Seed requirement averaged 5,861,000 bushels and domestic disappearance reached 24,217,000 bushels annually or about 20.57 bushels per horse. The surplus available for export each year was approximately 5,450,000 bushels. (Table 102.)

TABLE 102.—Oats: Statistical balance of Yugoslavia, pre-war average, and annual, 1921-22 to 1926-27

District	Year	Acreage	Seed	Production		Disappearance		Surplus (+) or deficit (-)
				Gross	Net	Statistical	Per horse ¹	
Pro-war period:								
Old Kingdom of Serbia ²	1909-1911	265	1,093	8,079	3,986	3,454	22.65	+4,532
South Serbia ⁴	1909-1911	133	548	2,565	2,017	1,105	15.46	+912
Montenegro ⁵	1909-1913	2	8	36	28	153	15.17	-125
Bosnia-Herzegovina ⁶	1911-1913	244	1,006	5,384	4,378	3,367	15.17	+1,011
Dalmatia ¹¹	1909-1913	7	29	89	60	393	15.17	-333
Croatia, Slavonia, Medimurje, Krk, and Kastav ¹²	1909-1913	257	1,117	5,244	4,127	4,406	12.60	-279
Slovenia and Prekmurje ¹³	1909-1913	87	386	2,568	2,182	768	15.17	+1,414
Voivodina ¹⁰	1909-1913	372	1,016	14,291	12,675	10,394	36.52	+2,281
Ceded by Bulgaria ¹⁴	1909-1912	14	58	272	214	177	22.65	+37
Total.....		1,381	5,861	35,528	29,667	24,217	20.57	+5,450
Post-war period ¹⁵ :								
.....	1921-22	1,003	4,257	18,907	14,650	14,640	13.70	+1
	1922-23	966	4,100	18,272	14,172	14,157	13.56	+15
	1923-24	923	3,938	21,476	17,538	17,348	16.32	+190
	1924-25	873	3,701	20,796	17,095	16,625	15.77	+470
.....	1925-26	856	3,633	23,772	20,139	19,063	17.24	+1,076
Average, 1921-1925.....		925	3,926	20,645	16,719	16,369	15.34	+350
.....	1926-27	871	3,697	24,645	20,948			

¹ For number of horses see Table 111.
² Same as note 2, Table 96.
³ 4,123 bushels per acre; same as Bulgaria.
⁴ Net exports for calendar years (17, 1909-11).
⁵ See note 5 in Table 96.
⁶ Midway between old Kingdom of Bulgaria (15.75 bushels) and Bosnia and Herzegovina.
⁷ See note 8 in Table 96.
⁸ Same as Bosnia-Herzegovina.
⁹ Same as note 10 in Table 96.
¹⁰ Net exports 1911-1913. 1911 and 1912 (5, Jahrg. 14-16); and 1913 (16, p. 33).
¹¹ See note 12 in Table 96.
¹² See note 15 in Table 96.
¹³ Seed (4.348 bushels per acre) and disappearance per horse, assumed to be at same rate estimated by

the Royal Hungarian Ministry of Agriculture for Croatia-Salvonia (22, p. 25).
¹⁴ Same as note 18 Table 96.
¹⁵ 4,438 bushels per acre; same as estimated for Marje (22, p. 25).
¹⁶ See note 19 Table 96.
¹⁷ 4,345 bushels per acre, seed, and 36.52 bushels per head of horses, as estimated for Voivodina (22, p. 25).
¹⁸ Same as note 22 Table 96.
¹⁹ At same rate as old Kingdom of Serbia.
²⁰ See note 25 Table 96.
²¹ 4,244 bushels per acre used, 1921 to 1926, as indicated in pre-war average.
²² Net exports for years beginning Aug. 1 (17, 1924-27).

When compared with conditions in Czechoslovakia, the production of oats in most Districts of Yugoslavia is unprofitable on account of the low yield per acre obtained. Consequently the seeding of oats has been governed largely by local demands or by peculiar local conditions of soil and climate.

In 1921 acreage had fallen off to 1,003,000 acres as compared with an average of 1,381,000 acres for 1909-1913. Until 1926 acreage under oats decreased each succeeding year. Production has also been very low, ranging from 10,000,000 to 17,000,000 bushels below the pre-war normal production. On the other hand, disappearance per head of horses has been much lower than before the World War, so that each year a small surplus has been exported. In 1925 net exports reached 1,076,000 bushels. Although there was a slight recovery of oats acreage in 1926 and a further increase to 917,000 acres in 1927, according to preliminary report it appears that oats as well as rye and barley are proving less profitable than corn and wheat and that, consequently, their cultivation is being replaced to a considerable extent by that of the two latter cereals.

CORN

Corn is the most commonly planted cereal among the southern Slavs. Before the World War 39.4 per cent of the cereal acreage was under corn, as compared with 33.1 per cent under wheat. During the 5-year period ended 1925 the percentage of cereal acreage under corn had increased to 43.3 per cent, as compared with 35.9 per cent under wheat. In 1925 the wheat area was 372,000 acres above the 1909-1913 average whereas corn was 449,000 acres above. In 1926 the areas of wheat and corn were 168,000 acres and 156,000 acres above normal, respectively. The corn belt of Yugoslavia includes the old Kingdom of Serbia, eastern Croatia-Slavonia, northeastern Bosnia, and all of Voivodina. These Districts lie in the valleys of the Danube, and its tributaries, the Sava, the Drava, and the Tisza, in the richest soil region of the Kingdom. Climatic fluctuations, however, range widely from drought to flood interspersed with hail. Consequently there are wide yearly fluctuations in production.

Before the World War the District of Voivodina produced a surplus approximated at 21,220,000 bushels of corn annually, as compared with an average export of 5,020,000 bushels from the old Kingdom of Serbia. A little more than half of this export from the old Kingdom went up the Danube to Germany and Austria-Hungary and a little less than half went down the river to Rumania for reshipment to Belgium and other western European countries. The eastern part of Croatia-Slavonia also produced a surplus of corn; but, although the net production of the Districts as a whole reached 24,781,000 bushels, an additional 1,198,000 bushels had to be imported annually to meet the feeding-stuff requirements of the local animal industry.

Northeastern Bosnia, lying in the corn belt, exported about 829,000 bushels of corn annually, whereas the agriculturally poorer regions of western Bosnia and of Herzegovina imported an average of 1,166,000 bushels, resulting in a net importation of about 337,000 bushels. All other Districts required importations of corn to supplement local production.

As shown in Table 103, net production in all Districts now comprising Yugoslavia averaged 113,765,000 bushels before the World

War, disappearance averaged 94,657,000 bushels, or 7.51 bushels per capita, leaving approximately 19,108,000 bushels available for export.

TABLE 103.—Corn: Statistical balance of Yugoslavia, pre-war average, and annual, 1921-22 to 1926-27

District	Years	Acreage	Seed	Production		Disappearance		Surplus (+) or deficit (-)
				Gross	Net	Statistical	Per capita ¹	
Pre-war period:								
Old Kingdom of Serbia ²	1909-1911	1,443	1,618	29,944	29,376	24,356	8.36	³ +5,020
South Serbia ⁴	1909-1911	306	131	6,359	6,228	6,928	4.16	-698
Montenegro ⁵	1909-1913	28	12	365	353	661	2.77	⁶ -308
Bosnia-Herzegovina ⁷	1911-1913	621	266	8,176	7,910	8,247	4.27	⁸ -337
Dalmatia ¹¹	1909-1913	89	38	1,572	1,534	2,697	14.27	¹⁰ -1,163
Croatia, Slavonia, Medjmurje, Krk, and Kastav ¹²	1909-1913	1,053	500	25,371	24,781	25,979	9.51	-1,198
Slovenia and Prekmurje ¹³	1909-1913	43	24	1,433	1,409	4,542	19.27	-3,133
Voivodina ¹⁷	1909-1913	1,171	656	42,520	41,864	20,644	15.26	+21,220
Ceded by Bulgaria ¹⁹	1909-1912	19	8	318	310	606	8.36	-295
Total		4,773	2,343	116,108	113,765	94,657	7.51	+19,108
Post-war period: ²¹								
	1921-22	4,646	2,277	73,788	71,511	72,115	6.00	²² -604
	1922-23	4,722	2,314	89,796	87,482	83,678	6.87	²³ +3,804
	1923-24	4,452	2,181	84,781	82,600	73,005	5.02	²⁴ +9,595
	1924-25	4,856	2,379	149,399	147,020	107,327	8.59	²⁵ +39,663
	1925-26	5,222	2,559	149,233	146,674	111,497	8.81	²⁶ +35,177
Average, 1921-1925		4,780	2,342	109,399	107,057	89,524	7.26	17,533
	1926-27	4,929	2,415	134,251	131,836			

¹ For populations, see Table 96.
² Same as note 2, Table 96.
³ 0.428 bushel per acre; same as Bulgaria.
⁴ Net exports of corn for calendar years (17, 1909-21).
⁵ Same as note 5 in Table 96.
⁶ Midway between old Kingdom of Bulgaria (4.05) and Bosnia and Herzegovina.
⁷ Same as note 8, in Table 96.
⁸ Imports for 1912, reported in (16, p. 85).
⁹ Same as note 10, Table 96.
¹⁰ Net imports 1911-1913. 1911 and 1912 (6, Jahrg. 14-15); 1913 (16, p. 38).
¹¹ Same as note 12, in Table 96.
¹² Same rate as Bosnia and Herzegovina.
¹³ Same as note 13, in Table 96.
¹⁴ 0.56 bushels seed per acre, and 9.51 per capita disappearance. Same rate as estimated for Croatia-Slavonia, by the Royal Hungarian Ministry of Agriculture (23, p. 19).
¹⁵ Same as note 13, in Table 96.
¹⁶ 0.55 bushel seed per acre; as estimated for Murje (22, p. 19).
¹⁷ Same as note 19, in Table 96.
¹⁸ 0.56 bushel seed per acre; and 15.26 bushels per capita as estimated for Voivodina (22, p. 19).
¹⁹ Same as note 22, in Table 96.
²⁰ Same rate as old Kingdom of Serbia.
²¹ See note 25, in Table 96.
²² 0.49 bushel per acre used 1921-1926, same as pre-war average.
²³ Net exports (+) and net imports (-) for calendar years following the crop year (17, 1925-1927).

Corn forms the staple diet of the peasants in the old Kingdom of Serbia; wheat and rye breads are eaten only on rare holidays. Among the other south Slavic peoples, corn is employed as human food to a less extent than among the Serbs but is eaten more or less, as in Bulgaria. The peasants of the northern Corn Belt in Voivodina, like the farmers of the Corn Belt in Iowa and Illinois, utilize corn chiefly for feeding hogs and other livestock.

An illustration of the wide fluctuations in the yields of corn in Yugoslavia is offered by the crop of 1922. The area planted was 4,722,000 acres, which was nearly equal to the pre-war average. The net production was only 87,482,000 bushels and some sections of the Kingdom were forced to import corn not only as a feeding

stuff for livestock but as human feed. Numbers of swine decreased sharply in 1922 and did not recover until the bumper crops of 1924 and 1925 again furnished supplies of cheap feed.

There were no considerable exports of corn from Yugoslavia until 1925 following the bumper crop of 147,020,000 bushels of the year before. Although the export price was relatively good (equivalent to 86 cents a bushel United States currency), the area under corn for the crop of 1926 fell off 293,000 acres, decreasing to 4,929,000 acres.

In 1926, the total exportation largely from the crop of the year before reached 35,223,000 bushels at an average export price equivalent to 67 cents, as indicated in Table 104.

TABLE 104.—*Corn: Exports and average export price per bushel, 1920-1926*

Year	Exports	Export price		Dinars per United States dollar	Year	Exports	Export price		Dinars per United States dollar
		Per kilogram	Per bushel				Per kilogram	Per bushel	
	<i>Short tons</i>	<i>Dinars</i>	<i>Dollars</i>			<i>Short tons</i>	<i>Dinars</i>	<i>Dollars</i>	
1920.....	120, 813	1.25	1.09	29.2	1924.....	270, 224	2.40	.77	78.9
1921.....	349, 716	1.00	.55	46.2	1925.....	1, 114, 726	2.00	.96	58.9
1922.....	12, 637	3.73	1.27	74.8	1926.....	986, 245	1.60	.67	56.6
1923.....	112, 609	3.25	.88	93.7					

From report of Consul Stewart E. McMillan, dated Mar. 28, 1927, Belgrade, Yugoslavia.

Net production in 1926 decreased to 131,836,000 and preliminary reports indicate a similar falling off in exports which were 7,211,000 bushels for the 6-month period ended June 30, 1927, as compared with 27,937,000 bushels for the corresponding period the previous year. These large corn crops are bound to have an influence upon animal production and it is probable that both swine and cattle numbers will increase somewhat in the corn belt.

Nearly half the corn exported from Yugoslavia in 1926 went down the Danube to Braila for reshipment to western Europe. The remainder was exported to Czechoslovakia and Italy in about equal quantities.

OTHER CEREALS

Other cereals grown in Yugoslavia are: Maslin and spelt for home consumption among the Christians and millet in Mohammedan communities. Buckwheat and rice are also grown. (Table 105.)

TABLE 105.—*Other cereals: Area and production in Yugoslavia, 1921-1925*

Cereal	1921		1922		1923		1924		1925	
	Acreage	Production	Acreage	Production	Acreage	Production	Acreage	Production	Acreage	Production
		<i>Bushels</i>		<i>Bushels</i>		<i>Bushels</i>		<i>Bushels</i>		<i>Bushels</i>
Maslin.....	100, 846	1, 176, 300	107, 442	940, 083	102, 374	1, 329, 827	99, 618	1, 216, 502	107, 780	1, 655, 271
Millet.....	86, 517	622, 260	87, 078	464, 017	85, 067	1, 001, 026	85, 586	1, 058, 468	77, 258	1, 113, 450
Spelt.....	46, 338	626, 836	52, 084	522, 986	66, 702	1, 007, 519	64, 594	884, 238	60, 485	816, 837
Buckwheat.....	71, 508	379, 944	81, 316	890, 498	14, 702	170, 462	11, 715	143, 662	12, 446	190, 441
		<i>Pounds</i>		<i>Pounds</i>		<i>Pounds</i>		<i>Pounds</i>		<i>Pounds</i>
Rice.....	4, 512	5, 530, 239	5, 117	4, 764, 361	5, 070	5, 468, 951	3, 724	4, 396, 854	3, 064	2, 712, 961

1921-1925, compiled from (46, 1922-21, 1924-23, 1925-24).

POTATOES

Before the World War the territories now comprising Yugoslavia planted on the average 455,000 acres to potatoes, of which about 199,000 acres were in Croatia and Slavonia, 87,000 acres in Slovenia, and 51,000 acres in Voivodina. That is to say, about 74 per cent of the potato acreage in Yugoslavia was found north of the Danube and the Sava Rivers. Potatoes are not employed to any considerable extent in the manufacture of alcohol in Yugoslavia, as is the case in Czechoslovakia, because yields per acre are low and cost of production high except in certain restricted districts where soil and climatic conditions are particularly favorable. As a rule, beet-sugar molasses, barley, plums, and prunes are employed instead of potatoes for the manufacture of alcohol in the south.

In the old Kingdom of Serbia the principal diet of the rural population is bread made of corn meal and occasionally of wheat flour, together with raw onions and bacon or fat side pork. This diet is sometimes varied with cheese and with meat cooked with potatoes and paprika; but, on the whole, very small quantities of potatoes are consumed as human food.

It is probable that in the old Kingdom of Serbia, in south Serbia, and in Montenegro potatoes were rarely employed by the distilleries. Corn is utilized almost universally in pork production south of the Danube and the Sava Rivers, whereas potatoes are seldom if ever fed to livestock. The use of potatoes for all purposes in these districts is very restricted, for disappearance averages less than one-half bushel per capita annually. (Table 106.)

This is in sharp contrast to conditions in northern Yugoslavia where, during 1909-1913, potato disappearance averaged from 4.81 bushels in Voivodina to 5.8 bushels in Slovenia. According to data assembled by the Austrian Ministry of Agriculture, the quantity of potatoes employed for feeding livestock and utilized in the industries in former Hungarian territories was equivalent to 30 per cent of the net production. Net production in these districts is considered to be gross production minus seed and minus an additional 10 per cent for decay and other losses. Before the World War, the livestock and industrial requirement of Croatia-Slavonia was placed at 4,627,000 bushels and the per capita supply available for human food was estimated at 1.03 quintals or 3.7845 bushels equivalent to a total of 10,338,000 bushels annually. Thus, there appears to have been a small surplus available for export, though this is probably a purely statistical balance.

Bosnia-Herzegovina during 1909-1912 imported an average of 121,000 bushels of potatoes. This would indicate a total average supply of 990,000 bushels available for all purposes. If, as the Austrian Ministry of Agriculture estimates, 30 per cent of the net production, or 261,000 bushels, was fed to livestock or utilized industrially, then about 729,000 bushels, or 0.377 bushel per capita, were consumed annually as human food.

This contrast between potato disappearance in the northern Districts and the disappearance south of the Danube and the Sava Rivers is very marked but probably represents with fair accuracy the actual average conditions that existed before the World War.

TABLE 106.—Potatoes: Statistical balance of Yugoslavia, pre-war average, and annual, 1921 to 1926

District	Year	Acreage	Seed	Production		Disappearance		Surplus (+) or deficit (-)
				Gross	Net ¹	Statistical	Per capita ²	
		1,000 acres	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	Bushels	1,000 bushels
Pre-war period:								
Old Kingdom of Serbia ³	1909-1911	28	4 723	1,721	826	850	0.20	4 -24
South Serbia ⁴	1909-1911	12	4 310	709	328	466	1.28	4 -134
Montenegro ⁵	1909-1913	6	4 155	258	77	77	.32	(⁶)
Bosnia-Herzegovina ¹⁰	1909-1912	60	1,771	2,933	809	900	.51	11 -121
Dalmatia ¹²	1909-1913	12	4 310	1,419	967	322	11 .51	+645
Croatia, Slavonia, Medjmurje, Krk, and Kastav ¹⁴	1909-1913	199	10 5,138	22,847	15,424	16 14,965	5.48	+450
Slovenia and Prekmurje ¹⁷	1909-1913	87	4 2,246	10,418	7,130	10 6,165	6.80	+965
Voivodina ¹⁹	1909-1913	51	10 1,305	6,597	4,632	10 6,510	4.81	-1,878
Ceded by Bulgaria ²⁰	1909-1912	(¹¹)	4 3	6	3	3	.04	(⁷)
Total.....		455	11,961	46,908	30,256	30,348	2.41	-92
Post-war period ²²								
	1921	516	22 13,566	26,184	10,000	9,670	.80	4 +330
	1922	532	13,986	31,100	14,004	13,844	1.14	4 +160
	1923	527	13,855	42,638	24,519	24,314	1.97	4 +205
	1924	538	14,144	37,753	19,834	19,545	1.56	4 +259
	1925	570	14,985	44,965	25,484	25,311	2.00	4 +173
Average, 1921-1925.....		537	14,107	36,528	18,768	18,537	1.50	+231
	1926	548	14,407	34,539	20,132	20,229	1.58	4 -97

¹ 10 per cent of gross production also deducted from each district for decay and other losses.

² See Table 96 for populations.

³ See note 2, in Table 96.

⁴ Estimated at same rate as Croatia and Slavonia, etc. See note 15.

⁵ Net imports indicated by (-) and net exports by (+), of potatoes for calendar years (17, 1909-21, 1924-27).

⁶ See note 5 in Table 96.

⁷ Midway between Bosnia-Herzegovina and old Bulgaria (0.04).

⁸ See note 8 in Table 96.

⁹ It is assumed that the total net production was consumed.

¹⁰ Acreage, seed and production (27, 1922, p. 664).

¹¹ Net imports for 1909-1912. 1911-1912 (5 Jahrg. 14-15). 1913 (16, p. 53).

¹² See note 12 table 96.

¹³ Estimated to be the same as Bosnia-Herzegovina.

¹⁴ See note 15 in Table 96.

¹⁵ At same rate as estimated by the Royal Hungarian Ministry of Agriculture for Croatia and Slavonia, 25.82 bushels seed per acre (22, p. 27).

¹⁶ Per capita supply of potatoes (1.03 metric quintals) in Croatia and Slavonia, as given in (27, 1922, p. 565), multiplied by population, plus 30 per cent of the net production to cover feed for livestock and industrial purposes.

¹⁷ See note 13 in Table 96.

¹⁸ See note 19 in Table 96.

¹⁹ Same rate as estimated for Voivodina in (22, p. 27) 25.59 bushels seed per acre.

²⁰ See note 22 in Table 96.

²¹ Only 118 acres.

²² Acreage and production 1921-1926 from official records of U. S. Department of Agriculture Bureau of Agricultural Economics.

²³ 26.29 bushels seed per acre, same as pre-war average.

The 1909-1913 net production of potatoes in the territories comprising the present Kingdom of Yugoslavia averaged about 30,256,000 bushels annually. Disappearance was approximately 30,348,000 bushels, indicating a small deficit to be imported.

In recent years the area planted to potatoes has increased until, in 1925, it reached 570,000 acres, as compared with 455,000 acres before the World War. But, because of low yields per acre, in no post-war year has production equaled the pre-war average. This decrease in yields is accounted for by unfavorable climatic conditions and by the fact that the quality of the seed potatoes employed since the war has been of low grade. The pre-war yields of potatoes in the former Hungarian and Austrian territories were maintained by the periodic renewal of the seed, improved varieties being imported

from Poland and Germany. Since the World War this practice has fallen into disuse.

Disappearance of potatoes in Yugoslavia since the World War has averaged about 1.5 bushels per capita—relatively much less than the estimated pre-war average of 2.41 bushels. Thus, although production has been less than pre-war each year, a small surplus has been available for export.

It is probable that north of the Danube and the Sava corn has replaced the customary pre-war potato ration fed to livestock to a very considerable degree.

It is also probable, since present potato production is measured largely by the demand for human food, that post-war potato acreages will continue somewhat higher than they were before the World War unless improved varieties of seed are imported to increase the yields considerably above present levels.

SUGAR BEETS AND BEET SUGAR

The beet-sugar industry of Yugoslavia is built around eight factories and refineries listed in Table 107. Two of these are located in the old Kingdom of Serbia, at Tchoupria and Belgrade. There is one factory at Usora in Bosnia. The other five plants are located in Croatia-Slavonia and Voivodina. All but the first two factories were formerly part of the closely organized Austro-Hungarian sugar combine.

TABLE 107.—Acreage and production of sugar beets utilized by factories and production of raw sugar in Yugoslavia, 1913-14

District and factory	Acreage sown	Beets worked	Raw sugar
Bosnia: Usora.....	14,371	Short tons 29,196	Short tons 5,225
Serbia:			
Tchoupria.....	2,503	21,296	2,689
Belgrade.....	5,009	33,433	4,222
Croatia-Slavonia: Osijek.....	7,252	140,543	14,462
Voivodina:			
Veliki Beckerek.....	10,596	165,215	21,048
Vrbas.....	11,861	373,864	44,435
Trsvenska.....	12,503		
Velye.....	12,987		
Total.....	67,082	763,547	92,111

All acreage except those noted, beets worked and sugar production for Bosnia and Serbia, from report of Vice Consul H. R. Brown, Apr. 3, 1924.

Beets worked and sugar production for Slavonia and Voivodina (*ib.*, [Ed.] 29, p. 130).

¹ Estimated to be the same proportion to sugar beets worked, as the average area for 1920-1924 is to the beets worked during that period, as reported in above consular report.

² Converted from refined to raw on the basis, 1 ton of refined sugar is equivalent to 1.14 tons of raw sugar.

³ Estimated to be produced at the same rate per ton of beets as in Tchoupria.

⁴ Owned by the State.

⁵ Estimated to be the same proportion to sugar beets worked as in Trsvenska given separately in the above consular report.

Some of the sugar factories in Yugoslavia are reported to be financed from Budapest, Vienna, Berlin, and London. The operating personnel of certain factories comprises a large number of Czechs, and the whole industry is reported to be closely associated with that of the three northern countries—Austria, Hungary, and Czechoslovakia.

For several years before the World War a single factory, operating at Belgrade, had produced sugar from domestically grown beets and had refined raw sugar imported from Hungary. In 1911 the Serbian-Czech factory at Tchoupria entered the production stage and Serbia became a sugar-exporting country, sending 3 carloads ⁷⁶/₁₀₀ to Bulgaria and 120 carloads to Turkey. The factory in Bosnia did not produce enough sugar to meet the requirements of Bosnia-Herzegovina. During the 4-year period ended 1912 an average of 34 carloads of refined sugar were exported, probably to Montenegro and southern Dalamatia, whereas the equivalent of 850 carloads of refined sugar were imported from the Czech factories in Bohemia, Moravia, and Silesia.

There are no separate records of the pre-war relations of the other factories to the sugar requirements of the districts in which they are now located.

From the beginning of their operations, the three southern factories had developed beet growing among the peasants whereas in the northern districts, as generally throughout the old Hungarian Kingdom, the growing of sugar beets had been a speciality of the large estates. The details of the acreage to be planted and the compensation to be received were matters arranged between the management of the factories and a few large growers, who were often directly or indirectly interested in financing the manufacturing end of the industry. The owners of large estates in the territories now comprising northern Yugoslavia were chiefly Hungarians of the upper class, who either abandoned their properties and fled to Budapest after the treaty of Trianon became effective or were deprived of a large part of their estates through expropriation, these farm lands passing into the hands of a large number of small farmers.

The beet supply of the five northern factories was thus seriously affected by the land reform. Instead of making arrangements with a few large producers, as was formerly the practice, it was now necessary to enter into contract with a large number of small growers, to many of whom sugar-beet production was a new business. Furthermore, after the new frontiers were finally established it was found that a considerable part of the area that had supplied beets to these northern factories before the World War was now in residual Hungary and Greater Rumania. Customs barriers thus shut off more than half of the former beet supply.

Before the World War, as indicated in Table 107, the eight factories now in Yugoslavia had worked up during the season 1913-14, 763,547 short tons of beets which had been produced upon 67,082 acres. On the other hand, the annual pre-war area under beets in the territories south and west of the present boundary lines of Hungary and Rumania averaged only 35,162 acres, upon which were produced 380,540 short tons of beets, equivalent to 45,904 short tons of raw sugar. Thus, about 383,000 short tons, or more than half, of the beets worked in the factories of Croatia-Slavonia and Voivodina had, before the World War, been grown on present Hungarian and Rumanian territories.

⁷⁶ One carload is 10 metric tons, or 22,046 pounds.

TABLE 108.—*Acreeage and production of sugar beets: Production and foreign trade of raw sugar in Yugoslavia, average 1909-1913, and annual, 1920-21 to 1926-27*

Year	Sugar beets		Raw sugar	
	Acreeage	Production	Production	Imports (-) or exports (+) ¹
Average, 1909-1913 ²	35, 162	Short tons 380, 540	Short tons 102, 111	(³)
1920-21.....	38, 758	225, 505	24, 263	-39, 685
1921-22.....	41, 387	207, 796	27, 232	-33, 679
1922-23.....	47, 520	344, 677	36, 933	-19, 112
1923-24.....	66, 680	411, 459	46, 015	-13, 887
1924-25.....	119, 241	1, 171, 862	140, 414	+11, 317
1925-26.....	81, 820	562, 964	74, 700	-1, 582
1926-27.....	86, 000	652, 000	79, 777	(⁴)

1920-21 to 1925-26 acreeage and production, from official records of the United States Department of Agriculture, Bureau of Agricultural Economics. Imports 1920-1923, from consular report of K. S. Patton, Oct. 27, 1924; 1924 exports, from consular report of K. S. Patton, Aug. 31, 1925; 1926, from consular report of K. S. Patton Feb. 28, 1927.

¹ Calendar years converted to raw from refined on the basis, 1.14 tons raw=1 ton refined.
² Estimate for pre-war 1909-1911, for old Kingdom of Serbia and south Serbia; 1911-1913, for Bosnia-Herzegovina and 1909-1912 for territory ceded by Bulgaria. See Table 96 for sources.
³ Total sugar produced during the year 1913-14 in present Yugoslavia from beets that were grown in present Yugoslavian territory as well as on territories that remained in other countries. (Table 107.) The estimated sugar production from beets grown on present Yugoslavian territory during 1909-1913 would amount to 45,904 short tons, assuming the sugar produced per ton of beets to be the same as in Table 107.
⁴ Not available.
⁵ Communication from International Institute of Agriculture.
⁶ (18, [p] 18).

The first difficulty of the sugar industry of Yugoslavia after the World War was to obtain acreeage. After 1921 the acreeage each year was greater than the 1909-1913 area within Yugoslavia itself, but it was not until the season of 1924-25 that the factories succeeded in contracting for as large an acreeage as they had had in 1913-14. (Table 108.)

The peasants were not equipped with the requisite machinery for the cultivation of beets, and hand labor did not give the returns that were obtainable from some other crops, particularly corn. It has been stated that many peasants would not plant beets two years in succession. The manufacturers, who in the meantime had organized themselves into the Union of Sugar Factories distributed books and pamphlets that described methods of cultivation. They, also, conducted propaganda setting forth the advantages of beet cultivation, loaned machinery free to the peasants, supplied seed (in many cases free), and made cash advances to growers. All these inducements resulted, in 1924, in an acreeage far above pre-war, 119,241 acres being planted. The season was favorable, and 1,171,862 short tons of beets were produced.

This large acreeage and production of the year 1924 followed a conference of the sugar-beet growers and the manufacturers, at which a committee of four members from each group was appointed to act as advisers to the Ministry of Agriculture and Waters on questions relating to the industry. This committee fixed a minimum price of 30 dinars per 220 pounds of beets (equivalent to 16.3 cents⁷⁶ per 100 pounds) for the crop of 1924. This was an appreciable advance over the price paid for the 1923 crop of 25 dinars per 220 pounds or 13.1

⁷⁶ During first three months of 1924 the value of 1 dinar averaged 1.1967 cents.

cents⁷⁷ per 100 pounds. This price for the 1924 crop is said to have been fixed on the basis of the world market price for sugar at the beginning of 1924 of 30 English pounds sterling per metric ton or \$5.83⁷⁸ per 100 pounds. By the time the sugar season opened the world price of sugar had fallen to 16 to 17 pounds sterling per metric ton (equivalent to \$3.26 to \$3.46 per 100 pounds).⁷⁹ This created serious difficulties. The factories delayed the acceptance of beets, and the beets lost in weight. The factories were not prompt in making payments.

As a result the sugar growers organized themselves into the Federation of Sugar Beet Growers in November, 1924, with the purpose of purchasing the two factories owned by the State and operating them cooperatively. Finally wealthy growers subscribed several million dinars, and work has been begun on the construction of two small factories, one at Crepaya and the other at Sivac, both in Voivodina. The daily capacities of these plants are 110 and 165 short tons of beets respectively. They will probably not produce over 2.5 per cent of the normal sugar production of the eight factories in operation. These factories can not begin operations for some time after the closing of this report, and then it is expected that their influence on the sugar situation will be small.

Although a large exportable surplus of sugar was produced in the season 1924-25 the quantity of sugar actually exported during 1925 was small, and it is estimated that the factories went into the campaigns of 1925-26 with about a year's supply of sugar on hand. On account of the low price previously received for beets many peasants had abandoned beet cultivation, and the total acreage was cut almost in half. The year was marked by conflicts between beet growers and the factories which finally resulted in more nearly satisfactory prices to the growers. The sugar-beet area for 1926-27 reached 86,000 acres. According to the report from the International Institute of Agriculture 79,777 short tons of raw sugar were produced.

The sugar cartel estimated that the carry-over at the end of 1925-26 was equivalent to 8,453 short tons of raw sugar. They estimated consumption for the year at 105,407 short tons (raw) of which 1,582 short tons (raw) were imported.

The estimated capacity of the present equipment of the sugar factories in Yugoslavia is about 165,000 short tons of raw sugar annually. It is thus possible, after adjustments between growers and manufacturers have been reached, to produce enough sugar in Yugoslavia to meet domestic requirements and to give an exportable surplus of 80,000 to 90,000 short tons per year.

Beet pulp is utilized locally as a cattle feed. About 10,000 short tons of dried pulp were shipped to the United States in 1925. Molasses, as well as the beets themselves, is used in the manufacture of alcohol.

TOBACCO

The southeastern portion of the District of south Serbia, annexed by the old Kingdom of Serbia at the close of the Balkan War in 1913, was formerly a portion of that part of Macedonia in the Ottoman

⁷⁷ During the last three months of 1923 the value of 1 dinar averaged 1.1533 cents.

⁷⁸ During the first three months of 1924 the value of 1 English pound averaged \$4.28581.

⁷⁹ The average value of 1 English pound sterling during October, 1924, was \$4.487.

Empire that was devoted to the cultivation of Turkish tobacco.⁸⁰ The best grades of tobacco produced in Serbian Macedonia classify as "basma"—that is, the small-leaf, fined-veined cigarette tobacco. Similar tobacco is also grown in the old Kingdom of Serbia, in Herzegovina, in parts of Montenegro, and in south Dalmatia, although the quality of the tobaccos grown in these latter Districts will not average as high as that grown in Serbian Macedonia, as they are chiefly of the larger, coarser sorts that produce leaves of the secondary commercial grade called "bachi bali."

The tobaccos grown in northern Dalmatia, in Croatia, Slavonia, and Voivodina are of the large-leaf varieties.

The old Kingdom of Serbia planted an annual average of 5,930 acres to tobacco during 1909-1911, producing 4,288,000 pounds of leaf, from which 811,000 pounds were exported. On the other hand, 297,000 pounds of prepared tobacco, including cigars and snuff, were imported each year. This indicates a pre-war per capita consumption of 1.30 pounds of tobacco annually.

In Bosnia-Herzegovina the pre-war area under tobacco was approximately 7,181 acres, from which about 8,818,000 pounds of leaf were obtained. The net exportation of leaf tobacco during 1909-1912 averaged 1,686,000 pounds, as contrasted with a net importation of cigars and other forms of manufactured tobacco averaging 106,000 pounds. This would indicate an average annual disappearance equivalent to 3.75 pounds of tobacco per capita.

The heaviest producing tobacco region was south Serbia. The average pre-war area under tobacco in this region has been estimated to be 16,407 acres. Annual production has been approximated at 11,649,000 pounds. Assuming per capita disappearance to be midway between that of the old Kingdom of Serbia and that of Bulgaria, or about 1.75 pounds, about 8,736,000 pounds of tobacco would have been available for export each year.

Dalmatia produced a second-rate tobacco in large quantity shipping about 5,000,000 pounds annually to the Austrian tobacco monopoly.

No tobacco was grown in Slovenia and only a little in Croatia-Slavonia, but the tobacco monopolies of Austria and Hungary maintained factories in all of these Districts. Disappearance of all classes of tobacco, including cigars, cigarettes, pipe tobacco, and snuff, averaged between 2.54 and 2.67 pounds per capita annually. About 9,600,000 pounds of leaf and manufactured tobacco was shipped to these districts each year.

Voivodina consumed about 3,000,000 pounds of tobacco per year and shipped (net) about 620,000 pounds annually to other Districts. The quality of tobacco grown in the north was not first-class as compared with the finer grades produced in south Serbia or Herzegovina.

Taken as a whole, the territories now comprised within the Kingdom of Yugoslavia planted about an average of 40,475 acres of tobacco annually. In Table 109, production averaged 37,615,000 pounds. Disappearance was approximately 29,252,000 pounds. This released about 8,363,000 pounds per year for exportation to other countries.

⁸⁰ Yugoslav tobaccos originated from Smyrna. They are now known by the names of the Districts in which they grow—Radovishta I, II, and Extra; Kochane—Zrnovatz; Malash; Prilep—Djumay-Bale; Sketche I, Sketche II; Skoplye—Crna-Gora, Blatiya, Karshi-Jaka; Komanovo—Djuma; Vranve—Brzak, and Gushan; Prosechan, Kurilovatz, Bainovatz, Bosnian, Herzegovinian, Banat, Segekin—Ruzha, Tisza, Dalmatian, etc. (3, p. 165).

TABLE 109.—*Tobacco: Statistical balance of Yugoslavia, pre-war average, and annual, 1921-1926*

District	Year	Acreage	Production	Disappearance		Surplus (+) or deficit (-)
				Statistical	Per capita	
Pre-war period:			1,000 pounds	1,000 pounds	Pounds	1,000 pounds
Old Kingdom of Serbia.....	1909-1911	15,930	14,288	3,774	1.30	+ 1,514
South Serbia.....		116,407	11,649	2,913	1.75	+8,736
Montenegro.....		1,768	1,085	894	3.75	+191
Bosnia-Herzegovina.....		7,181	8,818	7,238	3.75	+ 1,580
Dalmatia.....	1909-1913	104,158	6,559	1,124	1.78	+6,433
Croatia, Slavonia, Medjmurje, Krk, and Kastav.....	1909-1913	13,287	1,209	6,939	2.54	-6,730
Slovenia and Prekmurje.....		(14)	(14)	2,840	2.67	-2,840
Voivodina.....	1909-1913	104,601	4,056	3,436	2.54	+620
Ceded by Bulgaria.....	1909-1912	17,143	1,951	94	1.30	+857
Total.....		40,475	37,615	29,252	2.32	+8,363
Postwar period ¹⁰						
	1921	35,523	28,046			
	1922	31,419	20,704	26,455	2.17	
	1923	53,606	38,231	19,020	1.54	+19,211
	1924	87,051	78,671	18,974	1.52	+59,097
	1925	36,798	26,590			
	1926	36,000	32,682			

¹ Acreage and production (45).

² 811,000 pounds net exports of unmanufactured tobacco, 1909-1911 (42), and 297,000 pounds imports of manufactured tobacco (45).

³ Estimated to be the same proportion to old Serbia as 1920, as given in (46, 1921-20, p. 52).

⁴ Estimated by assuming the yield per acre to be midway between that for old Kingdom of Serbia and South Bulgaria, 710 pounds per acre.

⁵ Estimated to be midway between the per capita consumption of Bulgaria (2.20 pounds) and old Kingdom of Serbia.

⁶ Assumed to be the same rate as Bosnia-Herzegovina.

⁷ Acreage estimated by assuming the yield per acre to be equal to that in South Serbia.

⁸ From translation of excerpt from Trgovinski Glasnik, from report of S. W. Carroll, Dec. 31, 1919. Reported as pre-war. No year specified.

⁹ 1,686,000 pounds net exports of leaf tobacco and 106,000 pounds net imports of manufactured tobacco, 1909-1912 for Bosnia-Herzegovina (5, Jahrg. 13-15).

¹⁰ Dalmatia acreage and production (1). An estimate of territory ceded to Italy has been subtracted.

¹¹ Per capita consumption for total Dalmatia 1911 calculated from (2, Jahrg. 31), by dividing the population for 1911 into total distribution of tobacco for that year.

¹² Acreage and production for Croatia-Slavonia (15). No tobacco produced in other areas.

¹³ Assumed to be the same as that for total Hungary, as given in (15).

¹⁴ No tobacco produced.

¹⁵ Per capita consumption estimated to be equal to that for Kraine in 1911, as calculated from (2, Jahrg. 31), by dividing 1911 population into total distribution of tobacco for that year.

¹⁶ Acreage taken from same source as note 12. Production estimated by assuming the yield per acre for each small division of Voivodina to be the same as that given for tobacco produced according to the records of the tobacco monopoly given in the same source as note 10.

¹⁷ Calculated from (9).

¹⁸ Assumed to be at same rate as old Kingdom of Serbia.

¹⁹ Acreage and production 1921-1925 (46, 1924-25, p. 35; 1925-24, p. 35); 1926 (18, [v.] 18).

²⁰ From consular report of K. S. Patton, dated Apr. 8, 1925.

²¹ From consular report of K. S. Patton, dated May 11, 1925.

A State tobacco monopoly was established in the old Kingdom of Serbia in 1890 under the supervision of the Ministry of Finance. The pre-war manufacture and sale of tobacco in the other Districts except south Serbia and Montenegro was controlled by the tobacco monopolies of Austria and Hungary. In 1920 the old Serbian law was made uniformly applicable to the entire Kingdom of Yugoslavia. The present management of the tobacco monopoly controls the planting, the harvesting, the purchase, the manufacture, the sale, the importation, and the exportation of tobacco and tobacco products.

Tobacco acreage in Yugoslavia remained below the pre-war estimated average during 1921 and 1922, and production was low, but it is reported that about 320 carloads²¹ of tobacco were exported in 1922. In 1923 both acreage and production exceeded the pre-war

²¹ One carload is equal to 10 metric tons, or 22,046 pounds.

estimated averages. Production reached 38,231,000 pounds, from which the management of the tobacco monopoly, according to an unofficial report, prepared 500 carloads for exportation, but since Greece, Turkey, and Bulgaria also produced large crops of tobacco in that year, the Yugoslavian monopoly was unable to market this surplus to advantage in foreign countries.

The following year (1924), under permits from the tobacco monopoly, 87,051 acres were planted, from which 78,671,000 pounds of leaf were obtained. This bumper crop, twice that of the preceding year, overwhelmed the sales capacity of the monopoly, because Bulgaria, Greece, and Turkey again produced large crops.

This crisis was followed by a reduction in the number of permits granted and a more careful selection of Districts in which tobacco was permitted to be grown. Only the Districts that produce the highest quality of tobacco were allowed to grow the 1925 crop. No permits were issued in Slovenia, Slavonia or northern Dalmatia, or in the Banyaluka, Zvornik, and Bjelina Districts of Bosnia or in the Prozor District of Herzegovina. As a consequence the areas planted in 1925 and 1926 totaled about 36,000 acres from which 26,590,000 pounds of leaf were produced in the former year and 32,682,000 pounds in the latter.

Under 1924 conditions, the factories of Yugoslavia produced monthly 235,000,000 cigarettes, 2,500,000 cigars, 1,380,000 pounds of cut tobacco, and 175,000 pounds of chewing tobacco.

It is reported that in 1924 the consumption of cigarettes reached 2,681,531,689,⁸² cigars 43,683,812, of cut tobacco 12,261,000 pounds, of snuff and chewing tobacco 317,000 pounds, and 3,000 pounds of tobacco extract were sold. Thus, tobacco consumption for 1924 has been placed at approximately 18,974,000 pounds, far below the pre-war estimate.

Large stocks of tobacco accumulated in Yugoslavia during the years of the flurry of 1923 and 1924. These stocks are being disposed of by negotiations with tobacco monopolies of other European countries. Poland is reported to have taken several consignments.

It is probable that the 1926 acreage represents the level about which future tobacco acreage in Yugoslavia will fluctuate.

FODDER AND FORAGE CROPS

Between 1922 and 1925 there was an appreciable increase in the acreage of natural meadows as well as in pasture lands. (Table 110.) Cultivated forage plants totaled somewhat less at the end of the 4-year period ended 1925 than at the beginning.

TABLE 110.—Forage and fodder plants: Acreage and production in Yugoslavia, 1922-1925

Crop	Acreage				Production			
	1922		1923		1924		1925	
	Acres	Short tons	Acres	Short tons	Acres	Short tons	Acres	Short tons
Forage beets.....	46,890	44,325	43,307	48,790	213,717	225,667	249,408	279,695
Alfalfa.....	134,289	149,300	149,112	150,963	185,893	217,857	219,246	253,440
Clover.....	263,479	268,128	278,237	266,342	299,658	396,967	307,882	398,099
Turnips.....	53,065	9,452	8,540	7,971	154,800	30,071	22,232	20,359
Vetches.....	35,303	37,866	42,887	93,611	19,640	14,413	20,118	48,577
Other forage crops.....	144,487	170,020	138,376	96,858	.....	.....	.....	.....
Natural meadows.....	3,865,343	3,972,263	3,942,972	4,054,429	3,554,506	3,384,430	3,684,737	4,158,011
Pastures.....	6,519,894	6,660,593	6,947,118	6,816,819	.....	.....	.....	.....

Compiled from (17, 1923, 1924-1926).

⁸² A cigarette weighs 1 gram and a cigar 5 grams.

COTTON

A very small quantity of low-grade cotton is produced in the southern counties of Yugoslavia for export to Greece.

LIVESTOCK

When the Slavic clans poured into the Balkan peninsula from the northeast, the domestic animals of the native populations were of types similar to those of the Italian Peninsula, or were descended from the wild European cattle. Throughout their migrations from the plains of Russia these Slavic clans, which have since developed into the various branches of the present Nation of the Yugoslavs, clung tenaciously to the local races of household animals that had constituted their flocks and herds in the mother country (eastern Galicia). These animals were brought with them when the Slavs pressed southward by the Magyars, made their final stand in the ranges of the Balkan Mountains and the foothills of the Alps.

Remnants of the ancient Roman races of livestock are still to be found in Dalmatia and the coast counties of Croatia. To the north the Slavic steppe animals have given place to those of tartar origin brought by the Magyars from the south Volga regions, and in the south-east Turkish horses have left their impress.

During the last few centuries these Slavic peoples, with the exception of the Montenegrans, were under the domination of different foreign influences. The Serbs, including those in Bosnia-Herzegovina, and south Serbia were under the Turks. The Croats, the Slavonians, and the Serbs of Voivodina were under the Hungarians. The Slovenes and Dalmatians were under the Austrians, who a few years before the World War also wrested the control of Bosnia-Herzegovina from the Turks.

In most of the countries that were brought into subjection to the Turks, horse breeding was fostered by the Ottoman Government but for the most part the Turks left the fierce, warlike Serbs to their own devices. In the mountain districts, where the Serbian clan organization was maintained throughout the centuries of Turkish domination, the breeds of farm animals were identical with those brought in by the Serbs, or were mixtures of these with the breeds indigenous to the regions when the Serbs arrived. As to quality, no change had occurred for centuries.

After the warring clans had succeeded, in the early part of the nineteenth century, in establishing the governmental integrity of the old Kingdom of Serbia, the central Serbian Government undertook the improvement of horses for military purposes. In the recent years just preceding the World War, attempts were made to improve other classes of livestock. Under Hungarian tutelage the horses, cattle, swine, and to a lesser extent the sheep, north of the Danube and the Sava, were improved by the introduction of superior breeds of farm animals from central and western Europe. Although less systematic and thorough than the Hungarians, the Austrians stimulated the animal industry of Slovenia, but little or nothing was done in Bosnia-Herzegovina.

In the highlands of Montenegro (Black Mountain) sheep and goat herding is the main occupation of the people, who are outnumbered by their farm animals. In the precipitous coastal regions of Dalmatia

stock raising is chiefly confined to mountain sheep, goats, mules, and donkeys. Most of the mules and donkeys of Yugoslavia are found in the coast District of Dalmatia, though they are also important beasts of burden in the mountainous regions of Bosnia-Herzegovina and in south Serbia. In both south Serbia and the old Kingdom of Serbia sheep and goat herding have been characteristic occupations of the Zadrugas for centuries. Serbia, however, has been more famed for its pigs, and for the fine flavor of the pork and the quality of the fat produced by the hogs that are fed on the beechnuts and acorns of its forests. Horse breeding has been a leading large-estate industry of Batchka (northwest Voivodina)—a region particularly well adapted to the production of oats. Cattle are raised in all parts of Yugoslavia as work animals but very little attention has been given to their breeding except in the northern Districts.

HORSES

The breeds of horses found in Yugoslavia are most varied in origin and characteristics. In the mountains of Slovenia are found the heavy draft horse of early Roman and Spanish descent similar to the Norik of Austria. In the Slovenian lowlands, Croatia, Slavonia, and Voivodina the peasant horses are of the warm-blooded Tartar type similar to those of Hungary. Along the coast of Dalmatia vestiges of Roman types are found mingled with oriental breeds. In Bosnia-Herzegovina and Montenegro the horses are of the pack-animal type—small, nervous, warm-blooded. The native horses of the Serbs are of the Russian-steppe type, descended from the sturdy, ponylike animals that carried the Slavic warriors on their raids southward. Although small, these horses are wiry and resistant to cold, diseases, and hard usage. They constitute excellent foundation stock for crossing with the Norman horses from France, or with the Turkish and Arabian full bloods from the south, or with English and other breeds from the north.

Seven horse-breeding stations in Yugoslavia are maintained by the Government. These contain Norman, English, and Arabian sires for developing cavalry remounts and light draft horses. There are also Belgians for building up heavy-draft breeds.

The chief improved breeds of horses in Yugoslavia are the Posavaka, Lipican, Nonius, Hungarian, and Belgian. These are all crossbred strains of native stock and southern or northern blooded sires. Except for a few estates that specialize in purebred stock, the horse industry among the south Slavs consists of building up the native breeds.

Taking into consideration the enormous destruction of life and property in all parts of Yugoslavia occupied by the armies of the Central Powers during the World War, the relative status of the horse situation in 1921, as indicated in Table 111, is remarkable.

Between 1921 and 1925 the number of horses in Yugoslavia increased from 1,069,000 to 1,106,000, or to 93.9 per cent of the total pre-war number of horses estimated to have been in the territories now constituting the Kingdom of Yugoslavia. These figures are not comparable, since those for 1921 include all horses, whereas the data for 1922 to 1925, inclusive, include only horses used on farms and do not account for horses in cities, or those employed in the industries, or those in the Army. •

TABLE 111.—Horses: Number in Yugoslavia, pre-war period, and 1921-1925, with exports for 1921-1926

District and year	Horses			Exports	
	Total	Per 1,000 acres	Per 1,000 population	Horses	Colts
Pre-war period:					
1910—	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Old Kingdom of Serbia.....	1 152,523	13.0	52.4	22,228	8,365
Ceded by Bulgaria.....	2 7,810				
South Serbia.....	3 71,503	6.3	42.9	.....	.....
Montenegro.....	4 10,116	4.2	42.4	.....	.....
Bosnia-Herzegovina.....	5 221,981	17.5	114.9	.....	.....
Dalmatia.....	6 25,910	8.2	41.0	.....	.....
1910-1911—					
Croatia, Slavonia, Medjmurje, Krk, and					
Kastav.....	7 352,510	32.5	129.0	.....	.....
Slovenia and Prekmurje.....	8 50,603	12.6	47.6	.....	.....
1911—Voivodina.....	9 284,615	58.5	210.4	.....	.....
Total.....	1,177,571	19.2	93.5	.....	.....
Post-war period:					
1921.....	10 1,069,000	17.4	89.0	11 22,228	.....
1922.....	12 1,044,000	17.0	85.7	13 26,700	8,365
1923.....	14 1,063,000	17.3	86.2	15 52,479	6,124
1924.....	16 1,054,000	17.1	84.4	17 55,193	1,282
1925.....	18 1,106,000	18.0	87.4	19 32,767	140
1926.....	.....	.....	.....	20 36,574	265

1 (17, 1909-21.)

2 (10.)

3 Estimated to be the same as 1921.

4 (6, p. VIII.)

5 Calculated from (2, Jahrg. 31, p. 90).

6 1911 for Croatia and Slavonia, calculated from data in (15, 1912, p. 137); 1911 for Medjmurje, calculated from Zala figures given in (16, 1912, p. 131); 1910 for Krk and Kastav, calculated from coast-land figures given in (2, Jahrg. 31, p. 90).

7 1910 for Slovenia, calculated from Stiermark, Karnten and Krain figures, given in (2, Jahrg. 31, p. 90); 1911 for Prekmurje, calculated from Zala and Vas figures, given in (16, 1912, p. 131).

8 Calculated from data in (15, 1912, p. 137).

9 (22, p. 96). In those parts of Dalmatia occupied by Italians the enumeration of domestic animals on January 31, 1925, was impossible.

10 1921 exports from Commerce Reports (26, p. 439).

11 Horses employed in agriculture (17, 1925-26).

12 1922 exports, from reports of Consul K. S. Patton dated Aug. 18, 1924.

13 1923 and 1924 exports from reports of Consul K. S. Patton dated Mar. 30, 1925.

14 1925 and 1926 exports, from report of Consul Stewart E. McMillan, dated Mar. 23, 1927.

INTERNATIONAL TRADE IN HORSES

The old Kingdom of Serbia imported 175 horses from Austria-Hungary in 1910. In that year Bosnia and Herzegovina exported (net) 5,780 horses. It is probable that before the World War Croatia, Slavonia, and Voivodina produced a surplus of horses which was absorbed by the armies of Austria and Hungary.

Since the World War Yugoslavia has exported from 22,228 (1921) to 55,193 (1924) horses annually.

CATTLE

When the Slavic clans penetrated the Balkans they found that the scattered native population, including colonies of Roman farmers, owned cattle in some respects superior to the large-boned, long-limbed breed of draft ox that had dragged camp equipment for decades during their migrations from Galicia over the Carpathians and down the Danube to the Balkans. These draft oxen were put to service before the plow, and in the fertile valleys they soon replaced all other breeds. The aboriginal peoples and their domestic animals

were driven up into the mountains. During the centuries, these peoples were absorbed by the Serbs and no trace of them remains. Their cattle, on the other hand, have persisted, and these small, short-legged, hardy cattle of gray, brown, black, or tawny color are still found under various local names⁶³ in the hill regions of Serbia, Macedonia, Bosnia, Herzegovina, Montenegro, and Dalmatia. These aboriginal cattle are of the type *Bos taurus europaeus*, similar to the mountain cattle of Rumania, Czechoslovakia, and Poland, whereas the native peasant valley cattle are of the primitive type similar to the medium-horned gray steppe cattle of western Russia, the long-horned gray steppe cattle brought by the Magyars from the south Volga regions of western Asia, or the short-horned gray steppe cattle introduced into Italy by the early Roman emperors and found to-day in Italy and the eastern coast lands of the Adriatic. All of these breeds originated in Asia and belong to the group of *Bos taurus primigenius*. (Table 112.)

TABLE 112.—Cattle: Important native and foreign breeds in Yugoslavia

Type and breed of cattle	Habitat	Utilization
<i>Bos taurus primigenius</i> :		
Steep cattle—		
Long horned.....	North Bosnia, Croatia, Slavonia, and Voivodina.	Draft, milk production poor. Quality of meat indifferent.
Medium-horned (Podolan).....	Central Bosnia and Serbia.....	
Short-horned ¹	West Croatia, Dalmatia, and Slovenia.	
Alpine cattle—Simmenthal.....	Croatia, Slavonia, Voivodina, and a few in Serbia.	Meat, milk, and draft.
Alpine mixed—Mariahof.....	Slovenia.....	Do.
<i>Bos taurus europaeus</i> :		
Short horned—		
Illirian brown.....	Middle and south Bosnia, Herzegovina, Montenegro, Serbian Mountains.	Small light-draft animals, in-different milk and meat production.
Illirian black.....	Bosnia.....	
Illirian spotted.....	Middle Bosnia and Herzegovina.....	
Illirian blonde.....	Northwest Bosnia.....	
Dalmatian (ancient Roman).....	Dalmatia.....	Degenerated stock (cows weigh 330 to 420 pounds).
Mixed with primigenius gray and various colors—mountain.	Serbia.....	Fair production of rich milk.
Gray brown Alpine—Mürztal.....	Slovenia.....	Milk and draft.
Short-faced—Mölltal.....	do.....	Milk, meat, and draft.

¹ Mixed with ancient Roman breeds; no constant type.

As early as 1902 the Government of the old Kingdom of Serbia introduced the Simmenthal, Mariahof, Mürztal, Algau, and Montafon breeds from Austria for crossing on native stock, but this breeding project had not been carried very far so that at the outbreak of the Balkan War the breeds and quality of cattle in old Serbia were about the same as they had been for hundreds of years.

On the other hand, the cattle north of the Danube and the Sava Rivers had been bred for some decades to meet the specialized requirements of field work, of the dairy, and, to a less extent, of meat production. This breeding work had been stimulated by the former Hungarian and Austrian Governments, which had, before the World War, introduced the Simmenthal, Algau, Pinzgau, Montafon, English, Dutch, and Hungarian breeds into the southern districts.

The Croats, Slavonians, and Slovenes, like the Serbs had brought with them into the regions they occupied the gray steppe cattle from

⁶³ Kolubara, Maljen, Jasenica, Resava, Bosna, etc.

Scythia (Russia). In Croatia and Slavonia in 1911, however, only 14.3 per cent of the cattle were of the aboriginal gray breed, having been replaced by Swiss (55.3 per cent of total numbers) and other breeds. In Voivodina conditions were similar, 39.1 per cent of all cattle being unimproved gray steppe breeds, 52.1 per cent Swiss, and 8.8 per cent other breeds, including 0.4 per cent buffaloes. The native gray cattle in Slovenia had practically been replaced by milk breeds—the Mölltal milk breed for highland conditions and the general-purpose Mürztal and Mariahof breeds for the lowlands.

In these northern Districts dairying was an industry of growing importance, but almost everywhere throughout Yugoslavia cattle are bred almost exclusively as work animals. Most of the traction work of the farms is accomplished by bulls, steers, or cows, yoked indiscriminately together. The cattle of Yugoslavia, after being worked a few seasons in the fields, are either slaughtered or are exported to the slaughtering centers of surrounding countries.

Although the ravages of war greatly depleted the herds in Yugoslavia, the post-war recovery was rapid, so that by 1921 cattle numbers as indicated in Table 113, had increased to 98.1 per cent of the pre-war normal.

TABLE 113.—Cattle, including buffaloes: Number in Yugoslavia, pre-war period, and 1921-1926

District and year	Cattle		
	Total	Per 1,000 acres	Per 1,000 population
Pre-war period:			
1910—			
Old Kingdom of Serbia.....	¹ 964,355	80.4	331.2
Ceded by Bulgaria.....	² 28,336		
South Serbia.....	³ 613,076	54.4	368.3
Montenegro.....	⁴ 82,083	34.4	344.3
Bosnia-Herzegovina.....	⁵ 1,309,922	103.5	678.1
Dalmatia.....	⁶ 92,703	20.5	146.8
1910-11—			
Croatia, Slavonia, Medjmurje, Krk, and Kastav.....	⁶ 1,171,387	108.2	428.8
Slovenia and Frekmurje.....	⁷ 490,883	115.2	433.3
1911—Voivodina.....	⁸ 285,365	79.2	284.9
Total.....	5,108,110	83.1	405.4
Post-war period:			
1921.....	⁹ 5,011,000	81.5	417.0
1922.....	¹⁰ 4,090,000	66.5	335.9
1923.....	¹⁰ 3,902,000	63.5	316.4
1924.....	¹⁰ 5,813,000	62.0	365.2
1925.....	¹⁰ 3,796,000	61.8	300.1
1926.....	¹¹ 3,900,000	63.5	304.5

¹⁻⁸ Same as notes 1 to 9 in Table 111.

⁹ For work animals only (17, 1925-26).

¹¹ Estimate for cattle only from supplementary report of Consul S. E. McMillan, Mar. 28, 1927.

This high level in cattle numbers was reached by encouraging the free interchange of stock within the country. Exportation was prohibited. Slaughter of young stock was forbidden and restrictions were placed upon the slaughter of full-grown stock. In addition, livestock was demanded from Germany, Hungary, and Bulgaria in payment of reparations. Government breeding stables were established and as far as possible the animals received from enemy countries were employed for breeding and replacement.

In 1922, the numbers of cattle reported in Yugoslavia showed a decrease of 911,000 below the enumeration of 1921. This is chiefly because the 1922 figure pertains only to cattle employed as draft animals and does not include bulls and cows employed for reproduction, dairy cows, calves, or young stock. Exportation of cattle was permitted in 1920 and beginning with the year 1921 more than 100,000 cattle have been sent abroad each year. The numbers of cattle employed as work animals have fluctuated somewhat until 1926, in which year they were reported at 3,900,000 as compared with 4,090,000 in 1922. The numbers of total cattle greatly exceed those employed in farm work.

It is probable that in 1926 the combined number of all classes of cattle in Yugoslavia was equal to or exceeded the pre-war estimated number given in Table 113.

INTERNATIONAL TRADE IN CATTLE

During 1911, the last normal year before the Balkan War, the old Kingdom of Serbia exported 17,788 head of cattle to Italy and Malta, as well as 358 head to Bulgaria. During the 4-year period ended 1912, Bosnia-Herzegovina, although importing cattle probably into the western deficit regions, exported from the northeastern surplus regions. The result was an average net export of 63,110 head annually. The "southlands" of the former Austrian Empire, including Dalmatia and most of Slovenia, shipped an average of only 53 cattle to Vienna⁶⁴ during 1909-1913.

There is no separate record of shipments of animals from Croatia-Slavonia or Voivodnia, but it is probable that a very considerable portion of the 317,370 cattle exported annually from the former Kingdom of Hungary during 1909-1913 originated in these southern Districts.

Since 1921, as indicated in Table 114, the exportation of cattle from Yugoslavia has ranged between 105,385 (1922) and 206,513 (1923), the 1926 shipments abroad being 126,877.

TABLE 114.—Cattle: Exports and average export price in Yugoslavia, 1920-1926

Year	Total export		Average export price per head		Year	Total export		Average export price per head	
	Number	Dinars	Dollars ¹			Number	Dinars	Dollars ¹	
1920.....	1,445	2,645	90.58		1924.....	168,100	4,450	56.40	
1921.....	108,214	2,176	47.10		1925.....	114,352	3,792	64.38	
1922.....	105,385	3,167	42.34		1926.....	126,877	2,800	49.47	
1923.....	206,513	4,112	43.88						

Exports, 1920-1924 and 1926, and average export prices, 1920-1926, from supplementary report of Consul S. E. McMillan, dated Mar. 28, 1927.

Exports 1925, from annual report on commerce and industries for 1926 of S. E. McMillan, Mar. 28, 1927.

¹ See Table 99 for number of dinars per United States dollar.

During the first six months of 1927, 73,806 mature cattle and calves were sent to foreign countries, as compared with 51,572 during the similar period of the previous year.

Toward the end of July it became apparent that most of the pastures in the country had been scorched by the sun so the peasants were obliged to begin feeding the hay that they had stacked for winter use. This is reported to have been followed by heavy marketing of livestock.

⁶⁴ There are no records of other shipments.

The frequency of droughts in the lower Danube countries—Yugoslavia, Bulgaria, and Rumania—is the great drawback to the expansion of the cattle industry in this region.

MEAT AND MEAT PRODUCTS

During the past century it had been the custom for agents of foreign buyers to canvass the market centers of the old Kingdom of Serbia and to concentrate exportable quantities of such products as were in demand in their home countries. It was not customary for Serbian individuals or organizations to seek markets in foreign lands. This was also the case to a more intensified degree in Bosnia-Herzegovina and in Croatia-Slavonia. There were no facilities for shipping fresh meat in summer. In winter, export of uncured meats was possible, but it was difficult for Serbians to engage in such a restricted seasonal trade.

For these reasons the custom arose of shipping live animals to the large slaughtering centers—Vienna, Prague, Budapest, Italian points, Istanbul (Constantinople), and through Salonika to various destinations in the Orient. The shipments of animal products were confined almost exclusively to cured meats until a few years before the World War, when facilities were perfected to ship carcasses from Belgrade to Budapest and from Bosnia to Vienna.

From the viewpoint of prime beef production, the quality of the cattle marketed from the Districts south of the Danube and the Sava was very low. Bosnia-Herzegovina exported an average of 5,232 head of cattle to the Vienna market during 1909–1913, of which only 110 were classified as prime animals.

North of the Danube and the Sava, conditions were far different. Cattle and swine were stall-fed on corn in Voivodina and in Croatia-Slavonia in much the same manner as in the Corn Belt of the United States.

During 1911, the last normal year before the Balkan War, the old Kingdom of Serbia exported 13,757,648 pounds of fresh beef to Austria-Hungary. There are no separate records of beef shipments from Yugoslavia since the World War.

DAIRYING

The milk industry was one of the least-developed and most-backward branches of agriculture in old Serbia, south Serbia, Bosnia, Herzegovina, Montenegro, Dalmatia, and Slovenia. In most of these Districts cattle were bred almost exclusively as work animals; meat production was of secondary importance. Cows were seldom milked on peasant farms and the calves were allowed to run with their mothers. It was the common practice to yoke cows with steers or bulls as draft animals, as a mare would be harnessed in a team of horses.

In the vicinity of Belgrade and other cities a few cows which more nearly approached the dairy types were kept to supply liquid milk to the hotels and the families of the upper classes, but these establishments were very primitive. They also furnished a portion of the butter, cream, and cheese requirements of these cities, but Belgrade and other large cities had to depend upon the former southern Hungarian Districts of Croatia, Slavonia, and Voivodina for much of their supply of dairy products.

In Croatia, Slavonia, and Voivodina dairy herds have been developed with the mottled Triburg, Simmenthal, and gray cattle from

Switzerland. More than half of the cattle in these Districts are improved dairy stock. The dairy industry of Yugoslavia is now not only able to supply the requirements of the Kingdom itself, but produces a considerable surplus for export.

During 1923, 1924, and 1925, the exports of butter were 273 short tons, 308 short tons, and 170 short tons respectively. The cheese exports were respectively: 1,206 short tons, 525 short tons, and 177 short tons.

SWINE

It is not impossible that the migrating Slavs brought swine with them into the Balkans. It is certain that they found various native races in the land when they arrived. One of these races was the black, long-legged, arched-back Roman hog that is found to-day in the coast lands and islands of Dalmatia. The Serbs early developed local breeds of swine which were superior to those in the neighboring countries to the north. The most common type of hog thus developed was the progenitor of the present Schumadija (Sumadia) breed, called after the District of that name. These swine are long and rangy but are resistant to inclement conditions and to disease. There is a similar breed of native swine called Moravia.

Prince Milos of Topshider, who was a swine breeder of wide vision, perceived the immense profit that would accrue to Serbia through the sale of hogs in Hungary and Austria and sent agents to the north with great droves of the swine that he had developed, called Schumadija-Mongolicza (Angolica, Mangolica). These hogs were also driven great distances on foot to be marketed in Styria, Austria, and in Bavaria, Germany. At first there was a large sale of superior Serbian hogs in central Europe but early in the nineteenth century the Hungarians began themselves to breed Mangolica swine.⁸⁸

The territories that constitute the present State of Hungary, in the vicinity of Budapest and west to the Austrian frontier, were engaged chiefly in producing meat and milk for the Vienna market. The peasants in this region did not breed all the animals they fed nor grow all the feed required for fattening stock. Cattle and swine, corn and other feeding stuffs, were shipped in from outlying Provinces of the old Kingdom of Hungary and from adjacent countries including Serbia.

As early as 1870, Serbia sent 216,160 lean hogs to the commercial feeding establishment at Kőbánya near Budapest. During succeeding years numbers fluctuated somewhat but reached a maximum in 1893 when 250,570 were sent.

However, competition from provincial Hungary had grown stronger and in 1893, Kőbánya received 624,288 hogs from outlying Hungarian districts. During the 5-year period ended 1905, Serbia exported an average of 129,390 hogs to Hungary each year.

In 1906 the Austro-Hungarian agricultural protective tariff went into effect and in August of that year, shipments of swine from Serbia abruptly ceased. The bitter feeling engendered in the Serbs at this time, on being shut out of the markets of the Hapsburg Empire, is said to have led to the events that precipitated the World War, which in the Balkans, is often spoken of as "the war of the Serbian hog."

⁸⁸ By 1911 this improved Serbian breed had so replaced native strains in the territories now constituting residual Hungary that more than 90 per cent of all hogs were Mangolicas.

By 1911 the exportation of hogs (live and slaughtered) from Serbia had dwindled to a few thousand; only 8,649 animals were sent abroad in that year to Bulgaria and Rumania.

The hog situation and the potentialities of pork production in Yugoslavia are important to American farmers because this region, as well as northwestern Rumania (the Banat and Crisana), may develop keen competition with American lard, pork, and pork products in the markets of central Europe.

Just preceding the World War more than 60 per cent of the swine in the territories now comprising Yugoslavia were found north of the Danube and the Sava. These swine were almost exclusively Mongolicas or the fat type of hog, although some English and German improved breeds were found, particularly in Slovenia.

About 22 per cent of the pre-war numbers of swine were found in the old Kingdom of Serbia and 13 per cent of Bosnia and Herzegovina.

In the mountain regions south of the Sava River, the swine are more of the razorback unimproved type. The improved native types are coarse and fat—better adapted to the production of lard and fat salt side pork than of bacon comparable with the Danish product representing the European standard of excellence. Nevertheless, hogs that are grazed in the oak and beech forests feeding upon acorns and nuts, develop a highly flavored flesh that has created a demand for Serbian hams in certain European cities.

In recent years, considerable numbers of Yorkshires and Berkshires had been introduced for building up native breeds, but their influence had not, as yet, become commercially important at the outbreak of the Balkan war.

According to the enumerations taken in Hungary in 1911 and other territories in 1910, there were, before the World War, about 3,924,984 swine in the territories now comprising Yugoslavia. As indicated in Table 115, swine numbers had recovered to 85.9 per cent of the pre-war normal by 1921.

TABLE 115.—Hogs: Number in Yugoslavia, pre-war period, and 1921-1928

District and year	Hogs		
	Total	Per 1,000 acres	Per 1,000 population
Pre-war period:			
1910—			
Old Kingdom of Serbia.....	1,865,769	71.5	319.3
Ceded by Bulgaria.....	116,579		
South Serbia.....	78,707	7.0	47.3
Montenegro.....	10,542	4.4	44.2
Bosnia-Herzegovina.....	527,271	41.7	272.9
Dalmatia.....	61,449	19.5	97.3
1910-11—			
Croatia, Slavonia, Medjmurje, Krk, and Kastav.....	1,199,565	110.8	439.1
Slovenia and Prekmurje.....	744,711	111.7	420.3
1911—Voivodina.....	717,991	147.5	530.7
Total.....	3,924,984	63.8	311.5
Post-war period:			
1921.....	3,373,000	54.9	250.7
1922.....	2,887,000	47.0	237.1
1923.....	2,497,000	40.6	202.4
1924.....	2,518,000	41.0	201.6
1925.....	2,802,000	46.8	221.5
1926.....	3,000,000	48.9	234.2

¹ Same as notes 1 to 9 in Table 111.

² For swine found only on farms (17, 1925-26).

³ Estimate from supplementary report of Consul Stewart E. McMillan, dated Mar. 28, 1927.

The production of pork in Yugoslavia since the World War, has been hampered by export taxes on hogs, lard, and pork products, levied with the view not only of yielding revenue to the State but also of keeping down the cost of living in the cities. The short corn crops of 1921 to 1923 made feeding very expensive and swine numbers and exports decreased as Yugoslavian farmers could not pay the tax and compete in the markets of Budapest, Vienna, and Prague with the more favorably situated farmers in other States.

Swine numbers in 1924 had recovered somewhat from the low level reached in 1923 but there was an exportation of only 86,183 hogs and 147,512 pounds of lard from the eastern Districts. On the other hand the western Districts imported from the United States and other countries 22,287,316 pounds of animal fats. This foreign competition, brought to the very doors of the home markets of the Yugoslavian farmer, induced the Government to place high import duties on hog fats effective June 30, 1925, and on November 29 of that year all export duties on live hogs were abolished by a decree of the Government. Nevertheless, local markets remained stagnant and during that year only 70,266 hogs were shipped up the Danube.

Bumper crops of corn were raised during 1924 and 1925 and (although during the latter year more than twice as much corn was sent abroad as the average exported during 1909-1913) at the same time domestic disappearance was greater than before the World War. By 1925, swine numbers had increased to 2,802,000 and the following year although, 297,870 hogs were exported (Table 116), swine numbers increased to about 3,000,000 according to a preliminary estimate.

TABLE 116.—Hogs: Exports and average export price in Yugoslavia, 1920-1926

Year	Total export		Average export price per head		Year	Total export		Average export price per head	
	Number	Dinars	Dollars ¹			Number	Dinars	Dollars ¹	
1920.....	22,194	1,210	41.44	1924.....	86,183	2,147	39.89		
1921.....	219,251	953	20.63	1925.....	70,266	1,758	29.85		
1922.....	117,401	2,000	26.74	1926.....	297,870	1,140	20.14		
1923.....	140,441	3,190	34.04						

From supplementary report of Stewart E. McMillan, dated Mar. 28, 1927.

¹ See Table 99 for number of dinars per United States dollar.

The corn crop of 1926 was somewhat lighter than that of the previous year but was still 18,000,000 bushels greater than the pre-war average net production. Greater numbers of swine were put on feed than in the winter of 1925-26 so that, during the first six months of 1927, 179,602 hogs were exported as compared with 80,153 during the similar period of the year before. The corn exported abroad during this period was only 25.8 per cent of that exported during the first 6 months of 1926.

The corn belt of Yugoslavia can produce large numbers of hogs when the weather conditions are favorable to the crop and it is probable that the future trend of farming in the northeast districts of the Kingdom of Yugoslavia will be toward increased feeding of corn to hogs and the exportation of live animals and pork products rather than toward the shipment of corn as grain to rival pork-producing countries to the north.

INTERNATIONAL TRADE IN PORK AND PORK PRODUCTS

The blow given to the live-hog export trade of the old Kingdom of Serbia by the Austro-Hungarian tariff of 1906 acted as a stimulus to the pork-packing industry to such an extent that in 1911 pork exports to Budapest and Italy reached 19,451,911 pounds. Shipments of small pigs to France and Italy reached 565,273 pounds, and 50,018 pounds of cured hams and shoulders went to Italy, Turkey, Bulgaria and Switzerland.

Exports of lard to Germany, Austria-Hungary, and Switzerland reached 2,838,868 pounds.

During the 4-year period ended 1912, Bosnia-Herzegovina shipped an average of 31,258 carcasses and 14,158 live hogs to northern points.

In 1914, Croatia-Slavonia shipped 119,272 hogs and Slovenia 14,895 hogs to Vienna.

Since 1924, exports of meat (probably pork) have increased to 47,408,990 pounds in 1926. As shown in Table 117, Yugoslavia exported 2,420,697 pounds of meat products and 2,858,769 pounds of pork lard in that year.

Although the eastern Districts of Yugoslavia have exported increasing quantities of lard since 1924, these exports have been more than offset by imports of animal fats into the western deficit Districts. These importations were 22,287,000 pounds in 1924, 10,624,000 pounds in 1925, and 8,653,000 pounds in 1926.

TABLE 117.—*Meat and meat products: Exports from Yugoslavia, 1922-1926*

Item	1922	1923	1924	1925	1926
	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Pounds</i>
Meat.....	47, 576, 326	48, 635, 297	37, 881, 997	26, 418, 657	47, 408, 990
Meat products.....	(1)	643, 637	4, 437, 800	2, 809, 844	2, 420, 697
Pork lard.....			147, 512	177, 056	2, 858, 769

Compiled from reports of Consul K. S. Patton, Aug. 16, 1924, and Mar. 30, 1925, and from report of Consul Stewart E. McMillan, Mar. 28, 1927.

¹ Not separately stated.

Pork is the chief meat ration of the peasants of Yugoslavia. Among the Slavs, as among the Bulgarian and Rumanian peasants, it is customary to have a roast pig at Christmas time, whereas pork (fresh and cured) with baby lamb (4 to 5 days old) and mutton constitute almost exclusively the meat diet of the peasant, who seldom if ever eats beef or veal. Although the peasants of Yugoslavia eat a considerable portion of the pork they produce, the country as a whole is a corn country in which large quantities of hog feed can be produced cheaply. It is probable that with the development of the economic status of Yugoslavia this country will become an active competitor, together with Hungary and to a less extent with Rumania, against the United States for the pork and lard trade of central Europe.

The great drawbacks to swine production are the uncertainty of the corn crop and the prevalence to contagious diseases on account of poor sanitation and the general ignorance of the peasants concerning infection.

SHEEP

The migrating Serbs brought with them their flocks of sheep on which they subsisted in their wanderings across the plains of present-day Hungary. These sheep were of the coarse-wool, milk-producing types, and to this day the Yugoslavs have depended upon their sheep for milk, cheese, and meat, as well as for wool from which to spin and weave their coarse garments. The skins are soft tanned, with the long hair left on, and every peasant has a greatcoat made from such skins with the hair inside. The pelts of lambs, black, with the hair tightly curled, are used to make the native cap universally worn by the peasants.

Whereas more than 60 per cent of the swine are found in the three northern Districts of Yugoslavia, fully 85 per cent of the sheep are found south of the Danube and the Sava.

There are several breeds of these ancient types of sheep: The Krivovir and the Kraljevo breeds are prized for their meat and milk, whereas the breeds raised primarily for their wool are the Pirot, Vlaski, Ovce-Polje (Polish), Bosnian, Raczka, and Czigaja.

The Government has imported Oxfordshires, Hampshires, Merinos, and Karakuls to improve local breeds.

South of the Danube, the sheep are almost exclusively of the native unimproved varieties. The same conditions hold true in Croatia-Slavonia where in 1911 only 3.9 per cent of the sheep were Merinos and 1.9 per cent English and other types; whereas 94.2 per cent were Czigajas and Raczka (a breed brought from the south Volga regions in Russia by the Hungarians in the tenth century). Conditions are somewhat better in Voivodina where there were 17.1 per cent of Merinos, 4.8 per cent of English and other types, and 78.1 per cent unimproved native breeds.

South of the Danube and the Sava, the sheep belonging to the peasants of a village are assembled into one flock and sent out to pasture upon the neighboring mountain slopes in charge of a single shepherd. When warm weather comes they are sheared and returned to pasture until cold weather. In the fall a number are retained for reproduction purposes and the remainder are slaughtered. The custom of killing the sheep in the fall was developed to save the expense of feeding during the winter months.

The ravages of war greatly depleted the numbers of sheep in the territories now comprising the Kingdom of Yugoslavia. By 1921 the flocks had recovered to only 66.8 per cent of the pre-war average found on farms of Yugoslavia. (Table 118.)

The winter carry-over of sheep in Yugoslavia, which has fluctuated somewhat in recent years, has exhibited a tendency to increase since 1923 reaching 7,907,000 in 1925, as compared with 7,011,000 in 1921 and 10,499,000 before the World War.

In 1911 the old Kingdom of Serbia shipped 61,998 sheep and 11,990 goats to Turkey and Greece and 4,380 lambs to Turkey. During 1909-1912 Bosnia-Herzegovina exported (net) annually an average of 96,948 sheep and goats.

There are no data on shipments of sheep from the other districts now comprising Yugoslavia.

In 1923 and 1924, nearly 400,000 sheep and goats were sent abroad. In 1925, this number was swelled to 504,383 and in 1926 was further

increased to 587,944. Most of the sheep exported from Yugoslavia are shipped to the Orient through the port of Salonika.

TABLE 118.—*Sheep: Number in Yugoslavia, pre-war period, and 1921-1925, with exports for 1921-1926*

District and year	Sheep			Exports
	Total	Per 1,000 acres	Per 1,000 of the population	
Pre-war period:				
1910—	<i>Number</i>	<i>Number</i>	<i>Number</i>	<i>Number</i>
Old Kingdom of Serbia.....	1 3, 818, 997	321.3	1, 311.6	.....
Ceded by Bulgaria.....	2 140, 874	.....	2, 025.3	.....
South Serbia.....	1 1, 374, 555	122.1	825.7	.....
Montenegro.....	3 238, 576	99.9	1, 000.6	.....
Bosnia-Herzegovina.....	4 2, 499, 422	197.6	1, 293.8	.....
Dalmatia.....	4 874, 290	278.0	1, 384.2	.....
1910-11—				
Croatia, Slavonia, Medjmurje, Krk, and Kastav.....	5 878, 032	81.1	321.4	.....
Slovenia and Prekmurje.....	7 61, 412	15.8	57.7	.....
1911—Voivodina.....	8 607, 139	124.7	448.8	.....
Total.....	10, 499, 297	170.8	833.3	.....
Post-war period:				
1921.....	9 7, 011, 000	114.0	583.4	10 135, 608
1922.....	11 8, 462, 000	137.6	695.0	12 157, 818
1923.....	11 7, 639, 000	124.3	619.3	13 387, 452
1924.....	11 7, 619, 000	123.9	609.9	14 387, 020
1925.....	11 7, 907, 000	128.8	625.1	14 504, 383
1926.....	.....	.....	.....	14 587, 944

1-10 Same as notes 1 to 10 in Table 111.

11 (17, 1925-26).

12 Includes goats; compiled from reports of Consul K. S. Patton, dated Aug. 18, 1924.

13 Includes goats; compiled from reports of Consul K. S. Patton, dated Mar. 20, 1925.

14 Includes goats; compiled from report of Consul Stewart E. McMillan, dated Mar. 28, 1927.

WOOL

After the wool is clipped in Yugoslavia, it is customary to wash it superficially and sell to some dealer in the next neighboring market, who in turn sells it to a merchant in a larger adjoining town. In this manner, after passing through the hands of five or six dealers, the wool was concentrated in the more important centers and passed into the hands of the manufacturers and (before the World War) of the exporters. Practically all the wool exported from Yugoslavian territory before the World War went to Bohemia and Vienna, whose merchants maintained traveling agents to buy up the wool in small lots dealing directly with the producers or one of the smaller buyers.

There are no official statistics on wool production. According to the officials of the Ministry of Agriculture the sheep in the Kingdom were classified as follows in 1923:⁸⁶

	Number
Breeding ewes.....	4, 782, 764
Breeding rams.....	381, 069
Other mature sheep.....	730, 484
Total mature sheep.....	5, 894, 317
Lambs under 1 year.....	1, 744, 940
Total.....	7, 639, 257

⁸⁶ From report of Consul H. S. Bursley dated June 26, 1925. In the report, Consul Bursley refers to these data as of the year 1924. The total is that of sheep numbers in 1923.

The sheep over one year of age yield on the average 4.4 pounds of wool each per year. Sixty per cent of the lambs yield an average annual cut of 1.7 pounds each. The remainder of the lambs are used as food before reaching the wool-bearing age.⁶⁷

In 1923, the wool clip of this country may be considered to have been: From mature sheep 25,989,000 pounds, from lambs 1,731,000 pounds, totaling 27,720,000 pounds.

The exportation of wool was prohibited in 1921, and there are no records of imports.

TABLE 119.—Goats, mules and donkeys: Number in Yugoslavia, pre-war period, and 1921-1925

District and year	Goats	Mules	Donkeys
Pre-war period:			
1910—	<i>Number</i>	<i>Number</i>	<i>Number</i>
Old Kingdom of Serbia ¹	630,379	611	1,011
Ceded by Bulgaria ¹	28,739	56	1,280
South Serbia ²	430,246	6,623	55,628
Montenegro ³	75,515	1,230	3,810
Bosnia-Herzegovina ⁴	1,393,068	14,473	6,377
Dalmatia ⁵	249,033	14,061	27,618
1910-11—			
Croatia, Slavonia, Medjmurje, Erk, and Kastav ⁶	96,366	1,010	3,650
Slovenia and Prekmurje ⁷	15,323	55	313
1911—Vojvodina ⁸	1,568	44	1,418
Total	2,920,427	24,183	100,105
Postwar period:			
1921 ⁹	1,553,000	18,000	84,000
1922 (17, 1922-26).....	1,801,000	15,000	86,000
1923 (17, 1923-26).....	1,730,000	15,000	96,000
1924 (17, 1924-26).....	1,718,000	14,000	90,000
1925 (17, 1925-26).....	1,811,000	15,000	95,000

After 1921 donkeys represent farm animals only.

¹⁻⁹ Same as notes 1 to 9 in Table 111.

CONCLUSIONS REGARDING YUGOSLAVIAN AGRICULTURE

Yugoslavia is a conglomerate of territorial units whose inhabitants, though related by blood, exhibit different racial tendencies as regards their farm activities. The influence of these racial tendencies upon production has been modified by the physical characteristics of the various parts of the Kingdom. The northeastern part of Yugoslavia, lying in the valley of the Danube and its tributaries, is a region of large surplus production with easy access to cheap water transportation up the Danube to central Europe and down the river to the Black Sea ports and thence to western Europe. The western, southern, and southwestern parts of the country produce little if any exportable surpluses and, as a rule, require additional cereals to supplement local production.

The exportation of all classes of farm products from the northeastern surplus districts is well organized whereas there are very poor means of interchanging goods between eastern and western parts of the Kingdom. Consequently, the western Districts have imported flour and animal fats from the United States at the same time that the eastern Districts have exported wheat, flour, hogs, and pork. This situation is bound to be temporary, and the deficit Districts have increased their wheat production in an attempt to be more nearly independent of outside sources of supply.

⁶⁷ These lambs do not include the baby lambs killed at 5 to 10 days of age for their pelts.

The greater part of Yugoslavia was not affected by the land reform. The agriculture of the whole region south of the Danube and Sava Rivers is similar to that of Bulgaria—that is, an agriculture designed to satisfy home wants. On farms of 173 acres or less, from 59 to 89 per cent of all products are consumed at home. The farms in this part of the Kingdom were small even before the World War. There were many large estates north of the Danube and the Sava, and in this region, as in Rumania, the land reform was followed by increased corn production. Increases in corn in the north and of wheat in the south and west have brought the acreages of both of these cereals above the pre-war level. The tendency has been to cultivate smaller acreages of rye, barley, and oats than before the World War.

The net exportation of wheat from the territories now comprising Yugoslavia has tended to be lower than before the World War. There appears to be a trend toward increased wheat disappearance though it is not as positive as in Rumania. In recent years, until the season of 1927–28, corn exports have been marked features of the international trade of Yugoslavia as have been the shipments of hogs, pork, and pork products up the Danube River to Budapest, Vienna, and points north.

The whole south Danube corn belt is a region of potential corn and hog production that may develop into proportions of considerable magnitude and seriously affect the sale of United States pork and pork products in central Europe. But the peasant farmers of this whole region are ignorant of sanitation and large numbers of swine succumb to disease. The region is also subject to droughts which, as in 1927, may decrease the corn crop and force the premature marketing of hogs. Nevertheless, there are large possibilities for the expansion of the swine industry in Yugoslavia.

A well-developed sugar industry in Yugoslavia is at present suffering from maladjustments between factories and growers. Eventually, these differences will be adjusted and the Kingdom of Yugoslavia will ship considerable quantities of sugar to Italy and the Orient.

The tobacco industry of Yugoslavia passed through an expansion period similar to that in Bulgaria, but at the time of closing this report both acreage and production have been reduced somewhat below the pre-war level. The country produces sufficient tobacco for its own use and usually has a surplus for export.

Yugoslavia is a surplus-producing country in regard to most agricultural products. The interest of the United States centers on the possibilities of this Kingdom as a competitor in pork and pork products.

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October 14, 1929

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