

The proper times of application will differ, of course, in the different regions and must be determined for each region if dusting ever comes into practice. Timeliness of application is essential, but thoroughness is equally so.

In order to be thoroughly protected, wheat plants should be covered with a fine film of dust. This requires a specially constructed dusting machine which blows a fine cloud of dust onto the plants with such force as to insure uniform and effective distribution. Small hand dusters are often used in experiments, but horse-drawn or self-propelled power dusters, capable of dusting 50 to 100 acres a day, are required for practical work. Some of these machines have been tried and are at least fairly satisfactory, but improvement is necessary. The quantity of dust required depends somewhat on the efficiency of the dusting machine used, but from 20 to 30 pounds an acre usually are enough.

Economic Problems Involved

Is dusting a practicable method of rust control? That depends on the net return to the farmer. Good dust costs about 5 cents a pound, making the cost of materials for dusting an acre three times about \$3.75. The value of the grain broken down in dusting would be about \$2. Add man labor and horse labor, and the total, exclusive of interest and depreciation on the machine, would be about \$6 to \$8 an acre. The machines now on the market cost between \$400 and \$500 but are not yet entirely satisfactory.

Two problems must be solved if dusting is to be practicable. More efficient dusting machines must be devised, and it must be determined whether dusting will pay over a period of years, rust-free years and rust years. Manufacturers undoubtedly can perfect the machines—maybe airplanes can be used successfully—but no one can yet tell a farmer whether it would be profitable to dust year after year. It would help a great deal if the probability of epidemics could be predicted, but that is not yet possible. A wheat grower undoubtedly would make more money by timely and thorough dusting in a bad rust year, but he probably would lose money if he dusted when there was to be very little rust. The rust can be controlled with sulphur dust, but whether it would pay a farmer to dust for a period of years must be answered by long-time experiments made under practical conditions on the farm.

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WHEAT Requirements of Deficit Countries Have Grown Since the War

The demand for wheat in the countries of deficit production throughout the world has increased since the World War. Before the war the demand in countries that did not produce sufficient wheat to meet their own bread requirements created an average annual flow of wheat and wheat flour from countries of surplus production equivalent to 675,000,000 bushels. During the season 1927-28 world demand resulted in a flow of 818,000,000 bushels—an increase of 143,000,000 bushels. Profound changes have taken place at the sources of supply

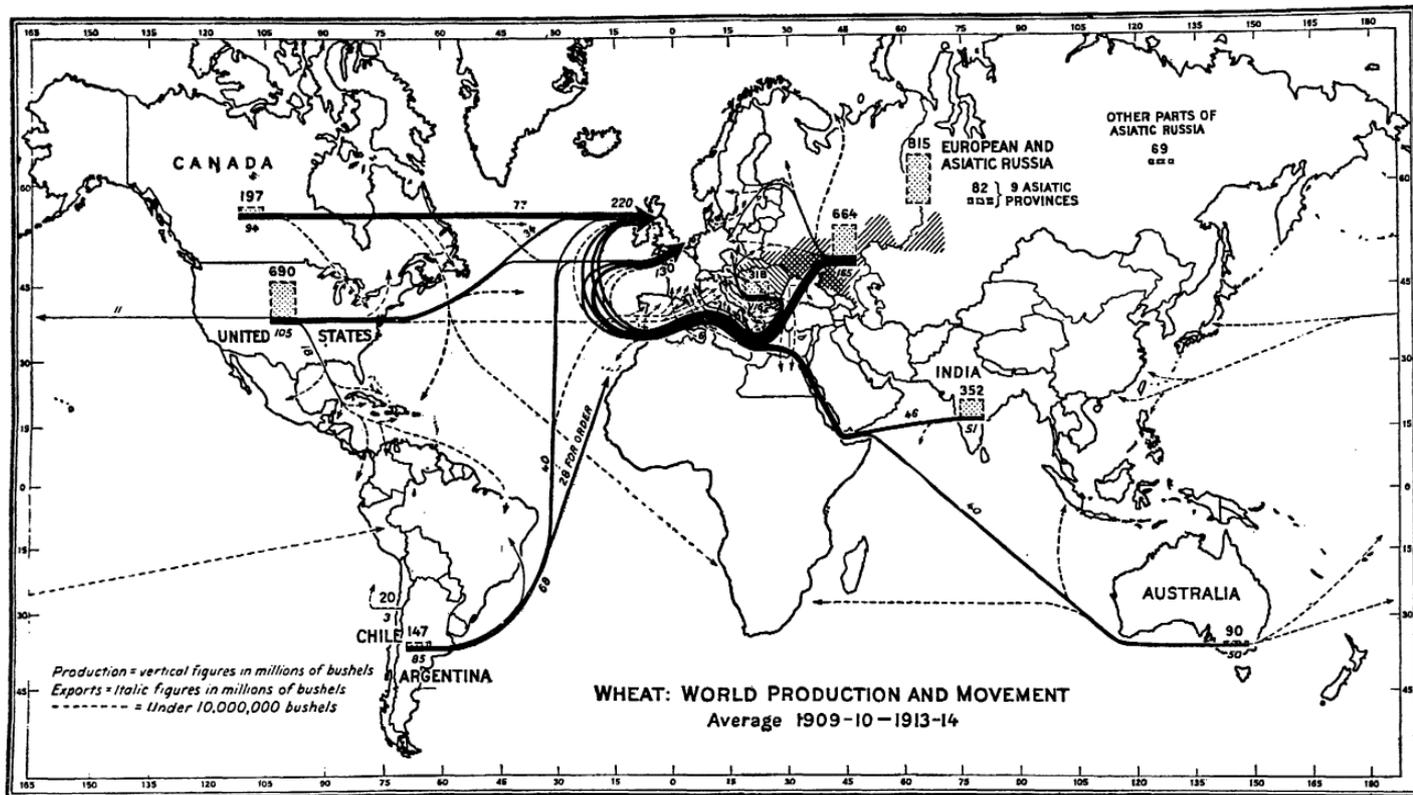


FIGURE 208.—Wheat, including wheat flour: World movement in response to world demand, average 1909-10 to 1913-14. Before the World War, the bulk of Europe's imported wheat supply passed westward through the Straits of Gibraltar from Russia, the Danube Basin, British India, and Australia. Shipments to Europe from the United States, Canada, and Argentina were incidental to the quantity of surplus produced in each country. The United States and Argentina supplied the wants of South America; Australia and Canada supplied the wants of Africa; the United States practically had a monopoly of the trade in the Orient. Port movements are not indicated on this map

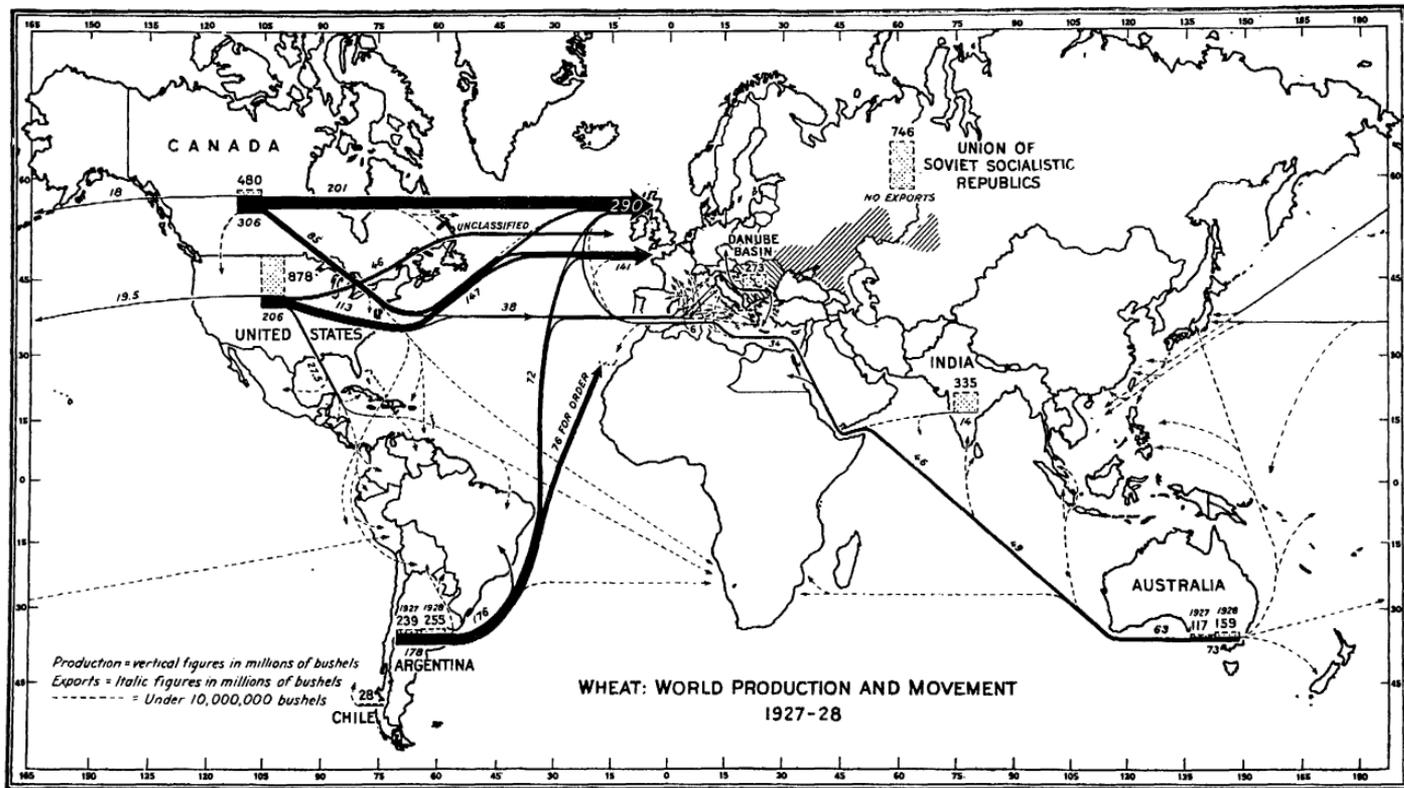


FIGURE 209. --Wheat, including wheat flour: World movement in response to world demand 1927-28. In 1927-28 the bulk of wheat supply passed eastward across the Atlantic Ocean from Canada, the United States, and Argentina. Russia was dropped out of the picture as a source of export wheat and the exports from the Danube Basin and British India have dwindled to 33,000,000 bushels and 9,000,000 bushels, respectively. Australian exports have increased. In every country of Europe, in the Orient, the West Indies, and South America, Canadian wheat and flour are crowding United States products in the world's markets. Port movements are not indicated on this map

from which the deficit countries have been accustomed to seek sufficient wheat to cover their requirement of daily bread.

The peasants of Russia have eaten most of their wheat in recent years and this former giant competitor of the United States wheat farmer has practically disappeared as a factor in feeding western Europe. The peasants of Rumania are eating more corn and feeding more corn to their cattle and hogs. Corn production has taken the place of wheat production to a large extent and Rumania, too, has ceased to be a prime factor in western markets. India has eaten more and exported less wheat in recent years than before the World War. Under the influence of these and other factors the mighty stream of nearly 370,000,000 bushels of wheat that flowed westward as grain and flour, by rail overland and by ship through the Mediterranean to Italy and France and on through the Straits of Gibraltar, up the Atlantic, and through the English Channel to the United Kingdom, Belgium, Netherlands, Germany, and Scandinavia has dwindled to 83,000,000 bushels—a shortage in the eastern supply of 287,000,000 bushels.

Production in Europe

In spite of the nearness of their markets the farmers of Europe have found it increasingly difficult to meet on a competitive basis the rising flood of wheat from the Western Hemisphere and are producing less wheat since the World War. Only the best lands can profitably be seeded to wheat. Marginal lands have been put into more lucrative crops or allowed to run to grass as pasturage for dairy herds. In 1927-28 the farmers of deficit western Europe produced 984,000,000 bushels of wheat—34,000,000 bushels less than their pre-war average of 1,018,000,000 bushels.

The population of the cities and industrial districts of Europe has increased more rapidly than that on farms. This has increased the domestic demand for wheat, while the domestic supply has decreased. The cities and industrial regions of western Europe united in demanding the importation of 661,000,000 bushels of wheat in 1927-28, an increase of 62,000,000 bushels above the pre-war average. Part of this increased demand is accounted for by the 34,000,000 bushel decrease in wheat production in western Europe. Part is accounted for by increased population. About the middle of the pre-war period, 1909-1913, the population of Europe outside of the present boundary of Russia was about 340,000,000. By 1927, the population outside of Russia had increased to about 370,000,000. A large part of the increase of 30,000,000 inhabitants in Europe depend for their wheat-bread supply upon sources outside of Europe itself, necessitating increased shipments from overseas. In parts of Europe the increased demand for wheat may be attributable to higher standards of living adopted since the war, though it is questionable whether the average rate of living in western Europe to-day is as high as it was before the World War.

Increased Call on the Western Hemisphere

The eastern supply of wheat for Europe, as noted above, had fallen off 287,000,000 bushels in 1927-28 and the demand had increased 62,000,000 bushels, which created a demand on the wheat supplies of the Western Hemisphere totaling 349,000,000 bushels greater than that of

pre-war days. Before the World War the United States, Canada, and Argentina shipped to Europe an average of 229,000,000 bushels of wheat. In 1927-28 the Western Hemisphere shipped 578,000,000 bushels of wheat across the Atlantic.

Canada has taken prompt advantage of the increased European demand and the decreased competition of Russia, the Danube Basin, and British India. Canada shipped to Europe during 1927-28 wheat and wheat flour equivalent to 271,000,000 bushels. Canada has an advantage in the British market and sent 198,000,000 bushels of wheat to Great Britain, as compared with 45,000,000 bushels from the United States and 20,000,000 bushels from Argentina. Canadian shipments to the continent totaled 73,000,000 bushels.

The United States shipped to Europe as grain and flour the equivalent of 159,000,000 bushels of wheat in 1927-28 against a pre-war average of 75,000,000 bushels. This represents an increase of 84,000,000 bushels or 112 per cent, compared with Canada's advance of 215 per cent. Argentina shipped 148,000,000 bushels of wheat to Europe in 1927-28, as compared with an average of 68,000,000 bushels before the World War—an increase of 80,000,000 bushels or 118 per cent. The volume of United States wheat flowing eastward is being squeezed and narrowed by the mighty pressure of wheat streams flowing across the Atlantic to the north and south of our own.

Competition in Oriental Markets

The United States wheat farmer is brought into sharp competition in Asia and the Pacific islands with the wheat growers of Canada and Australia. Before the World War this western demand created an average flow of wheat and wheat flour equivalent to 21,000,000 bushels. The corresponding movement was 60,000,000 bushels during 1927-28. Before the World War, the United States shipped the equivalent of 11,000,000 bushels, as wheat and flour, to the Orient and the Pacific islands. In 1927-28, the United States still held first place with 20,000,000 bushels; but Canada was a strong competitor with 18,000,000 bushels. Australia shipped to Asiatic and Pacific ports 17,000,000 bushels. Shipments from India to near-by points have undergone practically no change.

Africa has increased its demand for foreign wheat and flour from an average of 8,000,000 bushels during 1909-10 to 1913-14 to 26,000,000 bushels in 1927-28. Australia, the geographically natural source of supply, has increased its shipments of wheat to Africa from an average of 5,000,000 bushels before the World War to 21,000,000 bushels in 1927-28. Russia and the Danube Basin, which shipped about 1,000,000 bushels of wheat, each, to Africa before the World War, have dropped out of the picture. Canada continues to ship about 1,000,000 bushels annually. Argentina appears as a new source of supply and sent 1,000,000 bushels in 1927-28. In the same crop year the United States shipped the equivalent of 3,000,000 bushels, mostly flour, to South African ports.

The demand for wheat in South America before the World War called for exports from surplus countries averaging 26,000,000 bushels annually. In 1927-28, shipments of wheat to South American deficit areas reached 40,000,000 bushels. Argentina is the geographically natural source of supply for the South American wheat demand and

that country's shipments increased from a pre-war average of 17,000,000 bushels to 29,000,000 bushels in 1927-28. Australia continues its shipments of wheat to Peru of about 1,000,000 bushels annually. Shipments from the United States, for the most part flour, increased from the equivalent of 5,000,000 to 8,000,000 bushels. Canada appeared as a new source of supply, and shipped about 1,000,000 bushels in 1927-28. Chile produces a surplus of about 1,000,000 bushels that is shipped north to near-by countries.

Direction of Canada's Trade

Before the World War, Canada shipped 4,000,000 bushels of wheat annually to the United States, 1,000,000 bushels to Newfoundland, and 2,000,000 bushels to the islands of North America. In 1927-28, Canada shipped 8,000,000 bushels of wheat to the United States, 2,000,000 bushels to Newfoundland, and 5,000,000 bushels to the islands of North America. During 1927-28, Canada exported through United States ports 85,000,000 bushels of wheat. On the other hand, the United States exported 46,000,000 bushels of wheat through Canadian ports. This interchange of port facilities is a postwar development of the wheat trade of the two countries.

The United States shipped an average of 13,000,000 bushels of wheat to Mexico, Central America, Panama, and the islands to the south and east before the World War. Since the war this trade has increased to 16,000,000 bushels. These areas are the natural markets of the United States and serious competition from Argentina is not to be expected. On the other hand, Canada is rapidly gaining control of the markets in British insular possessions.

The outstanding feature of these changes in the demand for and supply of wheat throughout the world is the shift of Europe's chief sources of supply from Russia, the Danube Basin, and British India to Canada, the United States, and Argentina. Great Britain looks to Canada for most of the wheat destined for consumption in the United Kingdom, the United States supplying certain required grades.

On the Continent, the United States has maintained its trade in wheat more nearly on an equal footing with Canada and Argentina. Supplying the continental demand is a matter of grade, quality, and price.

In the Orient and Pacific Islands, increased Australian competition added to that of Canada has endangered markets, in which, before the World War, the United States held practically a monopoly.

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WHEAT Seed Cleaned and Treated for Smut by Portable Machine Smut in growing wheat reduces the yield of the wheat. Stinking smut, or bunt, in market wheat reduces its market value. Smut in wheat presents a serious handicap to the efficient, economical marketing of the grain. All smutty wheat must be passed through smut-removing machines before it is suitable for milling purposes.

Stinking smut can be controlled effectively by any one of several simple treatments, except in areas where soil infestation occurs or