

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Agricultural Economics
Washington

F.S.
Wh-5

November 7, 1927

FOREIGN NEWS ON WHEAT

THE WHEAT AND FLOUR INDUSTRY IN MANCHURIA

Growing conditions have been favorable for wheat in Manchuria during the present season and it seems to be agreed, according to a report from American Agricultural Commissioner Paul O. Nyhus in China to the Bureau of Agricultural Economics, that the yield per acre is high and that the crop will be the best in a number of years. The Chinese Eastern Railway places the crop at 30 million bushels compared to 24 million last year, with a surplus over requirements in the producing areas about twice as large as last year. In the opinion of the milling trade the receipts at the mills will be at least twice as large as last year. Prices for wheat have dropped close to bean prices, or to about U. S. \$1.05 per bushel, and mills that have been closed are preparing to operate. It is quite probable, therefore, that a large part of the South Manchurian flour needs will be taken care of by the crop in North Manchuria.

A striking change in the wheat and flour trade of Manchuria is indicated by a recent study made by Mr. Nyhus. In 1920 Manchuria exported 20 million bushels of wheat to world markets while in 1924 the trade was reversed and flour, equivalent to 13 million bushels of wheat, was imported. South Manchuria in recent years has been an important market for foreign flour, including flour from the Pacific Coast of the United States, and the extent of this market in the future will depend largely upon the development of wheat growing in North Manchuria.

New land is rapidly coming under cultivation in North Manchuria and since the climate is more favorable for soya beans than for wheat, it appears that the former crop is in general more popular at the present time. In certain regions, however, the production of wheat is not so hazardous but that plantings have been increased when prices were high and at such time the North Manchurian production has fully taken care of the flour needs of South Manchuria. So long, however, as world markets continue to absorb increasing quantities of soya bean products, there seems little likelihood that wheat production in Manchuria will expand beyond the requirements of South Manchuria.

Agricultural Development in Manchuria

Considering the extent of Manchuria, about 400,000 square miles, and the estimated area of cultivated crops of 30 million acres, the acreage of wheat is very small. The fact, however, that wheat is grown chiefly in certain regions in Northern Manchuria makes it a crop of considerable commercial significance in these localities.

A. Made by

Manchuria moreover is a "New China" in many respects and rapid changes are taking place. Here, as in no other place in China, are vast rolling areas still undeveloped and awaiting colonists. The extensive river valleys contain a great deal of fertile land. Fully 50% of the arable land in the Northern province is still untouched and here also as in no other part of China, railroad construction is rapidly going on and opening up new tracts to settlers. About half of the railway mileage of China is concentrated in Manchuria and the country has been free from the civil wars and impoverishment that other sections in China have suffered.

Immigration of farmers into Manchuria from the North China Provinces of Shantung and Chihli is another development factor of leading importance. This migration has been taking place in growing volume over a long period of years but more recently a strong impetus has been given to the movement by the continuous hardships of over-population and poverty aggravated by civil war and unsettled conditions in North China. It is estimated that fully 700,000 immigrants from China proper have found their way into Manchuria this past year; they come in the spring and many of them go again with the fall to return to their native provinces and take part in the ancestral rites and family sociability at the Chinese New Year season in February. In recent years it has been observed that a larger portion come prepared to settle permanently in Manchuria and to leave forever the ancestral graves that have bound generations after generations to the same soil. Both as to laborers and permanent settlers this emigration movement is affecting the development of North Manchuria in an evident way each year.

Even here where land is plentiful there is but little farming on an extensive scale. There are only about twelve big-scale farms of 2,000-4,000 acres in size owned by Chinese officials or Chinese banks and operated entirely with foreign machinery and Chinese labor. A large American manufacturer of agricultural implements set up a branch office at Harbin when it left Soviet Russia, and, in addition to supplying the large scale operators with tractors and other machinery, it is selling tractor equipment to land-owners who plough new land before parceling it out to settlers. There is a small business with native farmers in foreign ploughs, some 10 to 15 thousand placed in the last 5 years, but the farming methods are essentially the same as those which the farmers acquired in Shantung and Chihli provinces. It is almost entirely hand labor with very simple tools. Settlers are given on share-lease about 10 acres per man or about the amount that one man can work.

One of the serious drawbacks to development, in addition to the severe winters, is the activity of bandits or "hunghutzes". They rob and kidnap with so much boldness and so near to settlements that the insecurity of the country keeps away many settlers.

The staple crops of Manchuria are kaoliang (a grain sorghum) soya beans, Italian millet, corn and wheat. The first three predominate in importance and the soya bean crop as the big cash crop is inseparably linked with the growth and development of Manchuria. The soya bean industry has grown rapidly; exports

of oil, bean cake and beans were equivalent to 84 million bushels in 1925 or almost twice the 1915 export. As cash crops wheat and soya beans are somewhat in competition while kaoliang and millet are grown for farm and local consumption. With a population of about 20,000,000 people domestic requirements of the chief articles of Chinese diet, kaoliang, millet and corn are extremely large. In addition some 20 million bushels of kaoliang and millet have been exported to Korea and North China in some years, and of corn about 6 million bushels are sent to North China to supplement local grain production. The acreage yield and production of Manchurian crops for 1925 as estimated by the South Manchuria Railway are given in the following table:

<u>STAPLE CROPS: Production, acreage and yield per acre in Manchuria, 1925</u>				
Crop	Acreage	Yield per acre	Production	
	<u>Acres</u>	<u>Bushels</u>	<u>Bushels</u>	
Kaoliang	5,940,000	26.1	155,100,000	
Soya beans	5,155,000	24.7	127,200,000	
Millet	4,790,000	21.9	105,000,000	
Corn	1,902,000	27.7	52,800,000	
Wheat	1,572,000	18.0 <u>1/</u>	28,300,000	
Rice	428,000	36.8	15,755,000	
Barley	320,000	25.8	8,355,000	
Total of above	20,107,000		398,730,000	

Source: South Manchurian Railway.

1/ Yield per acre higher than estimate of Chinese Eastern Railway.

Climatic Conditions in Manchuria

Soil conditions are favorable for a wide variety of crops but the success with soya bean, kaoliang and Italian millet, all late maturing crops, is related to the special climatic conditions in Manchuria. These same climatic conditions make wheat and other summer maturing grains unsafe crops. There is a spring drought broken only in June; ample to heavy rainfall in July and August together with very high temperatures; and following these two months of excellent growing conditions there is clear dry weather in September and October for harvesting the late maturing crops. The winters are extremely severe, and the contrast with semi-tropical vegetation is caused by prevailing winds from the cold dry Siberian Northwest in the winter, and periodic winds from the warm and moist Southeast in the summer. A Russian scientist in commenting on the unusualness of Manchurian climate has written that it has an extreme climate in the winter, such as is found in Northern Manitoba and in summer temperatures of the rice and cotton districts of the United States. Essential climatic data at the South Manchurian Railway Experiment Station are shown in the following table:

Manchurian weather data 1/

Month	Temperature at 10 a.m.	Amount of Precipitation
	<u>Degrees of Fahrenheit</u>	<u>Inches</u>
January	2.3	.21
February	11.3	.13
March	28.9	.42
April	47.8	.69
May	61.7	2.10
June	70.3	3.45
July	77.5	6.81
August	75.4	5.67
September	61.7	2.66
October	49.5	1.53
November	26.6	.53
December	10.8	.15
Annual	44.1	24.35

1/ Ten year average, 1915-24. at Kungchuling Agricultural Experiment Station.

It will be noted that half of the annual rainfall occurs in July and August and that there is practically no snow in winter. The average date of the last frost in spring is May 8 and of the first frost in the fall September 24. The wheat grown in Manchuria is spring wheat and it is sown about the 1st of April. Some years it is very adversely affected by the spring droughts and the Director of the Chinese Eastern Railway Experiment Station together with others state that in many years a great amount of wheat has to be resown, or other crops substituted for the wheat failure. Again, moist and hot weather about July 1 frequently results in greater or less damage from rust. Various sources indicate that severe rust damage occurs two or three times in ten years. Excessive rains in late July sometimes handicap harvesting. Climatic conditions accordingly are not entirely favorable for wheat, a fundamental condition that limits the wheat acreage and possibilities. Even in the special wheat growing regions soya beans are grown to fully twice the extent of wheat.

Wheat and Soya Bean Prices

Prices of wheat particularly in relation to prices of soya beans have played and will play an important part in the areas sown to wheat from year to year. Monthly prices of wheat and beans at Harbin from 1912 to date show that at times bean prices equal or exceed wheat prices, but that usually wheat prices are higher. The spread between wheat and bean prices was considerable from 1914 to 1919, a price stimulus over a period of years that apparently brought on a big production and export of the years 1919, 1920 and 1921.

Growth of the wheat industry during the war

In the absence of estimates of the wheat crop prior to 1922 the trend of wheat production is indicated in the following table giving the summary of statistics that have been compiled to show the exports from North Manchuria. The Maritime Customs and the Chinese Eastern Railway statistics permit a division between North Manchuria; a section of surplus production, and South Manchuria, the deficit region.

WHEAT AND WHEAT FLOUR: Exports from North Manchuria

Year	Bushels	Year	Bushels
1912	4,000,000	1920	29,600,000
1913	5,000,000	1921	22,100,000
1914	4,500,000	1922	12,000,000
1915	4,900,000	1923	6,800,000
1916	6,100,000	1924	1,600,000
1917	10,000,000	1925	2,800,000
1918	10,100,000	1926	2,900,000
1919	17,600,000		

The gradual expansion of wheat production to the peak exports of 30 million bushels in 1920 and subsequently the retrenchment to practically the pre-war status is very apparent from the above statistics. A part of these exports was absorbed in South Manchuria, so that in 1920 the exports abroad were 20 million bushels. Comparable with estimates that have been made in recent years the annual farm production in North Manchuria during the years 1919, 1920 and 1921 exceeded 75 million bushels. Recent crops have been estimated by the Chinese Eastern Railway as follows:

Year	Yield per acre Bushels	Production Bushels
1922	15.4	45,000,000
1923	6.0	19,000,000
1924	11.5	21,000,000
1925	13.1	22,000,000
1926	14.8	24,000,000

The near failure of the crop in 1923 effected a severe reduction in acreage for the subsequent years.

Status of the flour industry

Dating back to the Russo-Japanese war in 1905, Harbin has been the center of a wheat milling industry and during and following the World War up to 1920 many more flour mills were built not only in Harbin, and in the wheat areas, but also in South Manchuria. With the slump in wheat production the milling capacity in Manchuria was fully 50 per cent idle. Of 26

mills in Harbin not more than 11 operated last year; the mills in South Manchuria are even less advantageously situated as to supplies. Flour shipments from Harbin during the past three years are about the same as before the war or only one third of the peak movement. Milling is mainly for local flour needs which are considerable, due to a Russian population of about 200,000.

Some flour, however, has been shipped during the past years as far south as Mukden in South Manchuria both from Harbin and from Changchun mills. Mukden is also a good outlet for foreign flour, Shanghai, Japanese, American and Canadian, imported at Dairen. About 12 mills distributed through North Manchuria in wheat growing localities have curtailed the outlet for the Harbin mills' flour, in addition to the fact that a small pre-war business along the Siberian border has been destroyed by a prohibitive import duty into Soviet Russia. The milling operations in Harbin last year appear to have used about seven million bushels of wheat and conditions were improved over the two previous years.

South Manchurian Flour Requirements

The following statement has been compiled from the statistics of imports and exports into South Manchuria and indicates the approximate extent to which South Manchuria takes flour, either from North Manchuria in the form of wheat and flour or from Shanghai and abroad as flour imports.

WHEAT FLOUR AND WHEAT FLOUR EQUIVALENT: Net imports into South Manchuria (Barrels of 196 pounds)

Year	From North Manchuria	From Shanghai and abroad	Total imports
	Barrels	Barrels	Barrels
1920	2,037,000	321,000	2,358,000
1921	1,867,000	512,000	2,379,000
1922	1,039,000	1,041,000	2,080,000
1923	949,000	1,376,000	2,325,000
1924	139,000	3,105,000	3,244,000
1925	447,000	1,530,000	1,977,000
1926	877,000	2,240,000	3,117,000

Prior to 1922 imports from abroad were insignificant in amount and imports from Shanghai were about one third of the amounts in recent years. Imports into South Manchuria therefore of 2 million to 3 million barrels of flour from Shanghai and abroad is a circumstance of only the last three years and its permanence depends upon the extent to which North Manchuria will enlarge its wheat production.

The place of American flour may be judged from the following table giving the country of origin of flour imports into the port of Dairen, a Japanese leased territory and the main entry port to Manchuria.

FLOUR: Source and amounts imported at Dairen

Source	1923	1924	1925	1926
	<u>Barrels</u>	<u>Barrels</u>	<u>Barrels</u>	<u>Barrels</u>
Shanghai	112,600	558,900	785,700	633,100
United States ...	512,800	904,800	448,600	263,900
Japan	48,900	47,000	344,500	460,000
Canada	15,300	247,100	108,000	314,600
Other	4,300	---	400	---
Total	693,900	1,757,800	1,687,200	1,671,600

The imports from Japan, prices being equal, are for the most part explained by the facilities of quick delivery that Japan possesses by virtue of nearness and of frequent sailing at times of low stocks in addition to the connections of their own nationality in Dairen.