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# FOREIGN AGRICULTURE

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# Comparison of Agriculture in the UNITED STATES and SOVIET UNION

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Both the United States and the Soviet Union are leading agricultural producers. Together, they account for more than one-quarter of the world's annual farm output.

The U.S. and U.S.S.R. utilize different combinations of resources and different organizational structures to achieve their respective levels of farm production. The farm economy of the United States uses much less labor and land but substantially more capital than the Soviet Union to produce approximately 60 percent more annual output. U.S. agriculture is characterized by many individual farm units producing for a market economy. In the U.S.S.R. land is nationalized and agricultural production is guided by central planning, operating through a complex of large-sized collective and state farms. /

This paper has been designed to present economic data comparing various aspects of U.S. and Soviet agriculture with a minimum documentation consistent with adequate presentation of the subject matter. As a rule, all economic data pertaining to Soviet agriculture should be used with some caution. During the past several years there has been a large increase in the volume of statistical data available on Soviet agriculture as well as other branches of the Soviet economy, but many of these statistics are of uncertain reliability. Also, many data have not been made available that are essential to understanding the organizational structure and operation, as well as measuring performance, of the Soviet farm economy.

For the comparisons which follow, unless specified as official Soviet data, the economic data describing Soviet agriculture will be those

computed or estimated by analysts in the U.S. Department of Agriculture. Almost all the data on Soviet commodities originate from a Soviet source. In many circumstances, the Soviet data have been adjusted to produce estimates which are comparable to U.S. farm statistics. Unreliability of Soviet data has not been the only reason for the need of adjustment. Much of the problem arises from differing official definitions of similar agricultural terms in the English and Russian languages.

### Resources

Land Area: Despite its  $2\frac{1}{2}$  times larger land mass, the U.S.S.R.'s area of cropland, including hayland, exceeds that of the U.S. only by about 40 percent. Within its present boundaries, the Soviet Union has approximately 650 million acres of crop and hay land, as compared with an estimated 460 million acres for the United States. In terms of land suitable for tillage, the U.S. probably has more such land than the U.S.S.R. In 1960, the Soviets sowed 501 million acres of crops, comparable to 329 million acres sown by the U.S.

Soils: The huge area of the Soviet Union has a diversity of soil types distributed in rather well-defined geographical zones or belts. The most important group for growing crops is the fertile black soils (chernozem) of the steppe and wooded steppe zones of the central and southern European U.S.S.R. and of southwestern Siberia and northern Kazakhstan. Although these soils occupy less than 10 percent of the total area, much of the very important wheat crop is grown on them. Estimates by U.S. soil authorities indicate the U.S.S.R. has over  $3\frac{1}{2}$  times more wheat land (chernozem and chestnut soils) than the U.S., but the Soviets have nothing to compare with the U.S. corn and cotton belts in terms of both soils and climate. In the past, the bulk of Russian farm production has been concentrated in the area of the chernozem and chestnut soils, but a larger part of the U.S.S.R. has podzolic, desert, or other infertile soils.

Climate: Thus far, climate has been more a limiting factor to expanding farm output in the U.S.S.R. than has land or soil resources. Relative to the U.S., the Soviet Union is situated much farther north. This latitudinal position, coupled with great distance from sources of moisture, has resulted in the severity and dryness of the Russian climate.

The extremity of the northerly position of the Soviet Union is indicated by almost all of the country being north of the southern border of Minnesota. Yalta at the southern tip of the Crimea has the same latitude as Rochester, Minnesota, and Odessa in the southern Ukraine is in the same latitude as Duluth. The climate of these southern Soviet cities, however, is moderated by the Black Sea.

The average growing season, indicated roughly by the frost-free period, is short even in central and southern Russia. The average frost-free season in Moscow is about 130 days, which corresponds to that of central North Dakota. It is necessary to go as far south as Krasnodar in the Kuban region of northern Caucasus to find an average of 190 frost-free days or about the same as in east-central Kansas.

Population: In mid-1960 the population of the U.S.S.R. was estimated as 214.4 million and that of the U.S. as 180.7 million. Within the last two decades, the U.S. population has gained significantly on the Soviet, narrowing the gap between the sizes of the two populations. Before World War II, the Soviet population was over 45 percent larger than the American, but by 1960 this margin had narrowed to less than 20 percent. Part of this is attributable to Soviet losses sustained during World War II, estimated at about 20 million. But part of the U.S. gain is explained by an increased U.S. birth rate.

War losses also have resulted in a numerical imbalance between men and women in the Soviet Union. Demographic estimates for 1959 list 82 men per 100 women in the U.S.S.R., compared to 98 men per 100 women in the U.S.

The Soviet population is more rural than the U.S. with 51 percent of the population living in rural areas, whereas only 30 percent of the U.S. population is rural, and only 8.7 percent lived on farms in 1960.

Labor Force: Consistent with its larger population, the Soviet Union also has a larger labor force than the U.S. According to the Soviet census for 1959, the number employed in the U.S.S.R., excluding those in the military, was 96.5 million people. This figure, however, does not include 9.9 million members of collective farmers and workers families engaged in individual and subsidiary agricultural production. If they were included, the total Soviet labor force would be 106.4 million. The U.S. civilian labor force was 69.4 million workers in 1959, according to the U.S. Department of Labor.

A much larger proportion of the Soviet labor force is employed in agriculture, about 45 percent, compared with an estimated 8 to 10 percent in the U.S. In 1959, almost 48.3 million workers were engaged in Soviet agriculture, including members of collective-farm households and other workers' families engaged in individual and subsidiary agricultural production. U.S. agricultural employment in 1959 averaged 5.8 million workers, or 8.4 percent of the total civilian labor force. 1/

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1/ According to U.S. Department of Agriculture, the average number of farm workers, including all family members who worked 15 hours a week, was 7.4 million in 1959.

The numerical imbalance between sexes in the population of the U.S.S.R. is reflected in the Soviet labor force, which consists of 48 percent women, and in the total number of Soviet farm workers, 60 percent of which are women. In the U.S., women comprise about one-third the total labor force, but less than one-fifth the farm labor force.

Capital: Relative to the U.S., the Soviet Union has much less capital employed in agriculture.

In 1960, there was a tractor for every 70 acres of sown cropland in the U.S., compared with one tractor for every 485 acres in the Soviet Union.

The amount of capital equipment available in the agricultural sectors of the two countries is roughly indicated by the following comparative data for various capital items:

	<u>United States</u> <u>1/</u>	<u>Soviet Union</u> <u>2/</u>
	. <u>Thousands.</u> .	
Tractors	4,750	1,036
Motor trucks	3,060	729
Grain combines	1,060	492

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- 1/ Preliminary 1959. Using old definition of farm.  
2/ End 1959.

#### Agricultural Organization

There is a sharp contrast between how agriculture is organized in the United States and the Soviet Union. American agriculture is characterized by individual farmers, for the most part, owning their own land and operating their own predominantly family-sized units. All land in the U.S.S.R. is nationalized and the operational unit is either a collective or state farm, which replaced the formerly predominant small peasant family farm.

Farm system and numbers: The United States had 3.7 million farms in 1960, of which 2.4 million were so-called commercial farms accounting for over 95 percent of all farm sales by farmers. The U.S.S.R. had 53,400 collective farms and 6,500 state farms in 1960. In addition, there were millions of small household plots discussed below.

The collective farm, or kolkhoz, is the predominant type and consists of pooled holdings created by the forced collectivization of formerly independent small peasant farmers. In 1960 collective farms accounted for more than 60 percent of the total sown area, a decline since 1953, when they accounted for 84 percent of a smaller sown area.

Theoretically, a kolkhoz is supposed to be a form of producers' cooperative, electing its own management. But actually, it has become tightly controlled by the Soviet state and Communist Party authorities and is practically indistinguishable from other state enterprises. Unlike the workers in other state enterprises, however, members of collective farms are residual sharers in the income of the collective, after the claims of the state and production expenditures have been met. The earnings in kind and in cash vary with the skill and labor contribution of the peasants. The greater the skill required, the greater the earnings of a collective farm member. Steps are being taken at present to reform and simplify the cumbersome method of payment in collectives, modeling the method on a regular cash wage. The state also shares in the income of the collectives, through planned deliveries (purchases) of farm products at fixed prices, which have the first priority in the distribution of the collective farm income.

The state farm or sovkhozy, as the name implies, has always been owned and operated directly by the state with the aid of hired labor, just as any Soviet factory. State farm workers, unlike collective farmers, are paid regular wages. State farms accounted for a third of the total sown area in 1960, compared with about 10 to 12 percent in 1953. Acreage expansion on the new lands beyond the Volga and the Urals and conversion of a number of collective farms into sovkhozy in various parts of the country have contributed to the gaining importance of the state farm.

The Soviets have an additional agricultural operational unit, the repair-technical stations, of which there were 3,500 at the end of 1959. These stations (RTS) are repair and supply centers of machinery, spare parts, fuel, etc., for the collective farms. They are the remnants of former machine-tractor stations (MTS), which once numbered close to 9,000. Before 1958, collective farms usually did not own tractors and other complicated machinery. Such equipment was owned by state machine-tractor stations (MTS), which serviced collectives for stipulated fees in terms of farm produce and also performed important supervisory functions for the Government. In accordance with the new Government policy promulgated in 1958, the MTS have been selling most of their machinery to collectives which are operating it themselves. The machine-tractor stations are being gradually transformed into the present-day repair-technical stations.

Farm Size: Average farm size in the U.S.S.R. has been considerably enlarged during the last decade. Farms are gigantic relative to those in the U.S. In 1960 the average size U.S. farm was 302 acres with an average of 84 acres of harvested cropland, compared with an average of 6,785 sown acres on collective farms and 22,485 sown acres on state farms in the U.S.S.R. On the average, about  $1\frac{1}{2}$  farm workers were employed on each U.S. farm in 1960, while each Soviet collective farm included 386 households and the average state farm employed 753 workers.

Private agriculture in U.S.S.R.: Practically the only remnants of private agriculture still left in the Soviet Union are the small garden plots and a few head of livestock which farm families in collective or state farms and some other workers are permitted to keep. Such private farming accounts for

about 3 to 5 percent of the total sown area, but for a much larger proportion of livestock and animal products. In 1959 the population still owned one-third of the total cattle, one-half of the cows, one-fourth of the hogs, and one-fifth of the sheep, in spite of government pressure on the people to sell their animals to the state. In the same year, private production accounted for 47 percent of the meat, 49 percent of the milk, and 82 percent of the eggs produced in the country. The garden plots yielded over half the green vegetables and 65 percent of the potatoes.

This intensive private farming linked with a limited free retail market in nearby cities makes a highly significant contribution to the national food supply, as well as to the individual farmer's income. To some extent, this highly productive private farming in the U.S.S.R. offsets the relatively low productivity of the collective-farm economy. On the other hand, the household plots compete with the collective farm for the worker's time.

### Agricultural Production

The outturn of farm commodities in the USSR during 1958 is roughly estimated at about two-thirds of the U.S. level. On a per capita basis, this Soviet output is reduced to about half of the U.S. level. The Soviet Union is placed in a more favorable position than normally by using the 1958 season to measure the farm outputs of the two countries. Exceptionally favorable weather during the 1958 growing season resulted in record crop production which tended to boost 1958 Soviet farm output above what is considered an average year. Although weather was also favorable in the United States during 1958, it was not as favorable as in the U.S.S.R. Soviet farm output during a year with more average weather is probably nearer 60 percent than two-thirds of U.S. farm output.

During 1958, Soviet farm production accounted for 11 percent and the U.S. farm production 16 percent of total world agricultural production.

Crop production: Wheat and potatoes are much larger components of total farm output in the U.S.S.R. than in the U.S. where corn is the leading crop. Sugar beet production is also much more important in the Soviet Union than in the U.S. Sunflowers are the major oilseed in the Soviet farm economy as soybeans are in the United States.

U.S. production of cotton is twice that of the U.S.S.R., but cotton is important in both countries. Higher yields of cotton per acre are reported in the Soviet Union than in the U.S. because all Soviet cotton is grown on irrigated land and only 25 to 30 percent of the U.S. harvested cotton acreage is irrigated. Yet the U.S. irrigated acreage produces about 40 percent of the cotton output (see table p. 7).

Acres and production of selected crops, United States and Soviet Union, 1960

Crop	United States		Soviet Union	
	Acres	<u>1/</u> Production	Acres	<u>1/</u> Production
	Million acres	Million bushel	Million acres	Million bushel
Wheat	52.6	1,363	148.5	1,700
Rye	1.6	32	40.8	520
Barley	14.0	423	23.5	440
Oats	27.1	1,162	35.8	850
Corn	82.1	4,353	<u>2/</u> 29.5	<u>3/</u> 590
Grain sorghum	15.4	638	<u>4/</u>	<u>4/</u>
Soybeans	23.5	559	<u>5/</u> , <u>6/</u> 1.1	<u>5/</u> , <u>6/</u> 8
Flaxseed	3.4	31	<u>5/</u> , <u>6/</u> 4.6	<u>5/</u> , <u>6/</u> 16
		Million short tons		Million short tons
Sugar beets	1.0	16.5	<u>6/</u> 7.5	56.0
Sunflower seed	<u>4/</u>	<u>4/</u>	<u>6/</u> 10.4	<u>6/</u> 4.2
		Million cwt.		Million cwt.
Potatoes	1.44	256.7	<u>6/</u> 22.5	<u>6/</u> 1,852
		Million pounds		Million pounds
Tobacco	1.1	1,960	<u>5/</u> , <u>6/</u> 0.4	<u>5/</u> , <u>6/</u> , <u>7/</u> 417
		Million bales		Million bales
Cotton, lint	15.3	14.3	<u>6/</u> 5.4	6.8
		Million short tons		Million short tons
Fiber flax	<u>4/</u>	<u>4/</u>	<u>6/</u> 4.0	<u>5/</u> , <u>6/</u> 0.4

1/ Preliminary.

2/ Nearly 40 million additional acres of corn were harvested for silage and fodder.

3/ Including some corn harvested in the milk stage for silage.

4/ Not available.

5/ 1959 data.

6/ Official Soviet data.

7/ Includes both tobacco and makhorka.

Source: Data on U.S. are from "Crop Production, 1960 Annual Summary," Agricultural Marketing Service, U.S. Department of Agriculture, December 16, 1960. Data for Soviet Union are estimates of the Foreign Agricultural Service, U.S. Department of Agriculture, except where designated as official Soviet data, in which case they are not necessarily accepted by the USDA as being accurate estimates.

Livestock production: In spite of recent rapid growth of livestock production in the Soviet Union, livestock output in the United States is still much greater. Meat production in the U.S. is over twice that of the Soviet Union. Egg production is  $2\frac{1}{2}$  times higher. Milk production in the U.S. is about 10 percent greater, but Soviet butter production is much larger. Smaller butter production in the U.S. results partly from margarine replacing butter in the diets of many Americans.

The U.S.S.R., with 4 times more sheep than the United States, greatly outstrips the U.S. in production of wool with an annual clip more than double the U.S. level.

Production of selected livestock commodities, United States and Soviet Union, 1960

Commodity	Unit	United States	Soviet Union
Meat, red <sup>1/</sup>	Million pounds	28,231	<sup>2/</sup> 13,550
Milk (from cows)	Million pounds	122,920	112,500
Butter	Million pounds	1,479	<sup>3/</sup> 1,870
Wool (greasy basis)	Million pounds	300	775
Eggs	Billions	61.4	<sup>3/</sup> <sup>4/</sup> 24.6

<sup>1/</sup> Includes beef, veal, pork, lamb and mutton, plus goatmeat for the U.S.S.R. Excludes lard and rendered fat.

<sup>2/</sup> Preliminary estimate.

<sup>3/</sup> Official Soviet estimate.

<sup>4/</sup> Estimated from reported increase over 1953 egg production, according to Pravda, January 26, 1961.

Source: Data for U.S. are from Agricultural Marketing Service, U.S. Department of Agriculture. Data for U.S. are estimates by Foreign Agricultural Service, U.S. Department of Agriculture, unless otherwise specified.

Numbers of specified livestock in the United States and Soviet Union, January, average 1950-59, annual 1959-61

Kind	Average 1950-59	1959	1960	1961
<u>All cattle:</u>				
	. . . <u>Millions.</u> . . .			
U.S.	90.8	93.3	96.2	97.1
U.S.S.R.	60.1	70.8	74.2	75.8
<u>Cows:</u>				
U.S. <sup>1/</sup>				
U.S. <sup>2/</sup>	22.8	20.1	19.5	19.3
U.S.S.R.	27.1	33.3	33.9	34.8
<u>Hogs:</u>				
U.S.	54.7	58.0	59.0	55.3
U.S.S.R.	33.4	48.7	53.4	58.6
<u>Sheep:</u>				
U.S.	31.3	32.6	33.2	32.9
U.S.S.R.	100.5	129.9	136.1	132.9
<u>Horses:</u>				
U.S.	4.9	3.2	3.1	<u>3/</u>
U.S.S.R.	13.5	11.5	11.0	<u>4/</u>

<sup>1/</sup> Included in all cattle.

<sup>2/</sup> Two years old and for milk.

<sup>3/</sup> Beginning in 1961, estimates are being discontinued because the number of horses and mules on U.S. farms have declined to such a low level.

<sup>4/</sup> Not available.

Source: Data for U.S. are from the Agricultural Marketing Service, U.S. Department of Agriculture. Data for U.S.S.R. are from official Soviet sources.

#### Food Consumption

U.S. food production is at such a level that it should easily support the growing population for some time to come. For the present the major agricultural problem is that of controlling burdensome farm surpluses. The situation in the Soviet Union, however, is more precarious.

In terms of daily calories available per person, both countries have adequate food supplies at the present time. Estimated 1959 average daily intake per capita in the U.S.S.R. was approximately 3,000 calories, compared to 3,210 calories in the U.S.

Regardless of the similarity of calorie intake of the two countries, the structures of their respective diets are vastly different. By Western standards, the Soviet diet is monotonous and heavily overladen with starchy foods. Over half the caloric value of the Soviet food supply is comprised of flour and cereal products, and potatoes are the source of about 10 percent. Less than 25 percent of the calories of the average U.S. diet is from flour, cereal products, and potatoes. The average Russian has almost three times as much flour and cereal products and over three times as many potatoes available than the average U.S. consumer.

Over 30 percent of the calories in the U.S. diet is from foods of animal origin, while only 15 percent of Soviet calories come from livestock products. Relative to U.S. consumption levels, Soviet consumption is low for meat, milk, eggs, fruits, and vegetables. Also, the Soviets have less edible fats and oils available than the U.S. Soviet agricultural policy, therefore, has been focused on expansion of farm output, especially of feedstuffs and animal products.

#### Farm Efficiency

To achieve their respective levels of farm output, the U.S. and U.S.S.R. use vastly different proportions of factor inputs. The United States uses much less labor and land, but much more capital to achieve its greater output. Farm efficiency, measured in terms of output per unit of input, is much higher in the U.S. for cropland and for farm labor. The yields per acre of most crops are lower in the Soviet Union than in the U.S.

The much lower productivity of Soviet agriculture than of U.S. agriculture is underscored by the fact that, according to Soviet sources, labor requirements per unit of product were from 2.3 to 7.3 times higher on collective farms and from 80 percent to 320 percent higher on state farms of the U.S.S.R. than on U.S. farms. But the extremely low input of capital directed into agriculture by the U.S.S.R. results in a larger output for each unit of capital input than in the U.S.

#### Agricultural Trade

Foreign trade in farm commodities is much more important to the U.S. farmer than the Soviet farm worker. Similarly, the United States is much more important in world agricultural markets than is the U.S.S.R. In the United States foreign trade operations are conducted, with minor exceptions, by private firms, though some agricultural exports are subsidized by the Government. In the U.S.S.R. foreign trade is entirely a government monopoly.

The U.S. is the world's largest exporter and the second largest importer of farm products. During fiscal 1960, the U.S. supplied almost one-fifth of world export volume in farm products and in recent years the U.S. has taken about one-sixth of world agricultural imports. Foreign

countries are an important market for U.S. agriculture. Output from one out of every 6 acres of harvested cropland in the U.S. moved abroad during 1960, or the equivalent of 57 million acres. In the past three years, the U.S. exported an average of about half its rice production; two-fifths, cotton, wheat and tallow; about one-third, tobacco; and one-fifth soybeans. Coffee is the leading U.S. agricultural import, with the U.S. taking over half the total entering world trade. The U.S. also imported over one-fourth of the sugar in world trade.

The Soviet Union has not been as important in world markets. In the past, the U.S.S.R. attempted to pursue a policy of economic self-sufficiency and traded only enough to assist in fulfilling economic plans or to meet political commitments. In general, the Soviets have imported in order to industrialize, and exported in order to continue importing. Wheat is the U.S.S.R.'s leading farm export and is the only agricultural commodity in which the Soviets play an important part in the world export trade. Beginning with 1956-57, the U.S.S.R. has been the world's third largest exporter of wheat and flour, surpassed only by the U.S. and Canada. But 80 percent of Soviet grain exports are taken by the other communist countries of Eastern Europe.

The Soviet Union is the principal supplier of many of the major agricultural imports of the Bloc countries. They dominate the Soviet foreign trade pattern, accounting for 70-75 percent of total trade volume in recent years.



Growth Through Agricultural Progress

