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PROCEEDINGS
OF THE
SECOND INTERNATIONAL CONFERENCE
OF
AGRICULTURAL ECONOMISTS

HELD AT
CORNELL UNIVERSITY,
ITHACA, NEW YORK,
AUGUST 18 TO AUGUST 29, 1930

The Collegiate Press
GEORGE BANTA PUBLISHING COMPANY
MENASHA, WISCONSIN

1930

Indexed

3 cards

Russia. Agriculture
Farm tenures, Russia

THE RECONSTRUCTION OF AGRICULTURE IN THE
SOVIET UNION

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PRE-REVOLUTIONARY Russia appeared in the world market primarily as an exporter of agricultural products. This position was not the result of a high level of development of the productive forces of the country—the necessary prerequisite for the export of a marketable surplus from a producing country. The export of farm products from pre-war Russia was based on the rule of the large land owner, which compelled the mass of small farmers to turn over to the market, domestic and foreign, the fruits of their labor, even at the expense of satisfying their own most elementary needs.

Agriculture in pre-revolutionary Russia was characterized by a considerable concentration of farm property in the hands of the wealthy landlords, by the great predominance of small producers among the masses of peasants and, together with this, by the semi-feudal dependence on the landlords existing among the bulk of the peasants. If we divide the land-holdings of pre-revolutionary Russia into four groups according to size of holding, the relation between the various groups will be shown in table 1, which gives the data for 1905 when the census on which it is based was taken.

Table 1. Number of Holdings of Various Sizes in Pre-Revolutionary
Russia, 1905
(Based on census data)

Group of landholders	Range in size of holding (hectares)	Average size of holding (dessiatins*)	Number of holdings (millions)	Total area in holdings (millions of dessiatins*)
Ruined peasantry, oppressed by semi-feudal exploitation.....	Up to 16.6	7.0	10.5	75.0
Middle peasantry.....	16.6-22.0	15.0	1.0	15.0
Upper strata, or wealthy peasantry.....	22.0-550.0	46.7	1.5	70.0
Semi-feudal estates.....	550 and over	2,333.0	0.03	70.0
Total Average.....		17.6	13.03	230.0

* 1 dessiatin equals 1.1 hectares or 2.7 acres.

The great bulk of peasants during this period, the group classified as the ruined peasantry, were oppressed by the exploitation of the wealthy landlords and did not even possess means sufficient for the maintenance of the physical conditions of existence. The chronically miserable conditions prevailing among the mass of poor peasants in Russia is illustrated by the progressively increasing proportion of rejections from military service on account of physical unfitness. According to official data for 50 provinces of European Russia, the percentage of those rejected or reprieved from military service due to physical unfitness, during the period 1874-1902, was as shown in table 2.

Thus, the transition of the agriculture of pre-revolutionary Russia from a primitive economy to capitalism was a process accom-

Table 2. Percentage of Rejections or Reprieves from Military Service on Account of Physical Unfitness, Fifty Provinces of European Russia, 1874-1902

<i>Period</i>	<i>Per cent rejections or reprieves</i>
1874-78.....	11.2
1879-83.....	14.9
1884-88.....	16.9
1889-93.....	17.9
1894-98.....	17.6
1899-1902.....	22.1

panied by the impoverishment of the great mass of the peasantry, by their pauperization, and by their being forced out of agricultural production to a great degree.

The contradictions between the desolate condition of the mass of the peasantry, the capitalist development of agriculture, and the domination exercised by the big landlords over the land—the basic means of agricultural production—were the fundamental cause of the revolution of 1905 and was also one of the basic underlying factors in the revolutionary outbreak of 1917. Having crushed the revolution of 1905 by means of the punitive expeditions of the czarist troops, and by executions and death sentences, the czarist government was at the same time compelled, by means of the so-called "Stolypin laws," to stimulate the development of agriculture along commercial and capitalistic lines at a heightened tempo. But these attempts could not create sufficiently favorable conditions for the liquidation of the conflict of interests between

the landlords and the peasantry, inasmuch as the power and the profits remained in the hands of the ruling, land-owning class. As a matter of fact, the contradictions were actually aggravated by the Stolypin reforms, despite the fact that the czarist government attempted to base itself on certain groups in the villages by affording these groups the possibility of expanding their hold-

Table 3. Comparative Distribution of Land in a Number of Districts in Russia Before and After the Revolution

<i>District and group of farms (classified according to the value, in rubles,* of the means of production owned)</i>	<i>Area per farm before the war (dessiatins)</i>	<i>Area per farm in 1924-25 (dessiatins)</i>	<i>Change (dessiatins)</i>	<i>1924-25 area in percentage of pre-war</i>
Ukraine (steppe sections)				
0- 200 rubles.....	1.5	4.9	+3.4	327
201- 500.....	4.0	7.0	+3.0	175
501- 800.....	7.6	8.5	+0.9	112
801-1,400.....	12.9	11.8	-1.1	93
Above 1,400.....	29.0	18.2	-10.8	63
Ukraine (wooded steppe sections)				
0- 200 rubles.....	1.1	2.3	+1.2	209
201- 500.....	2.8	5.0	+2.2	179
501- 800.....	6.0	7.3	+1.3	122
801-1,400.....	12.1	10.8	-1.3	89
Above 1,400.....	18.5	13.4	-5.1	73
Tambov Province				
0- 200 rubles.....	3.0	3.9	+0.9	130
201- 500.....	5.7	7.3	+1.6	128
501- 800.....	7.1	9.1	+2.0	129
801-1,400.....	12.3	11.5	-0.8	93
Above 1,400.....	43.0	17.7	-25.3	41
Smolensk Province				
0- 500 rubles.....	0.2	3.1	+2.9	1550
201- 200.....	4.3	5.8	+1.5	135
501- 800.....	8.5	7.7	-0.8	91
801-1,400.....	12.5	10.9	-1.6	87
Above 1,400.....	16.5	14.4	-2.1	87

* 1 ruble equals 51 cents.

ings through the plundering of the common land. In spite of the decisive measures taken in this direction, the outbreak of the revolution, hastened by the war, led to the overthrow of the czarist régime and to the overthrow of the capitalist class, which had attempted to seize the power after the March revolution.

The victory of the November revolution led to the final elimination of landlordism and of land ownership, confined principally

to the upper strata of the village; at the same time it brought about a considerable parceling out of land among the poor and middle peasantry. This may be seen in table 3 which gives the comparative distribution of land in a number of districts before and after the revolution.

These tables give a fair indication of the results of the process, brought about by the revolution, of taking land from the upper groups and parceling it out among the lower. For all the lower groups of the peasantry there was, generally speaking, virtually a doubling of the land at their disposal, and sometimes even more. The expansion of land holdings also extended to the middle peas-

Table 4. Redistribution of Land During the Revolution Among the Various Strata of the Rural Population in the Ukraine

Group of landholders	Farm area (millions of dessiatins)				
	Before the revolution	Confiscated	After the revolution	Change	Percentage change
Poor and middle peasant farms.....	20.0	—	34.5	+14.5	+72.5
Kulak (rich peasant farms)	8.6	6.8	1.8	-6.8	-79.0
Large land-holdings and church land.....	12.1	12.1	—	-12.1	-100.0
City land.....	0.6	0.3	0.3	-0.3	-50.0
State and common land..	—	—	4.7	+4.7	—
Total.....	41.3	19.2	41.3	—	—

antry, who added to their holdings in almost all sections of the country. Only from the upper groups did the revolution take part of their land, this part increasing in proportion to the size of the holding.

A summary of the results of the redistribution of land among the various strata of the rural population in the Ukraine is given in table 4.

Thus, post-revolutionary agriculture is characterized by the elimination of the large landlord economy, by a considerable reduction in the land-holdings of the rich peasantry, and by the rule of the so-called middle peasant—the small producer—in agriculture.

In the very first year after the revolution the Soviet State was confronted with the question as to the proper path for the devel-

opment of agriculture. It was quite apparent that the system of agriculture prevailing, with its small-scale production, was not equal to the task of regenerating this most backward branch of national economy and of bringing about a decided improvement in the living conditions of the poorer peasants. At that time Lenin, the head of the Soviet Government and the theoretical and practical leader and guide of the November revolution, wrote of the "necessity of giving all possible support to the *transition from small-scale peasant economy to large-scale socialized production.*" Lenin continually emphasized the necessity of "organizing the reconstruction of the entire economy, the passing from the single, individual, small-scale, trading economy to socialized large-scale economy."

But such a transition required as a necessary condition the development of an industry which would be able to supply agriculture with the machinery and implements needed for the carrying on of a large-scale socialized economy. "This transition," wrote Lenin, "can be speeded up only by means of such assistance to the peasant as will afford him the possibility of improving in a great degree his entire technique of land cultivation, by reorganizing it from the very bottom."

Without first restoring industry, ruined by the war, blockade and intervention, and without considerably advancing the industrialization of the country on the basis of the rehabilitated industry, it would have been impossible to think of a transition from small to large-scale agricultural production—a transition from individual to socialized production.

The period of the rehabilitation of industry is thus co-existent with the prevalence of a small peasant economy. What was small-scale production able to achieve during this period of its domination in agriculture? First of all, it should be noted that the system of government of the U.S.S.R. created the necessary prerequisites for raising the economic level of the small peasantry, instead of its wholesale ruination. This was demonstrated by the rather rapid restoration of animal and plant husbandry, which had been almost destroyed by the war, blockade and famine. Also the sown area grew from year to year.

The rapid restoration of agriculture in the U.S.S.R. took place not only under conditions of a growth in savings and investments in production, but also was accompanied by an improvement in

the living conditions of the agricultural producer. According to data of the Statistical Administration, the consumption of meat by the rural population in 1925 was over one-third more than the pre-war consumption in the villages. In the following years the consumption of meat showed a continuous gain, as is indicated in table 5.

The decided betterment in the living conditions of the agricultural population has brought about a sharp decline in the death rate of the rural population since the revolution. Thus, the death rate in rural districts amounted to 28.6 per 1,000 persons in 1911-13, to 21.7 in 1926, to 21.8 in 1927, and to 18.7 in 1928.

Even more clearly is this process of the improvement in the conditions of the great mass of the peasantry illustrated by the

Table 5. Annual per Capita Consumption of Meat and Bacon in Villages, 1924-25 to 1928-29

Year	Per capita consumption of meat and bacon (kilograms)*	Per cent of 1924-25
1924-25.....	16.05	100.0
1925-26.....	16.54	103.1
1926-27.....	18.29	114.0
1927-28.....	18.71	116.6
1928-29.....	22.41	139.6

* 1 kilogram equals 2.20 pounds.

decided reduction in the infant mortality rate. During the period 1911-13, in the European part of the empire, the infant mortality rate (for infants up to one year old) was 266 per 1,000; in 1926 the infant mortality rate among the rural population was 174, in 1928, 156. The foregoing figures bespeak a considerable betterment in the standards of living of the village masses, resulting in a notable decline in deaths among infants, in increased longevity, and in a corresponding gain in the natural growth of the population. In 1911-13 the annual natural growth in population amounted to 16.9 per 1,000, in 1926 it reached 24 per 1,000 for the village population, and in 1928, 26.3 per 1,000.

Along with the general growth of agricultural production, the great mass of the peasantry—the poor and middle groups—were confronted, in all its magnitude, with the problem of the conditions which would enable them to progress to the higher level of socialized production.

The more rapid development of production for sale signified the taking advantage of market conditions, primarily by the larger producers. This is clearly brought out by a comparison of the results accomplished by the various groups of peasants (table 6).

It will be seen that the larger holdings have a lower production cost per unit and consequently more favorable conditions for development and for building up their resources. The differences in the conditions of production existing between the various groups of small-scale producers created the differentiation of the village,

Table 6. Relation of Size of Holding to Net Return per Centner of Grain, Ukraine Steppe, U.S.S.R.

Type of wheat and group of farms (classified according to the value, in rubles, of the means of production at their disposal)	Outlays per hectare of sown area (rubles)	Yield (centners* per hectare)	Production cost per centner of grain (rubles)	Differences between price and cost per centner (rubles)
Winter wheat				
Up to 750.0 rubles	47.7	6.4	5.9	+2.5
750.1-1500.0	55.1	9.5	4.6	+3.8
Above 1500.0	55.4	10.6	4.2	+4.2
Average for region	52.9	8.9	4.8	+3.6
Spring wheat				
Up to 750.0 rubles	45.1	5.0	7.2	+1.2
750.1-1500.0	50.8	7.0	5.8	+2.6
Above 1500.0	50.3	7.1	5.1	+3.3
Average for region	49.2	6.8	5.8	+2.6

* 1 centner equals 1/10 of a metric ton or 220.46 pounds.

and stratification into separate groups. Parallel with the development of class antagonisms among the different groups of small producers, the period of economic restoration revealed in all clearness the limited means of production which the small peasant producer was able to command. The unprofitable character of small-scale production, and its limited field of operations, are indicated by a number of factors relating, on the one hand, to the means of production which the small holding is able to apply and, on the other hand, to the manner of their application. Thus, for instance, the use of more or less complicated machinery is a prerogative enjoyed only by a limited group of farms. In the U.S.S.R. the number of farms possession their own grain cleaning machines

and triers amounted to 11.6 per cent of the total, those owning seeders to only 3.7 per cent, reapers 6.2 per cent, and threshers 4.3 per cent.

The foregoing data indicate, in the first place, that the great mass of peasants were forced to limit themselves to the most primitive conditions of cultivation, without such elementary necessary means of production as seeders, reapers, grain cleaners, and threshers. On the other hand, a considerable number of peasant farms

Table 7. Relation of Size of Farm to Per Cent of Farms Working Land with Hired Working Livestock and Implements

Farms grouped according to sown area (dessiatins)	Percentage of farms working land with hired working livestock		
	1924	1925	1926
Up to 2.....	64.3	64.5	70.1
2-4.....	34.4	34.4	37.0
4-6.....	20.1	19.7	19.3
6-9.....	12.0	12.0	11.1
9-15.....	5.4	5.7	5.3
15 and over.....	1.5	2.0	2.0
Average.....	38.0	38.2	36.6

	Percentage of farms working land with hired implements		
	1924	1925	1926
Up to 2.....	66.0	65.7	70.7
2-4.....	36.3	36.7	38.8
4-6.....	22.3	21.6	22.4
6-9.....	14.5	14.8	15.6
9-15.....	7.7	8.0	9.5
15 and over.....	2.7	3.0	3.4
Average.....	40.0	39.7	38.8

were compelled to resort to the hiring of means of production, without which they would have been unable to avail themselves of whatever equipment they had at their disposal. The extent to which this hiring of agricultural equipment was carried may be seen from table 7.

For those farms which rented out means of production, the income from the renting out of working livestock and agricultural implements reached a substantial figure (table 8).

The inherent contradictions and the backwardness of small-scale production are also illustrated by the great degree of the non-utilization of the available labor power, a large part of which the

Table 8. Income from Renting Out the Means of Production, in Percentage of the Total Estimated Net Income of the Farm, in Different Provinces, U.S.S.R.

Province	Per cent which income from renting out means of production is of total estimated net income per farm	
	For farms with means of production valued at 801-1,400 rubles	For farms with means of production valued at more than 1,400 rubles
Tambov.....	7.3	5.2
Ukraine (wooded steppe region).....	5.1	7.8
Ukraine (steppe region).....	16.5	12.2
Novosibirsk.....	7.4	9.4

small-scale producer is not able to apply due to the insufficiency of the means of production (table 9).

The limitations of small-scale cultivation are also quite clearly reflected in the factors indicating the efficiency of production among the various social groups of the village. This may be seen from the data in table 10 relative to the grain yield and the productivity of the milch cattle.

It is clearly evident that while the middle peasant holdings show a lower level of productivity in comparison with the highest group, the poorest group shows an even lower productivity than the middle peasant holdings.

In an especially clear-cut fashion may be seen the limitations of petty-peasant production by comparing its productivity and its means of production with that of the collective and state farms. Let us examine a comparison of investments per unit of labor as

Table 9. Unused Working Time in Per Cent of the Available Labor Supply in Various Regions, U.S.S.R.

Region	Unused working time in per cent of available labor supply	
	Proletarian and semi-proletarian holdings	Small-scale commodity producers
Ukraine.....	43.2	40.7
Northern Caucasus.....	41.1	41.3
Lower Volga.....	61.1	46.3
Siberia.....	39.2	39.2
Central Black Soil.....	47.7	41.7
Moscow Industrial.....	46.5	41.7

Table 10. Yield of Wheat per Hectare, and Milk Production per Cow, in Different Regions and on Different Classes of Holdings, U.S.S.R.

	Class of holding*				
	Proletarian and semi-proletarian farms	Petty commodity producers	Petty capitalist farms	In percentage of poor peasant level	
				Middle peasant	Kulak
Ukraine					
Yield of winter wheat. ¹	8.1	10.0	10.8	123.6	133.3
Milk yield per cow ² ...	1,030.7	1,074.9	1,376.9	104.3	133.6
Northern Caucasus					
Yield of winter wheat. ¹	7.2	8.2	9.6	113.9	133.3
Milk yield per cow ² ...	646.0	768.1	956.2	118.9	148.0
Middle Volga Region					
Yield of winter wheat. ¹	12.8	12.9	13.1	100.8	102.3
Milk yield per cow ² ...	1,228.9	1,249.4	1,364.5	101.7	111.0

* The proletariat and semi-proletariat of the village are peasants selling their labor power, to whom this source of income is of primary or secondary importance.

Small market growers are independent farmers who do not hire any labor or who hire labor to a very small extent.

Petty capitalist households are farms on which hired labor is used to a comparatively large extent.

¹ Wheat yields are in centners per hectare.

² Kilograms of milk produced per cow.

among the different groups of individual peasant holdings and collective and state farms. The investments per working day for the various types of farms are given in table 11.

Thus the limitations of petty production, and its unprofitable-

Table 11. Investment per Working Day for Various Types of Farms, U.S.S.R.

Region and product	Investment per working day (rubles)					
	Individual sector			Socialized sector		
	Proletarian and semi-proletarian holdings	Petty commodity producers	Petty capitalist holdings	Collective farms		State farms
				Artels	Communes	
Central Volga						
Spring wheat...	0.5	0.6	0.7	3.6	4.2	11.2
Siberia						
Spring wheat...	0.5	0.7	0.9	—	4.2	4.2
Central Black Soil						
Winter rye...	0.5	0.6	0.7	1.8	2.6	3.3
Northern Caucasus						
Winter wheat...	0.8	0.8	1.1	3.5	3.7	6.6

ness, is revealed with sufficient clarity as compared with the great possibilities of large-scale farming in the form of collective and state farms.

The process of industrialization of the national economy of the U.S.S.R. has considerably increased the supply of agricultural machinery and the importation of the more complicated machinery from the countries of western Europe and America. This has led to the quantity of agricultural machines and tools employed in agriculture mounting steadily from year to year. The value of agricultural machines and tools on all farms amounted to 988 million rubles in 1926-27 and to 1,404 million rubles in 1929-30. The amount required to supply additional machinery for agriculture in 1930-31 is estimated at about one billion rubles.

There has simultaneously taken place a considerable development of agricultural cooperation. The spread of different kinds of machine associations and other forms of cooperation in agricultural production for the purpose of the adoption of a new technical basis is of wide extent, especially in connection with the government support rendered such agricultural collectives. The membership of these agricultural cooperatives was as follows:

1924	2,869,000
1925	6,589,000
1926	7,813,000

Especially characteristic of the development of cooperation in agricultural production is the considerable growth of the simplest forms of producers' associations, which increased their membership during the same years from 172,000 to 882,000, *i.e.*, more than five-fold. This growth involved the creation of machine, milk, cattle-raising, horse-breeding and seed-raising associations, and constituted the first preparatory step in the process of collectivization, which has spread so widely during these last years.

It is necessary to lay special stress on the enormous rôle played in the growth of collective agricultural production by the financial and credit aid which the Soviet state has rendered to all forms of cooperation and to collective farms. The tax payments of the collective farms and cooperative societies have been considerably reduced. Often they have been entirely exempted from the payment of a certain portion of the taxes. In addition, the collective farms receive and have received considerable financial support in

the form of cash credits and also of special credits for the purchase of machinery. By decisions of the Soviet Government, the bulk of the expenses involved in land organization within the collective farms was assumed by the state. These tax exemptions and this financial support by the Soviet state have considerably stimulated the development of collectivization.

All these factors, together with the greater unity and better organization brought about among the masses of the poor and middle peasantry, have led to a strong and energetic development of the collective farm movement, which has spread widely since 1927.

On November 1, 1927, the number of collective farms in the U.S.S.R. was 14,832, embracing 195,000 peasant holdings. By

Table 12. Percentage of Peasant Holdings in the U.S.S.R. Which Had Joined Collective Farms at Various Dates

Date	Percentage of peasant holdings which had joined collective farms
June 1, 1927.....	0.8
June 1, 1928.....	1.7
June 1, 1929.....	3.9
October 1, 1929.....	7.6
May 1, 1930.....	24.1

June 1, 1928, the number of collective farms had mounted to 33,258, comprising 417,000 peasant holdings. By June 1, 1929, the number of collectives had increased to 57,000 with 1,003,000 peasant holdings. By November 1, 1929, the number of such farms had grown to 67,436 and the number of holdings which had joined the collective farms, to 1,919,000. Finally, in May, 1930, there were in the U.S.S.R., 82,276 collectives embracing 5,778,000 holdings.

The tempo of collectivization of peasant holdings may also be realized by a comparison of the percentages of peasant holdings in the U.S.S.R. which had joined the collective farms at various dates (table 12).

This process is even more clearly evident when the percentages are given for those individual regions where collectivization embraces considerably larger strata of the village. The table which follows shows the percentage of the total number of peasant farms

which joined the collectives in three of the chief agricultural regions (table 13).

The collective farm movement has made big strides throughout the U.S.S.R., extending through the grain regions of the south and embracing to an ever greater extent the central and northern regions of the country.

What has led to such an enormous growth in the collectivization of agriculture in the U.S.S.R.? The answer to this question lies in those advantages of large-scale collective production which were disclosed in the process of collectivization in the first years of the formation of large-scale collective farms. First of all the collectivization of peasant holdings eliminated boundary strips, and, in

Table 13. Percentage of Peasant Holdings Which Had Joined Collective Farms in Different Regions of U.S.S.R., as of Various Dates

Region	Percentage of peasant holdings which had joined collective farms				
	June 1, 1927	June 1, 1928	June 1, 1929	October 1, 1929	May 1, 1930
Northern Caucasus	1.6	5.2	7.3	10.0	55.2
Lower Volga	1.6	2.1	5.9	18.3	34.8
Steppe Region of Ukraine	1.6	3.8	8.6	16.0	45.4

connection therewith, increased the utilization of the means of production in the large-scale farms thus formed. An enormous rôle in this uniting of the small peasant strips into the large tracts of the collective farms has been played by the nationalization of land in the U.S.S.R. and by the abolition of private ownership in land. This has provided the indispensable basis for combining the many thousands of small scattered strips of land, constituting the peasant holdings which entered into the collective farms, into the large land tracts of the collective farms, organized in conformity with the topographical conditions, with the nature of the soil, and with the best technical methods. Moreover, even wherever there are no tractors as yet on the collective farms (and there is still a considerable shortage of tractors, despite their ever wider distribution throughout the agricultural areas of the U.S.S.R.), the advantages of large-scale production are clearly in evidence.

First of all, one must point out the increase in the productivity of agricultural labor as a consequence of the uniting of the small peasant holdings into large collective farms. Thus the number

of hectares sown per farm laborer on the collective farms has increased as follows in comparison with the peasant holdings prior to their entrance into the collective farms (in 1929): in the Ukraine, 31.6 per cent; in the Middle Volga Region, 73.1 per cent; in the Central Black Soil Region, 23.0 per cent; in the Lower Volga Region, 78.0 per cent; in the Northern Caucasus, 50 per cent.

At the same time, there has been a considerable increase in the utilization of draft cattle, which on the small peasant holdings had never been fully utilized. Thus, according to budgetary data, the percentage of draft cattle which were not used had been as follows: in the Ukraine, 68.6 per cent; in the Northern Caucasus, 78 per cent.

On the collective farms the draft cattle have been utilized much more productively than was the case on the petty peasant holdings. In the Ukraine the utilization of draft cattle has increased, in comparison with the peasant holdings prior to their collectivization (in 1929), 24.1 per cent; in the Middle Volga Region, 30 per cent; in the Central Black Soil Region, 7.4 per cent; in the Lower Volga Region, 25.2 per cent; in the Northern Caucasus, 34.6 per cent.

The significant increase in the productive possibilities of the farms which have joined the collective farms is evidenced both in the rate of growth of the collective farms themselves and in a decided improvement in the well-being of the members of the collective farms. The improved living conditions of the members of the collective farms, and the increase in their well-being, are based on the increase in productivity of labor of the members of the collective farms. These new rates of growth in the productivity of labor in agriculture have resulted in the current year in new rates of growth in grain production. Prior to last year the annual increase in sown area in the U.S.S.R. was from 4 to 5 per cent, while in the current year, as a result of the increased productivity of labor in the collective and state farms, the increase in the total sown area amounted to 10 per cent, and in the collective farms, to from 30 to 40 per cent. Moreover, the collective and state farms are already manifesting great productivity in the field of animal husbandry. We may thus expect that the development of animal husbandry in the socialized sector of agriculture will in the course of the next few years make up for the present damage

which was inflicted on animal husbandry during the past year due to lack of feed and to the resistance to collectivization on the part of the kulaks.¹

On the collective farms, organized in 1928 and in operation in 1929, the increase in value of all means of production amounted in Uzbekistan to 110 per cent; in Turkmenistan to 109 per cent; in Kirghizia to 133 per cent. Together with the general growth

Table 14. Annual per Capita Consumption of Various Products by Different Peasant Groups

Products and regions	Peasant group (consumption per capita in kilograms)				
	Proletariat and semi- proletariat	Petty commodity producers	Petty capitalist farms	Members of artels	Members of communes
Meats and fats.....					
Northern Caucasus...	12.2	16.5	20.3	20.9	32.1
Volga Region.....	5.4	13.4	24.4	15.6	27.9
Siberia (southwest)...	11.6	25.0	36.1	38.9	42.4
Milk and butter*					
Northern Caucasus...	69.1	142.9	225.9	235.0	178.6
Volga Region.....	159.7	182.5	206.9	204.0	269.0
Siberia (southwest)...	129.6	199.2	238.5	177.6	421.5
Grain products					
Northern Caucasus...	199.4	227.8	245.1	238.3	222.0
Volga Region.....	203.8	228.3	229.9	220.5	208.2
Siberia (southwest)...	247.3	243.7	264.5	178.7	217.7
Potatoes					
Northern Caucasus...	56.2	60.8	69.7	82.6	112.8
Volga Region.....	99.0	115.0	103.5	112.1	112.4
Siberia (southwest)...	110.8	111.3	97.7	83.6	168.4

* In terms of milk.

of production in collective farms, there has been taking place a considerable improvement in the living conditions of those joining the collective farms, an improvement incomparably more rapid than in the small holdings. This improvement in the standard of living of the members of the collective farms is evident from a comparison of the annual per capita consumption of various products by different peasant groups (table 14).

¹ In 1930 the number of live stock was reduced as follows: bulls—10 per cent, cows—12 per cent and hogs—40 per cent.

The table here presented bespeaks most eloquently the fact that the food standards of the bulk of the village population which have joined the collective farms, the poor and middle peasantry, have advanced notably in comparison with the period when they were individual landholders, and that their standards are already approaching those of the petty capitalist entrepreneurs, which the mass of peasantry could not have attained, of course, if they had remained petty, individual landholders.

The most important rôle in large-scale socialist production has been played by the so-called "Sovkhoz," or Soviet state farm. The development of these state farms has been marked by a gradual and general transition from the most rational assimilation of the most advanced technical forms found abroad, to the crea-

Table 15. Percentage Distribution of the 131 Farms Organized by the Grain Trust up to 1930, According to Size

Size in hectares	Per cent of all farms
Up to 25,000	11
25,000 to 40,000	34
40,000 to 80,000	50
80,000 to 100,000	3
Over 100,000	2

tion of new models of production, such as are almost entirely unknown in the most advanced countries of today, or are met in isolated instances only. To illustrate this it is sufficient to consider the activity of one of the largest state bodies for the organization of state farms, the Grain Trust.

The work of the Grain Trust began in 1928. It had organized 55 farms by 1929, 131 by 1930 and, according to estimates, will have organized 230 by 1931.

The total area of arable land in the 131 farms of the Grain Trust amounts to 7,620,000 hectares. The distribution of farms according to size is shown in table 15.

An analysis of the capital structure of a state grain farm, will show that a large mechanized enterprise of this type is in this respect on a level with modern industrial enterprises.

The fixed capital of the grain farms amounts to 5,081,500 rubles. Working capital amounts to 1,250,000 rubles, of which wages

amount to 520,000 rubles. Consequently, the percentage of the constant part of the capital to the total capital is as follows:

$$\frac{5,081.5 + 1,250.0 - 520.0}{5,081.5 + 1,250} \text{ or } 91.8 \text{ per cent.}$$

This is a proportion that may well be compared with that found in industrial enterprises that are technically more powerful and better equipped, as, for example, the "Red Putilov" (Leningrad) tractor and machine building plant, where it amounts to about 95 per cent.

As regards their power base, the grain factories likewise approximate industrial enterprises. The expenditure for fuel per 100 rubles of products in the metal industry amounted to 529.8 calories of "standard fuel equivalents," in the textile industry to

Table 16. Expenditures by the State Grain Farms per 100 Rubles of Product

Item	Rubles expenditure per 100 rubles of product
Wages.....	28.40
Seeds.....	21.00
Amortization.....	18.60
Spare parts.....	4.96
Fuel.....	16.50
Sundry materials.....	2.54

103.0, in the food industry to 64, and in the state grain farms to 267 calories.

The state grain farms thus constitute in agriculture a type of industrial grain factory sharply distinct from the old farms of the landowners and approximating modern industrial enterprises, both in regard to the composition of the capital invested and to the level of technical equipment.

This is likewise revealed with sufficient clarity by the above table showing the items of expenditure entering into the cost of agricultural production on the state grain farms (table 16).

Thus, a large portion of the cost of production of the state grain farms is made up of items representing industrial products. This causes a state grain farm to stand out as a distinct and new type of economy in comparison with those types which were hitherto the rule in agriculture.

The Soviet state has boldly carried over the experience of large-scale industrial production into agriculture. When this question was up for consideration in 1928, the majority of the big specialists in agriculture, having agreed to the exceptional importance of such an approach to the problem of grain-raising, emphasized that at the same time this would be a first experiment and hence its success could not be guaranteed.

But the provision of ample resources for this mode of grain-raising proved of decisive importance in securing a solution of the grain problem as a whole, in as much as the mass collective farm movement which at this period took the form of small collective farms, was thus afforded a clear demonstration of the advantages of real large-scale farming. The state grain farms in a practical way answered the question as to the possibilities and advantages of large-scale socialist agriculture.

Along these two lines—the collectives and the state farms—there will be developed the complete collectivization of the Soviet village.

One of the most important developments in the collectivization movement was the creation of machine-tractor stations which had their first trial on one of the state farms, Shevchenko, in the Ukraine. This experiment, whose initiator was A. M. Markevich, an agronomist, spread widely, and received the support of the Soviet Government. A machine-tractor station, according to the definition of Markevich, is a center for all the mechanical power and the technical equipment necessary for supplying to the fullest extent the production needs of agricultural enterprises. This makes possible an immense economy in technical means of production and their maximum utilization through machine-tractor stations within limits of a radius of more than 15 to 20 kilometers.

Collective farms, which have been organized on territory served by a machine-tractor station, enter into agreements with the latter as to conditions for the cultivation of the fields of the collective farms by the machine-tractor station. The agronomic aid rendered by the machine-tractor stations and the enlisting of members of the collective farms into the working staffs of these stations decidedly transform the aspect of the countryside served by these stations. Machine-tractor stations first of all lead to the growth of the sown area and to the bettering of production. Thus, in the Berezov district on farms served by machine-tractor stations and

organized in 1928, the planted area increased as much as 28.4 per cent, while in districts not served by stations the planted area either remained unchanged, or increased on the average about 4.5 per cent.

Table 17. Expenditures, Gross Income, and Net Income in Rubles per Ten Hectares, under Various Forms of Farm Organization, U.S.S.R.

	Form of organization		
	Individual peasant households, without horses (rubles per 10 hectares)	Individual peasant households, with horses (rubles per 10 hectares)	Members of collectives served by machine-tractor stations (rubles per 10 hectares)
Expenditures:			
Maintenance of draft horses	—	150.00	—
Maintenance of equipment	—	10.00	—
Maintenance of buildings	4.00	5.70	0.80
Hire of labor power	—	10.50	—
Hire of draft horses and inventory against payment of one-half	260.10	—	—
Seeds	—	60.30	50.00
General and miscellaneous	20.20	30.20	15.00
Payment to machine and tractor station out of part of harvest	—	—	165.00
Total expenditures	284.30	266.70	230.80
Gross income:			
Grain	438.85 ¹	491.25 ²	700.00 ³
Straw	25.20 ¹	28.80 ²	37.50 ³
Total gross income	464.05	520.05	737.50
Net income from field crops per family ⁴	179.75	253.35	506.70
Second and third columns in per cent of first	100%	141%	283%

¹ 67 centners of grain at 6.55 = 438.85

84 centners of straw at 0.30 = 25.20

² 75 centners of grain at 6.55 = 491.25

96 centners of straw at 0.30 = 28.80

³ 100 centners of grain at 7.00 = 700.00

125 centners of straw at 0.30 = 37.50

⁴ Gross income less expenditures.

The income of members of collective farms served by machine-tractor stations has considerably increased, as is evident from the figures presented in table 17, recording the experience of the Shevchenko station. (In the calculations we have taken the net yield and the sales value of the products).

These figures, showing the enormous growth in the income of members of a collective farm which has entered into an agreement with a machine-tractor station, explain the broad extent and development of the machine-tractor stations and their significance in the further reconstruction of agriculture.

The machine-tractor stations lead to a decided increase in yield due to better cultivation of the fields and to the agronomic aid

Table 18. Tasks Set, Actual Results Attained, and Highest Results Attained by Machine and Tractor Stations in U.S.S.R.

	Task set by tractor center	Actual results attained	Highest results attained by machine and tractor stations
Number of working hours of tractors for spring sowing campaign			
International 10/20.....	—	537.00	831.00
International 22/36.....	—	685.80	882.00
Average.....	510.00	530.00	—
Length of working day in tractor hours			
International 10/20.....	—	15.90	20.10
International 22/36.....	—	18.70	20.10
Average.....	16.00	16.20	—
Hectares cultivated per tractor*			
International 10/20.....	—	170.00	304.00
International 22/36.....	—	297.60	405.00
Productivity in hectares per tractor hour, International 10/20 plowing sod lands.....	0.30	0.31	0.38

* In terms of soft soil plowing.

rendered the farms. They played a big rôle in the sowing campaign of the current year, by cultivating an area of 1,999,700 hectares. It is necessary to direct special attention to the indexes, which are furnished by machine-tractor stations, as regards utilization of tractors. These are shown in table 18.

The total annual number of working hours per tractor will be 2,300 hours in 1930. Under the plans for establishing machine-tractor stations their number is expected to increase in 1931 to 551, in 1932 to 796, in 1933 to 798, with a combined horse-power of 3,987,300.

As a result of such a development of the machine-tractor sta-

tions over a territory which in 1929 comprised 56,700,000 hectares of sown area, it is anticipated that the area under cultivation may be increased 58 per cent by 1933.

The reconstruction of agriculture in the Soviet Union is already in full swing. It is sufficient to analyze the data as to the share of the several groups of grain producers before the revolution, in 1927, and in the present year, in order to see the nature of the changes which have taken place in agriculture in the Soviet Union during the period of revolutionary reconstruction. Before the war there fell to the share of the large grain farmers, landowners and kulaks, 34 per cent of the sown area, 40 per cent of the gross yield of grain, and 61 per cent of the commercial grain crop, exclusive of local village consumption.

By 1927 this proportion had sharply changed in favor of the small and middle peasant holdings. To the share of the large kulak holdings, fell about 6 per cent of the sown area, 8 per cent of the gross production, and 20 per cent of the commercial grain crop. The rest of the agricultural production was in the hands of the small and middle producers and of the poor and middle peasantry.

The elimination of the landowners, the decided curtailment of kulak production, the predominance of petty individual holdings in the production of grain—these were the results of the first years of the revolution. This scattered agricultural production the Soviet Government has now definitely turned onto the path of socialist large-scale production, and in 1930 we have in the sector of large-scale socialist grain farms (state and collective farms) about 30 per cent of the sown area, 30 per cent of the gross yield, and 62 per cent of the commercial grain crop, exclusive of local village consumption.

At the same time, during the first years of the revolution there took place an uninterrupted growth in the number of peasant holdings. Their number showed an annual increase of 500,000 holdings, 2 to 3 per cent, on the average. The present year is characterized by a definite curtailment of the number of small holdings and by the replacing of 5,778,000 peasant holdings by 82,276 voluntarily organized collective farms.

The collectivization of the small and middle peasant holdings has already, in the first stages of its development, shown the enormous advantages of large-scale socialist farming. Small producers

who have joined the collective farms have been able already in the first year of the existence of these farms to lay the foundation for large-scale farming; they have been able to derive advantages from this large-scale farming in the form of an increase in the labor productivity of the members of the collective farms, and in the form of a better utilization of the means of production which the collective farms had at their disposal, as a result of the collectivization of the means of production formerly belonging to the individual peasant, and as a result of the acquisition of means of production in conformity with modern technical standards.

These advantages of large-scale production are evidenced in an increase of yield, a lowering of the cost of production, an increase in profits, and likewise in the higher standard of living of the members of the collective farms.

The collective farms have inaugurated a new pace of development in agriculture. Whereas up to recent years the total annual increase in the sown area had not exceeded 4 to 5 per cent, this year, with the state and collective farms as a basis, the sown area in the U.S.S.R. has increased more than 10 per cent.

Thus, both from the point of view of the general progress and increased volume of agricultural production and from that of the interests of the small and very small producers themselves, collectivization signifies a change bearing the greatest advantages.