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SOVIET AGRICULTURAL REORGANIZATION AND THE BREAD-GRAIN SITUATION

THIS study illuminates the course of agricultural developments in the USSR since 1930 and 1931, when Soviet grain exports reached spectacular heights after a bumper crop.

Socialistic reorganization of agriculture resulted much less in increase and improvement of grain production than in greatly increased power of the government over crop disposition. Collective farms, dominated by the state but involving certain elements of co-operation, have been more successful than state farms in stabilizing their position and improving their practices. The state grain farms were conspicuously unsuccessful in enlarging wheat production in semiarid regions; consequently, governmental efforts have recently been directed toward expansion of wheat in more humid regions, and toward enhancement of yield per acre. But in humid regions the scope for expansion of wheat is rather narrow and has proceeded mainly at the expense of rye. The total bread-grain area has not yet regained the levels of 1930 and 1931. Yields per acre, though better in 1933-35 than in the poor years 1931-32, failed to exceed the yields on peasant farms before collectivization.

Greater control over crops has enabled the Soviet government to collect more grain than was possible before 1930. This facilitated large exports in 1930-31, but left producers with insufficient reserves. During the following years the government, while continuing to collect large quantities of bread grain, exported only moderate quantities and accumulated grain sufficient for abolition of bread rationing in 1935. To the extent that the government held grain stocks, its power to export remained; but reduced need for foreign exchange, and policies aimed first at covering the rapidly increasing domestic needs, kept grain exports within moderate limits. The poor crops of 1936 necessarily affected the grain reserves earlier accumulated; and the present position does not suggest the likelihood of large wheat exports from the USSR in the next few years.

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SOVIET AGRICULTURAL REORGANIZATION AND THE BREAD-GRAIN SITUATION

When six years ago we undertook to study the Russian wheat problem, agriculture in the USSR was undergoing revolutionary reorganization on socialistic lines. It was too early to reach definite conclusions as to the effects of this reorganization on production. The new institutions were still too fluid and the political struggle continued. While the ultimate outcome was obscure, certain limitations of the new forms of organization were evident which gave rise to doubts as to their efficiency, at least for the near future.

It could also be discerned that the political struggle between the government and peasantry, waged in 1930-31 in order to bring peasants into collective farms, would continue further on a somewhat different front. The extreme rapidity with which the Soviet government intended to proceed with its enormous project of industrialization necessarily imposed extremely heavy burdens on the peasantry, making further conflict between government and peasantry inevitable. Such a struggle continued for several years following the forced collectivization, and the Soviet government was impelled on several occasions to alter policies and plans and to revamp the newly created agricultural organization. During the two or three years just passed, however, the new socialistic organization of agriculture seems to have taken more definite form and to have been stabilized in some degree. Presumably the peasantry has accepted the new organization of agriculture in its reorganized forms and is ready, at least for the time being, to carry it on.

The reorganization of agriculture, particularly its concrete forms and the rapidity with which it was pressed, was dictated by the difficulties which the government continually

experienced, after the revolution of 1917-19, with the supply of bread grain. Solution of the grain problem was the principal purpose of the socialistic reorganization of agriculture. To this end the state grain farms ("grain factories") were created. Collectivization was forced on the peasantry faster than the Five-

Year Plan originally contemplated because of grain-collection difficulties in 1928-29. The grain problem remained central when further steps were taken in the program of reorganization. Accordingly, how far the socialistic reorganization of agriculture ultimately contributed to solution of the bread-grain problem is a significant question.

Early in the period of reorganization, the world was startled by a great in-

crease of wheat exports from the USSR in 1930-31. Many interpreted this as a consequence of the reorganization of Soviet agriculture on new principles, and expected further expansion of such exports. Our explanations of the fact and of the outlook for exports were substantially different at the time.¹ Developments in the following years have tended to confirm our analysis.

Now that reorganization of Soviet agriculture is crystallized in more definite forms and a certain degree of stability prevails, it is proper to resurvey the new forms of organization and their effect on grain production and its possible further development. To be conclusive, such a study involves rather detailed analysis of various governmental measures taken during the past four or five years with a view to stabilizing socialistic enterprises; for all of Russian agriculture—production as

¹ V. P. Timoshenko, *Agricultural Russia and the Wheat Problem* (Food Research Institute, Grain Economics Series No. 1, September 1932), esp. pp. 488, 514.

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well as distribution—is now under the direct control of the government. Sometimes the organization of production is officially planned not only with a view to improvement and enlargement of the total outturn, but also with regard to easier appropriation of the product for the needs of the state. Appraisal of the new organization of state-controlled agricultural production and of the methods of appropriation of its products by the state, is essential before one can form reasoned judgments as to the prospective development of agricultural production in the USSR and the disposal of its products, including exports.

We concentrate attention here upon recent developments in the Russian bread-grain situation, since this aspect of agriculture lies

closest to the world wheat problem. The allied problems of feed grains and the livestock industry, wherein the Soviet government is perhaps experiencing the greatest difficulties at present, must be treated only incidentally. We shall see that the achievements of the Soviet government up to the present time lie mainly in the field of the reconstruction of agriculture on socialistic principles rather than in larger and better production. The efforts directed toward increase of grain production failed to produce the spectacular results that many anticipated a few years ago. The outlook for further development depends on appraisal of the new forms of organization of agricultural enterprises, and is summarized in the concluding section.

I. THE CRISIS FOLLOWING COLLECTIVIZATION

The development of agricultural production in the USSR during the first two years which followed the hasty reorganization on collective principles more than confirmed our rather pessimistic appraisal formulated in 1931. The position of Soviet agriculture in 1932 seemed to many objective and competent observers extremely precarious.¹ Food shortage throughout the country, and famine in the Ukraine and the southeastern agricultural regions,² were objective evidences of this. The political situation was so strained that even within the Communist Party an eventual abandonment of the socialistic reorganization of agriculture, at least in its extreme forms, was discussed.³

¹ For example, see Dr. Otto Schiller, "Die Krise der sozialistischen Landwirtschaft in der Soviet Union," *Berichte über Landwirtschaft* (Berlin, 1933).

² Concealed for some time from the outside world by official Soviet censorship, the fact of the famine of 1932 was recognized by all observers, even those who were not much disposed to publish alarming news about Soviet Russia; only the explanation of the fact was under discussion. See W. H. Chamberlin, *Russia's Iron Age* (Boston, 1934), particularly pp. 82-89 and 367-69; and the exchange of letters between Chamberlin and Louis Fischer in the *Nation*, May 29, 1935.

³ For example, see Joseph Stalin's report, "Results of the First Five-Year Plan," to the plenary meeting of the Central Committee of the Communist Party on Jan. 7, 1933; also Ia. Nikulikhin, *Socialistic Reconstruction of Agriculture during the First Five-Year Plan* (Moscow, 1934), pp. 92, 108.

⁴ See *Agricultural Russia*, esp. pp. 226-40, 512-14.

One of the principal causes of the critical situation of Soviet agriculture in 1932-33 was the ruin of the livestock industry. Catastrophic was the decline in the number of animals, particularly of the horses which continued to be the principal source of farm draft power. This was partly a response of the peasantry to the forced collectivization and partly a result of mismanagement of new collective enterprises which were peculiarly unfitted to handle animal husbandry.

The great reduction of animal units put a stop to expansion of crop area and even caused a decline. By 1930-31 it was clear that shortage of draft power would limit the expansion of crop area in Soviet Russia,⁴ but it was then impossible to foresee that the catastrophe would go so far. The drive for collectivization in 1929-30 had already resulted in reducing the number of work horses by nearly 3 million head (about 12 per cent of the total). The decline proceeded further in 1931. In 1932 the process was so much accelerated that more than 3 million work horses (17 per cent of the total) were lost in a single year. Production of tractors was pushed to the utmost, but failed to compensate for the decline in number of horses. Only 600,000 to 700,000 horsepower of tractors was produced in 1932. At the same time, purchasing power was insufficient to permit continued imports of American trac-

tors. Thus draft power in Soviet agriculture was persistently declining, and in 1932 the decline was greater than in any previous year, equalling about 10 per cent of the total draft power, animal and mechanical together.¹ The decline continued in 1933 but at a slower rate. Not until 1934, when Soviet industry was able to turn out more than a million horsepower of tractors and the rate of decline of horses diminished (though it continued until 1936), did the trend of draft power in Soviet agriculture turn upward. Even in 1935, the total was smaller than it had been just before the wholesale collectivization, despite rapid expansion of domestic production of tractors.

The shortage of the draft power in agriculture was an important immediate factor limiting agricultural production and causing the critical situation of 1932-33. But behind this lay another and more fundamental factor—the mood of the peasantry, its passive resistance to collectivization. Thousands, perhaps millions, of acres of grain in the principal grain-producing regions, particularly in Ukraine and North Caucasus, were left unharvested by peasants in the autumn of 1932, while the same peasants were starving during the winter and spring of 1932-33. This indicates the intensity of that passive resistance.²

The initiative of the peasants and their interest in an increase of grain production on

collective farms were undermined by the government policy of unlimited collection of grain without regard to the urgent needs of the members of the collectives. This policy was most strongly in effect during the crop year 1931-32, when obligations to deliver grain to the government became unprecedentedly heavy. The government was much more successful in the collection of grain from peasants, particularly from collective farms, than in stimulating increase of their grain production. In 1931-32 the government collected twice as much grain as it had during the years just preceding the wholesale collectivization, whereas the grain crop of 1931 was substantially smaller than the average for 1925-28. Fully a third of the total grain production, and 40 per cent of production less seed, was taken by the government from the 1931 crop. Wheat collections were equal to more than half of the crop less seed.

These fractions are averages for the whole country and for all groups of producers. The burden actually falling upon collectives, however, was even heavier than that upon outsiders (see p. 355), in the face of official intentions to penalize the latter in order to induce them to join. Particularly heavy collections of grain from collective farms during the crop year 1931-32 took place in Ukraine and some of the eastern regions. In many parts of Ukraine, 80 per cent of the total crop and sometimes the whole was taken by the government;³ collectives which fulfilled their obligations early received successive fresh orders for deliveries; and local officers in charge of grain collection followed a theory that "when a collective fulfilled promptly its share of delivery, this meant that the original charge was too light and must be increased."⁴ They also were saying that there was "no reason to lose time in collection of grain from individual farmers when it is simpler to order more grain from collectives." The collectives which were eager to fulfill their obligations were thus the greatest losers. Such a policy could hardly fail to offset any economic stimulus of peasants toward productive work on collective farms.

The error of this policy was recognized by the government and plans were laid to change

¹ Assuming that one tractor horsepower is equal to two live horses (the usual basis of calculation in Russia), the following tabulation presents in millions the development of draft power in Soviet agriculture after 1928 (data from *Agriculture of the USSR, 1935*, pp. 199, 217):

Year	Work horses ^a	Tractor horsepower ^b	Total horsepower
1928	22.8	.3	11.7
1929	23.6	.4	12.2
1930	20.9	.9	11.3
1931	19.5	1.4	11.2
1932	16.2	2.0	10.1
1933	14.1	2.7	9.7
1934	12.8	3.8	10.2
1935	12.0	5.5	11.5

^a In June.

^b As of Oct. 1, 1928-30; average for beginning and end of calendar years, 1931-35.

² In several southern regions, 30 to 40 per cent of the crop was left in the fields in 1931 also. See M. Kossior's remarks in *Pravda*, July 9, 1932.

³ See L'vov, in *Economic Life*, Aug. 18, 1932.

⁴ *Ibid.*

the system in 1932, though with little success at the time.¹ The grain collections for the 1932 crop, though planned for a somewhat smaller total than in 1931,² were even heavier in some regions. In Ukraine and North Caucasus, more than half of the total production of grain less seed was planned to be taken. It is therefore not surprising that the year 1932-33 was marked by peasant upheavals throughout these regions, that the population was starving, and that by February 1933 the Soviet government was impelled to authorize procurement of 6 million quintals of seed for collective and state farms in order to provide for sowing of the 1933 crop. A similar procedure had been necessary in February 1932 to supply seed for collective and state farms of the eastern regions of the USSR, from which excessive amounts of grain had been collected a few months earlier.³

Under such conditions the crop area on peasant farms—of collectives and individuals combined—declined after 1931 (see p. 329). In that year it had been found possible for the government to compensate for the loss on peasants' lands by extremely rapid expansion of the crop area on state grain farms. In 1932, however, the peasants' grain area declined by 15 million acres, and expansion of plantings on state farms compensated for only a small part of this decline.

On the state grain farms, however, the situation was far from favorable. Although the crop area on these farms was enormously enlarged in 1931 and increased further in 1932, their yield per acre was so low in 1931 and 1932 that there was not much increase of

production. Severe criticism of the work of the state grain farms was embodied in an official document signed November 1931 by Molotov, President of the Council of People's Commissars of the USSR, and by Stalin as Secretary of the Communist Party. Summarizing the findings of special committees of investigation, they spoke of "crying inefficiency and mismanagement" and of "the criminal attitude toward state property"; and emphasized that "the land cultivation on state grain farms was quite unsatisfactory and they failed to utilize amply available technical equipment for an improvement of yields."⁴ In this same document, a decree called for hastening a reorganization of the Grain Trust that had been decided upon three months earlier (August 25, 1931) by the People's Commissariat of Agriculture. Several state grain farms in the semiarid eastern regions were abandoned. The development of the state grain farms after 1932 was altogether different from the original plan worked out during 1927-30 (see p. 338).

The government realized that something must be done, and immediately, to prevent collapse of the whole structure of agriculture so hastily reorganized on socialistic lines. A shower of new decrees affecting all aspects of Soviet agriculture were published during the second half of 1932 and in 1933. These are indicative of the feverish activity directed toward salvation or stabilization of socialistic forms of agriculture, which then were drifting toward catastrophe.

These decrees, particularly those promulgated during the earlier part of the period, suggest a certain hesitancy on the part of the government. Some of them sought to stimulate the initiative of members of collectives, enhancing their private interest in improvement of work and increase of production. By decree of May 6, 1932, permission was granted to peasants to sell surpluses of agricultural products (after fulfillment of obligatory deliveries to the government) in open markets at market prices; by decree of September 3, 1932, the land tenure of collective farms was stabilized and by decree of January 19, 1933, a new system of obligatory grain deliveries to the government was established—fixing

¹ Official communist speakers at the Third Conference of the Communist Party of Ukraine and the resolutions of the conference recognized openly that the failure of the spring sowing campaign of 1932 was in some degree caused by "serious mistakes committed in the grain collection campaign of the previous year." See *Pravda*, July 9, 15, 1932.

² See *Collection of Laws and Decrees of the USSR*, May 13, 1932.

³ See *Collection of Laws and Decrees of the USSR*, Feb. 23, 1932, and Mar. 10, 1933.

⁴ Quotations from *Izvestiia*, Nov. 28, 1931. For equally severe criticism of work on the state livestock farms see "Concerning the Work of State Livestock Farms," in *Collection of Laws and Decrees of the USSR*, Apr. 25, 1932.

them early in the winter for the next crop year. In contrast, other decrees sought to terrorize and subdue those who were hostile to socialist forms of agriculture. Such was the decree of August 7, 1932 concerning protection of property, establishing the death penalty for theft of property from collectives and co-operatives. Other decrees pointed to further gov-

ernmental regulation of the minutest actions of collective farms, aiming to foresee and to prescribe bureaucratically for all activities on collective farms dispersed over thousands of miles of countryside. A classic example of such a decree was that of February 10, 1933, concerning the preparation of work animals for the spring sowing campaign.¹

II. RECENT GOVERNMENT MEASURES

ECONOMIC PLAN FOR AGRICULTURE

The agricultural program formulated by the Soviet government in the fall of 1932 for the next crop year, and that incorporated in the Second Five-Year Plan for the development of agriculture during 1933-37, reveal a radical change from the previous program of rapid crop expansion.² It was plainly stated that further expansion of the crop area, particularly of technical and of cultivated crops, was out of the question for the following years; and that such an expansion would put too heavy a burden on the available draft power, resulting in poor cultivation and low yields. Improvement of methods of cultivation in order to raise yield was proclaimed as the principal goal for the next few years. This was evidently a conclusion drawn from experience (see pp. 328, 344).

Only a very modest increase of the total crop area was contemplated in the Second Five-Year Plan—some 12 to 13 million acres within five years, or only 4 per cent of the 1932 crop area. Practically all of this increase was designed for small grains, especially wheat. In this respect the plan was in some degree inconsistent with the main objective of increasing yield per acre through bet-

ter crop rotations. In spite of some tendency toward diversification observable in postwar years,³ small grains, and particularly bread grains, occupy so large a proportion of the total crop area as to prevent a rational crop rotation. Shortage of bread grains dictated the agricultural policy in 1932, and the government was obliged to husband carefully its limited means of production, particularly draft power, with due regard for bread-grain supplies. It was planned that two-thirds of the total increase of the crop area should be in the grain-deficit area north of the black-soil belt, in order to make these regions more nearly self-sufficient in grain.

The second important aim of the new Five-Year Plan for agriculture was recovery of the livestock industry. Solution of this problem was no less urgent than solution of the grain problem. These goals tended somewhat to conflict, because recovery of the livestock industry required enlargement of feed crops, which in turn limited the possibilities for a badly-needed increase of bread-grain production. The Second Five-Year Plan sought to reconcile these conflicting interests by assigning a somewhat greater increase to the area under the feed grains than to the area under bread grains. But the urgency of the bread-grain problem and the limited means of production did not permit them to go far enough in this direction (see pp. 332-34).

It is important to mark here that in 1932 the plan was to improve cultivation in areas already occupied and settled, rather than to expand crops in new areas as had been characteristic of the First Five-Year Plan. Increase of production through improvement of the quality of work in limited areas was the *economic plan* for stabilization of agriculture.

¹ Dr. L. Volin, of the U.S. Department of Agriculture, describes Soviet policy during this period in some detail in "Recent Developments in Soviet Agriculture," *Foreign Agriculture*, January 1937, I, 3-28.

² Decree of Sept. 27, 1932, "On Measures Concerning Increase of Yield," issued jointly by the Council of People's Commissars of the USSR and the Central Committee of the Communist Party; and *Second Five-Year Plan of Economic Development of the USSR*, prepared by the State Planning Commission (Gosplan, Moscow, 1934), particularly the section on agriculture in I, 199-245.

³ See *Agricultural Russia*, pp. 191-95, 248-52.

In accord with this economic plan, the government elaborated its plans for political domination of collective farms and for strengthening their organization.

POLITICAL CONTROL OF COLLECTIVES

After hesitancy in governmental policy toward the peasantry during 1932, early in 1933 the Communist Party reached a decision that determined Soviet agricultural policy during the ensuing years. The decision was to rely more upon organizational control of and political domination of the peasantry, organized in collective farms, than upon stimulating their personal initiative by granting economic advantages. The latter method, however, has not been completely abandoned; it has sometimes been combined with thorough governmental control, and in recent years (particularly since 1934) has been resorted to more frequently.

An important decision was made by the Communist Party in January 1933 to organize political departments in every machine tractor station (MTS) and on every state farm, and to appoint to these departments tried and reliable Communist leaders who were to take under their political control the full guidance of all socialistic agricultural enterprises. Several thousand carefully selected party members were sent to the countryside early in 1933.¹ During the following two years they were in full control of all work on collective and state farms. They were not simply "the eyes of the Communist Party," but practically the directors of personnel in all socialistic enterprises. Without their advice and decision, nobody could be appointed to any post of importance. They were free to eject any member of a collective, even officers of any grade, and their effective powers included extreme measures of coercion or punishment against those who might resist their orders.

The fundamental principles of Communist rural policy at the time were formulated by Stalin himself,² who emphatically stated that complete collectivization of agriculture does not diminish but rather increases the responsibility of the Communist Party toward agriculture. He said that at that stage the "Communist Party cannot restrict itself to separate

acts of intervention in the process of agricultural development, but must have in her hands the complete direction of collective farms and must assume complete responsibility for their work."

The first task of the political departments in the MTS at their organization early in 1933, when collectives were inclined to resist deliveries of grain to the government, was to purge the collectives of elements regarded as inimical to the movement and unfriendly to the government. Official reports indicate the removal, during 1933, of from a third to a half of the total number of officers of collectives—presidents, members of administrations, managers, accountants, etc.³ The administrations of many MTS themselves were cleared of unreliable elements. Members of collectives were thrown out by thousands or even by millions.⁴ So revolutionary a change was possible only because the Communist Party could rely on certain groups of members within the collectives. The problem of the political departments was to organize these groups, and with their help to dominate the whole membership. This organization of groups of "militants" proceeded simultaneously with ejection of inimical elements, and the political departments of the MTS were successful in creating strong nuclei of militant members in all collectives.⁵ From these nuclei were chosen officers to replace those removed.

¹ The aims and purposes of these political departments, their organization and selection, are explained in L. Kaganovich's report to the joint plenary meeting of the Central Committee and the Central Control Commission of the Communist Party, Jan. 7-12, 1933, and the resolution of the plenary meeting.

² See his reports, "Concerning the Work in the Countryside" and "Results of the First Five-Year Plan," presented to the plenary meeting of January 1933.

³ For example, see *On the Agrarian Front*, 1934, No. 1, pp. 97-117, 118-36; 1935, No. 1, pp. 28-45, Nos. 2 and 3, pp. 143-56.

⁴ From an article in the same periodical, 1934, No. 12, pp. 98-107, it appears that in one district of the Central Blacksoil region from a fifth to a fourth of the total number of peasants then remaining outside of collectives were those previously ejected.

⁵ See D. Davydov, "The Role of Political Departments in the Strengthening of Collectives," *On the Agrarian Front*, 1935, No. 1, pp. 28-45. In 1933, every MTS included on the average about 400 organized militant members of collective farms; and in 1934,

These groups of militants were not necessarily members of the Communist Party; indeed, they were mainly non-members who actively supported the political departments in their execution of the party program. They were drawn from such elements as enthusiasts for the collective movement, former poor peasants who were better off on collective farms than they had been as individual farmers, and members of collectives who anticipated individual advantage from active support of the government program. Relying upon these groups of militants, the political departments of the MTS were able to contribute toward reorganization of collectives in order to make them more efficient economically. From their very beginning, as we have seen, the political departments of the MTS were designed not merely for political or party work, but also to undertake important tasks in the field of economic management of socialized agriculture, particularly in the organization of labor.¹

MACHINE TRACTOR STATIONS

One of the first problems was to enhance the rôle of the MTS as organizations planning the work of collective farms and controlling their operations. The MTS had never been purely technical organizations, designed solely to promote efficient management and utilization of tractors and other complex agricultural machines; their function was always dual, including governmental control and domination of collective farms.² Many leading Communists were finding in 1932, however, that "the political rôle of the MTS was not

equal to their economic importance."³ The mere fact that political departments were created within the MTS meant an enlargement of their political rôle.

At about the same time other changes were made which still further accentuated the dependence of collective farms upon the MTS. By decree of February 5, 1933, the Council of the People's Commissars of the USSR approved a new model contract between the MTS and the collective farms, containing two important innovations. First, the MTS acquired from collective farms all threshing machines with mechanical power; this made the collectives fully dependent on the MTS for threshing, and insured to the MTS better control of grain production of collective farms. Second, the remuneration of the MTS for their work on collective farms was fixed by the new form of contract *in kind* instead of in money payments as had been usual previously. For the complete series of operations connected with grain production, from plowing to threshing, the remuneration was fixed at 20 per cent of the total crop;⁴ and in addition, the collective farms were obliged to supply the MTS with the necessary labor, except for tractor drivers who were permanently employed by the MTS.

Both of these changes greatly enhanced the importance of the MTS in collection of grain for the government. But they clearly displeased the peasants, who resisted by refusing the services of the MTS, finding the costs excessive.⁵ In order to escape payment to and control by the MTS, the collectives attempted to thresh their own grain, using very primitive methods. The government, however, never recognized their right to refuse the services of the MTS.

The actual relationship between the MTS and the collective farms was contractual in form, but not in substance. Each MTS, receiving from the government an outline of work for a crop year, prepared its own plans for the several collective farms in its district; and these plans were embodied in contracts with the collectives. The contracts, however, were regarded by the MTS merely as a formality, not binding upon themselves. Very few of the contracts between the MTS and the collectives were executed according to the letter of agree-

about 800. Since each MTS served 30 to 35 collectives, the average collective had in 1934 a nucleus of 20-25 militant members. Since in 1934 there were about 3,500 MTS, the total number of militant members of collectives on which the Communist Party could then rely may be estimated at about 3 million.

¹ This was clearly expressed in Kaganovich's report to the January 1933 plenary meeting of the Central Committee of the Communist Party.

² See *Agricultural Russia*, pp. 120, 238, 459-60.

³ Kaganovich, *loc. cit.*

⁴ By decree of Mar. 20, 1937, remuneration of the MTS was reduced by 10 to 20 per cent. *Izvestiia*, Mar. 21, 1937.

⁵ See Nikulikhin, *Struggle for Profitable Collectives*, pp. 163-65; *On the Agrarian Front*, 1934, No. 11, p. 9.

ment. In some collectives, the work actually done by the MTS much exceeded the contractual obligation, and in others fell far below.¹ Initiative to disregard the letter of contracts lay always with the MTS, never with the collective farms. Thus the MTS not only imposed on collective farms the plans which had been received from the government, but modified these plans during the crop year without any agreement with the collective farms. Even the new 1935 model charter for collectives, though much more liberal than the earlier ones, places the collectives under obligation to fulfill strictly the plans of agricultural production prescribed by the government. Since the government usually transmits plans to the collectives through the MTS, even today and under the new charter of 1935, the collectives are not free co-operative organizations but are in some degree organs of the state receiving orders from the government, while the MTS are state organs whose principal task is enforcement.

By establishing such political and organizational control, the government was able to proceed further with internal reorganization of collectives designed to make them more efficient. In this reorganization the objective was always to combine direct command and strict control with some encouragement of initiative on the part of members of collectives. This second element began to assume more importance after 1934.

INTERNAL ORGANIZATION OF COLLECTIVES

Two measures were of great importance for strengthening collectives and improving their work. One of these was organization of smaller "permanent brigades" within the collectives, to which certain equipment, work animals, and land were assigned for the duration of a

¹ See Lovkov in *On the Agrarian Front*, 1935, No. 4, pp. 54-67.

² *Collection of Laws and Decrees of the USSR*, No. 6, Feb. 8, 1933.

³ See Z. Morozov in *On the Agrarian Front*, 1935, No. 1, pp. 117-31.

⁴ A. Muralov, in an article discussing the new model *artel* charter for collectives, *Planned Economy*, 1935, No. 3, pp. 48-66, observed that in 60 per cent of all collectives separate tracts of land had actually been secured for permanent brigades. He observed also that the personnel of the brigades was far from stable.

crop rotation. These brigades were responsible for the work on the land assigned to them; and, by various methods of distributing the incomes of collectives, the members of brigades were stimulated to get better results. The second measure involved remuneration on the basis of piece work.

On February 4, 1932, the Communist Party had decided in favor of the organization of permanent brigades. In 1933 both measures were incorporated in a decree of the Central Executive Committee of the USSR, "Concerning the Strengthening of Collectives."² During 1933 and 1934 it was one of the most important tasks of the political departments in the MTS to organize permanent brigades in collectives and to make them work effectively. It was regarded as one of the achievements of the political departments that by 1934 permanent brigades had already become basic units of production within the collectives,³ although this work had not been completed by the beginning of 1935.⁴

Both measures represented a degree of reversal of policies pursued during the early period of collectivization. Local agents of the government had then sought to organize large collectives—sometimes "giant collectives," including two or more villages—and to pool in them all property of members and all products of their work. Under such far-reaching pooling of interests it proved impossible to stimulate the activity of individuals, and this was one of the reasons why the work on the collectives was so unsatisfactory.

This creation of permanent brigades on collective farms, with tracts of land and allotments of equipment and work animals assigned to them for a period of several years, meant that the collectives no longer existed as integral productive units but for production purposes were broken up into smaller units. This was a policy similar to that emerging in the reorganization of the state grain farms. The government sought, however, to organize the permanent brigades as relatively large units, permitting convenient use of tractors and other machines on their tracts of land. In the major grain-producing regions of the south and east, the collectives are usually large, including on the average 200 to 300 workers

with crop areas from 2,000 to 5,000 acres. Such collectives are usually divided into 4 or 5 brigades with 40 to 80 workers in each and with the crop area varying widely from region to region, perhaps within such limits as 500 to 2,000 acres.¹

Such units were large enough for convenient use of tractors and machines but too large for pooling of the interests of individual members and for organization of labor. The members were organized for work in smaller units (*zveno*) to which were assigned a certain number of horses and machines. The policy was to maintain the personnel of these smaller groups throughout a crop year, and to make them responsible for certain operations and to interest them in the results of their work without assigning to them a tract of land for a longer period. In some regions and in some collectives, however, there was a tendency to form these smaller groups on a family basis and to assign tracts of land to them for longer periods.² The government did not favor such

a drift toward the old family farm, fearing the destruction of the larger units of production, the permanent brigades; but the peasantry in some regions evidently favored it.

The principle of stimulating peasant initiative by introducing piece work had been formulated as early as 1928 and had been incorporated in the first model charter for collectives,³ but apparently was forgotten later during the forceful drive for collectivization. By 1933, when the government sought to improve the work and organization of collectives, this principle re-emerged and was accentuated.

By decree of January 30, 1933, the Central Executive Committee of the USSR ordered the People's Commissariat of Agriculture (1) to elaborate a gradation of various agricultural operations in terms of work-days, and (2) to establish model daily standards of accomplishment for the principal agricultural operations in collectives. All agricultural operations within collectives were accordingly classified by the Commissariat into seven groups. In the highest group were included the skilled operators of complex agricultural machines such as tractors and combines. In the lowest group were included persons engaged in daily chores and other light unskilled work—guards, messengers, etc. The remuneration of a day's work for the highest group was fixed four times as large as that for the lowest group, with differentials also among the five intermediate groups. Thus a great differentiation in the remuneration of workers was established, and skilled labor on machines was placed in a privileged position.

Later, the remuneration of such skilled mechanics as tractor drivers and combine operators was still further increased relative to other groups, and a system of premiums on their work was inaugurated.⁴ Among members of collectives there was some opposition to such large differentiation in remuneration, and attempts were made to reduce the differential from 4 to 1 to 2 to 1, by reclassifying the tasks so as nearly to eliminate the two lowest-paid groups.⁵ But the government continued to insist on widely differential wages.

The Commissariat of Agriculture also established daily standards for the principal operations for the whole country, for instance,

¹ The Research Institute for the Study of Collective Farms made a study of 188 brigades in 32 collectives of the major grain-producing regions during the early period of organization of permanent brigades (1932). This study suggests that the common range of the crop area of a brigade was from 750 to 2,000 acres with from 30 to 80 workers. See *Bulletin of the Economic Cabinet of Professor S. N. Prokopovich* (Prague, 1933), No. 105, pp. 12-13. In the book *Organization of Production in Grain Collectives*, by M. Vainer, S. Demidov, and others (Sel'khozgiz, Moscow, 1936), in which the experience with the MTS and the collectives in the principal grain-producing regions is summarized, a description is given of a brigade on a collective farm in Western Siberia. The crop area of this brigade was about 1,300 acres and there were about 80 workers in it, including women and youths.

² See Ia. Ageev, "Internal Organization of Labor in Collectives," *On the Agrarian Front*, 1934, No. 10, pp. 63-75. This article describes practices characteristic of the northeastern part of Middle Volga.

³ See an article on the distribution of incomes in collectives in the *Bulletin of the Economic Cabinet of Professor S. N. Prokopovich* (Prague, 1934), No. 113, pp. 10-12.

⁴ Decree of Apr. 19, 1935, "Concerning the Work of Combines and the Pay of Combiners on State Farms and MTS," *Collection of Laws and Decrees of the USSR*, No. 21, Apr. 30, 1935.

⁵ See V. Revzina, "Workday in Collectives," *Planned Economy*, 1935, No. 7, pp. 48-59; also Ia. Iakovleff's report to the Fourth Session of the Central Executive Committee of the USSR, Jan. 2, 1934, as given in his *Problems of Socialistic Organization of Agriculture* (2nd ed., Moscow, 1935), pp. 102-42.

2.5 to 3 acres as the daily standard for spring plowing. On these the collectives based their own standards, taking account of local conditions.

Quality of work also was taken into consideration in the distribution of incomes of collectives. When, for example, yield per acre on the land of a particular permanent brigade on a collective farm was substantially above the average for the whole farm, the income of the members of this brigade was made proportionally larger than it would be if computed on the basis solely of the quantity of work done. The income of a brigade which obtained a yield substantially below average was correspondingly reduced.

Similar principles of differential wages and income distribution within collectives are incorporated in the new model charter for collectives (1935) which now regulates their activity, and the government attempts to enforce these principles rigorously in order to interest members of collectives in increasing yields through improvement of work. Unquestionably this policy has contributed to the improvement of work on collective farms in recent years.

SECURITY OF LAND TENURE FOR COLLECTIVES

During the drive for collectivization, the land tenure of individual farmers was sacrificed in the interests of the collectives, but this did not stabilize the land tenure of the collectives themselves.

The organization of state farms in the well-settled regions, contrary to the original plan, often resulted in transfer of land from collectives to the new state farms. The changes in governmental policy toward the size of collectives also caused numerous changes in their boundaries: first, collectives of small and moderate size were welded together into giant collectives, and then these giants were dismembered into collectives of smaller size. Finally, there was no established policy regarding the land of members who left the collectives. All this caused serious entanglement and uncertainty of land relations in Soviet Russia. Many collectives did not know the exact boundaries of their land, and all were uncertain of their tenure. Such a situation

clearly created obstacles to improvement of cultivation, and the government had to introduce greater security of tenure in order to improve collective farming.

In the autumn of 1932 a law was promulgated whereby the land then in the possession of collectives was secured to them and further changes and repartition of lands were forbidden, while state property in land was reaffirmed.¹ This law also created, for jurisdiction in all kinds of litigation over land, special land commissions whose decision was necessary for any shift of land from one collective to another or to a state farm. Collectives were also protected by this law against losing their land because of departing members. Such members had no further claim to land which they brought into collectives, and could be granted only free lands from the state land fund. Thus the rights of individual members of collectives were sacrificed in the interest of the collectives themselves.

Security of the land tenure of collectives was even more definitely confirmed by Part II of the new (1935) model charter of collectives, which plainly states that land occupied by a collective is secured in its permanent possession by law, *forever*. Each collective receives from local organs of the government a special state deed, confirming the permanent tenure of its land and indicating the size of the holding and its exact boundaries. This of course requires a survey of all land in Soviet Russia, and the government is hastening to complete this survey. The delivery of these deeds to collectives is made a very solemn procedure, evidently in order to impress on peasants the stability of tenure of their collectives.

However, survey of land and issuance of state deeds could not move so rapidly as was desired, because of the great confusion in land relations after the revolutionary collectivization of agriculture. The lands of the majority of collectives were intermingled,² and before

¹ Decree of the Central Executive Committee and of the Council of People's Commissars of the USSR of Sept. 3, 1932, "Concerning the Creation of Stable Land Tenure of Collectives," *Collection of Laws and Decrees of the USSR*, No. 66, Sept. 13, 1932.

² According to official statistics of the People's Commissariat of Agriculture, 40 per cent of all collectives had their lands intermingled at the beginning of 1935.

the survey began it was necessary to end this confusion and to rearrange them rationally. In some regions the situation is complicated by the fact that land *and farmsteads* of individual farmers who remained outside of collectives are intermingled with the land of collectives. This is particularly characteristic of those regions in which settlement on individual farms, not in villages, was typical, as in the western and northern parts of Russia. Here a problem of resettlement arose.¹

It was expected that all collectives would receive state deeds to their land by the end of 1935; but for technical reasons completion was not possible so early. By accelerating the pace in recent months, the government succeeded by the end of 1936 in delivering deeds to nearly 90 per cent of all collectives (218,000 out of about 245,000 reported on July 1, 1936);² and the completion of the process may be expected within a few months. With the haste that was involved, the arrangement of lands for many collectives will probably not be the most rational, despite efforts of the government to improve the grouping of lands of collectives before survey and deeding, and to find better locations for MTS serving groups

and these cases were particularly difficult of arrangement. See Shuleikin, "Land Forever for Collectives," *Socialistic Reconstruction of Agriculture*, 1935, No. 8, pp. 4-5.

¹ *On the Agrarian Front*, 1935, No. 1, pp. 59-70.

² *Bol'shevik*, 1937, No. 3, p. 27.

³ See especially Iakovleff, *Problems of Socialistic Organization of Agriculture*, p. 124; his speech at the Second Congress of members of collectives, Feb. 11, 1935; and H. Muralov in *Planned Economy*, 1935, No. 3, p. 55.

⁴ Such is the opinion of Professor S. N. Prokopovich; see his *Bulletin*, No. 132, November-December, 1936, p. 112.

⁵ The policy directed toward an expansion of the livestock industry within the individual husbandries of members of collectives as well as of outsiders was determined upon by the government earlier, coincidentally with the proclamation by Stalin of his slogan "to make all members of collectives well-to-do." By decrees of the Council of People's Commissars and of the Central Committee of the Communist Party, Aug. 14 and Nov. 5, 1933, the government enabled members of collectives to acquire for private use about 1½ million young heifers from socialized herds of collectives and from members of collectives who already had cows. Similar measures directed toward expansion of the livestock industry within individual husbandries of members of collectives were taken later with reference to other animals.

of collectives. The necessity for arranging and surveying the land of collectives also delayed the apportionment of separate tracts of land to permanent brigades of collectives (p. 316), as well as the introduction of rational crop rotations in collectives.³ But in spite of delay, security of land tenure of the collectives will be of great importance in strengthening collective farms and improving agricultural practice within them.

NEW MODEL CHARTER FOR COLLECTIVES

We have already mentioned the new model charter for collectives. It was approved in solemn meeting of the second congress of the members of collectives in February 1935, and then approved also by the government and the Communist Party and published as a state law. It marks an important stage in the development of collectivization, or even in the development of the agrarian revolution in Soviet Russia. Some observers think that the new model charter for collectives means the end of the agrarian revolution and formal recognition of the *status quo* created by this revolution.⁴ The authors of this charter and the official commentators upon it emphasize that its principal aim is to reconcile the private interests of individual members of collectives with the public interest in collectives.

The new charter made many important concessions to private interests of members of collectives. Their rights to engage independently in husbandry on neighboring lands were more definitely recognized, and permission was given to organize private animal husbandry on a larger scale. Here the government apparently felt impelled to grant concessions in order to prevent further decline of the livestock population and to stimulate its recovery.⁵ Concentration of common efforts of collectives mainly upon production of field crops, while leaving for individual husbandries of members of collectives the larger part of the livestock industry, made collectives more acceptable to peasants and promoted their reconciliation to the collectivization of agriculture.

The new charter accorded better protection to the shares of individual members in the income of collectives, limiting the "plowing

back" of income into various "capital" funds to 10 to 20 per cent of the total money income, while previously these assignments had frequently far exceeded these percentages. Nevertheless, all obligatory deliveries to the government *in kind* are placed ahead of the supply of individual members of collectives, and only those surpluses which remain after the fulfillment of obligations to the government and the MTS may be distributed among the members.

The new charter also gives better protection to individual members of collectives against arbitrary expulsion, and enhances the rôle of the general assemblies in the government of the collectives. Generally speaking, it makes the organization of collectives more democratic in form. It remains to be seen how soon and how far this democratization will become a reality. There are direct statements by the government that its local agents systematically violate the new charter of collectives and continue to remove officers of collectives in arbitrary ways. The articles of the charter protecting individual members against arbitrary expulsion also are not observed.¹ Quite aside from this, collective farms under the new charter remain very far from pure co-operative organizations and continue to be state organizations dominated by the government through the MTS.

The change of governmental policy in rela-

¹ See *Collection of Laws and Decrees of the USSR*, 1935, No. 65, pp. 918-19.

² This reduction, however, was insufficient. The average arable area in state grain farms in 1932 was still about 140,000 acres, and their average crop area was about 50,000 acres.

³ The unsatisfactory work of state grain farms in 1933 and particularly their great difficulties with harvest of the 1933 crop are set forth in the report of Iurkin, People's Commissar for State Farms, to the Fourth Session of the Central Executive Committee of the USSR (see *Izvestiia*, Jan. 5, 1934). Cf. an article by Feigin in *Socialistic Reconstruction of Agriculture*, 1935, No. 12, p. 64.

⁴ Reorganization of the state grain farms was decided by a decree (Dec. 22, 1933) of the Council of People's Commissars of the USSR "Concerning the Diminishing the Size of State Grain Farms" (*Collection of Laws and Decrees of the USSR*, No. 74, Dec. 31, 1933). The best formulation of the causes of unsatisfactory work on state grain farms and of the principles of reorganization may be found in the report of Stalin to the Seventeenth Congress of the Communist Party (see *Pravda*, Jan. 28, 1934).

tion to grain collection, introduced by the decree of January 19, 1933, had important effects upon the development of collectives. Discussion may be postponed, however, to Section VI, wherein the whole system of government grain collection is considered.

REORGANIZATION OF STATE FARMS

We have seen that reorganization of the state grain farms, because of their unsatisfactory work, was decided upon by the Soviet government in the autumn of 1931. This decision was acted upon early in 1932. The state grain farms were reduced in size,² and subdivided into divisions with quasi-independent management. Their direction was decentralized by organization of several semi-autonomous regional grain trusts. Finally, all state farms were removed from the administration of the People's Commissariat of Agriculture and placed under a special new People's Commissariat of State Farms.

This reorganization, however, failed to bring the desired results, and several further reorganizations of the state farms were undertaken in the next few years. The several reorganizations vacillated as to direction, indicating that the government failed to find a proper form of administration for big state agricultural enterprises. There were apparently greater difficulties in improving the work of the state farms—pure state enterprises—than of collective farms, in which at least certain elements of co-operation are involved. Indeed, it is widely recognized, by some of the critics of the collective movement as well as by its sympathizers, that following a certain change in the mood of the peasantry in 1933, some improvement in the work of the collectives can be perceived. No such improvement in the work of the state grain farms took place at that time; on the contrary, the greatest difficulties were experienced in harvesting the 1933 crop.³

This experience gave rise to revision of the fundamental principles underlying the organization of state farms, particularly state grain farms. Reorganization was initiated by Stalin himself and took place during 1934 and 1935.⁴ It involved (a) further decrease of the size of farms; (b) discontinuance of extreme spe-

cialization in production of small grains, and introduction of crop rotations and of livestock enterprises; and finally (c) improvement of living conditions for agricultural workers in order to secure for state grain farms a sufficient contingent of permanent labor.

These principles were quite different from those embodied in the original plan for organization of "grain factories" formulated during 1928-30. The total acreage in a state grain farm was now not to exceed 50,000 to 60,000 acres, or 37,000 acres in farms with a substantial portion of cultivated crops; and all farms were to be subdivided into quasi-independent divisions with crop areas not exceeding 5,000 to 6,000 acres. Such farms, though still large, are far smaller than those of 175,000 to 200,000 acres, which were regarded in 1930 as of optimum size. Diversification of crops and introduction of crop rotations and of livestock on state grain farms also were contrary to those principles which guided the first organizers of grain factories: monoculture, complete mechanization of farming, and exclusion of livestock from state grain farms. These last principles had been formulated when grain factories were planned in order to expand wheat production in the semiarid regions of the southeast; but after the crop failures of 1931 and 1932 this plan was dropped (p. 338), and for state grain farms in old settled regions new principles were necessary.

New principles were also needed in relation to permanent labor. It had been supposed that fully-mechanized grain factories would require a relatively small number of workers, but their number actually increased in 1933 to an army of 150,000 "permanent" workers, and during the weeding or harvesting seasons this army increased several-fold.¹ Of even greater importance, the permanent workers were permanent only nominally, so frequently did they change their places because living conditions on the newly-organized state farms were so primitive and rough, with unsatis-

factory housing and a poor supply of food and necessaries. This shifting of personnel was bound to result in inefficient work. Hence the decree of December 22, 1933, paid particular attention to improvement of the living conditions for workers in order to hold them longer on the state farms. Special assignments of funds for construction of individual houses for workers, apportionment to workers' families of plots of land for gardening and of livestock, improvement of the supply of foods, were measures whereby this decree sought to improve living conditions on state farms and thus to solve their labor problem. In order to improve the labor supply of state farms, the government exempted individual farmers hired for a season by state farms from obligatory deliveries of grain and other agricultural products to the state.²

Yet this reorganization did not result in prompt improvement of the work of the state grain farms, as is suggested by the fact that during the following two years the government found reason twice to reorganize the People's Commissariat of State Farms and its local organs. By decree of April 22, 1934, there was organized in this Commissariat the Principal Direction of State Grain Farms; in this was concentrated the whole operative direction of state grain farms, although the regional grain trusts, of which there were 23 in 1934, were preserved. By decree of November 27, 1935, these trusts, directing groups of state farms in their respective regions, were abolished except for a few in distant regions of Siberia and Central Asia; individual state farms were put under immediate direction of the People's Commissariat of State Farms; and the Principal Direction of State Farms was subdivided into five territorial divisions, each directing state farms in its territory. The headquarters of all five divisions were located in Moscow; this points toward centralization, a policy opposite to that applied when the state grain farms were reorganized in 1931.

The last-mentioned decree was designed also to change the character of state farms, making them more like private enterprises. Thus the power of the directors was substantially increased, in relation to personnel as well as to disposition of funds and conclud-

¹ *Agriculture of the USSR, 1935*, pp. 770-73; also Iurkin, *op. cit.*

² Decree of Mar. 26, 1934. *Collection of Laws and Decrees of the USSR, 1934*, No. 17, p. 235.

ing of contracts. The directors could appoint and dismiss all personnel, with the sole exception of their own deputies and principal accountants; and within certain limits established by financial plans, they could manage all funds and property of state farms. This last step in reorganization was perhaps no more successful than the previous ones; at least one may read in the official press that "the power of the directors of state farms has not been really increased," and that "minute tutelage of directors by the Commissariat of State Farms hinders any strengthening of state farms and the development of their production." Hence the official press speaks once more of "the necessity of radical change in the direction of state farms."¹

This record of the continuous reorganizations of state farms is given here in order to

show that their work does not yet satisfy the government, and that further changes may reasonably be expected. In this connection, importance attaches to the fact that beginning with July 1935 the government, by special decrees, has taken from state farms more than 20 million acres of land (including no less than 3 million from state grain farms) and transferred them to neighboring collective farms.² Such transfers as these in the main represent removal of surplus land from state farms, but in several cases the state farms were transferred in total. According to the plan of spring sowing for 1937, state farms are assigned 24.6 million acres instead of 30.7 million acres as in 1936, a reduction of about 6 million acres.³ This points toward reduction of the activity of state farms and replacement by increased production on collective farms.

III. CONCENTRATION OF AGRICULTURAL ENTERPRISES

The process of collectivization may now be regarded as complete. Only a very small fraction of the area in field crops is now planted by peasants remaining outside the collectives—according to the spring sowing plan for 1937, less than one per cent of the total crop area. The rapidity of issue of the state deeds securing the present land tenure of collectives (p. 319) reflects the decision of the government to stabilize land relations as they are now. There is no intention on the part of the government to expand state farms, and there is rather an opposite tendency (p. 340). Hence one may assume that the present structure of Soviet agriculture, with regard

to size and number of enterprises, may be representative of the near future as well. It is therefore appropriate to present the relevant data for 1935, with comparisons for some previous years.

CHANGES IN SCALE OF ENTERPRISES

One of the most important effects of the socialistic reorganization of agriculture in Soviet Russia was the practically complete disappearance of small-scale enterprises from the production of field crops; they continue the prevailing form of enterprise in the livestock industry and in gardening. The government at present can say—and is repeating with pride—that the USSR has become a country with the largest agricultural enterprises in the world; and that the collective farms, machine tractor stations, and state farms together represent an organization of agriculture similar to that of industry.⁴

Elimination of small-scale enterprises from agriculture was in accord with orthodox Marxian theory, which made no substantial differentiation between economic laws governing agriculture and those governing industry. In Marxian theory, a large-scale enterprise in agriculture has the same technical and economic advantages as in industry, and the

¹ See M. Temkin, "Without Plan," *Izvestiia*, Sept. 22, 1936.

² Such transfers are made by special decrees of the Council of People's Commissars of the USSR. The first was issued on July 7, 1935, and they continued throughout 1935 and 1936. Transfers took place in all the principal agricultural regions of the USSR, with relatively the largest areas of land transferred in Ukraine and North Caucasus. Recent publications indicate that the transfer of land continues and that by the end of 1936 more than 40 million acres of land have thus far been transferred to collectives. *Bol'shevik*, 1937, No. 3, pp. 25-26.

³ USSR Delegation in Great Britain, *Monthly Review*, February 1937, p. 83.

⁴ *Agriculture of the USSR, 1935* (Moscow, 1936), p. 13.

only way of increasing productive power in agriculture is to create large-scale mechanized enterprises. From this point of view, the development of Soviet agriculture from the revolution of 1917-18 until 1929 meant degradation of agriculture rather than improvement, since the size of agricultural enterprises created by the first revolution was even smaller than in pre-revolutionary Russia.¹ In 1927-28 the Soviet government, inaugurating its Five-Year Plan for industrialization that involved large-scale socialistic enterprises, perceived its disharmony with the social structure of agriculture. This disharmony helps to explain the second agrarian revolution, which was organized by the government from the top.

The forced collectivization of peasant farming, and organization of large state farms and of machine tractor stations controlling collective farms, resulted in a radical change of the structure of Soviet agriculture. Data are given in Table 1 for the year when the socialistic reorganization of agriculture began (1928), the year in which forcible socialistic reorganization resulted in acute agricultural crisis (1932), the year when certain improvements and stabilization of the socialistic agriculture took place (1935), and the latest year. Now, instead of 24.1 million small and tiny peasant farms, there are only about 2.0 million. Less than 260,000 large productive units were created; and these in turn are controlled by a still smaller number of directing units.

In 1928, practically all agricultural production was in the hands of 24.1 million peasant families on their small or very small farms. The 1,407 state farms in 1928 were not so much newly created "grain factories," organization of which had barely started, as remnants of state farms which had been created in the early period of the revolution (before 1922) and then had withered throughout the period of the NEP (New Economic Policy).² Most of them were small and weak enterprises, as may be seen from their minor importance in the total crop area of the USSR

(Table 2, p. 324). Much the same may be said of collective farms in 1928. After 1925 the policy of the Soviet government favored voluntary organization of collectives by extending certain privileges to them. But in 1928 the collectives were in most cases very small groups of poor peasants, while the middle and well-to-do peasantry remained completely outside. These collectives differed from those which were forced on the peasantry after the winter of 1929-30.

TABLE 1.—NUMBER OF AGRICULTURAL ENTERPRISES IN SELECTED YEARS, 1928-36*

Type of enterprise	1928	1932	1935	1936
State farms and similar enterprises ^a	3,125 ^b	9,009 ^c	8,982 ^d	....
State farms only	1,407 ^b	4,337 ^c	4,118 ^d	4,323 ^d
Machine tractor stations . . . . .	....	2,502 ^e	4,376 ^e	4,950 ^e
Collective farms (thousands)	33.3 ^f	211.1 ^f	249.4 ^g	244.5 ^h
Peasant households (millions)				
In collectives	4 ^f	15.1 ^f	17.3 ^h	18.4 ^h
Outside of collectives	24.1 ^f	9.4 ^f	3.6 ^h	2.0 ^h
Total	24.5 ^f	24.5 ^f	20.9 ^h	20.4 ^h

* *Agriculture of the USSR, 1935*, p. 191; for peasant households, *Socialistic Agriculture*, June 1, 1936, as quoted in *Bulletin of the Economic Cabinet of Professor S. N. Prokopovich*, No. 129, June-July 1936. Data for 1936 from *Pravda*, Nov. 24, 1936.

^a Including farms belonging to consumers' co-operatives and to organizations supplying workers with food (ORS).

^b Spring. ^d Jan. 1. ^f June 1. ^h July 1.

^c Dec. 31. ^e Harvest. ^g Oct. 1.

Between 1928 and 1932 came the second agrarian revolution which both fundamentally altered the structure of Soviet agriculture and brought agriculture to the brink of a precipice. Yet even in 1932 about two-fifths of the peasantry remained outside of collectives, forming nearly 10 million productive units. However, these played a smaller rôle in total production (Table 2), because a large part of their property had been confiscated and turned over to collective farms.

Between 1932 and 1935 there was no fundamental change in the structure of agriculture. The growth of state farms was arrested, as they were passing through a severe crisis (p. 338). The process of collectivization continued, although at a much slower rate. The number of peasant households within collec-

¹ See *Agricultural Russia*, pp. 59-70 and 77-78.

² *Ibid.*, pp. 126-28.

tives increased by only 2.3 million in more than three years from June 1, 1932, to October 1, 1935. This represents *net* increase, however; for many hundred thousands of members of collectives were expelled during 1932-34 (p. 314-15).

Of particular interest is the great decline in the number of peasant households remaining outside of collectives, which fell from 9.4 million in 1932 to 2.0 million in 1936. The decline of over 7 million was not compensated by the increase of 3.3 million in households within collectives; about 4.1 million peasant households disappeared from the countryside, if one can trust the statistics.¹ Similar data by years show that the greatest disappearance of peasantry from the countryside took place during 1933-34, when the total number of peasant households declined by 1.9 million or 8 per cent. At that time the position of the outsiders, particularly those thrown out of collectives by the political departments of the MTS, became unbearable, and they migrated to cities, supplying labor for new industries.

Migration to cities (aside from the forces motivating it) must be regarded as healthy for Soviet agriculture, for the Russian countryside was overpopulated before as well as after the revolution of 1917-19.² But there is evidence that the decrease of peasant households did not always occur in the most overpopulated areas. Thus recent official estimates of the rural population by provinces in Ukraine show that the agricultural population has recently declined in the southeastern prairie regions, never overpopulated, but continued to grow in the highly overpopulated regions on the right bank of the Dnieper.

In 1928, as shown by Table 2, 97 per cent of the total crop area was in small peasant farms averaging each about 11 acres in crops. By 1935, 12 per cent of the total crop area was in large state farms, averaging several thousand

acres each; more than 80 per cent of the area was in collective farms, averaging over a thousand acres; while 3 to 4 million individual farms of outsiders, each only half as large as in 1928, contained only 5 per cent of the total crop area. By the spring of 1937, these individual farms contained less than 1 per cent of the total crop area.

TABLE 2.—RELATIVE IMPORTANCE OF PRINCIPAL TYPES OF AGRICULTURAL ENTERPRISES IN SELECTED YEARS, 1928-35*

Type of enterprise	Percentage of total crop area			Average crop acreage per unit		
	1928	1932	1935 ^a	1928	1932	1935
State farms	1.5	10.0	12.2	1,344	5,691	7,732
Collective farms . . .	1.2	68.1	82.0 ^b	104	1,072	1,095
Individual farms . . .	97.3	21.9	5.2	11	7	5

* *Agriculture of the USSR, 1935, p. 194.*

^a In crop statistics for 1935 the crops on lands of agricultural laborers and city workers are shown separately, and account for .6 per cent of the total crop area.

^b Including crops in individual households of members of collectives, amounting to 3.3 per cent of total crop area. If these crops are regarded as crops on "individual farms," then the proportion of total crop area within "individual farms" rises from 5.2 to 8.5 per cent.

In some respects the data in Table 2 are too highly generalized to present a correct picture of the degree of the concentration of agricultural enterprises in large operating units. First, the average size of collectives given for the whole USSR includes the forest regions north of the blacksoil belt, where collective farms are very small; and this lowers the average size of collectives in such a way as to understate their size in practically all other regions. Second, the data do not indicate the way in which the MTS group collective farms into still larger productive units. And finally, among the state farms our data do not show separately the state grain farms of much larger size. Details necessary to complete the general picture are given below.

COLLECTIVE FARMS BY REGIONS³

Regional variations in the size of collective farms are large. Generally speaking, the size of individual collectives was determined by two fundamental facts of rural life: the types

¹ These figures are apparently estimates; there has been no census of population in the USSR since 1926. A new census, taken in January 1937, will presumably yield extremely interesting data on migration of population during this revolutionary decade.

² *Agricultural Russia*, pp. 66-67, 505.

³ Discussion based on data in *Agriculture of the USSR, 1935*, pp. 641, 647-48.

of settlement and the size of land holdings of peasant families as they existed in the different regions before the socialistic reorganization of agriculture. Collective farms were usually organized on the basis of villages with the lands belonging to them. Since villages were usually large in the blacksoil belt, particularly its prairie section, large collectives are found in this area.

The greater size of the family farms in the southern and southeastern parts of European Russia made the size of collectives in these regions particularly large. This area includes North Caucasus, Lower Volga, Middle Volga (particularly east of the Volga), and southeastern Ukraine. The average size of the crop area per collective varies here (in 1934, by provinces) from 2,500 to 5,000 acres, typically above or around 2,500. On such farms, large tractors can be conveniently used, even when fields are subdivided into several tracts for permanent brigades formed within the collectives (p. 316).

In the blacksoil belt north of these steppe regions, the size of collective farms, though somewhat smaller, is also large. Thus, in Ural and Western Siberia, where grain becomes progressively important, the average crop area per collective is from 1,500 to 2,000 acres, with the typical area about 1,000 or 1,500 acres. In the densely populated Central Blacksoil and northwestern Ukraine regions, with their large villages, the size of collective farms is also above the average for the USSR. Here the average crop area per collective varies by provinces between 1,000 and 1,500 acres, with the typical size around 1,000 acres.

Such collective farms as these are also large enough to permit convenient use of tractors. But in the densely populated part of the Ukraine and Central Blacksoil regions, the farm population is too large per farm, averaging from 200 to above 300 workers per collective where crop areas average from 1,000 to 1,500 acres. The use of tractors in these regions would free too much labor and result in greater agricultural overpopulation, from which these regions have already suffered for several decades. Only an outflow of population from farms to cities or organization of intensive branches of agriculture, particularly of inten-

sive livestock industry in the individual households of members of collectives, can be expected to solve the problem of overpopulation. In general, collectivization failed to solve this problem. The size of the crop area per household within collectives remains in these regions as small as it was when these households represented individual farms. Under certain conditions, collectivization and mechanization may even contribute to greater overpopulation, in so far as there is a tendency to retain population on the land. A similar effect sprang from communal holding of land in prerevolutionary days.

In the regions north of the blacksoil belt, where the villages were always small, collective farms are also small. The average crop area per collective by provinces (1934) here varies from 250 to about 600 acres. In some provinces the typical size of the crop area per collective is below 250 acres, and in others around 250 or slightly above. All these farms are too small and irregular for convenient use of large tractors. In these regions the grouping of collectives around the MTS for more convenient use of tractors seems more rational than in the prairie regions. Collective farms in Transcaucasia and in the southern part of Central Asia are also small, much as in the regions north of the blacksoil belt.

MACHINE TRACTOR STATIONS

The MTS, as we have seen, were organized not only as purely technical units for more efficient utilization of power machinery, but at the same time as devices for governmental control of collectives. Here we consider them in their technical aspects, as large productive units co-ordinating groups of collective farms.

At the end of 1935 there were 4,376 MTS. It was planned to increase their number to 4,951 by the end of 1936,¹ and (according to the Second Five-Year Plan) to 6,000 by the end of 1937. In 1935 only 53 per cent of the collective farms were served by the MTS. But the collectives served by MTS are, on the average, relatively large in size, since the MTS are

¹ Gosplan of the USSR, *Basic Indexes of the Economic Plan for 1936*, p. 35.

most active in the southern and eastern areas where the collectives are large. Hence the crop area within collectives served by the MTS comprised 72 per cent of the total crop area in collective farms. In the southern and eastern areas (except Siberia), the collectives served by the MTS contained 80 to 90 per cent of the total crop area in collectives.

On the average for the whole USSR, in 1935 each MTS served 30 collective farms containing a crop area of about 45,000 acres. The number of farms served by a single MTS varied regionally because of the different sizes of the collectives. In the southeastern prairie area the typical MTS served 10 to 20 collectives; in the blacksoil area north of the steppe, from 20 to 30 farms, or even 30 to 40 farms, as in the Central Blacksoil region; and in the area north of the blacksoil belt, more than 50 collective farms. The crop area served by a single MTS varied less by regions: in the southern and eastern prairie regions, it was about 50,000 crop acres per MTS; in the regions north of the blacksoil belt and in Siberia, from 35,000 to 40,000 acres. In 1934, more than a fifth of all the MTS served much larger crop areas, sometimes more than 100,000 acres. But the policy of the Soviet government has recently been to reduce the area served by one MTS. It may be assumed that the size of the MTS in 1935 will be typical for the near future; at least it corresponds to the size of MTS projected for 1937 in the Second Five-Year Plan.

On the average for the whole USSR in 1935, each machine tractor station had 60 tractors of various horsepower, and the total horsepower per MTS was about 1,000. The equipment of the MTS with tractors (as to their number and total power) varied little by regions, except that the MTS of the northern area were the smaller. Such equipment of the MTS with tractors corresponds to projections for 1937 under the Second Five-Year Plan.

The size of the MTS remains large even after the reduction of recent years. The technical necessity of such concentration of tractors in

large groups may be questioned, particularly because the present practice is to divide each MTS into several brigades with 2 to 4 tractors in each, and to attach these brigades to separate collective farms for the whole crop year.¹ In the principal grain-producing regions, one tractor brigade usually serves one collective, though more than one brigade may be attached to the larger collectives. Each tractor brigade is supplied, also for a crop year, with the necessary work-machines, as well as with permanent tractor drivers. Hence each tractor brigade represents practically an independent productive unit adjusted to the size of one collective and, in recent years, really attached to a particular collective for more efficient utilization. Might it not be technically simpler for each collective, at least in the principal grain-producing regions, to have its own tractor brigade and to use the MTS only as a repair shop? Under such conditions the collectives might be more concerned with economical utilization and better repair of tractors, while under the present system the MTS cannot cover their costs of production with the fifth of the total crop that is collected in kind from collectives in remuneration for their services.²

The extreme concentration of tractors and of other machines, particularly combines and threshers (p. 315), appears to exist not so much for reasons of technical expediency as for the purpose of control of semi-co-operative collective farms by the MTS, which are purely state organizations. In a socialistic country the concentration of means of production may thus be pushed beyond technical expediency for reasons similar to those which impel industrial and public utility combinations in capitalistic countries.

The size of the state grain farms and the necessity to reduce them in order to increase their efficiency have been discussed earlier. Here we may point out that even after reduction of size, the state grain farms remain excessively large. At the end of 1934, when the process of reduction was half finished, the average total area of state grain farms was about 75,000 acres, and the area of arable land about 50,000 acres, although the average crop area was only 23,000 acres because of incomplete utilization of arable land,

¹ See M. Vainer, C. Demidov, *et al.*, *Organization of Production in Grain Collective Farms* (Moscow, 1936).

² See F. Galevius, *Socialistic Reconstruction of Agriculture*, November 1935, p. 111.

IV. EXPANSION OF CROP AREA

In preceding sections we have analyzed recent Soviet governmental policy toward agriculture and the structural reorganization of agriculture resulting from this policy. In the present and following sections we propose to show the actual development of agricultural production in the USSR in recent years as influenced by these two factors. The agricultural policy and the socialistic reconstruction of agriculture both aimed at increased and improved agricultural production. The question is: How successful were they? The answer constitutes at once an appraisal of Soviet policy and of the new organization of agriculture, as they are only means to the end. This was frequently overlooked in the Soviet official press, in which the success of governmental policy was commonly measured by the rapidity with which collectivization proceeded, by the number of MTS and state farms organized, by the number of tractors produced, etc., rather than by the expansion of crop area, by increase of yield per acre, or by improvement of agricultural practice. Here we apply these tests, first with reference to expansion of crop area.

TOTAL CROP AREA AND GRAIN AREA

During the early period of socialistic reconstruction of agriculture, the Soviet government succeeded in expanding the crop area substantially. Between 1929 and 1931, the total crop area increased by 45 million acres, or more than 15 per cent (Table 3). The grain area expanded somewhat slowly, by about 20 million acres or nearly 9 per cent. But the area under wheat and rye expanded more than the total grain area (by 24 million acres); this means that bread-grain sowings were increased at the cost of feed grains, of which the crop area was reduced. The area under the two principal feed grains, oats and barley, was reduced by 6 million acres (Table I). Governmental policy emphasized expansion of the bread-grain area, particularly wheat, reflecting the pressure of the shortage of bread grain after 1928. Collective and state farms were ordered to expand their wheat areas at any price; and the orders were executed at

the expense of other grains. Since the peasants were then slaughtering much of their livestock before joining the collectives, and the care of animals within collectives was unsatisfactory at least in the early period, there was no particular stimulus to maintain feed-grain crops. Later, the shortage of feed contributed greatly to further shrinkage of the livestock industry. But the wheat area was expanded—in two years by 18 million acres, or 24 per cent.

TABLE 3.—TOTAL AND GRAIN CROP AREA, 1928-36*
(Million acres)

Year	Crop area	Grain area	Wheat and rye area
1928	279.2	227.8	129.4
1929	291.7	237.3	135.1
1930	314.4	251.5	154.7
1931	336.8	258.0	159.4
1932	332.2	246.4	150.0
1933	320.5	250.9	144.9
1934	324.9	258.7	146.5
1935	328.1	255.6	149.6
1936	330.4	252.5	.....

* *Agriculture of the USSR, 1935*, Table 29, p. 203, and Table 104, p. 268; for 1936, *Pravda*, Nov. 24, 1936.

It was also the policy during the early period of the collectivization to impose on the peasantry rapid expansion of certain technical crops, such as cotton in Central Asia, sugar beet in Ukraine, sunflower in the southeastern regions of the USSR, and flax in the regions north of the blacksoil belt. The area under cotton and sugar beet practically doubled from 1929 to 1931, though with disastrous results to the yield per acre. The area under sunflower and flax also rose greatly by 1931.

Growth of the total crop area by 15 per cent within two years was not unprecedented. During the early years of the NEP, 1922-26, growth of the total crop area had been even more rapid; but in this period rapid growth reflected the very low post-revolutionary level from which the increase began in 1922, as well as rapid increase in the number of draft animals. In 1929, on the other hand, the crop area stood at a high level; and the draft power declined not less than 10 per cent from 1929 to 1931 (p. 311), in spite of the rapid expan-

sion of the use of tractors. Between these two years the area cultivated per horsepower increased by more than a third and the burden on horses in 1929 had already been heavy under Russian conditions.¹

While there may appear to be reason to question whether official crop statistics may not overstate the growth of the crop area from 1929 to 1931, these statistics on the whole seem credible. The periods of agricultural operations—plowing, seeding, and harvesting—were extended beyond reasonable limits. Planting and harvesting were performed at unprecedentedly late dates,² resulting in poor yields on late-sown fields, but extending the crop area nevertheless. In the two following years, when shortage of draft power forced a contraction of cultivated area, the crop area per horsepower remained even larger than in 1931. In 1935 it was about the same as in 1931, although there is evidence that the quality of work had improved somewhat.

In order to expand the crop area in 1929–31, tractors were used with two or even three teams of drivers for 24 hours daily (when not under repair), at night by torch-light. At that time such “intensive” use of tractors was regarded as economical. Soviet economists, pointing to the performance of tractors, boasted of the advantages of socialistic organization of agriculture as compared with capitalistic. But ideas about profitable use of tractors later changed somewhat. With this frantic recourse to tractor cultivation, it was

¹ *Agricultural Russia*, pp. 232–33.

² In 1930–32, from 20 to 25 per cent of the total spring crop area was sown after June 1, while usually planting continues as late as this only in a few distant northern regions. Fall sowings in 1930–33 to the extent of 15 per cent were performed after October 15, whereas usually all plantings of winter crops are complete at that date, with a few exceptions in such southern areas as Crimea or Caucasus. See data on periods of planting, for 1930–35 in *Agriculture of the USSR*, 1935, p. 207; for 1922–27 in *Statistical Review*, 1928, No. 3, pp. 16–17, and No. 8, pp. 20–22.

³ See *Agriculture of the USSR*, 1935, Table 58, p. 213.

⁴ In the First Five-Year Plan, by 1932–33 the total crop area was to reach 350 million acres and the grain area 275 million acres. Actually, the total crop area was 332 million acres, and the grain area 246 million. In the Second Five-Year Plan the areas planned for 1937 are 345 million acres in all crops and 259 million acres in grain.

possible to expand the crop area to the level shown by official statistics for 1931.

Despite all governmental efforts the trend of expansion of crop area was broken in 1932, when a decline of 2 per cent took place. The grain area fell by about 5 per cent as the government sought even more strongly to expand technical crops and devoted much draft power to this purpose. The larger areas of the latter crops in 1932, however, produced smaller crops of sugar beet, cotton, flax, and sunflower seed.³ The shortage of draft power and the passive resistance of peasants (pp. 310–12) operated against the expansionist policy of the government, with the result that the agricultural plan for the next five years had to be revised downward before the goal set by the First Five-Year Plan had been reached.⁴ The crop area planned for 1937 was put several million acres lower than had been planned for 1932 in the First Five-Year Plan. This represented full recognition of failure of the first plan so far as concerns rapid expansion of crop area. As we have seen, the Second Five-Year Plan emphasizes improvement in quality of work and increase of yield per acre, but not expansion of crop area.

Analysis of the development of crop areas in various agricultural enterprises created by the reorganization of agriculture reveals that expansion of crops on state farms became urgent after 1930. The growth of crop area on peasant land, particularly of the very important grain crops, had been arrested at that early date. In official Soviet statistics, emphasis always falls on the ensuing rapid growth of the socialistic forms of enterprises, but never on the extent to which growth of the socialistic enterprises compensated for decline of individual enterprises.

The data in Table 4 show that the grain area on peasant lands, combining those in collectives and individual farms, began to decline after 1930; it was 6 million acres smaller in 1931 than in 1930. This reduction began at the very time when the government forced socialistic forms of organization upon the peasantry. The grain area on peasant lands has never since attained the level of 1930, and from 1932 to 1935 it was below the level in 1929, before forced collectivization began. It

was only through expansion of area on state farms (from 7 to 30 million acres during 1930-35) that the total grain area in 1935 was about the same as in 1930. This expansion on state farms offset reduction of grain area on individual peasant farms which was not compensated by expansion on collective farms. The same development occurred with reference to all crops, except that here the decline of area started a year later.

TABLE 4.—CROP AREAS IN VARIOUS TYPES OF AGRICULTURAL ENTERPRISE, 1928-35*

(Million acres)

Year	Total				Grain			
	State farms	Peasant farms			State farms	Peasant farms		
		Collective	Individual	Total		Collective	Individual	Total
1928....	4.3	3.4	271.5	274.9	2.7	2.6	222.5	225.1
1929....	5.6	10.3	275.8	286.1	3.8	8.4	225.1	233.5
1930....	9.7	94.1	210.6	304.7	7.2	73.4	170.8	244.2
1931....	27.1	195.1	114.6	309.7	20.0	150.8	87.2	238.0
1932....	33.2	226.2	72.8	299.0	22.8	170.8	52.7	223.5
1933....	34.9	231.4	54.1	285.5	20.8	185.2	38.9	224.1
1934....	37.3	243.5	44.0	287.5	28.7	199.8	30.2	230.0
1935....	40.0	258.3	29.8	288.1	29.8	208.6	17.2	225.3

* Agriculture of the USSR, 1935, Table 99, pp. 252-59.

There was no marked improvement in the general position during the four years beginning with 1932; indeed, the total crop area on peasant lands did not increase at all. The same situation continued in 1936, when the total crop area as compared with 1935 increased by only 2 million acres and the grain area declined by 3 million. Under such circumstances, the drive for expansion of crop area on state farms at any price was a sheer necessity for the government. There can be no question of its great cost.

Because of the great regional differences in agricultural conditions in the USSR, natural as well as social, it is advisable to devote some attention to regional aspects of acreage development. Table 5 summarizes regionally the changes in total crop area and grain area for the period 1928-35. Here the administrative subdivisions of the USSR are grouped into five major areas¹ in accordance with soil, climate, and population characteristics. The principal grain-surplus areas are the Southern, Eastern, and Siberian. Climatically, the Eastern area is the most arid, although there

is semiarid country in southern parts of the Southern and Siberian areas. The black-soil belt falls wholly within these three areas. The Eastern and the Siberian and Far Eastern regions are areas of comparatively new colonization, toward which the Russian agricultural population has been moving in recent decades and where crops have been expanding on new land.

TABLE 5.—REGIONAL DEVELOPMENT OF CROP AREAS IN SELECTED YEARS, 1928-35*

(Million acres)

Major area	1928	1931	1934 ^a	1934 ^b	1935
TOTAL CROP AREA					
USSR	279.2	336.8	324.6	324.9	328.1
Northern and Central. Eastern	62.8	71.5	74.2	74.9	76.2
Southern	64.5	88.2	81.5	78.9	79.7
Siberia and Far East..	111.5	131.4	121.4	121.5	121.3
Central Asia and Transcaucasia	26.9	27.3	30.4	32.5	32.9
USSR	13.5	18.4	17.1	17.1	18.0
GRAIN AREA					
USSR	227.8	258.0	258.7	258.7	255.6
Northern and Central. Eastern	47.8	50.7	53.1	53.6	53.0
Southern	57.9	75.2	71.8	69.3	69.1
Siberia and Far East..	87.5	96.7	95.1	95.2	92.2
Central Asia and Transcaucasia	24.6	24.0	27.2	29.1	29.0
USSR	10.0	11.4	11.5	11.5	12.3

* Summarized from Tables I and II.

^a In old boundaries, as in 1928 and 1931.

^b In new boundaries, as in 1935.

The greatest expansion of crop area during the early period of socialistic reorganization of agriculture took place in the Eastern regions. From 1928 to 1931 the total crop area here increased by nearly 37 per cent, and the grain area increased by 30 per cent. In the

¹ The European part of the USSR is divided into three large areas: *Northern and Central regions*, north of the blacksoil belt; *Southern regions*, on the black soils; and *Eastern regions*, on the black soils and southern brown soils in the basin of the Volga and farther east, including also such Asiatic regions as the Kazak ASSR and the Asiatic parts of the Ural region. The remaining Asiatic subdivisions are grouped into two areas: *Siberia and the Far East* in the north, and *Central Asia and Transcaucasia* in the extreme south of the USSR, settled mainly by non-Slavic oriental populations. For details of the composition of these major areas, see note following Table II.

USSR as a whole, the total crop area increased over the same period by about 21 per cent, and the grain area only by about 13 per cent. In no other area did the expansion of crop area proceed so rapidly.¹ Such rapid expansion in the Eastern regions is explained partly by the fact that agricultural production here had recovered relatively least after the revolution and the famine of 1921–22.² The policy of the Soviet government was therefore to expand grain production, particularly wheat, by organizing most of the state grain farms on thinly settled lands in these semiarid regions.

This drive was apparently successful in the early years, and the importance of the Eastern area increased; its total crop area rose from 23 per cent of the total crop area of the USSR in 1928 to 26 per cent in 1931. But this increase of the crop area did not bring increase of grain production. Not only in 1931 and 1932, when grain crops of the USSR generally were small, but also in the very favorable year 1930, the contribution of the Eastern area to the total grain production was substantially smaller than in 1928.³ The results of the expansion of crop area in the Eastern regions were so disappointing that during the later years, following 1931, a relatively large decline of crop area occurred. The setback was so severe that even in 1935, when agricultural production had recovered somewhat, the crop area in Eastern regions was 7 to 8 per cent smaller than in 1931, and the area under wheat had fallen even more. This is explained partly by the fact that the government, disappointed with the results of the crop expansion in the Eastern area, altered its program for development of state grain farms and shifted them more to the Southern area in the European part of the USSR. But the crops on peasant land (collectives and outsiders together) declined even more between 1931 and 1934, by nearly 10 per cent.

¹ Large percentage increases of total crop area in Central Asia and Transcaucasia reflect expansion of the cotton area, which more than doubled; other crops, including grains, increased much less.

² It has been estimated that by 1927–28, only from 3/4 to 4/5 of the prewar crop area had been recovered in these regions. See *Agricultural Russia*, p. 181.

³ For regional grain production, see Table I.

⁴ *Agriculture of the USSR, 1935*, Table 99, pp. 252–59.

The crop area in the Southern regions developed similarly, although in the early period expansion was less spectacular than in the Eastern regions. Growth of the crop area in the Southern regions between 1928 and 1931 was below the average for the whole USSR, as was to be expected in view of relatively considerable recovery of agricultural production there before 1928, and better utilization of agricultural land. But the setback in the Southern area after 1931 was even greater than in the Eastern regions and crops on peasant land shrank greatly here—to such an extent that after 1931 it could not be replaced by a substantial increase of the crop area on state farms. The following tabulation, in million acres, illustrates the change of total crop area from 1931 to 1934 on peasant land and on state farms respectively in the Eastern and Southern regions:⁴

Enterprises	Eastern area		Southern area	
	1931	1934	1931	1934
On peasant land . . .	78.9	71.3	119.6	105.3
On state farms . . .	9.3	10.2	11.8	16.1
Total	88.2	81.5	131.4	121.4

Despite the much greater expansion of crop area on state farms in the Southern area than in the Eastern, the decline of the total crop area was proportionately the same. It is necessary to recall that the conflict between government and peasantry in 1932 happened to be most severe in the Southern regions—Ukraine and the North Caucasus. Here the conflict acquired political significance. In some localities the resistance of peasants became active rather than passive, and the populations of whole villages and small regions were sometimes deported in total, as happened in places of North Caucasus. On the other hand, Ukraine was most severely affected by the famine of 1932. All this interfered with the normal work of the peasantry, and consequently their crop areas were reduced when we take into account not only the collective farms but also the farms of outsiders. Expansion of crop area in collectives was not enough to compensate for reduction of crop area of outsiders, despite the fact that large numbers of outsiders were forced into collectives.

A quite different development took place in the third important grain-surplus area, Siberia. Here the crop area expanded very little during the early period of reorganization of agriculture. Between 1928 and 1931 the total crop area increased only 1 to 2 per cent, while the grain area declined by 2 to 3 per cent. The crop area on peasant land fell even more, by 8 to 9 per cent; but this decline was fully offset by substantial expansion on state farms, which grew by nearly 3 million acres. Except for the state farms, there was no expansion of crop area in Siberia during this early period, partly in reflection of a fairly high level (above the prewar) already attained in 1928. Collectivization of this distant area proceeded much more slowly than in the Southern area and in the Volga region of the Eastern area. In the summer of 1931 in Siberia, only two-fifths of the peasant households were in collectives, whereas in the Southern and Volga regions two-thirds to more than four-fifths (varying in different sections) of the peasant households were collectivized.

Perhaps because of the slower rate of collectivization, the Siberian regions did not experience a setback of crop area in later years as severe as that in the other two grain-surplus areas. Indeed, there was a substantial expansion in Siberia and the Far East between 1931 and 1934, amounting to 3 million acres or 11 per cent in total crop area. This occurred not only on state farms (2 million acres) but also on peasant land (1 million), the peasants, in collectives and outside, expanding their crop area by 4 to 5 per cent. In this respect Siberia was unique, for elsewhere areas of crops on peasant land were reduced. Even in the grain-deficit area north of the blacksoil belt, where crop areas were slightly expanded (3 to 4 per cent), all of the expansion was on state farms, while peasants maintained their own crop area at the level of 1931.

It is of particular interest to note that precisely in these areas, Siberia and the Northern and Central regions of the European part of the USSR, the assistance of the government to collective farms through the MTS was relatively the smallest. At the end of 1935, less than two-fifths of the collectives in these two areas were served by MTS; whereas in the

Eastern area two-thirds were served and in the Southern area more than four-fifths. Despite (or because of) this smaller assistance the peasants of Siberia were able to extend their crop area and the peasants of the Northern regions were able at least to maintain it, whereas the peasants in the south and east, assisted greatly or perhaps over-assisted, reduced their crop areas by 10 to 12 per cent.

Generally speaking, it was characteristic of the period 1931-35 that crop areas, particularly of grain, were expanded in the grain-deficit regions, while in the principal grain-surplus regions crop areas were reduced. In this respect Siberia and the Far East does not present a prominent exception, for here the grain-surplus area lies only in the western part, the eastern being a grain-deficit area. This general development is explained partly by the fact that the burden of obligatory grain delivery to the state, fixed by law since 1933, has been relatively much heavier in the grain-surplus regions than in the grain-deficit regions (see pp. 350-51), per acre of crops or per unit of total production. In effect, peasants in the grain-deficit areas were producing more for their own consumption and less for the state, while those in the grain-surplus regions were producing more for the state and less for themselves. It is clear that the greater stimulus for expansion of crop area on peasant land lay in the grain-deficit areas.

Governmental policy toward expansion of crop areas in different regions also was changed in 1932. Since then, more attention has been paid to expansion in the humid regions north of the blacksoil belt than in the eastern semiarid regions, where the earlier results fell so far below expectations. The Second Five-Year Plan set as a goal expansion of crop area by 12.5 million acres in these humid regions. Beginning with the spring of 1934, the collectives in the northern regions which were extending cultivation onto new lands were exempted from taxes in kind and in money on crops grown on these lands for a period of two years.¹ By later decrees this privilege was granted to collectives in Siberia.

¹ Decree of the Council of the People's Commissars of the USSR and of the Central Committee of the Communist Party of Apr. 23, 1934, *Collection of Laws and Decrees of the USSR, 1934, No. 21.*

BREAD GRAINS AND FEED GRAINS

The bread-grain problem was persistently one of the most important to the Soviet government, from the very beginning of the revolution. The socialistic reorganization of agriculture was undertaken partly in order to solve the grain problem. It motivated the formation of huge state grain farms early in 1927-28, and partly also the collectivization of agriculture so ruthlessly forced upon the peasants in 1929-31. It is of particular interest to inquire how successful the Soviet government has been in its solution of the bread-grain problem.

Rye is not so much less important in Russia than wheat, and both must be considered to get a correct picture of the bread-grain supply in the USSR. They must also be treated together in discussion of the question of competition between the bread grains and the feed grains. Since the importance of the bread grains among other grains is unusually great in Russia and ever has been so,¹ the development of the total grain area as discussed above gives a general view of the development of the bread-grain crops. But certain divergences must be noted, and a few special questions require discussion.

From Table 3 (p. 327) it appears that, on the whole, the recent development of the area under the bread grains had about the same characteristic features as the total grain area: rapid expansion until 1931, a considerable reduction in the two following years, and, after 1934, some recovery toward the previous level. But from 1929 to 1931, as we have seen, expansion of the bread-grain area was the more pronounced. The bread grains, particularly wheat, were displacing the feed grains, oats and barley.

Later, an emergency requirement for feed crops, necessary in order to check further deterioration of the livestock industry, caused the government to shift emphasis toward the feed grains. These grains consequently occupied a larger fraction of the partially recovered total grain area in 1934 and 1935, and the bread-grain area could be expanded only slightly, by less than 5 million acres. The area

under bread grain in 1935 was still 10 million acres smaller than in 1931, although the total grain area had reached the 1931 level by 1934. In 1935 and 1936, the total grain area declined somewhat because of urgent necessity, again in connection with the crisis of the livestock industry, to expand such crops as seeded hay and other feed crops, as well as vegetables for food in order to compensate for the lack of meat. Thus the new emergency, created by the crisis in the livestock industry, became a factor limiting the possibilities for definite solution of the bread-grain problem.

This competition between the bread grains and the feed grains and other feed crops is reflected by the changes in the fractions of the total grain area devoted to these crops, as well as in the ratios of grain area to total crop area. As shown in Table 6, the fraction of the

TABLE 6.—PERCENTAGE OF TOTAL CROP AREA IN GRAIN, AND OF GRAIN AREA IN DIFFERENT GRAINS, 1928-36*

Year	Percentage of total crop area in grains	Percentage of grain area in			
		Bread grains	Feed grains ^a	Groats grains ^b	Other grains ^c
1928.....	81.6	56.8	31.5	9.4	2.3
1929.....	81.3	56.9	31.8	8.9	2.4
1930.....	80.0	61.5	28.5	6.9	3.1
1931.....	76.6	61.8	27.2	7.4	3.6
1932.....	74.2	60.9	26.0	9.4	3.7
1933.....	78.3	57.7	27.5	10.7	4.1
1934.....	79.6	56.6	28.8	9.9	4.7
1935.....	77.9	58.5	29.3	7.4	4.8
1936.....	76.5 ^d	....	....	...	...

* Compiled from *Agriculture of the USSR, 1935*, Tables 94, 104, 985.

^a Oats, barley, corn.

^c Including dry legumes.

^b Millet, buckwheat.

^d *Pravda*, Nov. 24, 1936.

total crop area occupied by all grains fell substantially between 1928 and 1932. This was not so much a sign of continued diversification of farming, somewhat characteristic of the development of peasant farming in 1922-28,² as a result of the rapid expansion of a few technical crops (cotton, sugar beet, etc.) on specialized farms in some regions.

The proportion of the total grain area occupied by the bread grains increased substantially between 1929 and 1931, from less than 57 per cent to nearly 62 per cent, whereas the proportion occupied by the feed-grain crops

¹ See *Agricultural Russia*, pp. 248-52.

² *Ibid.*, pp. 191-95.

(oats, barley, and corn) declined from 32 to 26 per cent. The feed-grain area had been reduced by 1932 to a level too low even for Russian agriculture, wherein these grains had always occupied only a small share of the grain area. This occurred because the livestock population had also been greatly reduced,¹ following the forced collectivization.

When in 1932 the government officially recognized the plight of the livestock industry and set about to improve it, emphasis necessarily fell upon expansion of feed-grain area, although at the same time there was serious shortage of bread grain. This emergency inevitably put a stop to further expansion of technical crops, and even involved reduction; for cultivation of these required excessive use of the draft power which could not be spared from cultivation of either feed grains or bread grains. The ratio of grain area to total crop area accordingly rose from 74 per cent in 1932 to 78–80 per cent in 1934 and 1935, not far from the level characteristic before the forced collectivization in 1929–30. At the same time the ratio of feed-grain area to total grain area rose from 26 to 29 per cent, while the proportion occupied by the bread grains fell to 57–58 per cent. Even with this expansion, the feed grains occupied too small a proportion of the grain area in 1935—less than in 1929. Substantial recovery of the livestock population requires further expansion of feed-grain acreage, especially in view of official plans to improve the quality of livestock—an objective necessitating substantial expansion of such feed crops as seeded hay and roots. The government has indeed followed this direction, although expansion of these crops is rather slow. The area under the feed crops (excluding feed grains) rose from 5.4 per cent of the total crop area in 1934 to 6.5 per cent in 1935. In connection with this the ratio of grain area to total crop area fell from 79.6 per cent in

1934 to 77.9 per cent in 1935 and declined further to 76.5 per cent in 1936. The process presumably will continue if the government adheres to its plans for rehabilitation and improvement of the livestock industry.

The marked fluctuations in the ratio of area in millet and buckwheat to total grain area require some comment. These crops are used in the USSR mainly as food, in the form of groats (cracked grain, boiled for porridge). Millet in particular plays a special rôle among the grains. Frequently it is a sort of emergency crop sown when planting of other spring grains cannot be continued because of a late season or a shortage of seed. Millet can be sown later than other grains and requires relatively little seed per acre. Fluctuations in the ratio of millet-and-buckwheat area to total grain area during 1928–35 represent largely fluctuations in the sowings of millet and are explicable largely by its emergency uses. The spring of 1930 was exceptionally favorable for extension of spring sowings, and consequently millet was not much sown. During the following three years, when spring sowings were delayed, a fairly substantial portion of the grain area was planted late with millet. Shortage of seed in some regions in 1932 and 1933 contributed to this development. Millet and buckwheat occupied a relatively large fraction of the grain area in 1934 also. This points toward strain in the spring sowing campaigns of all these years; it was impossible to execute the sowing plans with the more valuable grains. Reduction of the share of millet in the grain area of 1935 points toward less strain in this sowing campaign, though there were also more favorable climatic conditions in the spring. Hence the total grain areas reported for 1932–34 tend to overstate the results of the drive for expansion of grain area, for they include abnormally large percentages of the less valuable grain crops.

The foregoing discussion helps to clarify the position of the bread grains among other grains in the USSR as well as their competition with the feed grains. They competed not so much for land as for the means of production, particularly draft power, which was at a minimum during 1930–35. With shortage of draft power and because of the very short

¹ The following official data indicate the numbers (millions) of various types of livestock in the summers of 1928 and 1932 (*Agriculture of the USSR, 1935*, p. 519):

	Horses	Cattle	Sheep and goats	Hogs
1928	33.5	70.5	146.7	26.0
1932	19.6	40.6	52.1	11.6

sowing period usual in the principal grain-producing regions, it was impossible to expand the bread-grain area and the feed-grain area simultaneously. The government was therefore impelled to shift the emphasis in its plans from one to the other, according to the degree of emergency in either field. When, because of the short duration of the sowing season, it proved impossible to extend sufficiently either of these groups of principal grains, recourse was usually had to secondary grains like millet.

WHEAT AND RYE

Substantial shifts occurred also between the bread grains themselves. The government adhered to a policy of stimulating expansion of the wheat area, which sometimes and in certain regions led to a shift from rye to wheat, particularly winter wheat, since it was impossible to expand both. The competition between wheat and rye was not only for the means of production, but also for land and for place in the crop rotations, for these shifts occurred mainly in the densely populated regions of Ukraine and Central Russia.

The policy of stimulating expansion of wheat rather than rye preceded the reorganization of agriculture. With collectivization of agriculture and organization of state grain farms, the government acquired greater control over agriculture and could therefore follow this policy more effectively through direct planning of crop areas. The policy was pursued not merely because of the greater value of wheat as a domestic bread grain, but mainly with a view toward increase of grain exports, since wheat had a larger international market than rye. There is no question that this motive dominated until 1932.

It was also an early policy of the government to favor shift from spring wheat to winter wheat, which yields better. During the 1920's considerable efforts had been made to expand the area of winter wheat so far as climatic conditions permitted.¹ After the socialistic reorganization of agriculture this policy was pursued even more vigorously. Hence considerable changes occurred in the relative

importance of the various bread grains during the period 1928-35 (illustrated in Table 7), and in their regional distribution as well.

TABLE 7.—BREAD-GRAIN ACREAGE, 1928-35*

Year	Million acres					Percentages	
	Total	Wheat			Rye	Wheat to bread grains	Winter wheat to all wheat
		Total	Winter	Spring			
1928.....	120.4	68.5	15.3	58.2	60.0	52.9	22.3
1929.....	135.1	73.5	16.2	57.3	61.6	54.4	22.0
1930.....	154.7	83.4	24.9	58.5	71.3	53.9	29.8
1931.....	159.4	91.1	28.0	63.1	68.3	57.2	30.7
1932.....	150.0	85.3	29.2	56.1	64.7	50.9	24.2
1933.....	144.9	82.2	26.7	55.4	62.7	56.7	32.5
1934.....	146.5	87.1	26.7	60.4	59.4	59.4	30.6
1935.....	149.6	91.6	30.8	60.8	58.0	61.2	33.6

* *Agriculture of the USSR, 1935*, pp. 268, 1367.

We have seen that the governmental policy during the early period of reorganization of agriculture was to expand the bread-grain area at any price, and this policy was pursued with apparent success though at the cost of other grains. During this period the total area under bread grain was much expanded. But growth of the rye area was checked as early as 1931. It will be recalled that decline of the grain area on peasant land also started at the very beginning of the reorganization of agriculture. Since practically no rye was grown on state farms, which continued to expand their crop area throughout the whole period, the decline of the rye area on peasant lands was immediately reflected in decline of the total rye area. This has continued without interruption. By 1934 the rye area was less than in 1928, before the reorganization of agriculture.

Expansion of the total wheat area between 1928 and 1931 by more than 22 million acres, about a third, represented mainly expansion of winter wheat. The area of winter wheat increased by 13 million acres, more than four-fifths, while the much larger area under spring wheat increased by less than 10 million acres or less than one-fifth. The slower growth of spring-wheat area reflected two opposing processes: (1) a rapid expansion of the spring-wheat area in the Eastern regions, where the "grain factories" were then being organized with great haste; and (2) a shift from spring wheat to winter in the south, where rapid

¹ See *Agricultural Russia*, pp. 258-59.

extension of the total wheat area came solely in winter wheat and the spring-wheat area declined. Moreover, during 1928-31 there was no expansion of wheat acreage in Siberia, the area second in importance for spring wheat.

The shift to winter wheat, both from rye and from spring wheat, proceeded so vigorously that the growth of winter-wheat acreage persisted in 1932, when all other grain areas were considerably reduced. But in 1933 the winter-wheat area fell sharply, mainly because of developments in Ukraine and North Caucasus, the two principal winter-wheat regions of the USSR. Here the conflict with the peasantry and the famine of 1932 were most pronounced, and the setback to winter-wheat acreage was so severe that it even retarded general recovery of winter wheat, which failed to appear until 1935 although substantial recovery of the spring-wheat area occurred in 1934. The winter-wheat area continued in 1934 to decline in the principal winter-wheat regions, and only the vigorous drive of the government for expansion of winter wheat in Central Russia compensated for this decline and made possible maintenance of total winter-wheat acreage at the level of 1933. In 1935, however, substantial recovery of winter-wheat sowings occurred both in Ukraine and in North Caucasus, and the total winter-wheat area was brought to a level above the earlier peaks of 1931 and 1932, and twice as large as in 1928.¹ Against the doubling of the winter wheat area from 1928 to 1935, and expansion of more than 15 million acres, must be set the decline of the rye area from 1930 to 1935 by more than 13 million acres, and also the fact that the spring-wheat area after two years of recovery, 1934 and 1935, was still 2 to 3 million acres smaller than in 1931.

The fact that recovery of the spring-wheat area after the setback of 1932-33 began in 1934, earlier than the recovery of winter wheat, is explained partly by regional developments, particularly the substantial increase of wheat area in the Siberian regions where only spring wheat is grown. Siberia, as we have seen, was the only area where substantial increase of crops on peasant lands occurred between 1931

and 1934, synchronously with expansion of crop areas on state farms. This contributed to early recovery of the spring-wheat area in 1934. But in 1935 this process did not continue, and the spring-wheat area was practically the same as in 1934. This check to the growth of the spring-wheat area cannot be explained simply by shift from spring to winter wheat, for reduction of the spring-wheat area occurred in regions where no such shift can occur, as in Western Siberia. The setback in Siberia in 1935 was due to reduction of areas on state farms, for crops on peasant lands continued to expand. This reflects the crisis of the state farms and transfer of part of their land to collectives (pp. 337-40).

Generally speaking, growth of the spring-wheat area is proceeding but slowly, and in 1935 it was 2 to 3 million acres smaller than in 1931 and only 3 to 4 million acres larger than in 1929, before the socialistic reorganization of agriculture. With such small expansion of spring-wheat area and with reduction of rye area, it is clear why the total bread-grain area increased only a little in spite of a doubling of the winter-wheat area.

The divergent course of development of the two bread grains resulted in substantial change in their relative importance from 1928 to 1935. Rye became substantially less important as compared with wheat: in 1928 and 1929, before the collectivization, it had occupied 46 to 47 per cent of the total bread-grain area, but in 1935 less than 39 per cent. At present the ratio of wheat to rye area is about 3 to 2. This ratio not only exceeds that of early post-revolutionary years, but also of prewar years when Russia was a great wheat exporter.

The enhanced importance of wheat is exclusively due to winter wheat, which has risen from 12 to 20 per cent of the total bread-grain area. Winter wheat now occupies a third of the total wheat area, whereas in 1928-29 it occupied only a fifth to a fourth. But the relative importance of the two winter bread grains together (winter wheat and rye) has not changed. They occupy now, as in 1928-29, nearly three-fifths of the total bread-grain area, leaving two-fifths for spring wheat.

Since regional aspects are important for understanding of the development of winter-

¹ For yearly fluctuations of wheat acreage by regions, see Tables I and II.

and spring-wheat areas during 1928-35, as well as of the shift from spring wheat to winter, we present pertinent data in Table 8.

TABLE 8.—DISTRIBUTION OF WHEAT ACREAGE BY MAJOR AREAS IN SELECTED YEARS, 1928-35*

(Million acres)

Major area	1928	1931	1934 ^a	1934 ^b	1935
ALL WHEAT					
USSR	68.5	91.1	87.1	87.1	91.6
Northern and Central....	1.1	1.3	4.9	5.0	6.6
Eastern	24.0	34.0	31.0	30.1	30.3
Southern	23.8	35.2	29.3	29.3	32.2
Siberia and Far East.....	13.5	13.1	15.0	15.8	15.1
Central Asia and Transcaucasia	6.1	7.5	6.9	6.9	7.4
SPRING WHEAT					
USSR	53.2	63.1	60.4	60.4	60.8
Northern and Central....	.8	1.0	3.3	3.4	4.6
Eastern	23.4	33.2	29.8	28.8	29.3
Southern	13.0	12.0	8.6	8.6	8.1
Siberia and Far East.....	13.4	13.1	14.9	15.8	15.1
Central Asia and Transcaucasia	2.6	3.8	3.8	3.8	3.7
WINTER WHEAT					
USSR	15.3	28.0	26.7	26.7	30.8
Northern and Central....	.3	.3	1.6	1.6	2.0
Eastern .....	.6	.7	1.2	1.2	1.0
Southern	10.8	23.2	20.8	20.8	24.1
Siberia and Far East.....	.0	.0	.0	.0	.0
Central Asia and Transcaucasia	3.6	3.7	3.1	3.1	3.7

* Summarized from Tables I and II.

^a Old boundaries, as in 1928 and 1931.

^b New boundaries, as in 1935.

The rapid expansion of wheat crops during the early period of the reorganization of agriculture was mainly in the two principal wheat-surplus areas and enhanced their importance at the expense of wheat-deficit regions as well as in relation to Siberia, the third important wheat-surplus region. In the Eastern area, spring-wheat acreage expanded greatly, increasing by 10 million acres or more than two-fifths. In the Southern area only the winter-wheat area expanded, partly at the cost of spring wheat; but the area under winter wheat more than doubled from 1928 to 1931, increasing by 13 million acres. Thus the Eastern area in 1931 contained more than half of

the total spring-wheat area of the USSR, and the Southern contained more than four-fifths of the total winter-wheat area. These two areas together contained more than three-fourths of the total wheat acreage.

But this position was not maintained, for the setback of 1932 seriously affected these two wheat-surplus areas, and their recovery thereafter was slow. Their relative importance has remained less than it was in 1931. The decline of spring-wheat area in the Eastern regions was so great and the ensuing recovery so slow that these regions could not keep step with recovery of wheat in the USSR as a whole. The relative importance of the Eastern area in 1935 was less than in 1928, when its crop area was 20 to 25 per cent smaller than before the war.

This points toward failure of the official plan to expand wheat in the semiarid regions of the east. Moreover, in expansion of wheat the more humid regions of Siberia also lagged behind other regions of the USSR, despite the fact that Siberia was the only area not affected by the setback of 1932 and 1933. The share of Siberia and the Far East in the total wheat area was substantially smaller in 1935 than in 1928. The unsuccessful efforts of the government to expand wheat in the Eastern regions are connected with the failure of the state grain farms to fulfill the original ambitious plan assigned them during 1927-30. This problem is discussed below (p. 337).

Here it is pertinent to note the growing importance of wheat, both of spring and winter, in the humid regions north of the blacksoil belt. Before the collectivization in 1928, their share in the wheat area was only 1 to 2 per cent. It declined further during the early period of the reorganization of agriculture, which was characterized by the "Drang nach Osten." But after the failure of this drive the attention of the government turned to the humid regions north of the blacksoil belt, and the Second Five-Year Plan emphasized expansion of grain production, especially wheat, in this and other grain-deficit regions (Far East). Enlargement of the wheat area in the regions north of the blacksoil belt by 5 to 6 million acres in 1931-35 indicates a degree of success in this drive. Yet this expansion to

date has been almost wholly at the expense of rye, of which the acreage has fallen by nearly 5 million acres. Expansion of wheat in the northern humid regions is important enough to deserve discussion below (p. 340).

Table 8 indicates that the Soviet government has not yet succeeded in expanding winter wheat much beyond the regions where it was formerly cultivated—the southern European part of the USSR, Transcaucasia, and Turkestan, which in 1935 still contained 90 per cent of all the winter-wheat acreage of the country. Success in this policy is limited to expansion of winter wheat in the regions north of the blacksoil belt,¹ which contained another 6 to 7 per cent. There was practically no spread of winter wheat in the Eastern regions. Russian wheat breeders have persistently sought to develop new varieties of winter wheat resistant enough to the cold and snowless winters and the recurrent droughts characteristic of the Eastern regions, but definite results have not yet been achieved. Experiment continues with a few promising varieties but, as an authority on plant breeding for these particular regions recently stated, very little has been accomplished toward expansion of winter wheat in the Lower and Middle Volga regions, to say nothing of regions farther east.² Sometimes the Soviet government moves too rapidly and advises new varieties before they have been sufficiently tested, with resulting setback to expansion as in 1927–28.³

¹ That winter wheat has been extended only in the western part of the northern area may be seen from Tables I and II.

² See G. K. Meister, "Soviet Plant Breeding and Its Achievement," *Socialistic Reconstruction of Agriculture*, December 1935, p. 138. Meister, for many years in charge of plant breeding work in the Saratov Experiment Station in the Lower Volga region, mentions particularly two new varieties of cold-resistant wheat (Lutescens 329 and 1060/10). He states that they permit wheat to expand considerably to the east, in the Lower and Middle Volga regions; but later he observes that the cold-resistant varieties are not good yielders and in baking quality are not high (p. 140). Still later he states that "very little was done for expansion of winter wheat to the east," and emphasizes the many difficulties that hamper solution of the problem.

³ See *Agricultural Russia*, pp. 258–59. Reduction of the winter-wheat area in 1929 was caused by heavy winterkilling in 1927–28, for which inappropriate use of insufficiently tested new varieties of wheat was partly responsible.

STATE FARMS IN SEMIARID REGIONS

We have seen that the crop area in state farms persistently increased and compensated, at least partially, for decline of crops on peasant land after 1930–31 (pp. 328–29). On the other hand, the unsuccessful efforts to expand wheat crops in the Eastern area represented failure of the state grain farms (pp. 335–36). This apparent contradiction requires further explanation.

The state grain farms are one of several kinds of state farms. There were also livestock farms, seed-breeding farms, cotton farms, sugar beet farms, etc., besides state farms organized during the period of food shortage especially to supply food for urban workers, and those organized by the consumers' cooperatives (controlled by the state). All such state farms produce crops, and their crop area has recently expanded as they grew rapidly in number. But only the state grain farms concern us here. These were created during 1927–30 with the special purpose of solving the grain problem, and it is pertinent here to inquire into their success.

Table 9 reveals significantly divergent trends. In early years, the expansion of crop

TABLE 9.—CROP AREAS ON STATE FARMS, 1929–35*
(Million acres)

Year	Total crop area			Grain area		
	All farms	Grain farms		All farms	Grain farms	
		Area	Percentage		Area	Percentage
1929....	5.6	.4	6.4	3.8	.4	9.5
1930....	9.7	2.9	30.3	7.2	2.9	40.7
1931....	27.1	10.8	39.7	20.0	10.7	53.4
1932....	33.2	11.2	33.8	22.8	10.7	47.1
1933....	34.9	8.0	22.9	26.8	7.8	29.3
1934....	37.3	8.1	21.8	28.7	7.9	27.5
1935....	40.0	9.0	22.5	29.8	8.6	28.9

* See *Agriculture of the USSR, 1935*, Tables 99, 546, 547, and 985.

area in the state grain farms was much more rapid than in all state farms, and in 1931 they contained two-fifths of the total crop area in all state farms and more than half of the grain area. But in 1932 the growth of crop area in state grain farms was arrested and their relative importance declined. Their crop

areas were greatly reduced in 1933 and have never since recovered much, so that recently the state grain farms contained only a little more than a fifth of the total crop area in all state farms and somewhat above a fourth of the grain area. The state grain farms even failed to keep step in expansion of grain area with those state farms on which grain production was only a secondary enterprise.

Even this development of crop area on the state grain farms does not show the depth of the crisis which they experienced in 1931 and 1932, when their yield per acre averaged only about half of what it had been in 1929 and 1930 on a much smaller acreage.¹ For this reduction in yield the rapid expansion of crop area on the state grain farms was to some degree responsible.

The critical situation of the state grain farms in 1931 gave rise to the successive reorganizations described above (pp. 320-22), without apparent success. These reorganizations were not limited to change of size and of internal organization as productive enterprises; on the contrary, the entire plan for state grain farms was changed, and the decision was made to shift cultivation of wheat

¹ Yields per acre of all grain and of wheat on state grain farms were about as follows, in 60-pound bushels per acre:

Year	All grain	Spring wheat	Winter wheat
1929	7.7	7.4	...
1930	10.0	9.5	...
1931	4.5	5.1	...
1932	5.9	...	...
1933	7.6	...	...
1934	7.6	8.8	4.8
1935	10.7	10.6	11.6

These data are not separately published but are here computed from data on production and acreage scattered in several Soviet publications.

² *Second Five-Year Plan of the Economic Development of the USSR* (Gosplan, Moscow, 1934), p. 222.

³ *Agricultural Russia*, pp. 128-30. The early plan was that in large part the state grain farms should be organized in regions where annual average rainfall ranged from 10 to 14 inches. Only a few state grain farms in 1935 were in regions with annual average rainfall below 14 inches, and practically none in regions with rainfall below 12 inches. See an official report published by the People's Commissariat of State Farms, *State Farms of the People's Commissariat of State Farms of the USSR* (Moscow, 1936), Vol. I.

⁴ The discussion which follows is based on detailed statistics of state grain farms in *Agriculture of the USSR, 1935*, pp. 730-77.

on state farms from semiarid regions to regions of high yields.² This meant that expansion of wheat production on unoccupied land difficult to settle by peasants because of drought was to be replaced by creation of state grain farms in regions already well settled and on land already occupied by peasants or easy to occupy. After 1931, the development of state grain farms was mainly in well-populated Ukraine, North Caucasus, and the Central Blacksoil region, instead of in regions east of the Volga and in Central Asia, as had been planned.³ Organization of state grain farms in the more humid areas was presumably a device to combat resistance of the peasants to excessive grain collections, when collective farms of the southern area were passing through a severe crisis (pp. 311-12).

Reduction of land area in state grain farms after 1931 occurred exclusively in regions east of the Volga,⁴ particularly in the semiarid eastern regions, while no reduction of land in state grain farms occurred in the southern European regions west of the Volga. Indeed, the crop area in state grain farms of the southern regions increased by 20 per cent. This growth was less spectacular, however, than the synchronous growth of tractors and combines, which increased 2½ times, and of labor supply, which was trebled. Efforts to expand crops were apparent in the south, but not in the eastern regions, where tractor equipment was not enlarged between 1931 and 1934. With the crop area in 1934 only half as large as in 1931, the number of tractors on the eastern state grain farms ought to have been more than sufficient, if they were used efficiently. Such other equipment as combines was greatly increased on the eastern state grain farms, though not so rapidly as in the south. In any event, investment in the means of production on eastern state grain farms enlarged 50 per cent from 1931 to 1934, and yet even with this increased equipment the eastern farms could not handle satisfactorily a crop area cut in half.

It cannot be said that shortage of draft power was responsible for this, for the state grain farms in 1934 had two or three times more draft power per acre than agriculture throughout all of the USSR. State grain farms

in the eastern and Siberian regions had 11 to 12 acres of crops per horsepower, while in the country as a whole the burden approached 30 acres per horsepower. It was not a heavy task to work 12 acres of small-grain crops per horsepower of tractors in the open plains east of the Volga, resembling the Great Plains of America—the more so because the highly mechanized farms also had 2 or 3 workers per 100 acres of crops annually on the average, and were practically one-crop farms.

Reasonable explanations of the difficulties experienced by the state grain farms after 1931 may be found in Soviet publications themselves.¹ During their first few years of operation the state grain farms, equipped with new American tractors and manned with trained drivers sent from cities, were relatively successful, particularly in the exceptionally favorable crop year 1930. The situation changed when, encouraged by this relative success, the government undertook to expand the state grain farms very rapidly (against the warnings of a few experienced agronomists, it is true).² Trained tractor drivers could not be had in sufficient numbers, and new ones had to be trained. Living conditions for workers were extremely crude on the new farms, and consequently it was impossible to retain trained workers. Hence the tractors were badly run, and plowing and planting could not be completed promptly. In general, all rules of agronomy were ignored on the state grain farms.

In spite of the increased equipment, the plowing of fallow in 1932 was reduced by half as compared with 1931, and only 15 per cent

of this was plowed early (before June 1); whereas in 1930 nearly half of the plowing for fallow on state farms had been completed before June 1, an extremely important matter under Russian climatic conditions. The situation with the fall plowing for spring crops was even worse. In 1932 and 1933, with a much larger number of tractors, less than a third as much land was plowed as in 1930, and in 1934 the improvement was slight.³ The bulk of the spring sowing was done on land plowed only in the spring and therefore was delayed. This naturally reduced the yield per acre. Furthermore, neglect of agronomic rules resulted in weed infestation, and this in turn made harvesting with combines impossible. The use of simple harvesting machines instead of combines required much more labor than had been planned, and consequently the harvest was delayed. Grain cut but unbound (there were not many binders in the USSR, and labor on the state grain farms was short or inefficient) remained weeks and months exposed to the weather and in large part was lost. In order to make possible the use of combines at harvest, it was decided to weed the fields by hand. But to weed 50,000 to 60,000 acres of grain—the usual size of the crop area on state grain farms before subdivision in 1934–35—an army of 3,000 to 4,000 was needed.⁴ Such an army was difficult to find in the semiarid eastern region and there was no place to lodge so many. Yet the state farms sought to do this, and official statistics show that the fraction of the fields in state grain farms weeded by hand rose from 7.5 per cent in 1932 to 45.4 per cent in 1934.⁵ This gives us a picture of a half-Americanized and half-Oriental socialistic Russia: "grain factories" equipped with modern tractors and combines, but also with an army of 3,000 to 4,000 workers necessary to prepare the fields for the use of machines invented to economize labor.

Such was the situation of the state grain farms in their most critical period, 1932–34. In 1935 some improvement occurred, mainly because better use of tractors and combines had been learned. During the past two or three years great emphasis has been put on increase in the use of combines. Economical use is possible only after the land on state

¹ See especially E. Preobrazhensky, "State Farms on Their Way to Profitableness," *Planned Economy*, 1935, No. 10, pp. 58–79.

² See M. Gerchikov, *On the Agrarian Front*, 1931, No. 3, pp. 3–13. Here it is stated that Professors N. Makarov and Doiarenko objected to the plan of increasing deliveries of grain from state farms to 1.6 million tons within four years, and advised a slower tempo. Mr. Gerchikov, then head of all state grain farms, disagreed; but in less than a year he was dismissed in disgrace because of the failure of the state grain farms.

³ See *Agriculture of the USSR, 1935*, Tables 548–551, pp. 742–47.

⁴ See Preobrazhensky, *op. cit.*

⁵ *Agriculture of the USSR, 1935*, p. 748.

farms has been sufficiently cleared of weeds, and this requires thoroughgoing change from previous practices. The government evidently made great efforts in this direction. In 1935 and 1936 the state grain farms succeeded in harvesting practically all of their crops with combines—97 per cent in 1935 and 99 per cent in 1936. But great difficulties remained in using combines in the eastern and Siberian regions and they were inefficient under certain conditions.¹

Such improvement as has occurred on the state grain farms recently represents an increase of production without regard to cost. But all achievements are minor, as is admitted officially; and achievements in the direction of increasing yield per acre are particularly small.²

Governmental dissatisfaction with the experience in seeking to expand grain acreage in semiarid country is suggested not only by the shift toward increase of wheat production in the humid regions, but also (after 1932) by the energy devoted to study of an ambitious project of irrigating more than 10 million acres of land in the semiarid area of Middle and Lower Volga. Great disappointment is implied by the reduced plan for spring sowings on state farms for 1937, and by the continuous transfer of land from state farms to collectives during the past two years. It seems clear that state farms no longer are expected to contribute heavily to expansion of grain production.

WHEAT IN HUMID REGIONS

The decision to increase grain production, particularly wheat, in the northern humid regions instead of in the semiarid east, calls for discussion of the feasibility and economic soundness of this new plan.

¹ See K. Soms, "Socialistic Grain Factories," *Bol'shevik*, Oct. 15, 1936, pp. 19-31. In several state grain farms in Siberia, combines harvested on the average only 9 to 12 acres per day and the farms were not equipped to dry wet grain.

² See Mr. Kal'manovich, People's Commissar of State Farms, *Socialistic Reconstruction of Agriculture*, 1936, No. 3, p. 225.

³ See V. Rumiantsev, "Production of Grain in the Non-blacksoil Area," *Planned Economy*, 1936, No. 4, pp. 141-51.

⁴ *Ibid.*, p. 146.

Crop land in the area north of the blacksoil belt occupies a much smaller fraction of the land area than in the southern regions. Even excluding the extreme northern provinces, arable land in the European northern area occupies only 30 to 35 per cent of the total area. These statistics are frequently used to show the great possibilities for further expansion of grain crops. But there are many limitations to such expansion. At best it can go but slowly; before land is brought under crops it must be cleared of forest or scrub, drained, or otherwise improved; and rational improvement ought to be preceded by an extensive preliminary soil survey.

The Second Five-Year Plan included the goal of bringing 12-13 million acres of new land under cultivation within five years in the Northern and Central area. From 1933 to 1935, about 5 to 6 million acres were put under crops, but this land was mostly meadow and pasture not requiring much improvement, and only a small part of it involved clearing of forest or scrub.³ This suggests that occupation of new land must proceed rather slowly. On the other hand, expansion of grain crops without occupation of new land would mean reduction of feed crops in this area, which is not desirable in view of the increasing requirements of feed for the recovering livestock industry and would be poor agronomic technique.⁴ Agricultural specialists have estimated that, through occupation of new land and some reduction of area in fallow, it will be possible by 1937 to increase the grain area in the Northern and Central regions by 5 to 6 million acres. But these specialists gave warning that reduction of fallows by transfer to feed crops ought to proceed slowly, and only after sufficient clearing of weeds. They also estimated that the area under wheat might be increased by 8-9 million acres, partly at the cost of less valuable grains, particularly rye.

Between 1932 and 1935 the wheat area in these regions rose by about 5 million acres, and the plan for 1936 called for an increase of a million more. Hence the Five-Year Plan for expansion of the wheat area in the Northern area by about 8 million acres by 1937 seems likely to be fulfilled. Until 1935, how-

ever, practically all of the expansion was at the expense of rye (Tables I, II).

Further expansion of wheat in the Northern area may encounter shortage of soils suitable for profitable wheat cultivation. Preliminary official estimates suggest that a total of 40-50 million acres of land suitable for wheat exists in the Northern area, and through liming of acid land this area may reach 50-60 million acres.¹ Allowing for rational crop rotations, from 10 to 12 million acres of wheat might be grown in this area, of which nearly 7 million were already occupied by wheat in 1935. Hence the margin for further expansion of wheat on suitable soils in the northern part of European Russia seems rather narrow.

Other factors work against rapid expansion of wheat north of the blacksoil belt. Here wheat cultivation requires considerable use of fertilizer, mainly in the form of manure. Specialists put this requirement on land of average quality at 30-40 tons per hectare, of which only half should be replaced by mineral fertilizers in case of shortage of manure.² But the present supply of manure is insufficient even to continue fertilization on the level characteristic of peasant farms before collectivization, when they grew rye, a less exacting

crop.³ Expansion of wheat both on new land and also by replacement of rye has its limits and can proceed only at a moderate pace.

Furthermore, the economic soundness of the whole project for expansion of grain crops and particularly wheat in northern areas has properly been questioned by some specialists in the USSR. Here production of wheat, though technically feasible with intensive cultivation, is associated with considerable costs and is normally exposed to the competition of wheat grown in regions of extensive cultivation. Other more valuable crops, better fitted to the economic and climatic conditions of the northern areas, compete with wheat for the best lands, and also for manure which at present is so limited. The rapid expansion of wheat in the Northern area of the USSR after 1932 may therefore be explained on much the same basis as its recent expansion in such countries of western Europe as Germany: elimination of the free market and expansion of production at high cost, in order to achieve a certain degree of self-sufficiency. Within Soviet Russia this policy has been applied to different areas of domestic agriculture, elsewhere only to nations as a whole.

V. EFFORTS TO INCREASE GRAIN YIELDS PER ACRE

The achievements of socialistic agriculture in the USSR cannot be measured solely by its success in expansion of the crop area. The extremely rapid expansion of crop area resulted in reduction of the yield per acre in the early period of organization of state grain farms, and under the circumstances may be regarded as economic loss rather than as achievement. Definite conclusions as to the success of the reorganized agriculture of the USSR in in-

creasing of grain production involve an answer to the question: Did yields per acre of grain increase after the reorganization?

The answer is not easily found because of the short duration of the experiment, even if comparable statistics of yields were at hand; for yields in the USSR vary greatly from year to year and from region to region. The difficulty of analysis is all the greater because offi-

¹ See P. Mitrofanov, "Concerning Expansion of Wheat in the Northern Non-blacksoil Area of the Union," *On the Agrarian Front*, 1934, Nos. 2, 3, pp. 25-35; and M. M. Lapin, "Wheat in the North and Methods of Its Cultivation," *Agriculture of the USSR*, 1935, p. 96.

² *Agriculture of the USSR*, 1935, p. 100.

³ According to statistics of the People's Commissariat of Agriculture, the yearly supply of manures on collective farms (metric tons per hectare) was as follows in recent years (V. P. Mosolov, in *Socialistic*

Reconstruction of Agriculture, 1935, No. 12, pp. 176-87):

Northern region	5.5	Ivanov province	3.1
Leningrad province	5.0	Gorki region	1.5
Western province	3.3	Tartar ASSR	1.2
Moscow province	2.7	White Russian SSR	1.7

In 1927 in these regions more than half of the winter crops received manure, on the average 20 to 25 tons per hectare; while in 1934 only about two-fifths of the winter crops were manured and the average application was 10 to 15 tons per hectare. Cf. *Statistical Review*, 1928, No. 12, p. 6, and *Agriculture of the USSR*, 1935, pp. 337, 339.

cial crop statistics underwent a fundamental change in 1933, in the middle of the period of agricultural reorganization. The agencies of collection, the methods of collection, and the methods of reporting crop statistics were all changed at the same time. Postwar crop statistics of the USSR were not comparable with the official crop statistics of prewar Russia.¹ Once more the statistical series on yields and total production are broken into two incomparable groups: those before and those after 1933. Hence interpretation of the official crop statistics in recent years must be preceded by analysis of their comparability.

CHANGES IN CROP STATISTICS IN 1933²

A State Commission for determination of yield and total production of grain was created by decree of December 17, 1932. This Commission is independent of any other government department and is subordinate directly to the Council of the People's Commissars of the USSR. By decree of March 5, 1933, 282 regional commissions of this body were created, independent of local organs of the central government as well as of the provincial and republican governments. Their presidents are directly appointed by the Council of the People's Commissars of the USSR.

The State Commission and its regional organizations were purposely made independent, for their principal task is to check the estimates of yields and of total production of grain made by local governmental organs. This was clearly stated in a decree of July 15, 1933, where the purpose of the regional com-

missions was set forth as "an early determination of the correct size of crops and *determined resistance to any kind of local, anti-state attempts for concealment of crops.*" The functions of crop estimating performed by the Central Administration of Economic Accounting were discontinued by decree of March 5, 1933, and such technical work as remained was subordinated to the State Commission.

Oral instructions given to members of the regional commissions from government representatives leave no doubt that the government expected from the regional commissions not merely statistical work but a battle for high yields and for preservation of crops.³ The dual rôle of those whose duty it was to estimate the crop inevitably affected their work as statisticians.

Crop area.—Statistics of crop areas are based on the reports of chiefs of separate brigades in collectives checked by the presidents of collectives. Until recently, most of the land in collectives was not surveyed, and the crop areas were therefore determined by guess. But the regional commissions in such cases require physical measurement of crops. Generally speaking, the statistics of crop area at present may be better than they were earlier, when it was necessary to estimate crop areas on 25 million small independent farms. Crop areas in 1935 were ascertained by methods approaching complete census, and hence may be regarded as reliable.

Yields.—Estimates of yields per acre are based on three kinds of statistics: (a) subjective estimates of yields in quintals per hectare collected once a month during the growing period; (b) measurement of unharvested crops just before harvest by the sampling method; and (c) controlled threshing of crops in sample collectives.

Subjective estimates of crops are collected from most collectives and state farms. Estimates by presidents of collectives are checked by the MTS or by village soviets. The crop estimate for 1933 was based mainly on these subjective estimates. The measurement of unharvested crops in 1933 was performed on 5,500 collective farms in 22 provinces. In 1935 it was planned to measure crops of rye on 5,025

¹ *Agricultural Russia*, pp. 163-72, 388-93, 410-13.

² Our description of the organization of crop statistics is based on decrees of the government and on the following publications: N. Osinsky, "The Results of the 1933 Crop," *Planned Economy*, 1934, No. 2, pp. 75-98; E. I. Vorotnitsky, *For Socialistic Accounting of Crops* (Sel'khozgiz, Moscow, 1935); I. Levitin, "Methods of Estimating Grain Yields," *Plan*, 1935, No. 13, pp. 17-20. Useful interpretation of the changes in organization of crop statistics is given in the *Bulletin of the Economic Cabinet of Professor S. N. Prokopovich*, No. 112, April 1934.

³ Mr. Kaganovich addressed members of the regional commissions in these terms: "You must speak the truth about the crop. Your work is a struggle for high yields, a struggle for preservation of the whole crop" (*Socialistic Reconstruction of Agriculture*, 1934, No. 1, p. 151).

collectives, of winter wheat on 2,225, and of spring wheat on 3,960. This may represent 3 to 4 per cent of all collectives producing the respective crops. In each enterprise selected for measurement of unharvested crops, from 200 to 500 samples are taken, each a square meter in size; the number of samples depends on the size of crop area in the enterprise and on the degree of homogeneity of yield in the respective region. A random sampling method is prescribed for selection of square meter samples. For estimates of yield based on controlled threshing, from 10 to 15 per cent of the collective farms in each administrative region were selected in 1933 and 1934.

The basic crop statistics in the USSR might be very satisfactory if it were not for the dual position of the regional commissions, whose function is not only to estimate the size of crop correctly but also to strive for its preservation against loss and concealment. In connection with this, the objective of measurement was changed. Previously, the crop statistics purported to give the best estimate of the crop actually collected into barns, on the assumption of usual or probable losses in harvesting. But the objective of the present system is to estimate the *normal economic crop*, which is a "biological" or *unharvested crop less "technically inevitable" losses in harvesting*, or, to use the words of Soviet crop statisticians, *the carefully harvested crop without excessive losses and plundering*.

For 1933, the technically inevitable losses in harvesting were estimated by N. Osinsky, at that time responsible for the crop statistics, at 10 per cent of the biological crop on the average for the USSR.¹ This percentage evidently represents the average deduction from the biological crop used in the estimate of the normal economic crop, officially reported in 1933 and thereafter.

The official crop statisticians clearly recognized that "technically inevitable" losses are not the same as usual or probable losses in harvesting. Their argument was that if they should deduct the actual losses, they would be sanctioning perpetuation of existing shortcomings — bad management, inadmissible losses, etc.; and that the normal economic crop for each collective ought to be regarded as a

goal which it should achieve. Evidently the goal had to be above the average achievement.

The usual average losses in harvesting, in the circumstances of the USSR in recent years, were substantially above 10 per cent. Many statisticians, basing their views on objective data published in the USSR, estimate these losses at about 20–25 per cent of the biological crop. One of the most important causes of such large losses is delay of harvest. After the collectivization of agriculture, the date of harvest usually lagged behind the date at which uncollectivized peasants had been accustomed to harvest.² Even in 1935, actual losses apparently amounted to 20–25 per cent rather than 10 per cent, if several statements of high officials are reliable.³

Accordingly, the official reports on yield of grain per acre and on total production of grain in the USSR published after 1933 are not comparable with the official crop statistics of earlier years. Many statisticians who use official crop statistics reduce the official estimates of grain crops for years after 1932 by 10 per cent in order to achieve comparability. Such an adjustment must be regarded as a rough approximation to a correction that should

¹ *Izvestia*, Nov. 21, 1933.

² This is substantiated by comparison of the dates of harvest published in official Soviet statistics for recent years with statistical data on harvest on peasant farms during 1922–26 published in the *Statistical Review*, August 1928, pp. 20–26.

³ Stalin, speaking to expert operators of combines on Dec. 1, 1935, said: "You know yourself that harvesting with simple harvesting machines results in enormous losses of grain . . . everybody recognizes that with such methods of harvesting we are losing from 20 to 25 per cent of our crop" (*Socialistic Reconstruction of Agriculture*, December 1935, p. 8). Tchernov, People's Commissar of Agriculture, speaking officially about the same time, stated that "with harvesting by combines we shall have an economy of losses around 10 poods (1.64 quintals) per hectare" (*ibid.*, January 1936, p. 19). On the official estimate of the yield of grain per hectare of 8 to 9 quintals in the USSR in recent years, this means about 20 per cent of the crop. Since with the best methods of harvesting by combines some losses are still inevitable, the People's Commissar of Agriculture himself appears to estimate actual losses characteristic of the USSR at more than 20 per cent of the biological crop. Even in 1935 the combines harvested not more than 10 per cent of the total grain area, and in 1933 and 1934 much less. Hence, harvest by combines was not typical even of the 1935 crop and the loss in harvest approached 20 per cent.

vary somewhat from year to year, from region to region, and also between various grain crops. But in certain comparisons it should be applied, with explicit mention in each case.

INTERPRETATION OF CROP STATISTICS

The Soviet government openly recognized the failure of its plan to raise the yield per acre of grain during the First Five-Year Plan (1928-32), and set this as a central goal of the Second Five-Year Plan (1933-37). As achievements in the field of agriculture in 1928-32, expansion of crop area and extension of cultivation upon new land were officially stressed.¹ We have seen, however, that the plan was not fulfilled in this respect, particularly as regards the grain area; and that the goal set for 1937 by the new plan is below that fixed for 1932 (pp. 327-28).

With regard to yield, the objective of the First Five-Year Plan was to raise the yield per acre of grain during the five years 1928-32 by 35 per cent. In our earlier study that plan was characterized as utopian,² but the actual development was even worse than we anticipated. It is hazardous to draw conclusions about change in trend of yield during a five-year period, particularly in areas like Russia where wide yearly fluctuations of yields are characteristic; but attentive study of the official statistics of yields in 1928-32 indicates that the trend was declining rather than rising. Indeed, the tabulation which follows shows, in 60-pound units per acre, that the yield per acre of all grains was more than 10 per cent smaller in the last two years than in the first two. The yield per acre of spring wheat declined strikingly, but yields of other spring grain also were reduced. This comparison holds some significance because the earlier two years were more or less similar to the later pair in their climatic characteristics;

¹ Gosplan, *Second Five-Year Plan of Economic Development of the USSR* (Moscow, 1934), p. 219.

² *Agricultural Russia*, p. 292.

³ Data for 1909-13 as given in the *Second Five-Year Plan of Economic Development of the USSR*, I, 467. The data for 1928-32 in this source differ in some cases (in decimal places only) from data published in *Agriculture of the USSR, 1935*, p. 212, the source which we here use.

⁴ *Agricultural Russia*, pp. 284-89.

either two-year period may be described as below average but not exceptionally unfavorable for crops. The middle year, 1930, was exceptionally favorable. Significant also is

Year	All grains	Winter wheat	Spring wheat	Winter rye	Oats	Spring barley
1928.....	11.7	11.6	11.9	11.6	14.1	11.4
1929.....	11.2	11.7	8.8	12.2	12.3	13.4
1930.....	12.6	15.8	10.9	12.5	14.4	14.0
1931.....	10.0	13.5	5.9	11.9	9.4	11.0
1932.....	10.4	11.0	7.6	12.5	10.9	11.0
1931-32 averages ^a	88.7	105.1	65.4	102.5	77.3	88.7

^a As percentages of 1928-29 averages.

the great decline in the yield of spring wheat—the crop which was feverishly expanded over the whole period, particularly on the state farms where agronomic practices were especially unsatisfactory and where yields were extremely low (pp. 337-39). Analysis of the agronomic practices on collective farms, which are described below, also indicates that the decline of yield from the beginning to the end of the period is more reasonably explained by deterioration in quality of work than by adverse weather. In 1931 and 1932, Soviet agriculture was at the depth of its crisis.

Official Soviet statistics recently presented a comparison of the average yield of grain per acre in 1928-32 with the average for the five-year prewar period 1909-13, as shown below in 60-pound units per acre, without adjustment of the prewar statistics.³ Soviet statisticians responsible for the postwar crop estimates before 1933 found it necessary to raise

Crop	1909-13	1928-32
All grains	11.0	11.2
Winter wheat	12.9	12.7
Spring wheat	9.2	9.0
Rye	11.0	12.1
Oats	11.8	12.2
Barley, spring	12.7	12.2

the prewar official statistics of yields by 9 per cent in order to make them comparable with their own estimates of postwar crops; and in our opinion such correction was necessary.⁴

Without such adjustment, the tabulated data suggest that the averages for 1928-32 for

practically all crops were very close to the pre-war averages (presumably adjusted to the new frontiers). But if, as we believe, the usual correction was proper, there is reason to conclude that during the period of the reorganization of Soviet agriculture, grain yields per acre were somewhat lower than before the war and were also tending to decline further. This was one of the principal reasons why the government decided in 1932-33 to change its program from one of rapid expansion of crop area to one of stabilization of area and increase of production through increase of yield.

The program for raising yield is as ambitious as the earlier one; it calls for enhancement by 33 per cent in the five years ending with 1937. This program also seems to us unrealistic, though less so than the earlier one since it does not include a plan simultaneously to expand the crop area greatly as the earlier plan did. With a smaller crop area in 1932-34, however, the burden of crops per horsepower was greater than it had been in 1930-31, to say nothing of 1928-29. Such a situation prevailed until 1935, when the total supply of draft power increased somewhat, but was still below 1930. Under such conditions the cultivation of land up to 1935 could not be done much better and much more promptly than during the preceding years of the crisis, as official data appear to show.

Direct comparison of grain yields per acre in 1933-35 with yields in earlier periods is complicated by the incomparability of the crop statistics described above. Comparisons are given below (in 60-pound units per acre) for

Crop	1925-29	1928-32	1933-35	
			(a)	(b)
All grains	11.7	11.2	12.9	11.6
Winter wheat..	12.7	12.7	14.0	12.6
Spring wheat..	10.5	9.0	11.7	10.6
Rye	12.1	12.1	13.4	12.0
Oats	13.0	12.2	14.7	13.2
Barley	11.8	12.2	14.0	12.6

three periods, 1925-29, 1928-32, and 1933-35; and data for the last period are given (a) as officially reported and (b) reduced by 10 per cent.¹

Even if fully comparable data were available, the average for 1933-35 would tend to overstate the long-term average yield. It so

happens that weather conditions were favorable in two of these three years, 1933 and 1935, and moderately adverse only in one, 1934; whereas during the whole five-year period 1928-32 only one year, 1930, was really a good year. Inclusion of 1936 would lower the recent average, for that crop, for which official statistics are not yet available, was badly injured by drought.² But even the average for the three years 1933-35, when roughly adjusted for comparability, shows that the yield per acre of grain was only slightly above the average for the period of revolutionary reorganization of agriculture, which ended with severe crisis. And comparison with yields of grain for the five-year period 1925-29 which preceded wholesale collectivization shows that reorganized agriculture even after the acute crisis was over did not produce better yields than had earlier been obtained from the small peasant farms. This, however, could reasonably be expected, for the situation of reorganized agriculture in 1933 and 1934 was still one of strain, and in some respects agricultural technique, particularly timeliness of performance, was worse than on peasant farms. Not until 1935 did substantial improvement in agricultural technique appear, as the increased supply and better use of mechanical draft power permitted less hasty operations.

The statistics "as reported," given in Table 10 (p. 346), show that during 1933-35 total grain production averaged more than a fifth larger than in 1928-32, with growth of bread-grain production only a little less. The greatest increase is claimed for wheat, nearly a third. Our interpretation of these statistics is that, under the best of circumstances, such crops might have been garnered from the 1933-35 stand in the fields, if only the harvesting operations in the USSR had been performed satisfactorily. But the crops of grains actually garnered in 1933-35 were substantially smaller than as reported. As a rough approximation, the statement may be ventured that

¹ Data for 1928-35, *Agriculture of the USSR, 1935*, p. 212; for 1925-27, *Statistical Handbook for the USSR* (Moscow, 1929), pp. 179, 181, 187, 193, 195.

² In *Foreign Crops and Markets*, Apr. 26, 1937, the total 1936 grain crops of the USSR is appraised (on the basis of various official statements) 14 per cent below the 1933-35 average.

total grain production on the average in 1933-35 exceeded the average for the reorganization period 1928-32 by about a tenth. Bread-grain production probably increased less than 10 per cent, production of rye being substantially reduced as a consequence of the reduced rye

tially better during 1933-35, however, and the population doubtless sensed improvement.

FACTORS AFFECTING YIELD

Discussion of agricultural technique prevailing in the reorganized agriculture of the USSR during recent years serves somewhat to substantiate the interpretation of official crop statistics given above.

Until very recently, practically the sole improvement of agricultural technique on collective farms as compared with small peasant farms before collectivization was the *deep plowing* of land made possible by tractors in the larger fields of collectives, and a greater use of agricultural machinery. Other improvements of agricultural practice lie in the future, not in the past. In the period under review, 1933-35, there was a great deal of disregard of elementary rules of agrotechny on collective farms, though perhaps in lesser degree than was characteristic on state farms. This disregard of agronomic technique resulted partly because the collectives were incompetently managed, partly because draft power in agriculture was so deficient that timely performance of work was impossible.

There is no doubt about the rapid increase in number and importance of tractors in Soviet agriculture. But the tractors were used not to add to draft power available to improve cultivation of land, but for emergency replacement of work horses which were disappearing. Under such conditions, the use of tractors was inevitably too hasty and not always competent. The problem was not only to build tractors but also to construct the usual attachments of tractors, such as plows, cultivators, drills, etc. Hastily constructed models of such implements were not always the types best for Russian conditions.² Generally speaking, the shortage of good working attachments for tractors was even more acute than the shortage of tractors. It should be borne in mind that horses continued to be important on collective farms in spite of the catastrophic reduction of numbers. Mechanical draft power in Soviet agriculture supplied, according to official statements, only 17.6 per cent of the total for the spring of 1933 and 33.1 per cent for the spring of 1935.³

TABLE 10.—GRAIN PRODUCTION, 1928-35*

(Million 60-lb. units)

Year	All grains	Winter wheat	Spring wheat	Total wheat	Rye ^a	Total bread grains
AS REPORTED						
1928.....	2,694	176	632	808	709	1,517
1929.....	2,636	190	503	693	748	1,442
1930.....	3,070	368	621	989	867	1,856
1931.....	2,553	378	375	753	808	1,561
1932.....	2,567	320	424	744	809	1,553
1933.....	3,300	430	589	1,019	889	1,908
1934.....	3,285	315	803	1,118	740	1,857
1935.....	3,310	439	693	1,132	785	1,918
Average 1928-32..	2,704	286	511	797	788	1,586
1933-35..	3,298	395	695	1,090	805	1,894
REDUCED BY 10 PER CENT						
1933.....	2,970	387	530	917	800	1,717
1934.....	2,956	284	723	1,006	666	1,671
1935.....	2,979	395	624	1,019	707	1,726
Average 1933-35..	2,968	355	626	981	724	1,705

* Data, except as corrected, from *Agriculture of the USSR, 1935*, pp. 213, 273, 279. Since the data on crop area may be accepted as satisfactory, the adjustment of total production must be the same as the adjustment of yield per acre.

^a Including spring rye.

area. The production of wheat on its expanded area was somewhat less than a fourth larger in 1933-35 than in 1928-32; this grain showed relatively the largest increase. The total production of the two bread grains increased between 1928-32 and 1933-35 perhaps only about in proportion to the growth of total population of the USSR.¹ As compared with the critical years 1931 and 1932, the production of bread grain per capita was substan-

¹ Official statistics give population estimates of 154.3 and 165.7 million persons as of Jan. 1, 1929 and 1933, respectively—an increase of 7.4 per cent (*Socialistic Construction of the USSR*, Moscow, 1935). These estimates reflect rough approximations calculated without a census basis after 1926.

² See A. Mashirin, "Actual Problems of Mechanization of Our Agriculture," *Socialistic Reconstruction of Agriculture*, 1935, No. 10, p. 18.

³ *Agriculture of the USSR, 1935*, p. 200.

Tractors were used in collectives mainly for plowing, leaving other work for horses. But in 1933 the tractors plowed only 15 per cent of the crop area on peasant land (excluding state farms), and in 1935 somewhat less than 40 per cent. The importance of tractors in the plowing of fallow was greater: 45 per cent (on peasant land) in 1933, and in 1935 nearly 90 per cent.¹ This is undoubtedly an important achievement.

However, deep plowing is not the only requirement of good agrotechny. In the northern non-blacksoil area, deep plowing may even lower the fertility of land if a sufficient quantity of manure is not applied at the same time. The utility of deep plowing under the dry-farming methods that prevail in semiarid regions has been under discussion by specialists until recently, though at the present time it has become part of the *credo* about which discussion is excluded in the USSR.

Under the climatic conditions of the USSR, the *timeliness of plowing* is sometimes more important than its depth, as is true also of the timeliness of seeding and harvesting. The importance of timely plowing has long been disregarded in Russia; and in this respect the present position is not satisfactory, though some improvement has occurred by contrast with 1931 and 1932. The following examples, taken from official statistics, substantiate these generalizations.

Early breaking of fallow, before May or at least before June 1, considerably enlarges the average yield of grain under Russian conditions. Government agencies are now fully aware of this, and do their best to improve current practice though not always with great success. In 1935 nearly half of the fallow was broken before June; in 1934, only 28 per cent; and in 1933, only 10 per cent. Even this was great progress by contrast with 1931 and 1932, when practically no early plowing of fallow occurred.²

Early fall plowing for spring crops (before October 1 or not later than October 15) results in substantial increase of yields. But the area plowed before October 1 in 1935 was only 32 per cent of the total fall-plowed area, and there was not much improvement after 1933, when early plowing was 29 per cent. Plowing

before October 15 in 1935 made up about half of the total fall-plowed area. All other plowings were performed much later, and their effectiveness was therefore much diminished. Furthermore, a large fraction of the land is sown in the USSR neither on plowed fallow nor on fall-plowed land whether early or late, but simply on land plowed just before planting either in fall or spring. In 1932, two-thirds of the total crop area was sown in this way; in 1933, three-fifths; in 1934, about a half; and even in 1935, more than two-fifths.²

Plowing and cultivation of land were thus hasty and not always satisfactory, and sowings were delayed. We have seen (p. 328) that the very late sowings—later than peasants had ever sown—were usual during 1930–33. The improvement in 1934 was not large, and only in 1935 did the situation improve definitely in this respect; but even then two-fifths of the crop area was not sown on fall plowing or fallow, and the fallows that were plowed promptly were not always promptly cultivated, as appears from numerous official statements.³

In regions where crop cultivation without *fertilizer* results in poor crops, less manure was available during recent years than peasants had before collectivization (p. 341). Nor has the supply of mineral fertilizer increased as fast as would be desirable. In 1933 this supply reached the prewar level, which was extremely low.⁴ In 1935 and 1936 the supply increased substantially, but amounted to only 2 million tons. This was largely used for such technical crops as cotton and sugar beet, of which the areas were twice as large as in prewar years. Little was available for general farming and particularly grain production.

The introduction of *rational crop rotations* is at its very beginning. In January 1936, the People's Commissar of Agriculture said that there was very little to boast about in this respect; according to his estimate,⁵ not more

¹ Percentages computed from data in *Agriculture of the USSR, 1935*, Tables 24, 30, 163, 165.

² *Ibid.*, p. 206.

³ See, for instance, *Socialistic Reconstruction of Agriculture, 1936*, No. 1, p. 6.

⁴ *Agricultural Russia*, p. 209.

⁵ *Socialistic Reconstruction of Agriculture, 1936*, No. 1, p. 20.

than 40 per cent of the crops were produced under rational rotations. A year later an authority on Soviet agricultural economics wrote that two-thirds of the collective farms needed radical change in their rotations.¹ The policy of fostering grain production created barriers to introduction of rational crop rotations in some regions, Ukraine for instance. In the eastern regions, the introduction of rational crop rotations is generally difficult and is delayed by shortage of seed for perennial hay.²

Cultivation of wheat particularly does not follow a rational rotation. A fourth of all the spring wheat sown in 1934 was preceded by spring wheat; and, in western Siberia, nearly half of the spring-wheat crop followed spring wheat. Less than half of all winter wheat was planted on fallow in 1934, and more than a third followed other small grains, which is far from a rational rotation.³

Improvement of seed grain, particularly wheat, is generally regarded as a very effective means of increasing yields under the conditions of the USSR. The work of state laboratories points toward the possibility of raising yield per acre of the four principal grains by 10 per cent through replacement of common seed with improved sorts.⁴ The official statistics show rapid expansion of grain crop area planted with improved seed: from 3.1 per cent in 1928 to 24.5 in 1931, 27.3 per cent in 1933, and 35 per cent in 1935. Expansion of wheat acreage sown with improved seed has proceeded with particular rapidity; according to official data, 63 per cent of the total winter-wheat area and 43 per cent of the total spring-wheat area in 1933, and 70 and 50 per cent respectively in 1935.⁵

All this might suggest that improvement of seed ought to have contributed substantially toward increase of grain yield per acre, if it were not for the continuous complaints of high officials about the great confusion of the seed problem,⁶ and recent pessimistic discussions by an authority on the question, who said that only 4 per cent of the grain area, and not the 35 per cent as officially reported, was sown with really certified seed in 1935. Some of the "improved seeds" are not grown on enterprises sufficiently supervised by experts, and cannot be regarded as certified seed. Still

more important is this authority's pessimistic view of the outlook. In his opinion the principal reason for difficulties with reproduction of improved seed is that grain produced for seed has usually been taken by the state organization which collects grain for food, and every year much improved seed goes for consumption. Collective and state farms retained for their seed not their best grain, but what remained to them (in most cases the poorer-quality grain) after the obligatory deliveries to the state.⁷ The official statistics must therefore be interpreted with reserve.

Recent examination of the best new varieties of wheat and other grains officially recommended for use as seed shows that in many if not most cases even those most widely approved are not sufficiently resistant to various fungous diseases, particularly rust and ergot. Many also have weak straw and consequently are not resistant to lodging; this is an important shortcoming in the USSR, particularly if harvesting is to be done with combines. Specialists recognize these shortcomings of Soviet plant breeding, which in this respect lags behind not only the American and Canadian but also the western European.⁸

¹ A. Gaister, "Socialism and Land Fertility," *Bol'shevik*, 1937, No. 3, p. 32.

² N. M. Tulaikov, "Problems of Wheat Agrotechny on Black and Chestnut Soils," *Socialistic Reconstruction of Agriculture*, 1935, No. 12, pp. 188-96.

³ *Agriculture of the USSR*, 1935, pp. 334, 365.

⁴ *Socialistic Reconstruction of Agriculture*, 1935, No. 12, p. 148.

⁵ Although on collectives the use of improved seed was somewhat smaller, in 1935 improved seed was used on 54 per cent of the winter-wheat area of collectives and on 40 per cent of the spring-wheat area (*Agriculture of the USSR*, 1935, pp. 30 (Introduction), 367; *Socialistic Reconstruction of Agriculture*, 1935, No. 12, pp. 149-50).

⁶ Stalin, in his report to the Seventeenth Congress of the Communist Party, January 1934, stated: "The grain and cotton seed situation is so entangled that it would require a long time to disentangle it" (*Pravda*, Jan. 28, 1934).

⁷ P. I. Lisitsyn, "See Cultivation and Exchange of Seed," *Socialistic Reconstruction of Agriculture*, 1935, No. 12, pp. 150-52.

⁸ G. K. Meister, "Soviet Plant Breeding, Its Achievement and Its Perspective," *Socialistic Reconstruction of Agriculture*, 1935, No. 12, pp. 138-47; also *ibid.*, 1936, No. 6, pp. 161-68. Insufficient resistance of the best varieties of wheat to various diseases is confirmed also by the official publication of the All-Union Institute of

We have earlier referred to the great losses incurred in *harvesting* grains, of which one of the most important causes was delay. Late harvest was characteristic not only of the critical years 1931 and 1932, but also of 1933 and 1934. The harvest of 1934 was delayed more than that of 1933 in spite of the fact that grain matured two to three weeks earlier. Even in 1935 the improvement was small.

Under such conditions, efforts have been made by the government in the past two or three years to replace simple harvesting machines by combines. The number of combines in the USSR has increased with tremendous rapidity, as may be seen from the following tabulation in thousands:¹

Year	State farms	MTS	Total
1930	1.7	...	1.7
1931	6.3	.1	6.4
1932	11.9	2.2	14.1
1933	13.4	10.5	23.9
1934	15.4	15.2	30.6
1935	19.5	29.5	49.0
1936	.....	65.7	89.6

In the earlier years, practically all of the combines were on state farms, but after 1933 the number used on collective farms through the MTS increased very rapidly, and by 1936

there were two or three times as many combines for collectives as for state farms.

It seems to us that the government is perhaps moving in this direction farther than is economically sound under Russian conditions. An explanation perhaps lies in the fact that harvest with combines facilitates governmental control over the grain crops, and permits grain to be taken directly from combines to government warehouses without entering the barns of collectives. The government has used this method in recent years.

We have seen that the large number of combines on state grain farms did not help them much in early harvest of crops, and that thousands of workers had to be brought in to weed fields so that combines could be used. For several years the combines could not be made to work satisfactorily at critical moments, and stood idle while crops were harvested with simple machines or with scythes. Such a situation persisted until 1933 and into 1934. But considerable improvement has occurred recently, as may be seen from the following official data on the number of acres harvested during the season on the average per combine:²

	1933	1934	1935	1936
State farms ...	220	368	488	663
MTS	176	312	648	882

Plant Breeding, *Regioning of the Varieties of Cereals* (Leningrad, 1935). The descriptions of the winter-wheat varieties are given on pp. 33-79, and of the spring-wheat varieties on pp. 120-60.

¹ Data for 1930-35 from *Agriculture of the USSR, 1935*, p. 200; for 1936, total number on Nov. 1 from *Pravda*, Nov. 24, 1936, and the number on MTS from *Bol'shevik*, 1937, No. 3, p. 30. The number of combines on the MTS at the end of 1936 was computed by adding to the number at the end of 1935 the number received during 1936.

² Data for 1933-35 from *Agriculture of the USSR, 1935*, p. 26 (Introduction); for 1936, state farms from *Bol'shevik*, 1936, No. 20, pp. 21-22, MTS from *ibid.*, 1937, No. 3, p. 30.

³ *Socialistic Reconstruction of Agriculture*, 1936, No. 1, p. 19.

⁴ According to official statistics, the following grain acreage was harvested by combine:

Year	Million acres	Per-cent-ages	Year	Million acres	Per-cent-ages
1930	1.5	.6	1933	4.0	1.6
1931	4.0	1.6	1934	9.5	3.7
1932	3.0	1.2	1935	25.7	10.0

Data for 1930-34 from *Agriculture of the USSR, 1935*, p. 238; for 1935, *ibid.*, p. 1363, and *Bol'shevik*, 1936, No. 20, pp. 21-22.

It is clear that Soviet agriculturists have learned to handle combines effectively, though difficulties persist in certain regions (Siberia in 1936) and under certain weather conditions, particularly in fields invaded by weeds.

Soviet officials mention that harvest by combines saves from 2 to 3 bushels of grain per acre which would otherwise be lost.³ This tends to confirm our earlier statement that losses in harvest in the USSR exceeded 20 per cent of the unharvested crop in 1933-35, and does not affect our appraisal of the size of crops in those years, when only small fractions of the crops were harvested by combines.⁴ Not until 1936 was the rôle of the combines in harvesting very important: nearly a fourth of the total grain area of the USSR was then harvested by combine, and in the principal grain-producing areas of the south and the east, nearly a third.

No doubt combines will play an important rôle in future grain harvests, at least in the southern and eastern areas; and this may substantially reduce the loss in harvest. Harvesting by combine in 1936 presumably saved

much grain which otherwise would have been lost under the weather conditions of that year. But on the whole the importance of the combine lies in the future and not in the past of Soviet agriculture.

VI. GOVERNMENTAL GRAIN COLLECTION

CHANGES IN THE SYSTEM

The system of grain collection based on contracts for future crops, which has existed in the USSR since 1927-28,¹ degenerated within a few years into a system of arbitrary requisition of grain characteristic of the early days of revolution. In some respects the state's requirements for delivery of grain in 1931-32 were even more stringent than they were during the period of war communism, when peasants were obliged to deliver to the state all surpluses in excess of their needs for consumption; in 1931-32 the government required delivery of a certain percentage of the crop even before consumption needs were covered. The conflicts between the collectivized peasantry and the state in 1931 and 1932 arose precisely because the collectives intended first to secure their requirements for consumption and seed and to deliver to the state only the remaining grain, whereas the government always insisted that fulfilment of the contracts must come first. The contracts themselves lost their character of free contracts when collective farms in the major grain-surplus areas were compelled to agree to deliver from a fourth to a third of their total crop (at average yield), and individual farmers were required to deliver a percentage of their crops not smaller than did collective farms of their respective regions.

Furthermore, the government insisted on the execution of contracts by collectives, but did not feel itself similarly bound by the con-

tracts. When one collective could not fulfill its deliveries, local agents of the government transferred the deficit as an additional burden upon collectives which already had fulfilled their obligations, so that the collectives which harvested the better crops were placed in a worse position.² We have seen that this system had a disastrous effect upon the development of agricultural production, and the government had to change it if the trend toward catastrophe was to be arrested.

Important changes in the organization of grain collection occurred in 1932 and 1933. First, the government sought to stimulate rural activity by permitting collectives and their members to sell their surplus grain, after executing their obligation to the state, on free markets and at market prices. This policy was announced by decree of May 6, 1932.³ The government expected that this decree would stimulate expansion of grain sowings in 1932, but this expectation was disappointed. The decree rather created confusion among the producers, and the plan of grain delivery from the 1932 crop was not fulfilled, although it involved somewhat less grain than the plan for 1931.

The government and the Communist Party therefore decided to change the basis for obligatory deliveries of grain to the state. Instead of indeterminate obligations based on quasi-contracts, it was decided to introduce fixed obligations based on law, in effect a tax in kind. A decree of January 19, 1933,⁴ established for each province the average quantity of grain which collective farms must deliver from each hectare of their crops (as actually sown for winter crops and for spring crops as assigned according to the plan for spring sowing).⁵ Working from these norms, the republican and provincial governments were to establish (before February 15) the quantity of grain deliverable from each hec-

¹ *Agricultural Russia*, pp. 456-59.

² *Planned Economy*, 1933, No. 4, p. 18.

³ *Collection of Laws and Decrees of the USSR*, 1932, No. 31, pp. 295-97.

⁴ *Collection of Laws and Decrees of the USSR*, 1933, No. 4, pp. 26-29.

⁵ In subsequent years, obligatory delivery of winter grains was also based on the plan for sowings assigned to collectives and not on actual sowings.

ture of crop in every administrative district, and each collective was to receive its assignment according to these norms before spring. The norms of grain delivery for individual farmers were fixed 5 to 10 per cent above those for collective farms in the same district.¹ The norms varied from province to province, being much higher for grain-surplus than for grain-deficit regions. The highest norm of 3.3 quintals per hectare was established for Crimea, and Ukraine followed closely with 3.1 quintals, while the lowest (0.8 quintals) was assigned to some northern provinces.

At about the same time the governmental agencies of grain collection were centralized and reinforced. Instead of several organizations, among which some were co-operatives, a single governmental agency—the Zagotzerno—was created under the general guidance of the special Committee on Procurement of Agricultural Products, itself subordinate directly to the Council of the People's Commissars (after February 1933). Local agents of the grain-collecting organization are independent of local provincial and republican governments, and they are recruited from the most reliable and tried members of the Communist Party.²

It will be remembered that the rôle of the MTS in grain collection was also enhanced in 1933, since by taking the threshing machines of collectives under their control they acquired greater control over crops, and by instituting payments in kind for their services

a supplementary method of collecting grain was devised. This device increased in importance with the spread of the MTS. Ultimately, when all collectives are served by the MTS (as is planned for 1937), 40 per cent of all governmental grain collections will be obtained in this way—nearly as much as by obligatory grain delivery in the form of taxes in kind.³ Because of their obligation to the MTS, the collectives served by the MTS are assigned smaller grain deliveries to the state through taxes in kind; and in this way grain deliveries to the state as taxes in kind are gradually being replaced by grain deliveries in payment for the services of the MTS.

Another method of grain collection is through payment of custom mills for flour milling. Such collection is rather difficult to control, for it involves some 200,000 small flour mills (mostly wind and water mills) dispersed throughout the countryside. The government complains of the organization of secret mills by "kulaks." Moreover, some peasants grind their grain in primitive hand mills in order to escape payment of taxes in kind.

Grain produced on state farms must of course be delivered to the state grain-collecting organization aside from requirements of the farms. These requirements have sometimes been so large that the percentage of total crop delivered by state farms sometimes failed to equal that of collective farms. The complaints of the officials in this connection indicate that difficulties with collection of grain from purely state enterprises were no less than in collecting grain from collective farms, and that net receipts of grain from state grain farms as percentages of their gross production have been much smaller than was contemplated.

The system of grain collection and the principles on which it was based in 1933 continue with minor changes at present.⁴ The new system introduced a degree of stability into the obligation of collective farms toward the state, no matter how heavy these obligations were. Furthermore, these obligations have usually been announced early, and peasants have known before sowing what they must deliver to the state, regardless of the size of their actual crop. This has evidently stimulated their

¹ So-called "kulaks" were segregated into special groups and their obligations were fixed 50 per cent above those for individual farmers (*Collection of Laws and Decrees*, 1933, No. 62).

² See the article "Grain Collection" in the *Great Soviet Encyclopedia*, LIX, 711-23.

³ See *Second Five-Year Plan of Economic Development of the USSR*, I, 527.

⁴ A privilege granted to the peasants of the Far East and Eastern Siberia may be regarded as symptomatic, showing that fear of war may alleviate the burdens imposed on the peasantry. By decrees of Dec. 11, 1933, and Feb. 5, 1934, the government exempted grain crops of collectives in these regions from obligatory deliveries to the state for 6 to 10 years, and the crops of outsiders for 3 to 5 years. This exemption does not much affect the general grain situation of the USSR, for these regions are grain-deficit regions and occupation of land by new settlers is not easy under prevailing conditions.

interest in larger and better production, as was the purpose of the government when the new system was introduced. It must be said, however, that at the outset the peasants had no great confidence in the stability of the new obligations in view of past experiences; and the government felt impelled to proclaim the immutability of the new assignments and to forbid its own agents to increase them.

The recent policy of the government has been to complete grain collections as early as possible—a kind of safeguard against the possibility that the peasants might dispose of their grain otherwise before fulfilling obligations to the state. Grain must be delivered to the warehouses of the grain-collecting organizations directly from threshing machines or from combines. Not more than 10 to 15 per cent of the early-harvested grain may be allotted to members of collectives for their own use, in advance of their share in income; the rest must be hauled immediately to the state warehouses. In recent years, collections have been completed at progressively earlier dates: in 1933, by the beginning of December; in 1934, before the end of October; and in 1935, by October 10. Completion of grain collections in 1936 has not yet been announced.¹

The policy of rushing grain collection early in the fall interferes greatly with the performance of autumn agricultural operations, such as sowing winter crops and plowing for spring crops. In the conditions of Soviet Russia, with its great distances from railroad stations where the state warehouses are usually located, it has put a heavy burden on draft power which might better be used for more satisfactory and more timely performance of farming operations. But the grain collection campaigns are regarded as a "battle for grain" which takes priority and toward which all party forces are mobilized. Even in recent years the grain collections seem not to proceed smoothly, as the early date of completion suggests. They are always conducted under strong party pressure and sometimes involve extra constraint, as in the Ural and Siberian regions in 1934.²

In recent years the government has also had recourse to purchase of grain from collectives and their members as voluntary sellers, if collectives had surpluses after fulfilling

their obligations. Before 1935, these purchases were performed by state grain-collecting organizations as well as by consumers' co-operatives (the *Centrosoiuz*); since then, all purchases of grain have been left to the co-operatives, while local agencies of the grain-collecting organizations merely receive the grain purchased by co-operatives.

In contrast to other agricultural products, such purchases of grain are permitted only after completion of obligatory deliveries. In 1933-34 they were allowed only in those provinces which completed their obligations in full. After 1934-35, the completion of grain deliveries by separate collectives gave them and their members a right to sell their surplus grain. The prices paid by co-operative organizations are only moderately higher than the very low fixed prices paid by the government for obligatory deliveries, and far below market prices. In 1934-35 the prices paid for voluntarily sold grain were 20 to 25 per cent above the fixed prices; in 1935-36, 30 to 35 per cent above. According to official data, market prices in 1933 were 20 to 25 times the fixed prices for obligatory deliveries, and in 1935, 10 to 15 times.³

The incentive for collectives to sell their grain surpluses at prices so far below market prices is that they or their members obtain in this way a right to buy certain kinds of manufactured goods from co-operatives in amounts equal to three times the sale of grain; and these goods they cannot get otherwise at any price or can buy only at much higher prices. The transaction represents a kind of barter made practicable because of the shortage on the market of many manufactured goods required by the country population.

Such voluntary sales of grain on a barter basis are practiced mainly by collectives. The

¹ By decree of Mar. 20, 1937, collective farms and outsiders were relieved of arrears in the grain tax in kind for 1936. Apparently the government is not insisting on completion of the 1936 plan. *Izvestia*, Mar. 21, 1937.

² *On the Agrarian Front*, 1934, No. 11, p. 8.

³ See P. Kagarlitsky, "Grain Purchases of 1935-36," *Soviet Trade*, 1936, No. 6, p. 49. The "market prices" mentioned above are not prices on big central markets, but on local markets to which members of collectives bring products for sale.

individual members, less tied by various formalities, are more mobile and prefer to sell their available surpluses on free markets at high market prices. But these sales are not large—an incidental proof that the surplus of grain left to members of collectives is small. Soviet marketing specialists estimate roughly that sales of grains on free markets during 1935–36 were about 10 million quintals, equal to somewhat more than 1 per cent of the total grain production.¹ We are unable to check the reliability of this estimate.

Voluntary sales of grain to co-operatives on a barter basis were substantially larger in 1934–35 and 1935–36 than these estimated sales on free markets. In some Asiatic regions they represented a substantial supplement to the obligatory deliveries, but not in the principal grain-surplus areas of Ukraine, North Caucasus, and the Volga regions.² Here it seems that only a little surplus grain remains after fulfilment of obligations to the state.

In order to stimulate expansion of wheat production and of voluntary sales of wheat surpluses, the government in February 1936 raised by 1.20 rubles per quintal the fixed price for wheat from the 1936 crop delivered on obligations due the state; and at the same time introduced a system of progressively increasing prices for wheat sold in excess of obligations.³ As the quantity sold in excess of obligations rises, the price of wheat increases from 10 to 100 per cent above the fixed price. This represents an important encouragement to wheat producers. But an increase of the fixed price by 1.20 rubles per quintal means only about a 10 per cent increase, so that the highest fixed price remains far below the open market price. Even at the highest fixed price, the voluntary sales of wheat must be encouraged by barter against manufactured goods.

¹ The Gosplan estimated the sales of bread grains by producers on free markets at 7.2 million quintals in 1933, 8.2 millions in 1934, and 10.5 millions in 1935. See *Soviet Trade*, January 1936, p. 34.

² Kagarlitsky, *op. cit.*, p. 45.

³ Decree of the Council of People's Commissars of the USSR and of the Central Committee of the Communist Party, Feb. 11, 1936 (*Collection of Laws and Decrees of the USSR*, 1936, No. 9, pp. 162–64).

STATISTICS OF GRAIN COLLECTIONS

Official statistics of governmental grain collections and purchases, revealed for the first time with adequate detail in the statistical yearbook *Agriculture of the USSR, 1935*, make possible a quantitative appraisal of grain collections between 1928 and 1935 in which collections of bread grains (wheat and rye) can be segregated. These statistics portray changes in the importance of the various sources of the grain collection during that period and permit measurement of the burden of obligatory grain deliveries upon various groups of agricultural enterprises. Table 11 condenses this statistical information.

TABLE 11.—GOVERNMENTAL GRAIN COLLECTIONS AND PURCHASES, 1928–35*

(Million 60-lb. units)

Year	Grand total	Purchases only	Total obligatory ^a	State farms	Tax in kind	Payments to MTS	Payments to flour mills
1928.....	396.4	.....	396.4	.....	.....	.....	52.9
1929.....	590.8	.....	590.8	14.4	.....	.....	84.5
1930.....	813.5	.....	813.5	49.0	.....	.....	81.7
1931.....	839.2	.....	839.2	66.1	.....	.....	55.9
1932.....	689.9	9.5	680.4	62.4	.....	.....	45.2
1933.....	855.6	15.2	840.4	75.8	608.1	99.7	56.8
1934 ^b	964.3	131.7	832.6	81.6	573.6	133.5	43.9
1935 ^b	1,043.2	127.2	916.0	110.8	571.9	208.5	24.8 ^c

* Data from *Agriculture of the USSR, 1935*, pp. 19 (Introduction), 266.

^a Including grain deliveries of state farms.

^b Data for 1934 and 1935 are preliminary, and differ a little from similar data given in other tables in the same source.

^c Obtained from data in preceding columns; seemingly incomplete.

Percentages to total grain crops, reducing official crop data for 1933–35 by 10 per cent, work out as follows:

Year	Total collections and purchases	Obligatory deliveries
1928	14.7	14.7
1929	22.4	22.4
1930	26.5	26.5
1931	32.9	32.9
1932	26.9	26.5
1933	28.8	28.3
1934	32.6	28.2
1935	35.0	30.7

Governmental purchases of surplus grain on the voluntary basis are shown separately

because of their special position, as well as because of the lack of complete information about their composition and sources. It can be said, however, that the bread grains comprise roughly two-thirds of these purchases. Table 11 shows that purchases on the voluntary basis acquired some importance in 1934 and 1935, when they made up 12 to 13 per cent of total state grain collections. This is explained less by the availability of considerable grain surpluses in collectives than by serious shortage of several kinds of manufactured goods in country markets, in exchange for which collectives were ready to barter grain which otherwise they would have distributed among their members. The fact that after 1934-35 any collective was authorized to start its sale of surplus grain immediately after fulfilment of obligations, without waiting for completion of the grain deliveries by all collectives in the respective provinces, also contributed to increase of governmental purchases of grain on the voluntary basis.

All other grain deliveries to the state are classified as obligatory deliveries, including those by the state farms. Obligatory grain deliveries other than those by state farms are divided after 1933 into three groups shown separately in Table 11. Only one of these groups, payments in kind to flour mills for milling, extends through the whole period 1928-35. This source has been of only secondary importance, particularly during recent years when it has provided only 5 to 7 per cent of total grain collections.

The principal source of governmental grain collections, excluding deliveries by state farms, was direct collection from peasants, in collectives or outsiders. Before 1933 they were requisitioned under one title, but thereafter were legally separated into (a) grain delivered as tax in kind and (b) grain delivered to the MTS in payment for services. But the collectives could no more refuse the services of the MTS than refuse to pay taxes.

The prominent aspect of the development of obligatory grain delivery during 1928-35 is its great increase following the collectivization of agriculture. In 1930 and 1931 governmental grain collections were more than double the collections in 1928, which were about on the

same level as in 1926 and 1927.¹ In 1928 the government had succeeded in obtaining from the peasants only 15 per cent of their total grain crop, while in 1931 it took just a third of the total crop, or two-fifths of the total crop less seed. In 1932, a year of strong resistance, the government failed to complete its plan, but obtained more than a fourth of the total crop, the same percentage as in 1930. In absolute quantity the collections of 1932, however, were substantially smaller because of the much smaller crop in that year.

Reorganization of the grain-collecting system in 1933 resulted in recovery of grain collection. From two sources, the tax in kind and the payments in kind to the MTS, the government succeeded in collecting in 1933 nearly as much grain as it had obtained from peasants in 1931. The same situation continued in 1934 and 1935, except that with the spread of the MTS the volume of payments in kind for their services increased, while collection of taxes in kind somewhat declined, as norms for grain delivery per acre were lowered to collectives of some regions.² With these two sources, the government succeeded in raising total grain collections to the level of 1930-31, and above this level in 1935. The portion of the crop taken from producers in the form of obligatory deliveries was also enlarged. In 1933 and 1934 about 28 per cent of the total grain crop, and in 1935 nearly 31 per cent, went to the government as obligatory deliveries, if necessary adjustment of the crop statistics is made. When the substantial voluntary sales of grain surpluses in 1934 and 1935 are taken into account, governmental grain collections by 1934 constituted as large a fraction of the crops as in 1931, and in 1935 a larger fraction.

Some further details are shown in Table 12. With collectivization of agriculture, the governmental collections of bread grains increased even in greater proportion than that of all grains together, as would be expected because the drive for larger grain collections was connected with shortage of bread for the city population. In every year after 1930, the

¹ *Agricultural Russia*, pp. 463-64.

² Decrees of the Council of People's Commissars of the USSR and of the Central Committee of the Communist Party, Feb. 11, 1934, and Mar. 4, 1935.

bread grains made up about two-thirds of the total grain collections, and this proportion held also in governmental purchases of surplus grains. The greater emphasis on collection of bread grains appears also in the fact that collection per acre of bread-grain crops

TABLE 12.—OBLIGATORY DELIVERIES OF ALL GRAINS, BREAD GRAINS, AND WHEAT, 1928–35*

Year	Million 60-lb. units			Units per acre of crop		
	All grains	Bread grains	Wheat	All grains	Bread grains	Wheat
1928.....	396.4	254.6	195.8	1.7	2.0	2.9
1929.....	590.8	326.3	188.9	2.5	2.4	2.6
1930.....	813.5	540.5	330.7	3.2	3.5	4.0
1931.....	839.2	576.8	299.8	3.3	3.6	3.3
1932.....	680.4	445.3	213.8	2.8	3.0	2.5
1933.....	840.4	572.5	330.0	3.4	4.0	4.0
1934.....	832.6	535.7	341.3	3.2	3.7	3.9
1935.....	916.0	.....	.....	3.6	...	...

* *Agriculture of the USSR, 1935*, pp. 19 (Introduction), 266–67, and Tables 3, 7.

was substantially higher than that for all grains together. Governmental efforts were directed particularly toward increase of wheat collections. Regulations forbade that wheat deliveries assigned to a particular collective or individual farm should be replaced by any other grain, whereas such replacement of other grains was permitted within limits. During the early years of collectivization, the government had failed to enlarge collections of wheat as much as other grains. The great increase of bread-grain collections in 1930–31 was mainly of rye, of which collections in 1931 were 4 to 5 times as large as in 1928. Collections of rye had been unusually small in 1928; but rye collections in 1930–31 were nearly three times those of 1926 and 1927, whereas wheat collections increased only about 50 per cent.¹

This difference between the two bread grains is significant. Wheat has always been regarded by Russian peasants as a cash crop, rye a crop mainly for home consumption. When, as before 1929, the government obtained supplies mainly from voluntary sales, the peasants tended to reserve rye for their own consump-

tion. When grain collections in 1930–32 turned into arbitrary requisitions, much more rye was taken by the government from the peasants. This suggests that governmental grain collections increased in 1930–31 at the cost of peasant consumption. More than a third of the total rye crop was collected in 1931, a percentage higher than peasants had ever sold under free market conditions. They could not fall back upon wheat for consumption, since it was requisitioned even in larger proportion; obligatory deliveries of wheat to the state, a fourth of the crop in 1928, increased to two-fifths of the crop in 1931. If total collections of wheat failed to increase proportionally, this was because wheat production did not expand meanwhile. But the question of the extent to which enlarged collections of bread grains encroached upon peasant consumption is discussed more fully below.

TABLE 13.—OBLIGATORY GRAIN DELIVERIES BY VARIOUS GROUPS OF PRODUCERS, 1930–35*

Year	Million 60-lb. units				Units per acre of grain crops			
	Collectives	Individuals	All state farms	State grain farms	Collectives	Individuals	All state farms	State grain farms
1930..	239.9	442.8	49.0	17.5	3.3	2.6	6.8	6.0
1931..	518.4	198.2	66.1	38.8	3.4	2.3	3.3	3.6
1932..	471.8	101.0	62.4	44.2	2.8	1.9	2.7	4.1
1933..	622.4	85.4	75.8	38.5	3.4	2.2	2.8	4.7
1934..	625.2	66.4	81.6	45.0	3.1	2.2	2.8	5.7
1935..	742.8	37.5	110.8	63.2	3.6	2.2	3.7	7.4

* *Agriculture of the USSR, 1935*, pp. 19 (Introduction), 216, 716. The payments in kind to flour mills are not included as their apportioning to various groups of producers is impossible, but the payments in kind to MTS by collectives are included in their obligatory deliveries.

Table 13 bears upon the question of the burden of obligatory deliveries upon different groups of producers. The principal burden of course always fell on the peasantry. In the beginning of collectivization, farmers who remained outside of collectives delivered the largest share; later, when most peasants had been forced into collectives, the greater responsibility for grain deliveries fell on the collectives. The state farms have always played only a secondary rôle in supplying the state with grain. Significant is the stagnation in deliveries by the state grain farms between 1931 and 1934, which was to be expected in connection with their failure to increase grain

¹ See *Agricultural Russia*, p. 463.

production. Only by 1935 did they fulfill for the first time the plan assigned to them for 1932, to supply the state with 100 million poods (1.6 million metric tons) of grain. With the smaller crop of 1936 and the decreased plan for sowings on state farms in 1937, their achievement in 1935 may perhaps remain the highest point.

Grain deliveries of state farms per acre of grain crops were usually lower than those of collectives, except in 1930 when only a few relatively successful state farms existed. The official explanation of this fact is that great growth has occurred in the number of state livestock farms since 1931, and these consume a large fraction of grain for livestock. But exactly the same situation must exist in peasant households, in which animal husbandry was always of large importance and on which (together with collective farms) 90 per cent of the livestock of the USSR are found. Of greater importance in our opinion is the fact that state grain farms, which in theory must deliver all their grain to the state, could in most years deliver less than 6 bushels per acre because of the very low yields on these farms.

The fact that grain deliveries of individual farmers per acre of crops always fell below those of collectives represents first of all a kind of statistical aberration. Because of the rapid progress of collectivization, the crops on many individual farms reported in the spring as crops of outsiders were later brought by their tenants into the collectives and the collectives were responsible for grain deliveries to the state from these lands. In some years this development helps to explain the lower level of grain deliveries per acre from crops of outsiders in spite of governmental intention to tax them more heavily. Perhaps of greater importance is the fact that governmental grain collections per acre were regularly set relatively low in the northern grain-deficit regions, where individual farms persisted longer than elsewhere. But considerable importance must also be ascribed to the fact that the government found more difficulty in collecting grain from individual farms; the outsiders simply had more chance for escape even though officials did not stop short of wholesale confiscation of their property in case of their delin-

quency. In the eyes of many this possibility may have constituted a reason for not joining collectives. On the other hand, the creation of collectives by the government built up not only a new organization of agricultural production, but also a better device for appropriation of agricultural products for the state.

For various reasons the peasants regarded obligatory deliveries as a heavy burden. The government paid extremely low prices for grain delivered on these obligations. Even before the collectivization, the government in 1927-28 by monopolizing the grain market had succeeded in buying grain from peasants at prices only slightly above prewar levels (wheat no more than 20 per cent above and rye still less), while manufactured goods purchased by peasants were much dearer than in prewar days. Hence the purchasing power of grain, according to a rough estimate, was only 40 to 50 per cent of that in prewar years.¹

During the period of the First Five-Year Plan, 1928-32, the fixed prices paid for collected grain were raised only a little² while prices of goods which peasants needed rose greatly, even in the government stores from which peasants could buy only limited quantities. In more recent years, the price system in the USSR has been very complex and no index of prices has been published since 1929. Hence it is very difficult to measure the purchasing power of grains at fixed prices. But there is no doubt that it declined very heavily between 1927-28 and 1932-33, even when measured in terms of prices charged by the government for products of mass consumption in stores from which peasants could make purchases (not in stores for city workers only), to say nothing of prices in private trade.

¹ See *Bulletin of the Economic Cabinet of Professor S. N. Prokopovich*, May 1933, No. 104, pp. 8-10. The analysis of prices in this bulletin is based on official Soviet statistics.

² According to the official sources the average fixed prices for delivered grain were as follows (in rubles per quintal):

	1927-28	1932-33 and 1933-34	1934-35
Wheat	6.85	8.42 - 8.52	10.10
Rye	4.08	6.33	6.40

In 1935, fixed prices for grain delivered as tax in kind were raised by decree by 10 per cent, and in 1936 the price of wheat was raised once more by 1.20 rubles per quintal, or about 10 per cent above the 1935 price.

When by decree of May 6, 1932, collectives were permitted to sell their surplus grain in the open markets at market prices, the enormous divergence between market price and fixed price was legally revealed. We have already noted that in 1933-34, when stringency on the bread-grain market had already subsided a great deal, the market price of grain was 20 to 25 times as large as the fixed price paid for grain delivered on obligations (p. 352). Private sources point to much higher ratios even in 1933-34, to say nothing of the 1932-33 relation. Under such conditions, any delivery of grain at fixed prices is regarded by the peasants as a tax, not as a sale; and after

1933 the government itself so treated obligatory deliveries of grain.

Thus the problem of incidence of the burden of obligatory grain deliveries in the USSR and of how this burden falls upon various producers assumes great importance. The fact that the government through organization of collectives could extract from peasants much larger fractions of their products, particularly bread grains, than it could obtain from peasants before collectivization, enables us to say that up to the present time the government has been more successful in developing the taxation feature of collectives than in developing their productive capacity.

VII. EXPORTS AND DOMESTIC DISPOSITION OF BREAD GRAIN

EXPORTS

Since emphasis falls in this study on internal aspects of the Russian bread-grain problem, it is unnecessary here to consider in detail the bread-grain exports of recent years. To the extent, however, that exports reflect the internal situation and particularly the domestic supply of the bread grain, they merit some discussion. The relation of bread-grain exports to production and to collections by the government are of particular interest.

The government experienced serious difficulties in collection of grain in 1928-29 and there were no grain exports; indeed, the government imported some 5-6 million bushels of wheat. But in 1929-30 the improved grain collections permitted exports of a moderate quantity of bread grain. In 1930-31, with a bumper crop harvested under favorable climatic conditions, exports reached their post-war peak. They continued large in the summer and fall of 1931, before the unsatisfactory outcome of the 1931 crop became quite clear. The coincidence of large exports of grain (especially wheat) with the socialistic reorganization of farming in the USSR that was occurring in these years attracted much attention and caused great confusion of thought.

Subsequent development of bread-grain exports was much less spectacular, as may be seen from the following tabulation showing exports of wheat and rye (including flour in terms of grain, in million 60-lb. units).¹

	July-June	Wheat	Rye	Two bread grains
1929-30	8.7	6.7	15.4
1930-31	111.8	27.2	139.0
1931-32	71.8	40.4	112.2
1932-33	19.7	9.0	28.7
1933-34	33.8	5.4	39.2
1934-35	4.3	1.1	5.4
1935-36	29.7	2.6	32.3

The sudden and large increase of exports of bread grains in 1930-31 must be explained, at least partly, by the fact that presumably the Soviet government itself was misled by the favorable results of the 1930 crop, which were regarded as exemplifying successful socialistic reorganization of agriculture. The bumper crop of 1930 and the large quantity of bread grain collected in 1930-31 (double that of the years just preceding collectivization) made many people believe that the grain problem had been definitely solved. Hence it was not surprising that, under the existing immediate pressure for foreign exchange, the Soviet government sent abroad all grain collected above current domestic needs, simply overlooking that heavy requisitions of grain from peasants were depleting the invisible stocks usually carried by Russian peasants in expectation of the poor crops that are not unusual under Russian conditions.

¹ Data compiled from official sources as cited by U.S. Department of Agriculture, *Foreign Agriculture*, Jan. 1, 1937, p. 28. Gross exports across all frontiers.

When the government curtailed exports late in the fall of 1931, realizing finally that the new crop was poor, its reserves following the bumper crop of 1930 were no larger than those of the year before.¹ Under such conditions, in order to replenish stocks, the government was impelled to proceed further with heavy requisitioning of grain and succeeded in collecting more bread grain from the poor crop of 1931 than it had done from the bumper crop of 1930 (see Table 12, p. 355). But the country population was left with a quantity of bread grain one-third smaller than the average for the four years preceding collectivization, 1925-28.² The reserves of producers were so depleted that in February 1932 the government was obliged to loan 30 to 35 million bushels of grain for seed and food to peasants in the eastern regions where crops were poor. This loan was small, however, in contrast with the total collection of bread grain of 577 million bushels, and it is possible that the government accumulated some reserves in 1931-32, as the exports during later months were small. If the government indeed began to accumulate its own reserves in 1931-32, by depriving peasants of theirs, then it did not use them generously in 1932-33 when famine affected Ukraine and other southeastern regions. Only 22 million bushels were loaned by the government for seed and food to the starving population of the southeast,³ while 29 million bushels of bread grain were exported out of the rather moderate grain collections of that year.

Exports of bread grain, particularly wheat,

¹ It may be easily shown that no reserves were accumulated by the government from the heavy bread-grain collections in 1930-31. One must subtract from 540 million bushels (60-lb. units) of bread grain collected that year the total exports of 1930-31 and at least three-fourths of the exports of 1931-32 which were shipped during the first three months of the season before the government had new crops definitely in hand—a gross subtraction of around 230 million bushels. The remaining 310 million just sufficed to cover current needs; see p. 361.

² Official data show that in 1931-32 the country population had left to them less than 700 million 60-pound units of bread grain for their needs excluding seed, while on the average in 1925-28 they had about 1,050 million units (see p. 360).

³ Decree of the Council of the People's Commissars of the USSR, Feb. 25, 1933.

have not since even approached the levels of 1930-31 and 1931-32. They seem inexplicably small in comparison with official crop statistics showing average grain crops for 1933-35 as 7 to 8 per cent larger than the bumper crop of 1930, and average wheat production over 10 per cent larger than in 1930. In 1934-35, exports of bread grain were practically discontinued, although the total grain crop and the wheat crop as officially reported exceeded the bumper crops of 1930 by more than 200 and 125 million bushels respectively. But we have seen that official crop statistics for 1933-35 are not comparable with those for preceding years and must be adjusted downward. This divergence between official crop statistics and actual grain exports merely provides further evidence of the necessity for adjustment of official crop statistics.

If the government had persisted in its policy of 1930-31 and early 1931-32—namely, exporting all grain collected above current domestic needs, without consideration of the necessity of reserves—substantially larger quantities of grain, particularly wheat, could have been exported in 1933-34 and exports need not have been discontinued in 1934-35. Indeed, collections of bread grain in 1933-34 were substantially larger than in 1930-31; and, if both purchases of surpluses and collections are included, a new record was established in that year. Collections of bread grain, particularly wheat, made successive new high records also in 1934-35 and 1935-36. Hence the Soviet government must have had available plenty of bread grain to export in these late years when exports were actually small. It was different with the producers of grain, who were left with no more at their disposal than in the critical years 1930-32 (pp. 359-61). If the Soviet government chose not to export much wheat in 1933-35, it must have had reasons; and these reasons were not primarily curtailment of export in order to expand immediate domestic consumption, at least of the country population. Presumably the government learned lessons from the events of 1931-33, and came to understand the importance of reserves of bread grain under the condition of the USSR. What happened was a shift of reserves from the barns of producers to govern-

ment warehouses, as was deemed advisable in view of the political situation both at home and abroad.

There was another reason why grain exports were not forced in recent years: subsidence of pressure for foreign exchange. By the end of 1935, the government had practically completed payment of the short-term commercial obligations which had accumulated in 1931 to an important amount. The necessity of importing machinery and other producers' goods also has become less urgent than it was in 1931-32; for domestic production of some types of machinery, particularly tractors and agricultural implements, has risen greatly with increased industrialization. As to certain kinds of consumers' goods badly needed by the population, the policy always involved disregard of these needs. The present foreign trade policy is not to increase exports in order to pay for necessary imports, but to hold imports at as low a level as possible. Domestic gold production has greatly increased in recent years, and occasionally foreign accounts are balanced with gold exports, without forcing of merchandise exports.

DISPOSITION OF BREAD-GRAIN CROPS

Analysis of the disposition of bread-grain crops in the USSR involves substantial difficulty because of lack of information on consumption and complete secrecy about stocks of grains in various positions. Before 1929, the available pertinent information was much less inadequate. This is itself significant, but it introduces uncertainties that are further magnified by the change in the system of crop estimating in 1933. An attempt to appraise consumption (or disappearance) on a per capita basis is even more precarious because the population estimates in the USSR for recent years are far removed from the basis of the last census taken in 1926. Particular uncertainties surround estimates of city and country population.

But if our adjustment of recent crop statistics is sufficiently well founded, and if we may tentatively accept the official estimates of population (total, urban, and rural), it is possible to present certain rough estimates of the disposition of bread-grain crops in the

USSR. Table 14 shows that the growth of bread-grain production lagged behind the growth of population during the whole period under review.

TABLE 14.—DISPOSITION OF BREAD GRAIN IN THREE PERIODS OF 1925-35
(Million 60-lb. units)

Average	Production	Seed use ^a	Production ex-seed	Exports	Domestic disappearance	Population ^b	Per capita disappearance ^c
1925-28 ^d	1,648	270	1,378	28	1,350	149.6	9.0
1930-32	1,657	293	1,364	93	1,271	160.0	7.9
1933-35	1,705 ^e	277	1,428	26	1,402	168.0	8.3

^a At 2 bushels per acre for rye, and 1.8 for wheat.

^b Rough estimates of population, based on the following official data: Census, Dec. 17, 1926, 147.0 million; estimate on June 1, 1929, 154.3 million; on June 1, 1933, 165.7 million, as given in *Socialistic Construction*, 1935, p. 539.

^c In 60-lb. units.

^d *Agricultural Russia*, p. 394.

^e Official estimates reduced by 10 per cent.

Efforts to expand the crops resulted in a greater use of seed but not in a sufficiently large increase of total production. Production ex-seed even declined slightly during the critical years 1930-32, while the population increased by 6 to 7 per cent. However, the government found it reasonable under such conditions to export to an overburdened world market at low prices three times more bread grain than it had during the NEP, thus contributing to further demoralization of the world wheat situation. By depleting reserves of bread grain accumulated by producers during the period of the NEP¹ and by reducing their consumption, the government succeeded in enlarging exports. But per capita disappearance of the two bread grains fell from 9 bushels in 1925-28 to 7.9 bushels in 1930-32.

Reduction of per capita consumption of grain by about 12 per cent was important because the supply of other foods, particularly animal products, declined simultaneously; the livestock population was cut in half between 1928 and 1932. The situation in 1932

¹ Official estimates appraised the stock of bread grain in hands of producers at nearly 250 million bushels at the end of 1926-27 and about 210 to 215 million at the end of 1928-29. See *Agricultural Russia*, p. 396.

and the spring of 1933 was especially difficult, a fact somewhat concealed by the average for 1930-32.

During the years 1933-35, bread-grain production increased somewhat. Moreover, the government had gained knowledge from the experience of 1931-32, and thereafter reduced the exports of bread grain. The use of seed also was smaller with reduction of the crop area. All this resulted in a substantially larger amount of bread grain for domestic consumption. On the average for 1933-35 there was nearly 10 per cent more bread grain for domestic use than on the average for 1930-32, while the population increased only half as much. Consequently supplies were available to permit increase of per capita consumption by about 5 per cent; but increased availability of gross supplies does not mean that per capita consumption actually increased.

Table 15 shows that grain consumption of the country population could not increase at all. After collections by the government, the peasants were left with less rather than more bread grain in 1933-35 than during the critical years 1930-32, to say nothing of the period of the NEP. This suggests the need for analysis of the distribution of bread grains between city and country, an analysis even more precarious than the above because it involves more assumptions which cannot be checked by statistics. Table 14 permits the further statement that per capita consumption of the whole population in 1933-35 could not have been raised to the level characteristic of the period of the NEP even if the government had distributed for consumption all grain compulsorily collected and had accumulated no reserves. As we have stated elsewhere, per capita bread-grain consumption during the period of the NEP could not have been higher than in prewar years and was perhaps somewhat lower.¹ Hence per capita disappearance of bread grain in 1933-35 must have been below the prewar level.

Through collectives, the government acquired greater control over the countryside and was able to enlarge compulsory grain collections more than production. Presumably

the stocks of bread grain in the hands of producers, accumulated before collectivization and amounting to 210 to 215 million bushels in the spring of 1929, were taken first; and consequently a larger portion of the 1930 crop was left in the hands of peasants and was carried into 1931. Otherwise the record collections of grain in a year of poor crops, 1931, cannot be explained.

TABLE 15.—BREAD GRAIN LEFT TO THE COUNTRY POPULATION IN THREE PERIODS OF 1925-35

(Million 60-lb. units)

Average	Production ex-seed	Governmental collections and purchases	Country disappearance	Country population ^a (Millions)
1925-28..	1,378	330-340 ^b	1,038-1,048	121
1930-32..	1,364	523	841	126-127
1933-35..	1,428 ^c	634 ^d	794	126

^a Country population was officially reported as follows: Dec. 17, 1926, 120.7 million residents and 121.2 actual; Jan. 1, 1929, 126.7 million; Jan. 1, 1933, 126.0 million.

^b Grain collection by the planned grain-collecting organizations averaged 267 million bushels, but at that time these organizations covered only part of the grain collections and purchases: in 1925-26 about 65 per cent, in 1926-27 from 75 to 80 per cent, in 1927-28 about 85 per cent, in 1928-29 perhaps 95 per cent. The estimate of the total grain collections and purchases is based on these percentages.

^c Official estimates of crops reduced 10 per cent.

^d Assuming for 1935 that collections of bread grain were two-thirds of the officially reported collections of all grains, as in earlier years.

It may seem incredible that the quantity of bread grain left with the country population in the later period, 1933-35, should have been smaller than in the critical period 1930-32; and this relationship may appear to be an argument against downward adjustment of official crop statistics by 10 per cent. Of course this correction is only a rough guess; and perhaps it might be lowered by a few per cent particularly for the 1935 crop.

On the other hand, the official population estimates perhaps require some correction, which may transpire when results of the population census taken in January 1937 are published. Official estimates indicate that the country population declined between 1929 and 1933. The decline was possibly much greater than is shown by official estimates. The great mortality of the country population from starvation in 1932-33, mentioned by several foreign observers,² must be taken into considera-

¹ *Agricultural Russia*, pp. 402, 411-12.

² See footnote 2, p. 310.

tion. Moreover, the disappearance of several million peasant families from the countryside, as reported by official publications (1.9 million households in 1933-34 alone), points also to a greater shift of the population from country to cities. Hence the country population in the middle of the period 1933-35 may have been substantially smaller than the 126 million given in Table 15. If so, per capita disappearance of bread grain amongst the country population in 1933-35 may be larger than our data suggest. Furthermore, Table 15 gives averages for 1930-32 and 1933-35 and not the data for individual years. Comparison of the average for 1933-35 with the data for 1931-32 and 1932-33 shows a somewhat more favorable picture for 1933-35, and many students refer to this change when reporting improvement in recent years. But at most this improvement could have been but slight.

We present no figures on per capita disappearance of bread grain in the country, since part of the rural population receives bread grain from stocks collected by the government. The government supplies bread grains to some producers of technical crops, such as cotton and flax, in exchange for their crops; and it supplies country lumbermen, hunters in the northern regions, and some other groups such as gold miners with bread. Some groups of non-agricultural population living in the country also receive bread and flour from government stocks. We have not statistical data adequate to permit us to calculate what fraction of the grain collected by the government is returned to the country population in these ways. But to draw upon statements in Soviet publications, it may be said that during the first eight months of 1935, about 20 per cent of the total sales by the government of bread, flour, and bread grain was sold in country places, half of which went to the above-mentioned specialized producers in exchange

for their products or work, and half mainly for non-agricultural population living in country places.¹

Table 16 supplies information about the quantity of bread grain available to the government for distribution to the city population and for other domestic needs, including possible accumulation of reserves. We reach these estimates by subtracting quantities of bread grain exported from the quantities secured by governmental grain-collecting organizations, including the centralized purchases.² The table shows that the quantity of bread grain disposable by the government for all

TABLE 16.—BREAD GRAIN AVAILABLE TO THE GOVERNMENT FOR DISPOSITION IN THREE PERIODS OF 1925-35

(Million 60-lb. units; million persons)

Average	Collections and purchases	Exports	Domestic supply	City population ^a	Consumptive needs at 1925-28 standard	Possible yearly accumulation
1925-28..	330-340 ^b	28	300-310	26	300-310	...
1930-32..	523	93	430	34	around 400	30
1933-35..	634	26	608	41-42	480-500	120

^a Rough estimates based on the following official data: by Census of Dec. 17, 1926, city residents 25.8 million, actual population 26.3 million; estimate of Jan. 1, 1929, 27.6 million; of Jan. 1, 1933, 39.7 million. Net inflow of population to cities in 1929 was 1.4 million; in 1930, 2.6 million; in 1931, 4.1 million; in 1932, 2.7 million; and in 1933, 0.8 million.

^b See Table 15, footnote b.

domestic needs averaged in 1930-32 about 40 per cent larger than during the period of the NEP, in spite of the larger exports in the later period. In 1933-35, the disposable quantity averaged twice as large as in 1925-28. In this respect the Soviet government was eminently successful. The supply of bread grain for cities increased faster than the city population, although the growth of cities was extremely rapid. The government was able not only to provide bread grain for the rapidly increasing city population, but also to accumulate substantial reserves. We may be sure that accumulation of reserves was not the policy before the winter of 1931-32. It is possible that decision to accumulate the reserves came in 1931-32, when the enormous

¹ See Z. Kolchinsky, "Current Problems of the Bread Trade," *Planned Economy*, 1935, No. 11.

² Sales of grain by producers on markets at market prices, which were roughly estimated for 1935 by Gosplan at about 10 million quintals, are not included in the total quantity of governmental collections and purchases for 1933-35, although for 1925-28 the estimated purchases of other than planned grain-collecting organizations are included in the total.

collections of grain permitted. Yet the government found it necessary to advance grain to collectives for seed, in a total amount exceeding 50 million bushels (p. 358); hence it seems unlikely that important stocks of bread grain could be built up before 1933. Within the period 1933-35, substantial stocks of bread grain amounting to several hundred million bushels may have been accumulated. We venture this statement on the assumption that the consumption requirements met from government stocks increased about in proportion to the growth of the city population.¹

Without doubt some stocks of bread grain had to be accumulated by the government in preparation for the abolition of bread rationing on January 1, 1935. From the large collections of 1933 and 1934, 200 million bushels may have been available for this purpose. There are indications that accumulation of reserves continued in 1935, as is suggested both by the large compulsory collections and the purchases of bread grain from the 1935 crop and by statements of high officials.² But against the accumulation of substantial reserves in the hands of government must be set the depletion of reserves in the hands of producers.

¹ It may be objected that in later years the government had to provide bread for a larger fraction of the city population than in 1925-28. We admit this, but our allowance for government grain collections and purchases in 1925-28 includes about 25 per cent more than the quantity provided by the planned grain-collecting organizations. This allowance is sufficient to take care of a great many of those whom later the government supplied directly from its resources.

² Stalin, speaking at a meeting of expert combine operators in December 1935, said of grain production of 1935 that it was "amply sufficient for abundant nutrition of the population as well as for accumulation of reserves necessary for any unforeseen circumstances" (*Socialistic Reconstruction of Agriculture*, 1935, No. 12, p. 5). A. Zlobin, in an article reporting statistics of grain collections in 1935, concluded that collections were so satisfactory that the government controlled a quantity of grain in excess of current needs and permitting creation of reserves. In the same article it was mentioned that the storage capacity of the state grain-collecting organizations increased by about 300 million bushels in 1934 and 1935 (*Planned Economy*, 1935, No. 11).

³ *Soviet Trade*, 1934, No. 7-8, p. 8.

⁴ See *Planned Economy*, 1931, No. 2-3, p. 89.

⁵ *Ibid.*

⁶ *Soviet Trade*, 1934, No. 7-8, p. 8.

ABOLITION OF BREAD RATIONING

The rationing of bread and of some other foods, with a view to provide a better supply at low price to some groups of the population, particularly industrial workers, began in some cities of the USSR as early as 1928. Early in 1929 the government decided to ration bread and other foods in all cities of the Union. The Communist Party, as appears from a decision of its Central Committee in December 1930,³ regarded the rationing system as a means of curtailing consumption of non-laboring classes, in order to reserve larger supplies for industrial workers. Thus the rationing system from its very beginning discriminated between classes. Later the discriminations went so far that several different rations were established for various groups of industrial workers themselves.

In 1931 the system of rationing was applied to most of the common foods. According to the plan of supply for 1931, nine-tenths of all food of industrial workers were to be supplied by the state and only one-tenth purchased by themselves in private markets.⁴ The workers in the privileged first list were to be supplied by the state in even greater proportion. Other groups of the population, even if belonging to the laboring class, were to be supplied in smaller degree; government employees, for example, were then obliged to buy about a third of their food on the free markets.⁵ This discriminatory system succeeded in providing for city workers better than for other groups. In 1930 the manual workers constituted about a third of the total population of Moscow; but they obtained 47 per cent of the supply of bread and meat, 43 per cent of the butter, 56 per cent of the groats, etc.⁶ Such sharp discrimination as regards quantity and price of food, combined with the shortage of most foods, resulted in almost complete elimination of open trade and led to the establishment of special stores for particular groups of the population, in which products were sold at various prices, all much lower than those in private trade. This greatly complicated the problem of governmental supply, particularly in view of the extremely rapid growth of the city population in connection with the industrialization of the country.

The abolition of bread rationing in January 1935 reflected not only a desire to create better sentiment throughout the population, but also a necessity for improving the complex price structure. In recent years prices charged for consumers' goods even in state stores had varied greatly according to the class of purchasers. In stores open to the public generally, the so-called commercial prices were several times the prices charged in stores reserved for limited groups of privileged buyers, such as factory workers or employees of certain governmental institutions. The prices paid by privileged groups were, however, out of line with market prices; and for the government this complicated the problem of procuring necessary goods. Grain could still be collected from peasants at fixed prices of a confiscatory character, but it had become more difficult to collect other supplies. The cost to the government of grain purchased on barter was higher. Hence the attempt has been made in recent years to improve the price structure by raising the prices charged to privileged groups, and on the other hand by lowering commercial prices and by enlarging open markets.

Fixed prices on flour and bread obtainable on rations were raised about fourfold from 1932 to the end of 1934. At the same time the government succeeded in lowering open market prices of bread and flour by one-third to two-fifths. The ratio of commercial to fixed prices of rye bread thus was reduced from 20 at the beginning of 1933 to about 5 at the end of 1934, and of wheat bread from 13-14 to about 3.¹ This prepared the way for the abolition of rationing. But a final unification of prices was necessary. It was achieved at the abolition of rationing by establishing a uni-

form price for bread which in Moscow was 40 to 50 per cent below the previous commercial prices. Such unified prices meant, however, nearly double bread costs to the privileged groups of consumers who had usually obtained all their bread on rations; and such consumers had incentives to lower their consumption of bread. It is true that the government simultaneously increased the funds for wages of workers and employees, but not enough to raise wages more than 10 to 15 per cent; and this was insufficient to compensate for higher prices of bread and other foods.

In September 1935 the government, presumably reassured by the results of the new crop and by the development of unrationed sales of bread, twice lowered the prices of bread and of flour (on September 1 and 25).² These reductions left prices still substantially above the level prevailing before the abolition of rationing.

In spite of higher prices, bread sales in state stores rose during the first nine months of 1935 by 25 per cent, according to official statistics. It is symptomatic, however, that sales in large cities such as Moscow, Leningrad, and Gorki, where the supply on ration had been satisfactory, did not increase but declined. On the other hand, sales increased greatly in localities which had not been well supplied with rationed bread earlier.³

In connection with enlarged demand for bread in 1935, the productive capacity of state bakeries was increased proportionally, and the flour mills increased their output of flour. Generally speaking, the government was sufficiently prepared to meet increased demand for bread and flour in total, but distribution by localities was not always satisfactory, and this temporarily caused certain difficulties in the local supply of unrationed bread.

Table 17 (p. 364) shows how governmental preparations for abolition of bread rations and the abolition in January 1935 affected flour and bread production in the centralized state enterprises. By 1934 the government, anticipating abolition of rationing, increased flour production (wheat flour only) by nearly 15 per cent, expecting that consumers would shift to it when free from rationing. In 1935 flour production (again wheat flour only) was in-

¹ See Z. Bolotin, "Results and Prospects of the Development of Soviet Trade," *Planned Economy*, 1935, No. 1, pp. 140-58.

² On Sept. 1, the prices of flour were reduced 16 per cent and the price of bread from 7 to 18 per cent. On Sept. 25, the price of flour was reduced by 18 per cent and the price of bread by 15 per cent. See an article by Z. Kolchinsky in *Planned Economy*, 1935, No. 11. Another reason for lowering bread prices at the time was perhaps the fact that on Oct. 1, 1935, unified (higher) prices were introduced for other foods such as meat, fat, sugar, and potatoes.

³ Kolchinsky, *op. cit.*

creased by 34 per cent more. Production of bread in centralized state enterprises increased even more than 40 per cent. This points toward an increased share of centralized producers of bread in total bread production, for

TABLE 17.—PRODUCTION OF FLOUR AND BREAD IN CENTRALIZED STATE ENTERPRISES, 1933-36*
(Million quintals)

	1933	1934	1935 preliminary	1936 plan
Flour, total	78.4	90.0	119.9	117.0
Wheat flour, total.....	33.8	46.2	80.7	76.2
75 per cent extraction and lower	5.1	5.3	9.7	13.4
Rye flour	43.1	42.8	38.7	40.4
Bread .....	.....	100.7	143.4	147.6

* For 1933, *Economic Plan for 1935* (Moscow, 1935), pp. 548-49; for 1934-36, *Economic Plan for 1936* (Moscow, 1936), pp. 432-33. Data on production of flour relate to flour mills under the direct administration of the Committee on Procurement of the Council of People's Commissars of the USSR. On the basis of statistics for 1933, these mills appear to produce about two-thirds of the flour production in all state flour mills, including those administered by provincial and district executive committees. Bread production as given in the table includes production in centralized state enterprises as well as in co-operatives of the *Centrosouz* and in the organizations supplying workers (ORS).

sales of bread increased in 1935 as compared with 1934 by only about 25 per cent, as was mentioned above. Production of flour presumably was in excess of current needs and in anticipation of growth of demand, as the lower output planned for 1936 suggests.

Information about growth of flour produc-

tion in other state enterprises is not available to us. Assuming that it increased in the same proportion as in the centralized enterprises, one may conclude that the additional requirement for bread grain in 1935, in connection with the abolition of bread rationing, did not exceed 50 million bushels, while collections and centralized purchases of bread grain in 1935 exceeded those of 1934 by a larger quantity. This indicates that accumulation of reserves could proceed in 1935 as the government planned.

The extremely high extraction of flour in the USSR deserves brief comment. Before 1935, only slightly more than 10 per cent of the wheat flour was of 75 per cent (or lower) extraction. The rest was of 96 and 85 per cent, most wheat flour being of 96 per cent extraction. All rye flour was extracted to 95 per cent. The abolition of rationing led to an increase in the production of wheat flour of 75 per cent extraction; but it constitutes only a sixth of the total wheat flour. Practically all flour produced in centralized state enterprises is consumed in the cities wherein standards of bread quality are relatively exacting. In the USSR, consumers continue willing to accept bread of low quality and the government can therefore persist in very high extraction rates. This suggests that the bread-grain problem is far from solution even for city consumers, at least with reference to quality of bread.

VIII. THE OUTLOOK

It is reasonable to conclude this study with an appraisal of probable future developments of agricultural organization and production in the USSR. Complete control of agriculture, both of production and of distribution, lies in the hands of the central government. Hence any major political change, at home or abroad, must affect the structure of Soviet agriculture. The prospects for major political changes lie beyond our purview, and in these concluding pages we confine our discussion to the direction of evolution of Soviet agriculture on the assumption of no fundamental break in the Soviet governmental structure.

We consider first the outlook for stability of the new forms of agricultural organization described in the earlier sections of this study,

and we begin with the state farms, particularly the "grain factories."

We have seen that the Soviet government encountered much difficulty in finding a satisfactory way to administer large-scale enterprises in agriculture, and that in recent years their operation has given less satisfaction even than the work of collective farms. At the outset, the organization of purely state enterprises appeared to the government simpler than organization of collective farms, which were necessarily hampered by old ownership relations and which required close co-operation with previously independent producers. But in fact the organization of state farms, even in their simplest form—one-crop farms, fully mechanized, without livestock—turned

out to be more complicated than was contemplated. Even here the problem was more one of men than one of machines; and the impossibility of solving the labor problem on state grain farms was one of the principal causes of their failure. Moreover, the problems of agrotechny even in simplified "grain factories" turned out to be of much greater importance than had been expected, and less well adapted to standardized solutions. The state livestock farms, not here considered, seem to us to have been no more successful than state grain farms.

The state farm therefore seems to us a less stable form of agricultural enterprise in the USSR than the collective farm. The recent reorganization of state farms, particularly the efforts of the government to solve labor problems, points toward their evolution in the direction of collective farms. The government has sought to attach hired labor to state farms for long periods; to supply laborers with individual houses, livestock, and gardens; and to interest them in the results of production on state farms by certain forms of profit-sharing. All this has made hired laborers on state farms quite similar to members of collectives. The more this evolution proceeds, the greater opportunity there will be for improvement of production on state farms. However, this is more difficult for state farms to achieve than it is for collectives manned by people who had the same land for generations.

The fact that the government has recently turned over about a fourth of all land in state farms to collectives points toward a government policy of discontinuing this type of agricultural enterprise and replacing it by collective farms. It seems fairly clear that the government does not intend to proceed with energetic extension of crop land in the semiarid regions of the east. It is true, however, that a billion rubles were invested in state grain farms—at least twice as much as was contemplated at the outset;¹ and the government will be loath to discontinue these farms and openly to recognize their failure. Presumably there will be further reorganization, with less emphasis upon state grain farms than in the

early period of socialistic reorganization, and gradual transformation into collective farms. If so, the evolution will be the reverse of that contemplated by the "left" groups of the Communist Party, who sought to transform all collective farms into state farms.

The collective farms, on the other hand, seem likely to continue as the backbone of Soviet agriculture. This does not imply that the peasants have definitely accepted this form of agricultural organization; quite possibly they would reject it in case of a major political change, which we exclude from consideration. Under the present Soviet structure, the collectives seem likely to continue with some minor changes. The government appears to be persisting in their preservation. The peasants, on the other hand, seem to have found that they cannot successfully further resist the new forms of organization under the present political structure, and have accepted them as the best available choice.

The new model charter for collectives and other governmental measures have made collectives more acceptable to peasants because more scope is given to individual peasant households, particularly in the realm of livestock husbandry. The intention of the government is apparently to rely more on individual households of members of collectives than on state farms in its attempts to rebuild the livestock industry from the chaos of 1930–33. The transfer of land from state farms to collectives occurred not only on state grain farms but also on livestock farms. Since the advantages of large-scale productive units are much more limited in most livestock enterprises than in grain production, it is reasonable to suppose that the government will leave the larger portion of the livestock industry in the hands of individual households of members of collectives; yet in recent years there has been some persistence in organizing within collectives so-called "collective livestock farms" as large productive units. For obvious reasons these seem to us more likely to have vitality than the state livestock farms, and they have such precedents in peasant life as dairy co-operatives in Siberia.

It seems probable, then, that in the near future collective activity will tend to concen-

¹ See *Agricultural Russia*, p. 134.

trate in the field of crop production while the livestock industry will be left for individual households of members of collectives, assisted by some sort of co-operative enterprise among them. Such evolution may fit with peasants' habits; and it promises substantial success if collectives evolve into co-operative farms, and not into purely bureaucratic organizations commanded from above by outsiders as they have been in recent years. The new model charter of collectives suggests that the government contemplates making the collectives into more democratic organizations. Moreover, the government itself now denounces its own local agents for "systematic violation of the new charter of collectives." Since arbitrary practices and violations of personal rights are not unusual in Soviet administration, it remains to be seen how far the central government will succeed in its attempts to safeguard the democracy of collectives against the violence of its local agents. Persistence in these attempts is needed to confirm their sincerity.

However, the fundamental question is a different one. Will the collectives consolidate on a co-operative basis if and when the government somewhat relaxes its bureaucratic pressure on them, or will they begin to disintegrate? Only with consolidation can we expect substantial stabilization and improvement of collective agriculture. If the centrifugal forces within collectives should prevail and the government therefore feel impelled to keep them under heavy bureaucratic pressure, not much improvement of their work can reasonably be expected. By bureaucratic methods the government has already achieved a certain degree of improvement, but not what is needed and not enough to justify the expectation of much more improvement if bureaucratic methods continue to be followed. There is no longer much room to proceed by combination of bureaucratic tutelage with such methods of discriminative remuneration as piece work, differentiation of wages, premiums for quality, etc., by which the government succeeded in lifting the collectives from their very low position in 1932. Not all of this improvement was achieved by bureaucratic methods; some of it sprang from the stimulus

given to the initiative of members of collectives themselves and from appeal to their private interests as members of collectives. But in order to proceed in these directions, much more freedom and democracy in collectives will be necessary than now prevails. Only consolidation of collectives on a basis of voluntary co-operation seems to promise further improvement. We cannot attempt to predict whether this line of development will be found compatible with the actual political structure of the USSR.

The prospects for expansion of crop area, grain area, or wheat area, and for increase of yield per acre and total production, depend heavily upon the manner in which the new forms of agricultural enterprises become stabilized, consolidated, and improved.

There are, however, certain more permanent influences such as natural and geographical factors or population growth which set certain limits to the production of surpluses, particularly of grain surpluses. In this respect our view of the future has not changed much from that formulated in our earlier study of the Russian wheat problem, and it is not necessary here to go into detailed discussion. We may note here, however, that the state grain farms were less successful in occupation of new land in semiarid regions of the east than were peasant settlers who before the war had extended grain production to the extreme frontiers of the semiarid steppes of Central Asia and the southeastern part of the European area of the USSR.

The Soviet government, by complete revision of its original plan for state grain farms, has recognized its failure in this direction. It now relies more upon ambitious irrigation projects in the semiarid regions east of the Volga than upon dry farming. But irrigation of the Trans-Volga steppe not only meets with enormous technical difficulties requiring much time and capital to surmount, but may not be economically sound. Can the production of spring wheat cover the enormous costs of irrigation? The government contemplates the sprinkling system of irrigation on a large scale. This may pay in gardening and fruit farming, but it seems very likely to prove too costly for production of spring wheat. Hence

we do not expect rapid expansion of the wheat area in the semiarid regions.

The project of extending wheat production in the humid regions north of the blacksoil belt was discussed above and its economic soundness was questioned. But even technically—quite aside from economic limitations—this development can proceed only slowly because it involves reclamation and improvement of land. Agriculture on this land must be organized intensively. It will require much fertilizer, particularly manure, of which the supply is limited by the decreased livestock population. The number of livestock planned for the end of 1937 in the Second Five-Year Plan will be smaller than the number before the collectivization in 1928, even if the plan succeeds fully. Furthermore, if the project to expand crop area in the northern European regions and in Siberia is successful, it must be accompanied by growth of the livestock population, and this will result in a larger portion of the crop area under feed crops. These regions therefore seem unlikely ever to become grain-surplus areas on a large scale; at most they may become self-sufficient.

The heavy requirements for feed crops, particularly feed grains, are not overlooked by high officials of the USSR. When in December 1935 Stalin launched his project of increasing grain production to 7 or 8 billion poods (4.2–4.8 billion 60-pound bushels) in three or four years, he referred not only to the increasing food requirements of the rapidly growing population—the city population as well as the country population producing technical crops—but also emphasized the enormously increasing requirements for feed grains in the recovering livestock industry. In speaking of an increase of grain production by 30 to 40 per cent as compared with the good crop of 1935, Stalin characteristically made no mention of exports. He explained the necessity for such enormous increase of grain production within only three or four years solely by rapidly increasing domestic needs. This may be taken to imply that the Soviet government does not contemplate heavy exports of grain within the new few years.

In our earlier forecast of Soviet agricultural production, we pointed to the deficiency of

draft power as an immediate limitation upon rapid expansion of crop area. Actually, shortage of draft power proved so great as to curtail crop production. In this respect Soviet agriculture has already passed the most difficult period; the supply of draft power (mainly tractors) began to increase in 1934, and the increase will presumably continue. There is evidence also that the country population has learned to handle tractors and such other complex machines as combines more effectively. The outlook for the supply of draft power and machinery is therefore better than it was five years ago. Moreover, the government learned a lesson in 1931–32 and does not now plan to go fast with expansion of crop area; the plan is rather to use the larger resources of draft power for better cultivation of crops and consequently to increase the yield per acre.

Official expectations of increase in per acre yield continue to be very ambitious. The actual prospect for rapid increase of yield per acre clearly depends heavily upon the success of the collective movement. No doubt the potentialities of increase in yield are large: the present level of yields is low even considering the Russian climate, and there are extreme variations of yield from one collective to another in the same locality. Researches recently published in Soviet periodicals, directed toward the possibilities of increasing yields on collective farms and based on crop statistics for 1934 and 1935, emphasize these extreme variations of yields in the same year and the same locality.¹ By arranging several hundred collectives in the principal grain-producing regions of the USSR into three groups—best, medium, and lagging—these inquiries reveal that the yield of grain on the best collectives, which constitute about a fifth of the total number in the sample, secure about threefold the yield on lagging collectives, which constitute about a third of the sample. The remaining collectives, half of the number, lie between these two extremes and their yields are about on the prewar level. But the yield of grain per

¹ See *Socialistic Reconstruction of Agriculture*, 1936, No. 5, pp. 49–66; No. 7, pp. 157–63; No. 9, pp. 31–72. Also summary of these researches in the *Bulletin of the Economic Cabinet of Professor S. N. Prokopovich*, January–February 1937, No. 133, pp. 19–20.

acre in the lagging collectives was extremely low, only about 4.5 to 7.5 bushels per acre. These data point to the fact that the variation of yields from one collective to another in the same localities are greater than were common between peasant farms before the collectivization and depend heavily upon the uneven level of agronomic practices in the various collectives. On the basis of these relationships, and with reference also to a relatively close correlation existing between the level of yield and the excellence of agrotechny applied in the respective groups of collectives, the authors conclude that there is a large scope for increase of yields if the worst and the medium collectives are raised to the level of the best.

We recognize that there is room for great improvement; but it must also be admitted that achievement requires a long and laborious educational process, and will depend on the consolidation of collectives on a co-operative basis of which we have spoken. Furthermore, in the economic sphere, a tendency for the worst enterprises to approach the level of the best is sometimes accompanied by a tendency for the best to approach the level of the average. The problem is to keep this medium level sufficiently high. There will always be poor and good collective farms as there are poor and good individual farmers. It may be hoped that the peasants organized in collectives, when accorded enough freedom for voluntary co-operation, will raise the medium level of agricultural efficiency sufficiently high; but it is to be doubted that such favorable conditions will emerge under the present Soviet structure. In order to stimulate the efforts of collectives, fairer prices ought to be paid for their products, instead of the requisitioning at extremely low prices that is now practiced by the Soviet government. If the Soviet government should be wise enough to proceed sufficiently far in according both freedom and higher prices to collectives, a substantial increase of grain yields would in our opinion eventuate. But this can hardly be achieved in so short a time as Soviet leaders contemplate.

However, even substantial increase of grain production does not mean an immediate large

surplus of grain for export. The major fraction of additional grain production must consist of feed grains for domestic use, since these still constitute a smaller proportion of the total grain production than before the collectivization, and the requirements of the recovering livestock industry for feed grains are rapidly growing. Increased production of bread grains will be required first for domestic use. National per capita consumption in 1933-35 was substantially below the level characteristic of the period of the NEP, and it is reasonable to expect some recovery of per capita bread-grain consumption, particularly in rural areas, when collectives are left with larger stocks. It must not be forgotten also that the population in the USSR continues to grow rapidly—according to official reports, in recent years (1928-1935) at a rate exceeding that of total grain production. Even with further and more rapid growth of grain production, a large fraction of it will be claimed by increased population.

Our analysis of domestic disposition has shown that the Soviet government was able to accumulate substantial reserves of bread grains, and presumably has accumulated them. If, therefore, the government should decide to follow the policy of 1930-31, it could export substantial quantities of bread grain. But such action seems improbable in the next few years. First, the unsatisfactory crop of 1936 may at least have stopped further accumulation of reserves, and perhaps have caused the use of part of the stocks previously accumulated. Second, the government knows that its stocks are the only reserves in the country. This makes improbable the use of accumulated reserves for exports except in case of extreme necessity, particularly in the present international situation. Third, the Soviet government does not now experience such pressure for foreign exchange as it did in 1930-32. We do not expect in the near future a sudden spurt of exports of bread grain, particularly wheat, such as took place in 1930-31. More probable is continuation of the developments of 1932-36, when moderate exports of wheat fluctuated with the results of crops.

This study is the work of V. P. Timoshenko with the advice of Joseph S. Davis and M. K. Bennett. Marion Jo Theobald assisted in the preparation of tables.

APPENDIX TABLES

TABLE I.—ACREAGE AND PRODUCTION OF THE PRINCIPAL GRAINS IN THE USSR, BY REGIONS, 1928-34*

Year	Area (Million acres)							Production (Million 60-lb. units)					
	Winter wheat	Spring wheat	Winter rye ^a	Oats	Barley ^b	All grains	All crops	Winter wheat	Spring wheat	Winter rye ^a	Oats	Barley ^b	All grains
USSR													
1928...	15.27	53.25	59.60	42.61	18.03	227.76	279.21	175.85	631.53	694.44	605.59	208.25	2,694.01
1929...	16.20	57.26	60.33	46.66	19.98	237.25	291.70	190.41	503.22	732.72	578.31	265.05	2,636.02
1930...	24.87	58.52	70.23	44.21	18.36	251.45	314.36	367.52	621.61	853.35	610.68	248.92	3,069.72
1931...	27.97	63.14	67.05	43.18	16.94	257.99	336.76	377.89	375.33	794.89	402.66	190.24	2,553.07
1932...	29.19	56.07	63.69	38.11	16.91	246.36	332.19	319.84	424.20	798.77	413.05	184.67	2,567.38
1933...	26.70	55.44	61.82	41.22	17.93	250.94	320.48	429.81	588.97	877.49	566.25	288.38	3,299.71
1934...	26.66	60.44	58.47	44.51	20.96	258.66	324.64	314.99	802.50	728.55	694.49	251.20	3,284.97
RSFSR													
1928...	7.83	43.50	47.66	35.65	6.84	164.32	197.39	78.13	536.87	556.90	508.98	87.70	1,997.30
1929...	8.86	47.12	46.41	38.79	7.98	172.00	207.37	86.26	384.98	550.10	458.68	87.42	1,765.11
1930...	10.95	46.81	53.05	36.75	7.72	179.48	219.53	148.06	496.51	578.80	491.33	89.96	2,033.36
1931...	11.21	54.53	51.23	37.00	7.18	189.98	240.28	141.18	299.29	602.70	334.38	70.21	1,697.87
1932...	11.48	50.21	50.90	32.71	7.99	185.47	241.68	106.94	375.66	654.87	354.14	81.52	1,875.07
1933...	10.33	49.38	47.82	35.44	8.74	186.37	231.63	132.34	515.94	664.92	475.33	127.22	2,288.37
1934...	11.24	53.62	46.26	38.29	10.32	192.74	236.23	156.31	728.94	598.37	622.73	133.04	2,600.84
LENINGRAD PROVINCE AND KARELIAN ASSR													
1928...	.02	.02	1.37	.92	.38	2.91	4.45	.31	.26	19.30	15.02	4.07	40.39
1929...	.02	.02	1.28	1.04	.30	2.77	4.37	.30	.30	16.13	15.68	3.72	37.54
1930...	.03	.03	1.48	1.25	.33	3.32	5.29	.45	.30	18.64	16.77	3.73	41.95
1931...	.04	.03	1.41	1.19	.31	3.17	5.21	.50	.38	18.91	16.20	3.90	41.91
1932...	.05	.04	1.36	1.14	.36	3.20	5.46	.61	.51	17.89	14.83	4.27	41.15
1933...	.05	.07	1.22	1.15	.43	3.24	5.26	.90	1.02	19.46	15.51	5.64	46.88
1934...	.18	.18	1.18	1.25	.40	3.54	5.61	3.02	2.41	19.52	19.90	6.10	56.09
NORTHERN REGION													
1928...	—	.06	.90	.35	.43	2.29	2.68	—	.61	8.67	9.82	5.78	25.34
1929...	—	.07	.96	.86	.41	2.35	2.80	—	.83	13.22	11.88	5.99	32.55
1930...	—	.06	1.03	.76	.39	2.29	2.77	—	.66	13.43	8.85	5.38	28.77
1931...	—	.05	.95	.77	.37	2.19	2.76	—	.66	14.25	11.02	5.29	31.89
1932...	—	.06	.80	.80	.34	2.06	2.70	—	.68	11.39	9.02	5.94	27.86
1933...	.00	.09	.63	.82	.43	2.07	2.67	.01	1.42	11.31	13.32	7.93	35.70
1934...	.01	.16	.70	.87	.47	2.34	3.00	.15	2.83	14.21	15.51	9.80	44.35
WESTERN PROVINCE													
1928...	.05	.08	3.58	1.89	.27	6.87	10.37	1.04	.88	48.02	29.13	2.83	90.38
1929...	.05	.10	3.75	2.08	.25	7.11	11.10	.68	1.35	46.05	31.91	3.48	92.06
1930...	.10	.09	4.20	2.19	.30	7.78	11.81	1.30	1.22	60.69	32.79	3.72	109.24
1931...	.03	.10	3.95	2.08	.33	7.24	11.78	.29	1.22	43.53	24.44	3.98	79.69
1932...	.07	.13	3.56	2.14	.38	6.99	12.03	.73	1.45	38.70	28.60	4.59	80.41
1933...	.07	.15	3.11	1.97	.52	6.82	11.24	1.00	2.34	45.76	26.52	7.65	94.27
1934...	.19	.24	3.03	2.16	.53	7.14	11.13	2.84	3.46	42.66	31.98	8.22	98.75

* Compiled from *Agriculture of the USSR, 1935* (Moscow, Sel'khozgiz, 1936), Tables 97, 107, 110, 112, 115, 117, 120, 122, 125, 127, 130, 132, 135, and 137. This is a yearbook published jointly by the People's Commissariats of Agriculture and of State Farms. The areas of winter crops exclude winterkilled acreage.

^a Not including spring rye, data for which were not distributed by regions before 1932. The total area of spring rye (80 per cent in Siberian regions) fell from 1.3 to .9 million acres between 1928 and 1935; total production ranged from 15 to 11 million 60-pound bushels in this period.

^b Winter and spring.

SOVIET AGRICULTURAL REORGANIZATION

TABLE I.—Continued

Year	Area (Million acres)							Production (Million 60-lb. units)						
	Winter wheat	Spring wheat	Winter rye ^a	Oats	Barley ^b	All grains	All crops	Winter wheat	Spring wheat	Winter rye ^a	Oats	Barley ^b	All grains	
MOSCOW PROVINCE														
1928...	.04	.01	3.82	2.68	.11	7.92	11.33	.65	.11	42.61	42.62	1.64	97.96	
1929...	.06	.01	4.33	3.11	.12	8.75	12.40	.91	.13	55.59	45.47	1.71	113.96	
1930...	.08	.01	4.53	3.14	.09	8.91	12.92	1.19	.07	55.37	45.34	1.25	114.05	
1931...	.09	.01	4.43	2.92	.12	8.95	13.72	1.28	.08	65.85	32.55	1.58	115.63	
1932...	.14	.03	4.33	3.26	.12	9.49	14.57	1.88	.30	59.06	43.11	1.66	122.98	
1933...	.19	.05	3.66	3.69	.17	9.30	14.39	2.82	.84	57.18	51.14	2.46	137.16	
1934...	.58	.32	3.36	3.57	.15	9.49	14.64	9.71	4.89	51.18	61.09	2.40	149.43	
IVANOV PROVINCE														
1928...	.06	.09	1.65	1.23	.11	3.33	4.95	1.07	.99	19.81	20.88	1.45	46.03	
1929...	.07	.10	1.64	1.39	.11	3.47	5.25	.98	1.08	19.74	20.48	1.32	45.25	
1930...	.09	.08	1.76	1.47	.10	3.67	5.67	1.02	.92	22.86	22.07	1.12	50.39	
1931...	.09	.07	1.73	1.24	.11	3.51	5.58	1.21	.85	23.39	17.56	1.34	47.71	
1932...	.09	.07	1.63	1.34	.13	3.51	5.58	1.22	.68	24.95	15.47	1.39	46.78	
1933...	.10	.10	1.37	1.41	.16	3.46	5.48	1.92	1.73	24.43	24.01	2.77	60.14	
1934...	.32	.22	1.20	1.42	.18	3.69	5.98	6.53	3.52	21.28	25.71	3.23	64.87	
GORKI REGION														
1928...	.02	.16	6.06	4.62	.45	12.04	13.84	.23	2.01	74.78	65.69	6.92	158.09	
1929...	.02	.18	5.16	5.01	.54	11.74	13.94	.30	2.21	67.63	65.53	7.57	151.92	
1930...	.03	.18	6.52	5.10	.52	13.20	15.79	.42	1.95	67.05	65.67	7.07	150.99	
1931...	.02	.18	6.21	4.55	.50	12.41	15.21	.22	1.97	74.46	50.89	6.31	143.14	
1932...	.02	.25	6.32	4.61	.59	12.73	15.71	.29	3.00	81.69	53.09	8.20	156.05	
1933...	.03	.34	5.72	4.77	.60	12.59	15.51	.40	5.60	92.80	64.18	7.62	185.63	
1934...	.09	.80	5.77	4.80	.61	13.16	16.16	1.25	12.28	82.68	70.90	9.73	189.43	
URAL PROVINCE														
1928...	.01	5.00	2.16	4.03	.49	11.99	12.89	.11	74.27	30.37	64.41	9.25	181.36	
1929...	.00	5.11	1.94	4.43	.57	12.54	13.76	.02	52.18	22.66	46.01	9.47	133.25	
1930...	.00	5.61	2.35	4.30	.91	13.76	15.50	.03	63.98	31.62	57.86	14.82	173.27	
1931...	.00	6.39	2.58	4.68	.71	15.40	17.64	.02	13.02	23.03	18.09	4.66	62.64	
1932...	—	5.36	3.09	2.46	.90	14.98	18.04	—	40.72	45.87	21.61	6.58	130.51	
1933...	.00	5.48	3.16	3.23	.79	14.65	16.51	.04	54.10	43.40	33.74	8.97	155.45	
1934...	.01	5.64	3.30	3.64	.52	14.60	16.13	.04	79.66	43.04	56.92	8.54	199.64	
BASHKIR ASSR														
1928...	.01	1.44	2.28	1.25	.03	6.04	6.49	.07	18.44	29.27	18.48	.45	77.59	
1929...	.00	1.58	1.69	1.58	.03	6.10	6.65	.01	12.24	15.59	15.64	.28	53.09	
1930...	.00	1.68	2.20	1.54	.03	6.51	7.25	.02	21.86	29.72	22.60	.31	86.10	
1931...	—	2.36	2.27	1.85	.05	7.85	8.71	—	10.24	18.18	10.51	.23	46.36	
1932...	—	2.30	2.56	1.28	.02	7.48	8.47	—	15.10	33.10	8.62	.15	65.72	
1933...	.00	2.29	2.41	1.42	.02	7.54	8.22	.02	23.68	37.04	18.29	.30	90.68	
1934...	.00	2.39	2.32	1.61	.03	7.56	8.35	.02	38.00	34.70	33.38	.54	119.21	
TARTAR ASSR														
1928...	.00	.26	3.15	1.67	.03	6.22	6.72	.03	3.02	31.87	16.13	.51	62.82	
1929...	.00	.28	2.70	1.56	.03	5.83	6.38	.01	2.67	22.10	15.63	.39	48.39	
1930...	.00	.33	3.36	1.69	.03	6.62	7.17	.03	2.50	28.31	16.12	.32	56.89	
1931...	—	.43	3.19	1.66	.03	6.77	7.75	—	3.22	39.03	12.08	.26	64.23	
1932...	—	.63	3.18	1.25	.05	6.82	8.03	—	5.78	49.09	9.28	.59	77.49	
1933...	.01	.91	2.96	1.55	.06	7.18	7.99	.09	11.88	44.98	21.55	1.11	94.64	
1934...	.03	1.08	3.01	1.49	.07	7.23	8.13	.49	18.57	37.92	26.91	1.42	101.21	

^a Not including spring rye, data for which were not distributed by regions before 1932. The total area of spring rye (80 per cent in Siberian regions) fell from 1.3 to .9

million acres between 1928 and 1935; total production ranged from 15 to 11 million 60-pound bushels in this period.

^b Winter and spring.

TABLE I.—Continued

Year	Area (Million acres)							Production (Million 60-lb. units)					
	Winter wheat	Spring wheat	Winter rye ^a	Oats	Barley ^b	All grains	All crops	Winter wheat	Spring wheat	Winter rye ^a	Oats	Barley ^b	All grains
MIDDLE VOLGA REGION													
1928...	.00	4.81	6.18	2.80	.14	16.38	18.33	.22	63.89	69.42	34.99	2.03	194.28
1929...	.01	5.10	5.78	3.03	.17	16.53	18.45	.10	26.25	61.46	26.47	.45	125.02
1930...	.01	6.11	6.71	3.13	.06	18.82	21.19	.05	60.26	54.88	19.43	.40	157.54
1931...	.01	7.54	6.33	3.13	.09	20.49	24.41	.07	25.90	59.59	20.02	.16	122.39
1932...	.03	6.98	6.57	2.83	.16	20.00	25.34	.30	39.05	81.12	20.85	.79	166.56
1933...	.29	6.83	5.71	3.00	.18	19.70	23.54	2.73	54.39	68.01	40.85	1.15	200.75
1934...	.45	7.07	5.58	3.39	.16	20.52	24.10	4.54	97.94	62.24	51.22	2.35	259.77
CENTRAL BLACKSOIL REGION													
1928...	.45	.75	8.30	4.34	.38	19.16	24.64	5.93	6.42	96.42	62.15	4.16	215.92
1929...	.38	.77	8.85	4.60	.38	19.84	25.26	5.69	10.33	124.51	66.99	5.44	258.77
1930...	.70	1.11	9.04	4.88	.42	20.88	26.55	11.28	13.28	110.24	77.45	5.94	270.90
1931...	.96	1.06	8.80	4.11	.40	19.93	27.14	14.04	7.34	138.31	38.26	3.83	243.77
1932...	1.48	1.03	7.92	3.73	.43	19.80	27.23	17.63	10.86	115.37	44.30	5.74	259.91
1933...	1.50	.93	7.77	3.36	.45	19.79	26.39	22.20	11.88	121.94	40.20	6.45	273.21
1934...	1.60	1.23	7.25	3.53	.63	20.47	26.50	21.54	14.89	97.55	56.24	7.38	262.81
LOWER VOLGA REGION													
1928...	.06	5.70	4.65	1.06	.47	13.63	15.81	.41	61.86	43.49	14.06	4.92	138.76
1929...	.08	6.57	4.59	1.27	.58	14.69	16.79	.52	50.03	43.41	15.47	4.08	120.03
1930...	.10	7.87	5.32	1.43	.40	17.05	19.16	.81	70.55	37.39	20.99	3.43	144.79
1931...	.20	9.22	5.17	1.45	.42	19.06	22.69	1.39	45.06	40.73	7.80	1.70	104.91
1932...	.44	9.00	5.27	1.17	.47	18.79	22.95	3.15	46.83	46.27	8.03	2.07	119.01
1933...	.52	8.17	5.18	1.09	.53	18.42	21.11	3.60	71.86	36.67	13.93	6.22	154.49
1934...	.36	8.04	4.69	1.30	.70	17.90	20.34	2.64	66.50	29.85	18.48	7.46	142.27
NORTH CAUCASUS													
1928...	5.44	4.50	1.05	.45	2.22	18.11	23.56	50.85	43.44	6.91	7.48	27.05	188.41
1929...	6.63	5.05	1.36	.78	2.94	20.63	26.06	59.41	47.71	9.58	8.70	28.82	199.91
1930...	7.90	5.52	1.76	.84	2.67	22.91	29.33	111.74	51.76	12.17	10.23	29.09	246.12
1931...	7.72	5.21	1.89	.99	2.11	22.59	30.50	97.13	39.40	15.13	10.45	21.89	263.74
1932...	7.16	5.33	1.98	.85	2.31	22.56	31.29	58.09	39.09	18.95	7.76	21.13	215.47
1933...	5.84	4.22	2.22	1.13	2.58	22.11	28.17	73.77	43.98	23.20	15.14	44.94	297.83
1934...	5.59	3.69	1.99	1.15	3.89	22.47	27.98	79.41	28.03	16.93	14.90	38.09	271.54
CRIMEAN ASSR													
1928...	.99	.00	.01	.24	.29	1.62	1.74	7.48	.00	.04	1.53	2.26	11.50
1929...	.86	.00	.01	.28	.39	1.65	1.78	9.34	.02	.09	3.31	4.13	17.84
1930...	1.02	.00	.01	.27	.53	1.95	2.14	9.33	.01	.08	1.45	1.63	12.92
1931...	1.31	—	.03	.18	.38	2.04	2.36	16.70	—	.28	1.17	2.79	21.96
1932...	1.16	—	.05	.13	.45	2.01	2.35	14.20	—	.49	1.30	4.37	22.68
1933...	1.11	—	.07	.14	.50	2.06	2.36	17.01	—	.71	2.06	8.74	31.06
1934...	1.16	—	.01	.14	.56	2.29	2.63	13.64	—	.07	1.43	5.39	22.13
KAZAK AND KARA-KALPAK ASSR													
1928...	.50	6.49	.18	1.08	.35	9.86	11.06	6.95	86.86	2.03	16.74	5.10	134.84
1929...	.44	6.96	.09	1.16	.42	10.62	11.90	4.73	46.21	.45	7.26	2.98	74.42
1930...	.68	6.27	.12	.73	.28	9.86	11.46	8.02	54.01	1.05	7.73	2.86	90.38
1931...	.53	7.73	.29	.97	.35	12.51	15.08	5.18	44.97	2.76	6.51	2.82	80.77
1932...	.65	6.34	.43	.69	.32	11.55	14.15	6.78	46.25	4.12	5.98	2.94	87.87
1933...	.41	5.66	.61	.82	.34	11.30	13.03	3.31	45.65	4.23	7.01	2.76	76.05
1934...	.43	6.67	.58	1.07	.38	11.29	12.88	6.23	108.54	4.84	18.27	6.01	163.71

^a Not including spring rye, data for which were not distributed by regions before 1932. The total area of spring rye (80 per cent in Siberian regions) fell from 1.3 to .9

million acres between 1928 and 1935; total production ranged from 15 to 11 million 60-pound bushels in this period.

^b Winter and spring.

SOVIET AGRICULTURAL REORGANIZATION

TABLE I.—Continued

Year	Area (Million acres)							Production (Million 60-lb. units)					
	Winter wheat	Spring wheat	Winter rye ^a	Oats	Barley ^b	All grains	All crops	Winter wheat	Spring wheat	Winter rye ^a	Oats	Barley ^b	All grains
KIRGHIZ ASSR													
1928...	.15	.72	.00	.08	.17	1.33	1.67	2.24	8.36	.04	1.52	2.48	18.09
1929...	.21	.81	.00	.12	.21	1.56	1.88	2.94	11.10	.02	2.00	3.04	22.93
1930...	.18	.94	.01	.13	.22	1.56	2.00	2.02	9.74	.08	1.66	2.82	17.50
1931...	.21	1.08	—	.14	.30	1.88	2.48	3.15	14.48	—	2.24	4.11	26.60
1932...	.19	1.00	—	.18	.35	1.89	2.56	2.06	9.56	—	2.36	4.00	20.25
1933...	.21	.98	—	.16	.35	1.93	2.42	2.44	10.91	—	2.21	4.17	23.21
1934...	.23	.96	—	.17	.34	1.89	2.30	4.13	14.64	—	2.69	5.02	29.69
WESTERN SIBERIA													
1928...	.03	10.78	1.54	4.66	.37	17.89	19.37	.54 ^c	152.52 ^c	32.54 ^c	77.63 ^c	6.31 ^c	283.70 ^c
1929...	.02	12.00	1.55	4.80	.37	19.49	21.48	.26	105.13	30.33	45.11	3.42	192.08
1930...	.03	8.75	1.85	2.54	.22	14.63	16.88	.35	112.58	23.91	43.30	2.64	199.01
1931...	—	10.63	1.32	3.34	.31	17.40	19.71	—	60.59	14.91	30.63	1.44	117.55
1932...	—	9.11	1.07	2.99	.23	14.80	17.53	—	82.69	16.38	39.17	2.36	153.53
1933...	.00	10.57	1.38	3.82	.25	17.53	19.92	.07	141.39	24.65	60.17	3.27	244.85
1934...	.01	12.21	1.57	4.58	.32	20.00	22.37	.13	190.07	26.47	82.95	5.77	316.53
EASTERN SIBERIA													
1928...	.00	1.53	.64	.94	.11	4.22	4.61	—	—	—	—	—	—
1929...	.00	1.52	.62	.93	.11	4.17	4.58	—	2.05	.58	1.68	.17	8.94
1930...	—	1.40	.71	.81	.14	3.92	4.41	—	23.89	10.46	14.32	2.42	62.81
1931...	—	1.60	.60	1.08	.21	4.56	5.02	—	22.63	9.38	17.16	3.01	63.25
1932...	—	1.52	.65	1.25	.28	4.70	5.17	—	23.48	9.18	14.26	3.65	59.94
1933...	.00	1.52	.56	1.17	.29	4.47	4.80	.01	22.60	8.62	16.67	4.07	61.99
1934...	—	1.76	.63	1.41	.30	4.96	5.34	—	31.30	12.37	23.86	4.86	82.89
IRKUTSK ASSR													
1928...	—	—	—	—	—	—	—	—	—	—	—	—	—
1929...	—	—	—	—	—	—	—	—	—	—	—	—	—
1930...	—	.01	—	.01	.04	.06	.10	—	.17	—	.13	.62	1.09
1931...	—	.03	—	.02	.03	.12	.13	—	.37	—	.26	.48	1.68
1932...	—	.04	—	.02	.04	.16	.17	—	.50	—	.27	.59	1.97
1933...	—	.04	.01	.02	.05	.18	.19	—	.48	.03	.24	.58	2.06
1934...	—	.04	.01	.02	.05	.20	.20	—	.34	.03	.18	.39	1.39
FAR EAST REGION													
1928...	—	1.10	.14	.86	.04	2.51	2.88	—	12.93	1.31	10.70	.49	31.84
1929...	.01	.89	.11	.76	.05	2.15	2.54	.06	13.16	.96	13.46	.96	37.16
1930...	—	.76	.09	.54	.04	1.78	2.14	—	6.80	.85	6.57	.39	18.65
1931...	—	.81	.08	.65	.05	1.91	2.40	—	6.91	.98	6.54	.43	18.05
1932...	—	.99	.13	.59	.06	1.95	2.35	—	9.13	1.25	6.23	.51	18.93
1933...	—	.98	.07	.72	.04	2.03	2.43	—	10.19	.50	8.59	.42	22.32
1934...	—	.92	.08	.72	.03	2.00	2.46	—	11.07	.83	10.21	.34	25.63
UKRAINIAN SSR													
1928...	3.96	7.75	8.81	5.53	9.17	48.58	61.60	51.20	71.60	105.26	79.78	93.71	510.20
1929...	3.80	7.83	10.77	6.29	9.87	49.88	63.12	57.57	94.69	148.90	99.80	150.03	687.17
1930...	10.13	8.29	13.93	5.77	8.32	55.13	70.09	173.04	90.47	236.95	99.04	130.35	835.02
1931...	13.17	5.80	12.44	4.67	7.43	52.13	71.39	192.22	45.06	161.35	51.90	90.55	674.09
1932...	14.19	2.98	9.54	3.86	6.19	44.79	65.33	180.37	25.56	113.67	43.61	76.30	538.55
1933...	13.48	3.03	11.17	4.42	6.44	49.08	65.15	262.80	46.24	172.80	73.26	126.55	819.25
1934...	12.41	3.66	9.26	4.72	7.87	49.91	64.31	114.00	30.98	90.37	51.06	75.98	453.23

^a Not including spring rye, data for which were not distributed by regions before 1932. The total area of spring rye (80 per cent in Siberian regions) fell from 1.3 to .9

million acres between 1928 and 1935; total production ranged from 15 to 11 million 60-pound bushels in this period.

^b Winter and spring.

^c Includes Eastern Siberia.

TABLE I.—Concluded

Year	Area (Million acres)							Production (Million 60-lb. units)					
	Winter wheat	Spring wheat	Winter rye ^a	Oats	Barley ^b	All grains	All crops	Winter wheat	Spring wheat	Winter rye ^a	Oats	Barley ^b	All grains
WHITE RUSSIAN SSR													
1928...	.07	.16	3.12	1.42	.64	6.22	8.40	1.00	2.01	32.22	16.71	7.32	65.01
1929...	.07	.18	3.14	1.57	.62	6.28	8.62	.93	2.05	33.62	19.68	7.44	69.56
1930...	.07	.18	3.22	1.68	.59	6.35	8.95	.98	1.86	37.28	20.17	5.92	72.04
1931...	.08	.10	3.38	1.50	.65	6.44	9.50	.86	1.07	30.84	16.18	7.27	62.05
1932...	.07	.20	3.24	1.52	.74	6.49	9.84	.68	2.18	30.20	15.09	7.93	62.23
1933...	.08	.23	2.82	1.33	.78	6.14	9.33	1.25	3.30	39.72	17.23	12.15	83.45
1934...	.15	.34	2.94	1.46	.78	6.47	9.54	2.16	4.96	39.68	20.29	12.31	87.82
TRANSCAUCASIAN SFSR													
1928...	2.09	.43	.01	.01	.87	4.69	5.28	27.34	4.98	.06	.09	13.21	67.02
1929...	2.20	.45	.01	.01	.89	4.90	5.55	29.80	5.00	.10	.15	13.57	62.98
1930...	2.37	.47	.03	.01	.98	5.18	6.11	29.75	5.67	.32	.14	13.87	70.73
1931...	2.21	.46	—	.01	.98	4.79	6.10	27.56	5.24	—	.20	13.38	61.21
1932...	2.14	.57	.01	.02	1.08	5.07	6.39	20.09	3.75	.03	.21	10.57	49.47
1933...	1.85	.50	.01	.03	1.04	4.74	5.86	24.49	5.27	.05	.43	14.08	63.62
1934...	1.93	.52	.01	.04	1.10	4.92	6.13	26.73	5.29	.13	.41	15.14	68.61
UZBEK SSR													
1928...	.81	.79	—	.00	.30	2.45	4.37	18.18 ^d	16.07 ^d	—	.03 ^d	6.31 ^d	54.48 ^d
1929...	.75	.98	—	—	.36	2.58	4.67	15.85 ^d	16.50 ^d	—	—	6.59 ^d	51.50 ^d
1930...	1.04	1.49	—	—	.32	3.27	6.42	11.44	10.94	—	—	2.80	31.41
1931...	.61	1.41	—	—	.31	2.64	6.28	6.17	12.93	—	—	3.03	28.75
1932...	.61	1.31	—	—	.61	2.67	5.98	4.28	9.16	—	—	5.20	22.25
1933...	.65	1.60	—	—	.58	3.14	6.06	4.82	10.71	—	—	4.15	27.29
1934...	.59	1.59	—	—	.58	3.14	6.02	9.80	22.18	—	—	9.77	51.16
TURKMEN SSR													
1928...	.23	.10	—	—	.03	.44	.82	—	—	—	—	—	—
1929...	.25	.11	—	—	.03	.46	.88	—	—	—	—	—	—
1930...	.24	.14	—	—	.07	.46	1.05	3.41	2.45	—	—	1.15	7.27
1931...	.18	.12	—	—	.03	.39	1.04	3.10	2.26	—	—	.54	6.86
1932...	.19	.15	—	—	.06	.45	1.05	2.48	1.48	—	—	.72	5.73
1933...	.14	.12	—	—	.08	.37	.90	1.83	1.49	—	—	1.08	4.87
1934...	.17	.13	—	—	.08	.42	.95	2.94	2.14	—	—	1.42	7.41
TADZHİK SSR													
1928...	.28	.52	—	—	.18	1.06	1.35	—	—	—	—	—	—
1929...	.27	.59	—	—	.23	1.15	1.49	—	—	—	—	—	—
1930...	.07	1.14	—	—	.36	1.58	2.21	.84	13.71	—	—	4.87	19.89
1931...	.51	.72	—	—	.36	1.62	2.17	6.80	9.48	—	—	5.26	22.24
1932...	.51	.65	—	—	.24	1.42	1.92	5.00	6.41	—	—	2.43	14.08
1933...	.17	.58	—	—	.27	1.10	1.55	2.28	6.02	—	—	3.15	12.86
1934...	.17	.58	—	—	.23	1.06	1.46	3.05	8.01	—	—	3.54	15.90

^a Not including spring rye, data for which were not distributed by regions before 1932. The total area of spring rye (80 per cent in Siberian regions) fell from 1.3 to .9

million acres between 1928 and 1935; total production ranged from 15 to 11 million 60-pound bushels in this period.

^b Winter and spring. ^c Includes Turkmen and Tadzhik.

SOVIET AGRICULTURAL REORGANIZATION

TABLE II.—ACREAGE OF THE PRINCIPAL GRAINS IN THE USSR, BY REGIONS, 1934-35*

(Million acres)

Region	Year	Winter wheat	Spring wheat	Total wheat	Winter rye ^a	Oats	Barley ^b	Corn	Other grains ^c	All grains	All crops
<i>USSR</i>	1934.....	26.66	60.44	87.10	58.47	44.51	20.96	9.09	38.53	258.66	324.87
	1935.....	30.78	60.79	91.57	57.13	45.27	21.60	8.00	32.03	255.60	328.10
<i>RSFSR</i>	1934.....	11.24	53.62	64.86	46.26	38.29	10.32	4.70	28.31	192.74	236.45
	1935.....	13.12	54.76	67.88	45.36	39.34	11.09	4.18	23.83	191.68	239.82
Northern	1934.....	.01	.15	.16	.70	.88	.47	—	.13	2.34	3.01
	1935.....	.02	.22	.24	.74	.86	.46	—	.14	2.44	3.19
Karelian	1934.....	—	.00	.00	.04	.05	.02	—	.00	.11	.15
	1935.....	.00	.00	.00	.04	.04	.02	—	.01	.11	.15
Leningrad	1934.....	.16	.17	.33	.98	1.09	.33	—	.28	3.01	4.78
	1935.....	.22	.26	.48	.95	1.06	.30	—	.31	3.10	5.04
Western	1934.....	.14	.21	.35	2.48	1.69	.40	—	.83	5.75	8.81
	1935.....	.17	.33	.50	2.40	1.66	.41	—	.77	5.74	9.02
Moscow	1934.....	.51	.26	.77	2.90	2.94	.02	—	1.48	8.11	12.07
	1935.....	.61	.52	1.13	2.62	2.67	.03	—	1.33	7.78	12.04
Kalinin	1934.....	.14	.10	.24	1.19	1.21	.31	—	.23	3.18	5.57
	1935.....	.19	.17	.36	1.18	1.25	.32	—	.27	3.38	5.82
Ivanov	1934.....	.32	.22	.54	1.20	1.42	.18	—	.35	3.69	5.99
	1935.....	.36	.33	.69	1.24	1.40	.18	—	.36	3.87	6.30
Gorki	1934.....	.07	.52	.59	2.86	2.15	.08	—	.83	6.51	8.18
	1935.....	.13	.68	.81	2.79	2.04	.08	—	.79	6.51	8.38
Kirov	1934.....	.03	.39	.42	3.11	2.78	.54	—	.37	7.22	8.59
	1935.....	.05	.60	.65	3.06	2.56	.55	—	.32	7.14	8.73
Sverdlovsk	1934.....	.00	.94	.94	1.52	1.68	.37	—	.50	5.01	5.84
	1935.....	.00	1.04	1.04	1.54	1.73	.38	—	.50	5.19	6.09
Cheliabinsk	1934.....	.00	3.75	3.75	1.15	1.37	.08	—	.70	7.05	7.56
	1935.....	.00	3.64	3.64	1.07	1.70	.10	—	.55	7.06	7.70
Bashkir	1934.....	.00	2.36	2.36	2.31	1.60	.03	—	1.21	7.51	8.29
	1935.....	.01	2.43	2.44	2.10	1.62	.04	—	1.08	7.28	8.25
Tartar	1934.....	.03	1.08	1.11	3.01	1.49	.07	—	1.55	7.23	8.13
	1935.....	.06	1.18	1.24	2.77	1.48	.07	—	1.33	6.89	8.03
Kuibyshev	1934.....	.40	3.54	3.94	4.10	2.71	.04	.00	3.20	13.99	16.78
	1935.....	.35	3.69	4.04	3.94	2.55	.09	.00	2.54	13.16	16.08
Orenburg	1934.....	.05	3.81	3.86	1.56	.72	.12	.01	.77	7.04	7.85
	1935.....	.02	3.82	3.84	1.50	.83	.18	.01	.59	6.95	7.78
Voronezh	1934.....	.90	1.05	1.95	4.17	1.94	.33	.10	3.48	11.97	15.50
	1935.....	1.05	1.25	2.30	4.02	1.99	.34	.15	2.72	11.52	15.44
Kursk	1934.....	.70	.18	.88	3.08	1.59	.31	.02	2.62	8.50	11.00
	1935.....	.76	.46	1.22	3.02	1.74	.42	.03	1.89	8.32	10.99
Saratov	1934.....	.19	3.98	4.17	2.64	1.04	.34	.01	1.70	9.90	11.28
	1935.....	.16	4.14	4.30	2.79	1.09	.40	.04	1.56	10.18	11.78
Stalingrad	1934.....	.17	4.05	4.22	2.05	.26	.36	.06	1.05	8.00	9.19
	1935.....	.13	3.62	3.75	2.22	.43	.54	.08	.80	7.82	9.16

* Data from *Agriculture of the USSR, 1935*, Tables 986-87. Areas of winter crops exclude winterkilled acreage. Regions with names in roman type are subdivisions of regions immediately preceding with names in italic type.

^a See footnote a, Table I.

^b Winter and spring.

^c Mainly millets, buckwheat, and dry legumes.

TABLE II.—Continued

Region	Year	Winter wheat	Spring wheat	Total wheat	Winter rye ^a	Oats	Barley ^b	Corn	Other grains ^c	All grains	All crops
Azov-Black Sea	1934.....	3.09	3.60	6.69	1.79	.60	2.62	1.84	1.15	14.69	18.29
	1935.....	3.91	3.33	7.24	1.91	.65	2.54	1.69	.73	14.76	18.87
North Caucasus (new boundaries)	1934.....	2.50	.10	2.60	.19	.55	1.27	2.24	.92	7.77	9.73
	1935.....	3.06	.09	3.15	.18	.61	1.27	1.83	.66	7.70	9.86
Crimea	1934.....	1.16	—	1.16	.01	.14	.56	.27	.15	2.29	2.63
	1935.....	1.23	—	1.23	.01	.14	.55	.18	.08	2.19	2.58
Kazak	1934.....	.42	6.41	6.83	.51	1.04	.37	.05	1.96	10.76	12.14
	1935.....	.34	6.88	7.22	.47	1.27	.56	.06	1.92	11.50	12.91
Kara-Kalpak	1934.....	.01	.01	.02	—	—	.01	—	.05	.08	.27
	1935.....	.01	.02	.03	—	—	.01	—	.05	.09	.28
Kirghiz	1934.....	.23	.96	1.19	—	.17	.34	.08	.11	1.89	2.30
	1935.....	.27	.93	1.20	.01	.20	.41	.09	.09	2.00	2.46
Omsk	1934.....	.00	2.94	2.94	.70	1.20	.14	—	.42	5.40	6.05
	1935.....	.00	2.78	2.78	.73	1.36	.19	—	.32	5.38	6.16
Western Siberia	1934.....	.01	9.07	9.08	1.07	3.23	.20	—	.99	14.57	16.27
	1935.....	.01	8.41	8.42	1.15	3.42	.23	—	1.00	14.22	16.08
Krasnoiarsk	1934.....	.00	1.71	1.71	.50	1.11	.12	—	.20	3.64	3.96
	1935.....	—	1.69	1.69	.47	1.21	.13	—	.14	3.64	4.01
Eastern Siberia	1934.....	—	1.09	1.09	.35	.90	.21	—	.77	3.32	3.57
	1935.....	—	1.20	1.20	.37	.93	.21	—	.72	3.43	3.77
Iakutsk	1934.....	—	.05	.05	.01	.02	.05	—	.07	.20	.21
	1935.....	—	.06	.06	.01	.02	.05	—	.07	.21	.22
Far East	1934.....	—	.92	.92	.08	.72	.03	.02	.24	2.01	2.46
	1935.....	—	.99	.99	.06	.83	.03	.02	.19	2.12	2.65
Ukraine	1934.....	12.41	3.65	16.06	9.26	4.73	7.87	3.36	8.64	49.92	64.31
	1935.....	14.06	3.01	17.07	9.04	4.53	7.55	2.78	6.71	47.68	63.54
Kiev	1934.....	1.45	.04	1.49	1.83	1.13	.84	.08	1.57	6.94	9.27
	1935.....	1.44	.04	1.48	1.71	1.09	.83	.10	1.44	6.65	9.27
Chernigov	1934.....	.22	.11	.33	1.63	.64	.31	—	1.24	4.15	5.56
	1935.....	.26	.13	.39	1.56	.70	.32	—	1.03	4.00	5.54
Vinnitsa	1934.....	1.40	.01	1.41	1.15	.86	.91	.33	1.35	6.01	8.03
	1935.....	1.46	.01	1.47	1.20	.82	.87	.30	1.18	5.84	7.99
Kharkov	1934.....	1.30	1.14	2.44	2.08	.73	1.04	.35	1.68	8.32	10.91
	1935.....	1.75	.94	2.69	2.18	.73	1.04	.42	1.04	8.10	11.08
Dnepropetrovsk	1934.....	3.17	.82	3.99	.92	.50	1.83	1.10	1.06	9.40	11.42
	1935.....	3.87	.63	4.50	.89	.45	1.59	.74	.76	8.93	11.22
Odessa	1934.....	3.73	.37	4.10	.46	.45	1.77	.70	.89	8.37	10.40
	1935.....	3.97	.21	4.18	.37	.38	1.83	.63	.64	8.03	10.19
Donetsk	1934.....	.71	1.13	1.84	1.09	.38	1.00	.57	.82	5.70	7.42
	1935.....	.86	1.03	1.89	1.04	.32	.90	.38	.59	5.12	6.97
Moldavia	1934.....	.43	.03	.46	.10	.04	.17	.23	.03	1.03	1.31
	1935.....	.45	.02	.47	.09	.04	.17	.21	.03	1.01	1.28
White Russia	1934.....	.15	.34	.49	2.94	1.45	.78	—	.81	6.47	9.55
	1935.....	.16	.34	.50	2.70	1.36	.73	—	.74	6.03	9.48

^a See footnote a, Table I.^b Winter and spring.^c Mainly millets, buckwheat, and dry legumes.

TABLE II.—*Concluded*

Region	Year	Winter wheat	Spring wheat	Total wheat	Winter rye ^a	Oats	Barley ^b	Corn	Other grains ^c	All grains	All crops
<i>Transcaucasia</i>	1934.....	1.93	.52	2.45	.01	.04	1.10	.99	.32	4.91	6.13
	1935.....	2.01	.51	2.52	.03	.04	1.15	.99	.34	5.07	6.31
Azerbaijan	1934.....	1.09	.05	1.14	—	.02	.56	.02	.21	1.95	2.65
	1935.....	1.16	.06	1.22	.00	.02	.62	.02	.21	2.09	2.85
Georgia	1934.....	.61	.15	.76	.00	.01	.25	.97	.06	2.05	2.41
	1935.....	.61	.15	.76	.01	.01	.26	.97	.06	2.07	2.38
Armenia	1934.....	.23	.32	.55	.01	.01	.29	.00	.05	.91	1.07
	1935.....	.24	.30	.54	.02	.01	.27	.00	.07	.91	1.08
<i>Uzbek</i>	1934.....	.60	1.59	2.19	—	—	.58	.04	.33	3.14	6.02
	1935.....	1.02	1.41	2.43	—	—	.72	.04	.26	3.45	6.30
<i>Turkmen</i>	1934.....	.17	.13	.30	—	—	.08	—	.04	.42	.94
	1935.....	.19	.16	.35	—	—	.09	.00	.06	.50	1.01
<i>Tadzhik</i>	1934.....	.17	.59	.76	—	—	.23	.01	.06	1.06	1.47
	1935.....	.23	.60	.83	—	.00	.27	.01	.08	1.19	1.64

^a See footnote a, Table I.^b Winter and spring.^c Mainly millets, buckwheat, and dry legumes.

NOTE: *Grouping of administrative districts.*—The number and the boundaries of administrative subdivisions of the USSR have been changed in recent years. In Table I, we present data for 26 districts, 1928–34; in Table II, for 46 districts, 1934–35. In Table 5, p. 329, data for 5 “major areas” are given covering the whole period 1928–35. The following list shows how data by smaller districts were grouped in order to reach totals for “major areas” closely comparable over the whole period in spite of the changes in number and boundaries of districts. Names (a) in parentheses are of administrative districts specified in the 1928–34 statistics but not in the 1934–35 statistics; (b) in roman type, without parentheses, of districts specified in both sets of statistics; and (c) in italic type, of districts specified in statistics for 1934–35 but not 1928–34.

NORTHERN AND CENTRAL AREA: Northern, Karelian ASSR, Leningrad, Western, Moscow, *Kalinin*, Ivanov, Gorki, *Kirov*, Tartar ASSR, White Russian SSR. EASTERN AREA: (Ural), *Sverdlovsk*, *Cheliabinsk*, Bashkir ASSR, (Middle Volga), *Kuibyshev*, *Orenburg*, (Lower Volga), *Saratov*, *Stalingrad*, Kazak ASSR. SOUTHERN AREA: (Central Blacksoil), *Voronezh*, *Kursk*, North Caucasus, *Azov-Black Sea* (formerly part of North Caucasus), Crimean ASSR, Ukrainian SSR (divided into 8 districts in Table II, 1934–35). SIBERIA AND FAR EAST AREA: *Omsk*, Western Siberia, *Krasnoyarsk*, Eastern Siberia, *Iakutsk* ASSR, Far East. CENTRAL ASIATIC AND TRANSCAUCASIAN AREA: Kara-Kalpak ASSR, Kirghiz ASSR, Uzbek SSR, Turkmen SSR, *Tadzhik* SSR, Transcaucasian SFSR (divided into 3 districts in Table II, 1934–35).

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