

Grain Farming of Sverdlovsk Region in 1946 – 1960s

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Abstract — The paper studies the dynamics of grain production in the Sverdlovsk region and shows the role of the Middle Urals in the grain economy of the USSR and the RSFSR in the post-war years. The authors reveal data on the size of acreage and yield of grain crops, the social structure of grain production during the study period. The study of gross fees used in the agricultural statistics required various methods of processing the time series, including the method of average values and the method of direct counting.

Keywords: *Sverdlovsk region, post-war years, grain crops, gross yield, production dynamics, collective farms*

I. INTRODUCTION

An important sector of the economy of the Sverdlovsk region is agriculture largely focused on the production of livestock products. Crop production of the Sverdlovsk region is mainly represented by cereals and potatoes. According to the data for 2015, the main cereal crops in the region were barley and wheat, which accounted for 16.0% and 15.7% of all crops, respectively. Among cereals, oats were also prominent. The total harvest of barley was 1.5% of Russian production of barley, wheat - 0.4%, oats - 1.9%, rye and triticale - 0.5% each, leguminous crops - 0.4%, buckwheat - 0.1% of the national collection [16]. In the middle of the XX century, cereals had a significant role in the Sverdlovsk region. So in 1940, the share of grain crops in the structure of sown areas was 80.7%, in 1950 - 71.9%, and in 1960 - 51.0% (Table 1).

TABLE I. SOWN AREA OF GRAIN CROPS IN THE SVERDLOVSK REGION (ALL CATEGORIES OF FARMS, THOUSAND HECTARES)

Year	Total crops	including cereal	of them					
			wheat	rye	barley	oats	legumes	buck wheat
1940	1146,1	925,2	332,5	192,8	45,3	301,4	39,2	10,3
1946	962,4	714,4	201,5	105,7	73,7	271,9	45,5	4,9
1950	1152,9	828,5	299,1	178,9	52,6	245,8	36,6	6,1
1955	1271,9	835,0	363,8	125,7	56,6	251,9	23,8	No inf.
1960	1454,0	741,5	263,6	61,1	72,4	300,5	21,6	2,7

Source: [6, p. 218; 15, d. 5295, 1.72; d. 5297, 1.95; d. 5301, 1.74; d.520, 1.74; d.6996, 1.80].

The state of grain farming in the Sverdlovsk region in the 1940s - 1950s attracts the attention of researchers. There are many monographic studies on the agrarian history of the Urals in the post-war years. However, the state of grain production is especially important among other branches of

agriculture [2; 9; 18; 19; 20]. Several published works of small size describe the development of grain farming in general in the Urals [7; 10]. This work studies the dynamics of grain farming in the Sverdlovsk region, shows not only the change in the gross grain harvest but also the influence of various factors on them, determines the average annual growth rate of grain farming, and reveals the social structure of grain production.

II. MATERIALS AND METHODS

The aim of the study is to analyze grain production in the Sverdlovsk region in the 1946-1960s, determine the role of various categories of farms in the grain economy of the region, and identify the contribution of the Urals to the grain balance of the USSR. The analysis of attracted and previously unpublished materials of the Russian State Archive of Economics and documents of the United State Archive of the Sverdlovsk region required various methods of processing time series used in agricultural statistics.

One of the methods for analyzing the dynamics of grain production is to identify the average annual growth rates. The average annual increment is calculated as the quotient of dividing the difference between the gross collection for the first and last year of the period by the number of years of the period.

III. RESULTS AND DISCUSSION

On the eve of World War II, the main grains in the Sverdlovsk Region were wheat and oats. Wheat was cultivated mainly in spring, crops of winter wheat occupied only 2.1 thousand hectares. Barley, winter rye, legumes (mainly peas) and buckwheat were also common crops (Table 1). In 1940, the grain harvest in the region was 10,613.0 thousand centners which amounted to 1.1% of the gross grain harvest in the USSR and 1.9% of its yield in the RSFSR. The main suppliers of grain were collective farms, on the eve of World War II, they accounted for 93.8% of the harvested grain (Table 1).

The war caused enormous damage to agriculture. The population of the Sverdlovsk region has declined significantly, mainly due to the able-bodied villagers. The reduction of the rural population led to an increase in a load of acreage per unit of labour. Extremely negative impact on the state of agriculture was the reduction of machine tractor station, MTS, activity. The policy of expanding acreage in the country during the initial period of the war led to negative consequences for the industry. In the Sverdlovsk region, grain crops increased 864.3 thousand hectares in

1940 to 870.1 thousand hectares in 1942. However, in conditions of a sharp reduction in labour resources and a weakening of the material and technical base of agriculture, it was impossible to remove the seeds. As a result, thousands of hectares remained uncleaned and went under the snow. During the war years, due to the increase in the urban population and the acute shortage of food in the Urals regions, the change in the specialization of agriculture accelerated. It required to take measures for increasing the production of potatoes, vegetables, meat and dairy products. The development of suburban economy, which occurs simultaneously with the reduction of the collective farm sector - the main producer of grain, led to a decrease in grain crops. In 1943, grain crops in the region occupied 700.6 thousand hectares, and in 1944 they decreased to 639.9 thousand hectares. In wartime conditions, the yield of grain crops sharply decreased [8, p. 14]. As a result, by the end of the war, grain harvest in the region was almost halved (Table 2).

TABLE II. GROSS HARVEST OF GRAIN CROPS IN THE SVERDLOVSK REGION IN 1940, 1945 - 1960, THOUSAND CENTNERS

Year	Total	Including			% of the USSR	% of the RSFSR
		Collective farms	State farms	Individual farms		
1940	10613	9952	659	2	1,1	1,9
1945	5784	4913	867	4	1,2	2,3
1946	5215	4471	741	3	1,3	2,5
1947	6180	5416	758	6	0,9	1,7
1948	7655	6842	807	6	1,1	2,2
1949	6507	5967	533	7	0,9	1,7
1950	8613	7705	903	5	1,1	1,8
1951	6009	5783	221	5	0,8	1,3
1952	9254	8477	773	4	1,0	1,7
1953	9209	8456	749	4	1,1	1,9
1954	8832	8057	770	5	1,0	1,6
1955	9382	8614	764	4	0,9	1,6
1956	10214	9439	774	1	0,8	1,4
1957	8067	6709	1357	1	0,6	1,1
1958	6115	4706	1408	1	0,5	0,9
1959	10818	7938	2879	1	0,9	1,6
1960	8940	4507	4432	1	0,7	1,1

Source: [13, p.61; 15, d. 5295, l. 1, 72; d. 5296, l. 1, 63; d. 5297, l. 2,3,95; d. 5298, l. 2,3,98; d. 5299, l. 1,2,60; d. 5300, l. 1,2,74; d. 5301, l. 1,2,74; d. 5302, l.1,2,73; d. 5303, l.1,2,73; d. 5304, l. 1,2,74; d. 5305, l.1,2,73; d. 5520, l.1,2,74; d.5916, l. 1,2,76; d. 6176, l.1,2,60; d. 6440, l. 1,3,73; d. 6437, l. 2,60; d. 6996, l.1,4,70,80].

In the early postwar years, the dire food situation in the Soviet Union required the adoption of urgent measures to increase grain production. In December 1946, the USSR Council of Ministers adopted a Decree "On expanding the sown area and increasing the yield of grain crops, especially spring wheat, in the eastern regions of the USSR" [14, p. 368]. The resolution provided for the expansion of crops on collective and state farms in Kazakhstan, Siberia and the Urals by 8.0 million hectares, including 6.5 million hectares of cereals. Much attention was paid to the restoration of grain production at the February (1947) Plenum of the Central Committee of the CPSU (b). The task was set during

1947-1949 by increasing yields and expanding crops, restore the pre-war level of grain production and significantly surpass it by the end of the five-year plan [4, p.103]. However, in the early postwar years, the growth of production in agriculture was achieved mainly by extensive methods, due to the restoration and expansion of crops. Large tracts of land and the absence of a developed agricultural industry put forward this path of agricultural development as the main one. As a result, during the years of the Fourth Five-Year Plan, grain crops in the Middle Urals increased to 828.5 thousand hectares in 1950, amounting to 89.5% of the level of 1940 (fig. 1).

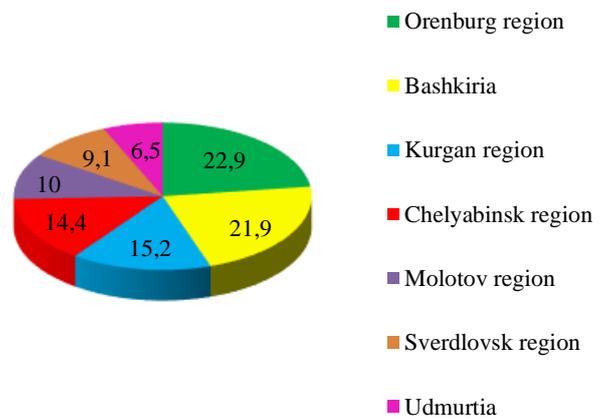


Fig. 1. Gross harvest of grain crops in the republics and regions of the Ural region for 1946-1960 (%)

The most important problem of agriculture of those years was the increase in grain yield. The data Table 2 shows that in 1946 the yield of all grain crops in the Sverdlovsk region was significantly lower than the pre-war level. After the end of the war, they tried to solve the problem of increasing yields by improving the culture of agriculture. Particular attention was paid to the restoration of crop rotations, the expansion of crops of perennial grasses, the introduction of vapours, the introduction of fertilizers, etc. However, the increase in yield, especially on collective farms, was slow. Great damage was caused to agriculture by drought, which in the spring and summer of 1946 captured a significant part of the country, including the Volga region, the North Caucasus, the Center, Ukraine, and the South Urals. Huge areas of grain died. In the non-black-earth regions of the region, there was no such a drought, the grain yield remained at the level of the previous year. If in 1946 in Bashkiria the grain harvest amounted to 4.2 c / ha, in the Kurgan region - 4.3 c, and in the Chkalov (Orenburg) region - 3.3 c, in the Sverdlovsk region - 7.3 c / ha, and in the Molotov (Perm) region, even 8.9 c [12, d. 5297, l. 98-101, 193]. Nevertheless, the famine in the USSR, which also affected many cities and districts of the Urals [3; 5; 11].

Compared to the South Urals, 1947 - 1949 were also more favourable for grain farming in the non-black-earth zone of the Sverdlovsk region. In those years the grain yield ranged from 7.6 to 9.2 c / ha. In Bashkiria, in 1948, the grain yield was 3.8 c / ha, in the Kurgan region - 4.6 c / ha, in the

Chelyabinsk region - 4.7 c / ha, and in the Chkalov region even 2.2 c / ha [15, d. 5299, l. 65-70]. 1950 was also successful for the grain farming of the Middle Urals. The grain yield was 10.4 centners per hectare, thus exceeding the results of 1941 - 1949 (Table 3). However, the pre-war indicators of the state of grain farming by 1950 were not achieved in the Sverdlovsk region.

TABLE III. GRAIN YIELD IN THE SVERDLOVSK REGION (ALL CATEGORIES OF FARMS, C / HA)

Year	All cereals	Including					
		wheat	rye	barley	oats	legumes	buck wheat
1940	11,5	11,0	13,7	10,7	11,6	7,8	5,4
1946	7,3	7,9	5,2	7,0	8,0	5,5	4,9
1950	10,4	10,6	9,4	11,0	11,4	7,3	6,2
1960	12,1	12,2	16,8	11,3	11,3	11,5	4,4

Source: [15, d. 5295, l.72; d. 5297, l. 100; d.5301, l.74; d.520, l.74; d.6996, l.80].

In the early postwar years, the decisive role in the collection of grain, as in the years of the Great Patriotic War, belonged to collective farms. The share of other producers - state farms, subsidiary farms of industrial enterprises, organizations and institutions, individual farms of collective farmers, workers and employees, individual farmers during the fourth five-year plan averaged 11.0% (Table 4). One line in Table 3 presents data on the gross collections of state farms and subsidiary farms of industrial enterprises, organizations and institutions. Analysis of the annual reports of state farms and subsidiary farms indicates that state farms gave most of the grain [1, d.1596, l. 2; d. 2140, l. 2; d. 2630, l. 7; d. 3091, l.15; d. 3653, l. 52]. Thus, for the first post-war years in the Sverdlovsk region, there was a tendency towards the restoration of grain farming. However, it was not possible to reach the pre-war level of grain production by the end of the fourth five-year plan.

TABLE IV. DYNAMICS OF GRAIN PRODUCTION IN THE SVERDLOVSK REGION BY CATEGORIES OF FARMS, THOUSAND CENTNERS

Farm categories	on average per year			
	1940	1946 - 1950	1951 - 1955	1956 - 1960
Collective farms	9952	6080,2	7877,4	6659,8
State farms	659	748,4	655,4	2170,0
Individual farms	2	5,4	4,4	1,0
Total	10613	6834,0	8537,2	8830,8

Footnotes are the same as in the table 2

As a result, in 1951 - 1952 grain harvesting turned out to be significantly lower than it was required for food and seed needs. This put the country on the brink of another famine. To feed the population, the Soviet government was forced to break up grain from emergency state stocks. In this situation, at the September (1953) plenum of the Central Committee of the CPSU adopted a program for raising agriculture and outlined a whole range of measures for raising it. In particular, they increased capital investments in agriculture, introduced new purchase prices for many products, streamlined the taxation system, strengthened

material incentives to work, improved planning etc. As a result, throughout 1953 - 1956 the rural workers of the Middle Urals received fairly stable grain yields, in 1956 coming close to the pre-war level.

In the second half of the 1950s, the country's agriculture faced serious difficulties. They were the result of a reduction in capital investments in the Russian Non-Black Earth Region, caused by the huge use of resources for the development of virgin lands, the reorganization of the MTS, as a result of which the collective farms achieved earlier levels of operation and maintenance of equipment and the collective farms were converted into state farms. Translating part of the collective farms into state farms, the country's leadership proceeded from the thesis on the temporary character of the collective-farm property, which gradually had to become state-wide property. At the same time, it was not taken into account that many artels achieved a high yield of grain crops due to an increase in the culture of agriculture and planting with benign seeds. So on the collective farm "Path to Communism" of the Talitsky district of the Sverdlovsk region, an average of five years (1953-1957) in an area of 2.5 thousand hectares, the grain yield was 15.3 centners per hectare. In the same years, an average of 15.1 centners per hectare was harvested on the area of 1,830 hectares on the collective farm "Krasnaya Zvezda" of the Baikalovsky District [17, p. 255]. In the Urals, the mass transfer of collective farms to state farms began in 1957, and for four years the following years, 120 state farms were organized on the basis of 967 collective farms. In the Sverdlovsk region, the number of Soviet farms in the region increased from 27 in 1956 to 76 in 1960 [15, d.6037, l. 19; d. 7168, l.15].

Many of those established in the Soviet area specialized in the production of grain crops. As a result, the gross grain harvest by state farms and other state farms increased from 774.0 thousand centners in 1956 to 4432.0 thousand centners in 1960, i.e., 5.7 times (Table 3). At the same time, the number of collective farms decreased from 828 in 1950 to 206 in 1960 [13, p.67]. However, the elimination of many economically strong artels did not bring the expected results. Comparative analysis of data from the consolidated annual reports of collective and state farms of the Sverdlovsk region for 1957-1960 shows that the yield in grain on collective farms was higher, despite the better availability of equipment to state farms. So in 1957, the grain yield on the collective farms of the Sverdlovsk region was 10 centners per hectare, and on state farms, it was 9.3 centners per hectare. In 1959 - 15.3 and 14.7 c / ha, and in 1960 - 12.1 and 11.5 c / ha, respectively [15, d. 6176, l. 60; d. 6437, l. 60; d. 6996, l. 80].

In these years, the tillage system was also widely introduced throughout the years, which led to ploughing up meadows and pastures and eliminating vapours. The structure of crops underwent negative changes, and in many areas, without taking into account regional peculiarities, corn was spread indiscriminately. The idea put forward by N. S. Khrushchev in May 1957 to overtake the United States for the production of livestock products per capita marked the beginning of a voluntaristic "big leap" policy in the field of agriculture. Corn fever, which also affected the Sverdlovsk region, became a characteristic feature of the development of USSR agriculture in the late 1950s. The first

corn crops in the Sverdlovsk region appeared on the fields of the collective farm “Sverdlov” of Aramil region in 1954, and the following year its crops occupied 54.3 thousand hectares. In 1956, maize was sown on 97.1 thousand hectares, and in 1960 its crops occupied 161.3 thousand hectares, making up 11.1% of the sown area in the region [12, p. 49; 13, p. 68]. Corn in the Urals began to grow even in those places where it gave low yields of green mass, for example in the Verkhotursky district of the Sverdlovsk region. A major step in the reform of the collective farm system was the reorganization of machine and tractor stations. During 1958, the MTS in the USSR were liquidated, and their equipment was transferred to the collective farms, which negatively affected the state of collective farm production, since about half of the mechanization personnel was lost, and the artels themselves were not ready to receive complex agricultural equipment.

It should be noted that the yields of grain crops were subject to strong fluctuations, being constantly dependent on weather conditions. So if in 1958 the gross harvest of grain in the Sverdlovsk region amounted to 6.1 million centners, then in the next 1959 – 10.8 million, i.e., 1.8 times more (Table 3). Therefore, to study the patterns of gross fees in agricultural statistics, the authors used various methods of processing time series. In particular, the method of averages was widely used. The data of Table 4 allows us to calculate that in the Sverdlovsk region the average annual grain harvest in the years of the fourth five-year period was 6.8 million centners. In the years of the fifth five-year plan, the average annual grain harvest was 8.5 million centners, and in the years of the sixth five-year plan, it was 8.8 million centners. Thus, the analysis of the dynamics of the five-year cycles shows the growth of grain production throughout the study period. However, in the second half of the 1950s, this growth rate noticeably decreased (fig.2, 3).

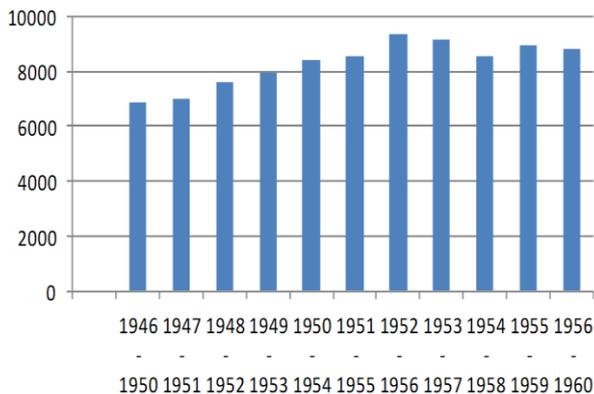


Fig. 2. Average moving gross grain harvest in the Sverdlovsk region in 1946-1960, th./c in five-year periods

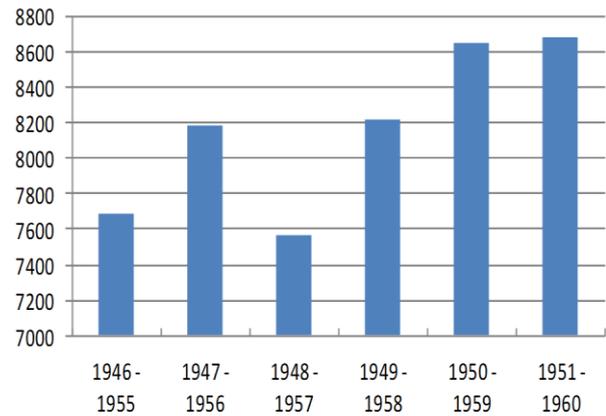


Fig. 3. Average moving gross grain harvest in the Sverdlovsk region in 1946-1960, th./c in ten-year periods

One of the methods for analyzing the dynamics of grain production is to identify the average annual growth rates. The average annual increment is calculated as the quotient of dividing the difference between the gross collection for the first and last year of the period by the number of years of the period. Produced according to the Table 3 calculations show that in this case, the absolute average annual increase in the collection of grain for 1946-1960 will be equal to 248.3 thousand centners.

It is important to note not only the change in the total gross grain harvest but also the influence on it of various factors. The influence of these factors (acreage and yield) on the change in gross yield can be determined by decomposing the absolute increase in the factors. Such decomposition is performed by direct counting. The change in acreage is a quantitative factor. The change in gross yield due to this factor is determined by multiplying the increase (decrease) in crops for the compared periods by the level of the base year according to the formula $(S1-S0) \cdot Y0$. The change in gross yield due to the change in yield (also a quantitative factor) is determined by multiplying the change in yield on the size of the sown area of the reporting year according to the formula $(Y1-Y0) \cdot S1$.

As noted earlier, in 1946, in the Sverdlovsk region, 715.4 thousand hectares of sowing harvested 5,215.0 thousand centners of grain with an average yield of 7.3 centners/ha, and in 1960, these figures were respectively 741.5 thousand ha, 8490.0 thousand c and 12.1 c / ha (tables 1, 2, 3). Calculations made according to tables 1–3 show that in the postwar years, the increase in grain harvest due to changes in the size of crops was: $(741.5 - 714.4) \cdot 7.3 = 197.8$ thousand centners. Due to the increase in yield, the increase in production was: $(12.1 - 7.3) \cdot 741.5 = 3559.2$ thousand centners. The influence of these factors can be expressed in relative terms. Calculations show that in the Sverdlovsk region in the postwar years, intensive factors played a dominant role in the increase in grain production. At their expense, there was a 94.7% increase in the gross collection of grain crops.

An important issue is the social structure of grain production. The dynamics of changes in the share of various

categories of farms are shown in Table 4. From its data, it follows that in the first post-war decade, the main supplier of grain in the Sverdlovsk region, as well as throughout the country as a whole, were collective farms. In the second half of the 1950s, the massive transformation of collective farms into state farms led to multiple increases in grain production on the fields of state farms. According to 1960 data, with gross grain harvest of 8,940.0 thousand centners, collective farms accounted for 4,507.0 thousand centners (50.4%), while state farms collected 4,432.0 thousand centners (49.6%). As for the individual households of the population, their role in the grain production during the post-war years was insignificant, amounting to one-hundredth of a percent in the second half of the 1950s (Table 3).

The reorganization of agricultural production forms carried out in the USSR, as well as significant fluctuations in yields, make it difficult to identify the basic patterns of their collection. Therefore, a more reliable result gives the application of the moving average method. When using this method, the most severe fluctuations due to weather conditions are excluded. In this case, the actual data of each year are replaced by averages calculated from several actual neighbouring levels, with the calculation of the calculated level to the middle of the period. The periods for the entire dynamic series should be the same, gradually shifting one period down from the initial series. When using the moving average method, the actual data for several years is levelled by the influence of the characteristics of each year, resulting in a general trend. The accuracy of the average results obtained depends on the length of the oscillation period (Table 5).

TABLE V. AVERAGE MOVING GROSS GRAIN HARVEST IN THE SVERDLOVSK REGION IN 1946-1960, THOUSAND CENTNERS

Five year periods		Ten year periods	
Years	Average gross yield	Years	Average gross yield
1946 - 1950	6834,0	1946 - 1955	7685,6
1947 - 1951	6992,8	1947 - 1956	8185,5
1948 - 1952	7607,6	1948 - 1957	7567,5
1949 - 1953	7918,4	1949 - 1958	8220,2
1950 - 1954	8383,4	1950 - 1959	8651,3
1951 - 1955	8537,2	1951 - 1960	8684,0
1952 - 1956	9378,2		
1953 - 1957	9140,8		
1954 - 1958	8522,0		
1955 - 1959	8919,2		
1956 - 1960	8832,8		

Footnotes are the same as in the table No 2.

The analysis shows that the average moving five-year period clearly shows a tendency to increase gross grain harvest in the Sverdlovsk region in the postwar decade. In the second half of the 1950s, this trend is broken.

However, the moving average for decades demonstrates the tendency to increase the gross grain harvest, although with varying degrees of intensity, manifests itself throughout most of the study period.

An analysis of the dynamics of the gross harvest of grain crops in the Urals region shows that the bulk of the grain – over $\frac{3}{4}$ – was grown in the Southern Urals. For the years 1946-1960 most of the grain - 304.7 million c., was

removed in the Chkalovsk (Orenburg) region. This accounted for 22.9% of the gross grain harvest in the region. Further, the size of the gross grain harvest followed Bashkiria -21.9%, Kurgan -15.2%, Chelyabinsk—14.4%, Molotov (Perm) — 10.0%, Sverdlovsk — 9.1% of the region and Udmurtia — 6.5% [footnotes are the same as in the Table 3].

IV. CONCLUSION

Analysis of the revealed materials indicates that in the postwar years, the absolute average annual increase in grain harvest in the Sverdlovsk Region was 248.3 thousand centners. The study of the dynamics of grain production shows that the tendency to increase the gross grain harvest, although with varying degrees of intensity, has been steadily manifesting itself over the entire period studied. At the same time, intensive factors in the growth of grain production were dominant. By the end of the 1950s oats became the main cultivated cereal in the Middle Urals, spring wheat followed with a solid lag. These two cultures accounted for $\frac{3}{4}$ of all grain crops. Winter rye, spring barley, corn, and legumes played an important role in the grain industry of the Middle Urals. On a small scale, there were crops of buckwheat. In the postwar years until 1956, the bulk of the grain was grown by collective farms. However, the transformation of part of the agricultural cooperatives into state farms led to multiple increases in grain crops in the fields of state farms. In 1960, the magnitude of the gross yield of grain in the co-operative and public sectors are almost equal.

In general, in the postwar years, the Sverdlovsk region was an important breadbasket of the country, the harvest in its fields amounted to 0.9% of the all-Union grain harvest (Table 3). However, in the second half of the 1950s, the Soviet village has become a testing ground for all sorts of reorganizations and transformations. This affected the results of agricultural development both in the whole country and in the Sverdlovsk region. If in the years of the fifth five-year plan the average annual gross grain harvest amounted to 8,537.2 thousand centners, then in the years of the sixth five-year plan it was 8,830.8 thousand centners, i.e. it increased by only 3.4% (Table 4). Of course, an important role in reducing the growth rate of grain production was played by the expansion of the suburban economy in the war and postwar years, the rapid increase in the sowing of potatoes and vegetables. The analysis of statistical materials shows that in 1952, 1953, 1955s the gross grain harvest in the Sverdlovsk region was even higher than in the subsequent years 1957, 1958 and 1960 (Table 3). As a result, in the early 1960s in the country, there was an acute shortage of food products, and in 1962-1963s, the majority of cities and towns of USSR introduced the rationing system.

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