



Organizational and Economic Mechanism of Improving the Efficiency of Grain Production at the Regional Level

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(Received 05 May 2019, Revised 16 July 2019 Accepted 25 July 2019)

(Published by Research Trend, Website: www.researchtrend.net)

ABSTRACT: The relevance of the article's subject is dictated by the need to improve the efficiency of agricultural production in the conditions of new challenges of the external economic environment. The purpose of the article is to develop some recommendations for improvement of organizational and economic mechanism of raising the efficiency of grain production, based on the analysis of current situation, and identification of trends of agricultural development in the regions of Russia. The subject of the research is a system of organizational and economic relations, forming in the process of production and sale of grain, in modern socio-economic conditions. The novelty of the research consists in the identification of trends of grain industry development at the regional level, and in the justification of necessary organizational, economic and technological measures for the improvement of economic efficiency of grain production. The main results of the analysis of the development level of grain production were given in the work; the priority directions for the improvement of grain production efficiency were determined; the system of organizational and economic measures for ensuring the sustainable development of this industry was developed. Theoretical propositions, given in the article, can be applied in the process of scientific research on the problems of increasing the efficiency of agriculture. The practical significance of the research results lies in the possibility of their using in the process of development of agricultural policy, organizational and economic measures for improvement of the efficiency of grain production in the agrarian business entities.

Keywords: Agriculture; Grain Production; Market; Food; Technology; Efficiency.

I. INTRODUCTION

Effective development of agricultural sectors is a primary task for the state economy. Ensuring of food independence and fulfillment of the tasks, set by the Food Security Doctrine of the Russian Federation, largely depend on the level of development of the grain industry, which is fundamental not only for agriculture, but also for the whole agro-industrial complex. The solution of the problem of the most complete satisfaction of population's demand for products depends on the level of development of this industry. In Russia, it is necessary to produce at least 95-100 million tons of grain per year, with the purpose to create export potential, to form the country's food facility, to meet the demand of agricultural organizations and households for feed grain [1].

The priority direction for bringing the grain industry to the forefront with regard to the potentially export-oriented industry is the effective management of the production technology, storage and processing of grain, improvement of organizational and economic conditions, as well as practical implementation of innovative and investment projects. In this context, the identification of trends, key priorities of development, and organizational-economic aspects for improving the efficiency of the grain industry is of great economic importance. It is one of the most urgent and threshold issues.

II. METHODS

The theoretical and methodological framework of the research is based on the use of fundamental principles and the concept of economic theory, such as classical,

neoclassical, Keynesian and institutional. The theoretical and methodological basis was also formed by the works of foreign and domestic agricultural economists on the topic under study; the regulatory and legislative acts of the Russian Federation, concerning the agri-food policy; government programs for the management of the agro-industrial complex of the Russian Federation, developed by the authorities and adopted for implementation; the materials of international and all-Russian scientific practical conferences, devoted to the development of agriculture. System analysis forms the general methodological basis of the research. Numerous materials and diversity of their content necessitated the use of various approaches, methods and techniques of scientific research within system analysis. Thus, constructive, deterministic, retrospective, dynamic, statistical methods are used in the work. The methods of showing the development trends of the agriculture, such as monographic, abstract logical, design-constructive, economic and statistical, the method of analogies were used in the course of the study.

The official data of the Federal State Statistics Service of the Russian Federation, the Ministry of Agriculture of the Russian Federation, the Ministry of Agriculture and Food of the Republic of Tatarstan, planning and reporting documents of agricultural organizations, the materials, contained in monographs, dissertations, reports of scientific research institutes, publications, the materials of scientific conferences, expert estimates, the data obtained in the course of the author's analysis and calculations were used in the work.

III. RESULTS AND DISCUSSION

The analysis of the current state of organizational and economic mechanism of influence on the stabilization and sustainable development of agricultural sectors is a complex scientific problem. Publications of many representatives of theoretical directions of economics were devoted to the solving of this problem. Scientific research results of theoretical foundations of agricultural sectors development are highlighted in the works of the leading Russian economists: A.I. Altukhov, A.G. Belozertsev, V.R. Boev, N.I. Buzdalov, G.A. Baklazhenko, A.V. Gladilin, T.I. Gulyaeva, E.I. Krylatykh, V.V. Kuznetsov, I. G. Ushachev, I.F. Khitskov, A. A. Shutkov and others. They made a significant contribution to the development of scientific-theoretical and practical issues of improving the efficiency of the grain industry, at different stages of agricultural development in the country and its regions. At the same time, it should be noted, that in theoretical and practical researches, the organizational and economic mechanisms of creating conditions for the efficient production of agricultural products are not fully covered from theoretical and practical points of view. Therefore, this problem should be evaluated and studied from a new perspective, taking into account the need for import substitution of food products with domestic agricultural products and products of their processing. In this regard, the scientific novelty of the research is, firstly, the identification of trends in the development of particular branches of agriculture, emerging in the conditions of limited funds in organizations of the agrarian sector and the shortage of investment resources. Secondly, it is the justification of the necessary measures, aimed at the improvement of the elements of organizational and economic mechanism, for raising the efficiency of the grain industry in the Russian Federation and in the regions.

The increase in grain exports is one of the strategic directions for the development of the agro-industrial complex of Russia, which requires the creation of conditions for improving the competitiveness of domestic producers. In the context of globalization, the competitiveness of grain production largely depends on the effectiveness of state economic policy, based on the development and implementation of competitive trade-economic, fiscal, monetary, investment, scientific, technical and educational policies [2].

To meet the demand of the food market, and to provide bakery products for the population in the amount of 300-350 kg per person, it is common to use the aggregated standard at the rate of one ton of grain per person. Significant part of grain is used for fodder purposes, for the production of cattle, poultry, pigs and milk. The rest of grain, with the exception of certain grain resources of state and municipal needs, forms the export potential [3]. The grain market in the region should be formed taking into account the situation, competition and development of market infrastructure. Unfortunately, the market conjuncture is influenced by many factors, and the ratio of prices for material resources and the selling price of grain can change significantly (Fig. 1).

As can be seen from Fig. 1, the prices for oil and mineral fertilizers exceed the prices for the 3rd grade wheat by 2.9 and 6.7 times; and in high-yielding years (in 2017), the price of grain in the country fell by almost 2 times. This adversely affected the financial situation of grain producers.

In the Republic of Tatarstan, the production of grain is determined as the main direction in the plant industry for the period of 2013 to 2020. The stable growth of this branch is predicted in the near future [5]. Table 1 presents the estimated figures for the production of the main crops species.

As it is seen from Table 1, the planned indicators of grain production in the Republic were mainly realized only by 65-89%, with the exception of 2017, when gross production in initial weight amounted to 5252 thousand tons or 111.7% of the plan. In 2018, agricultural producers harvested 3.9 million tons of grain, compared to 5.2 million tons in 2017. The decrease in the total grain harvest in 2018 was the result of a drought, which was observed in certain areas of grain cultivation in the Republic of Tatarstan. At the same time, the grain, harvested in 2018, was of very high quality (it had moisture content of 12-14%, comparing to the standard - 13.5%), so the standard weight was much higher than expected. In this connection, the price of grain on the agricultural market is quite high this year.

The government of the Russian Federation has set the task of ensuring the export potential of the agro-industrial complex by 2024 to \$ 45 billion [7]. The main export product of agriculture is grain, so it is necessary to improve the competitiveness of products of this industry, and to create the conditions for the increase in production volumes, development of various distribution channels, based on the formation of an effective system of wholesale and retail trade, implementation of intervention policies in the domestic grain market [8]. The volume of grain production for the longer period of trend in the Republic of Tatarstan has a tendency to decrease by 2.3% (Table 2).

The main reason is a decrease in the cultivated areas of grain and leguminous crops by 9.2%, with an increase in the average yield in the mass after revision - 8.1%. There was a decrease in sown areas by 14.4% in agricultural organizations. Peasant (farmer) households, on the contrary, increased the areas under crops by 27.9%. The reason for the decline in production and sales of grain products may be a decrease in the efficiency of the industry due to the rising costs of grain production. The competitiveness of grain products is determined by the individual costs of its production, quality, as well as the existing level of demand in the market [9]. The latter is expressed by the level of market price and determines the efficiency of grain production. The data, presented in Table 3 for 2013-2017 for the Republic of Tatarstan, shows that the cost of 1 centner of grain in recent years has decreased by 27.80 rubles, i.e. by 4.7%.

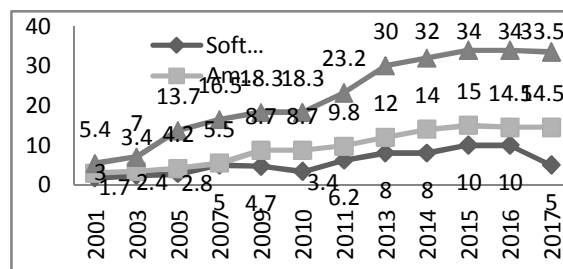


Fig. 1. Dynamics of prices for crop and industrial products (according to the Ministry of Agriculture and Food of the Republic of Tatarstan).

Table 1: Forecast indicators in crop production and their implementation in the Republic of Tatarstan (according to the Ministry of Agriculture and Food of the Republic of Tatarstan), thousand tons.

Indicator, name	Years							
	2013	2014	2015	2016	2017	2018	2019	2020
Production of cereals and legumes: - plan	4300	4400	4500	4600	4700	4800	5000	5200
-fact	2803	3366	3368	4105	5252	3914	-	-
Implementation of the plan, %	65.2	76.5	74.8	89.2	111.7	81.2	-	-

Table 2: Production of grain and leguminous crops in the Republic of Tatarstan (for all categories of farms).

Indicators	2011	2012	2013	2014	2015	2016	2017	2017 in% by 2011
Sown area, thousand ha including agricultural organizations	1652.9	1554.9	1613.4	1572.3	1595.1	1587.4	1517.6	91.8
-peasant (farmer) households ¹	244.1	237.2	264.6	283.9	294.7	301.8	312.2	127.9
Productivity, c per 1 ha	29.6	22.5	21.4	21.6	21.2	25.3	32.0	108.1
Gross collection (in bulk after revision) thousand tons	4867.7	2990.5	2611.5	3366.0	3367.7	4105.2	4856.6	99.7
Sales, thousand tons	2123.5	1847.9	1427.3	1723.8	1662.5	1886.9	2035.0	95.8

¹Including sole proprietorships

Table 3: Cost dynamics for 1 center of grain and leguminous crops (according to the annual report of agricultural producers of the Republic of Tatarstan).

Expenditures	2013		2016		2017		Deviation, 2017 by 2013 .	
	Amount, rub.	Structure, %	Amount, rub.	Structure, %	Amount, rub.	Structure, %	Amount, rub.+/-	Same %
Wages with deductions for social needs	88.6	15.2	88.6	13.7	75.6	13.6	-13.0	-14.5
Seeds and planting material	101.0	17.4	103.5	16.1	86.3	15.5	-14.7	-14.5
Mineral and organic fertilizers	101.2	17.4	88.8	13.8	87.8	15.8	-13.4	-13.2
Chemical plant protection products	31.2	5.4	53.3	8.3	43.3	7.8	+12.1	+38.7
Electric power	9.5	1.6	8.5	1.3	8.3	1.4	-1.2	-12.6
Oil products	68.5	11.7	60.5	9.4	60.9	10.9	-7.6	-11.0
The content of fixed assets	83.3	14.3	92.2	14.3	73.6	13.2	-9.7	-11.6
Other funds	98.4	16.9	148.3	23.0	116.5	21.0	+18.1	+18.3
Total	581.7	100	643.7	100	553.9	100	-27.8	-4.7
Total cost per 1 hectare of harvested area, rub.	12456	-	16286	-	17559	-	+5103	+40.9
Productivity, c per 1 ha	21.4	-	25.3	-	31.7	-	+10.3	+48.1

Table 4: Efficiency of grain production by agricultural organizations of the Republic of Tatarstan.

Indicators	Years					Deviation, 2017 by 2013 (+, -)%
	2013	2014	2015	2016	2017	
Grain in weight after rework, thous. tons	2611.5	3366.0	3367.7	4105.2	4856.6	85.9
Productivity, c per 1 ha	21.4	21.6	21.2	25.3	32.0	49.5
Produced on 100 hectares arable land, c.	801	1035	1037	1265	1499	87.1
Implemented, thousand tons	1388.3	1549.4	1662.5	1886.9	2035.0	46.7
The level of marketability,%	53.2	46.0	49.3	45.9	41.9	-11.3 percentage point
Cash proceeds from sales, mln. rub	9157.0	9962.6	13083.8	15020.3	12754.4	39.2
Amount of profit, mln. rub	1291.4	883.2	1662.5	2205.5	1019.0	-21.1
Selling price, rub. for 1 c	659	686	787	796	627	-4.9
The cost of 1 c., rub	566	643	687	679	577	1.9
Sales profitability,%	14.10	8.87	12.71	14.70	7.97	-6.1 percentage point
Profitability,%	16.4	9.9	14.6	17.2	8.7	-7.7 percentage point

From the data of Table 3 it can be seen that most of the cost items reduced, except for the costs of chemical plant protection products and others, which, on the contrary, increased by 38.7 and 18.3%, respectively. The costs per 1 hectare of harvested area increased by 5,103 rubles (40.9%), and the yield increased by 10.3 c/ha or 48.1%,

that affected the efficiency of production and sale of grain in general (Table 4).

The data show that, in general, the grain manufacturers reduced their costs of production, and achieved an increase in the yield of grain crops. Compared with the increase in costs per 1 hectare, the outperforming growth

rates of yield provided the decrease in the product unit cost. However, the outstripping rates of decline in the price of sold products, as compared to the rates of cost reduction, did not allow to increase the efficiency and profitability of sales. By 2017, the level of sales was lower by 7.7 pp and 6.1 pp and almost doubled, compared to 2011. The current situation on the grain market did not play a stimulating role for grain producers [10].

Government agencies are concerned about the situation in the grain industry, and try to provide various types of state support. Nevertheless, the problem of selling grain on favorable terms for producers is still far from being resolved. Therefore, it is necessary to intensify the implementation of the main elements of organizational and economic mechanism for increasing the efficiency of grain industry.

In the conditions of the Republic of Tatarstan, the market price primarily affects the marketability of grain. The formation of the level of market price is often greatly influenced by the monopoly of the grain-receiving and grain-processing enterprises, which, depending on the volume of production, occupy a waiting position on the market and offer obviously low prices. As practice shows, the selling price on the market is formed at a more or less acceptable level for producers, if the grain yield is lower than 20-21 c from 1 ha. In this case, the marketability of grain can be increased to the level of 50% of the volume of production. In other cases, a significant part of grain is better to use for domestic needs, or as feed for livestock, and for the formation of seed stock. The analysis of the state of grain market shows that the increase in sales volumes not always leads to the increase in profit.

So, in the least productive year (21.0 centners per 1 hectare in 2015), the profit from the sale of grain in the republic was 1.6 times higher, than in the most productive year (32.0 centners per 1 hectare in 2017).

In the conditions of high costs of mineral fertilizers, plant protection products, rising prices for fuels and lubricants, agricultural producers are forced to limit themselves in modernization of the main means of production, and to master the resource-saving technologies, using geographic information systems (GIS). These technologies allow to determine and to select the intensity of technological operations in the process of performing of field works, to increase or decrease the rates of fertilizer application, sowing of seeds, etc. [10, 11]. All this makes it possible to move on to the technology of precision farming and digitalization of agricultural production, aimed at reducing costs and increasing yields. In this regard, the support of government should be directed to further measures for the technical re-equipment of the industry, and to the intervention of grain products, in order to prevent sudden price increases in the market. And this shows the existing reserves for improving the efficiency of grain production, which are rooted in technology, machine systems, production and labor, etc.

IV. SUMMARY

Based on the analysis of indicators of development level of the grain industry in Russia and in the Republic of Tatarstan, as well as the research of market conditions, production volumes and sales of grain products, the efficiency of production, we can draw the following

conclusions. 1. The level of grain production in the Republic of Tatarstan over the past 5 years has increased by 38%. The volume of grain production per 100 hectares of arable land amounted to 1265 c. A significant part of the grain is produced by agricultural organizations – 81.5% of the total volume, and the rest – by the farms. 2. In agricultural organizations and farms, there is a tendency of reduction in marketability level, which amounted to 52.8% in 2017. About 40% of the produced grain is sold by peasant (farmer) holdings. 3. There is a direct dependence between the amount of mineral fertilizers per 1 hectare of arable land and the yield of grain crops.

The increase in prices for mineral fertilizers and the cost of work on the application of organic fertilizers lead to the decrease in yield, as well as to the deterioration in soil fertility indicators. 4.

In general, the production of grain and its sales is profitable for the farms of the Republic of Tatarstan (the level of profitability is 8.7%). It should be noted that in the most yielding year (in 2017) the average selling price of grain was lower, than in the previous year. As a result, there was a decline in the level of profitability. All this happened against the background of a decrease in the cost of grain production. This trend confirms the need for state regulation of market prices for grain products, and the implementation of state intervention to grain industry, in order to prevent a sharp fall in prices for grain products.

V. CONCLUSIONS

The main directions for improvement of the grain subcomplex of the Republic of Tatarstan are the following: 1. Improvement of the structure of grain production due to the increase in the share of cash grain crops, through the extension of arable lands, reduction of the share of fodder grain in gross yield, activation of grain legumes cultivation. 2. Application of cluster approach to the development of regional grain markets, in order to improve the chain “grain producer - grain elevator - processor - seller”; to ensure sustainable grain production by expanding the accessibility and the use of material, labor, financial and information resources; to reduce the risks of environmental uncertainty; to meet the demand of population in agricultural products and food. 3. Cultivation and implementation into production on an ongoing basis of resistant varieties of crops, which will ensure the optimal use of climatic factors in the process of their cultivation. 4. Introduction of resource-saving technologies for the production of grain, and the implementation of projects for its deep processing, allowing to attract investments from both the state and private investors, based on the possibility of obtaining a synergistic effect from the production and processing of grain, placing elevator capacities, creation of closed cycle enterprises, integrating all stages of final yield production.

The implementation of the developed provisions can significantly increase the effectiveness of the main organizational and economic measures for improvement of the efficiency of agricultural sectors. It can provide positive solution to the economic and social problems of the agro-industrial complex.

ACKNOWLEDGEMENTS

The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

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