European Research Studies Journal
Volume XXI, Special Issue 3, 2018

pp. 28-38

Organizational and Economic Transformations towards the Greening of Agro-industrial Production

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Abstract:

The increase in the production of agricultural products and food supplies in excess of regulatory needs and the provision of food safety in Russia led to the expansion of the export of agricultural products and the change in the course of the development of the agro-industrial complex from import substitution to export-oriented production.

However, the entry to world food markets requires high quality of products from manufacturers and its certification in accordance with world standards.

The article presents the organizational and economic transformations towards the greening of agro-industrial production, namely, the use of the resource potential, the involvement of Russian manufacturers in the production of environmentally friendly products and the development of organic agriculture; the mechanisms for solving the set problems are substantiated.

Keywords*: Economics, management, food safety, efficiency, agro-industrial complex, ecology, food export.*

JEL Classification*: O13, Q1, Q18, R11, R58.*

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1. Introduction

The food market in modern conditions shows a clear priority towards the development of the sector of organic products. The development of the organic market is due to many reasons. It is the uncertainty of possible consequences and distrust of genetically modified products; the perceived danger of products of mass production for human health; the comprehensive information campaign aimed at promoting ecologically friendly products, public preferences for a healthy lifestyle, including nutrition with organic products and others (Avarsky *et al.,* 2014; Sycheva *et al.,* 2015; Voronkova *et al.,* 2018a; Poltarykhin *et al.,* 2018; Yemelyanov, et al., 2018; Akhmetshin *et al.,* 2018c).

Organic production has been practiced in more than 160 countries of the world and on more than 37 million hectares of agricultural land. In Russia, 150 thousand hectares of agricultural land have been certified for organic production (Sycheva *et al.,* 2015; Voronkova *et al.,* 2018b). The resources of the regions of agro-industrial specialization allow expanding the production of organic products. At the same time, there are unresolved problems; the development of organizational and economic mechanisms for solving them is required.

2. Methods

The study is based on the works by domestic and foreign scientists on the economic regulation of processes of the greening of agro-industrial production, problems of organizational and economic transformations in the regional sector of the AIC. The methodological basis is the systematic approach, which allowed ensuring the integrity and purposefulness of the study. Analytical, economic and statistical, as well as monographic research methods, were applied in this work.

The study of the experience of agricultural production shows that the development of agriculture in the countries of the world community is more focused on organic production of environmentally friendly products that are safe for human health, which ensures increased quality and longevity of the population. Scientists and practitioners work on the issues of organic agriculture. Discussions continue, starting with the terminology used in the research and practice of organic agriculture, the resource potential and technologies of ecological farming (Altukhov and Kundius, 2009; Poznyak and Romanovsky, 2009).

3. Results

In general, organic agriculture includes social responsibility, ensures environmental safety and economic efficiency. It is a biological and dynamic method of management, the main idea of which is to execute agricultural production in accordance with the laws of nature. Due to the understanding of the environmental conditions prevailing in the modern world, over the past two decades, there has been

an increasing interest in environmental issues of farming, contributing to the natural restoration of soil fertility and maintaining an equilibrium natural ecosystem. The number of farms in the USA, China, India, Japan, and the European Union countries, executing agricultural production based on environmental principles, is increasing. This technology of agricultural production is a serious alternative to the established traditional (industrial) farming (Krilatih, 2008).

Today, the degree of efficiency of agricultural production largely depends on the level of its balance, as well as the applied organizational and economic methods of farming. The public consciousness has reached a certain level of its development, when the measure of agricultural production is not only the growth in the volume of manufactured products but also the degree of preservation of natural resources, which is determined by constantly increasing technogenic pressures on environmental objects – soil cover, bioorganisms, atmosphere, and water resources, which leads to an imbalance of the fragile natural balance (Dautov *et al*., 2018; Zhundibayeva *et al.*, 2013).

The resulting dilemma of the further development of agricultural production and the preservation of the natural environment as the basis of the vital activity of future generations has determined the search for alternatives for the development of the agricultural sector. Thus, for about three decades, leading foreign agricultural scientists and practitioners in the sphere of solving territorial environmental issues and improving food quality, have gradually introduced organic methods of agricultural production, turning this trend into a strategically important and significant sector of the economy (Lysenko, 2008; Miloserdov, 2012).

Organic agricultural production dynamically develops in the USA, Canada, European Union countries, Australia, China, and Japan. According to the report of the International Federation of the Organic Agriculture Movements (IFOAM), agricultural manufacturers in more than 130 countries around the world, in parallel with the industrial system of agricultural production, are introducing methods of organic production of agricultural products. Asian countries occupy the third position in the ranking of countries, engaged in organic agricultural production in terms of the area of land, which is allocated for organically oriented methods of management. The main consumer of eco-products today is the European Union, where Germany accounts for the main sales volume (Plotnikov *et al.*, 2018a; 2018b). The physiological full-value and ecological safety of organic products is the most important criterion for consumers, who are willing to pay a higher price for it (Zhuchenko, 2012; Smoluk-Sikorska and Luczka-Bakula, 2013).

Based on the conducted analysis, it becomes obvious that the current situation in the agricultural sector does not imply quick and large-scale rehabilitation of the AIC. As a result, it is required at the state level to define clear strategic and tactical goals (Korableva *et al.*, 2017) for the systematic development of environmentally oriented agriculture, substantiate specific ways to achieve these targets, clearly define

government support measures and designate the sequence of stages for reforming the land relations system towards the organic development.

The main condition for the effective functioning of the proposed system is the development of methods of transition to environmentally oriented agricultural production, both in large agricultural organizations and in small organizational and legal forms of management. It is advisable to conduct the formation of the organic sector of land use in several successive interrelated stages that will ensure the effective functioning of organic agricultural production in the future (Nedelkin *et al.,* 2016; Abramov, 2016; Akhmetshin *et al.,* 2017a). The formation of an organic farming system does not mean abandoning industrial agricultural production. In the authors' opinion, both organic and industrial farming systems can function effectively in parallel with each other, gradually transforming into an agricultural technology that can meet the current and assumed needs of the population for high-quality and environmentally safe food products.

The transition to environmentally oriented agricultural production should meet the goals and development strategy of each agricultural manufacturer. Given the incompatibility in size and diversity of the organizational and legal forms of agricultural enterprises, it is proposed to distinguish measures for the transition to organically oriented land use based on the production sizes of agricultural manufacturers. The essence of the proposal is that, based on the existing soil and fertile, natural and climatic, organizational and economic, social and environmental conditions and needs of the market, it is necessary to create optimal conditions for increasing the economic efficiency of agricultural production.

Agricultural manufacturers, applying the principles of organic agriculture and wishing to enter the domestic and world markets with their products, need to be certified. However, many agribusinesses, particularly in developing countries, execute natural organic farming due to the lack of financial resources for the purchase of synthetic fertilizers of plant protection (Yemelyanov *et al.,* 2018a), as well as the lack of access to modern intensive technologies without having certification of their manufactured products.

Most scientists believe that not only Russia but also many other countries are characterized by the absence of an agreed concept of an environmentally friendly or organic product, respectively, organic or ecological agriculture. One of the generalized definitions characterizing a product manufactured in accordance with organic (ecological) agricultural technologies means that these products are grown without the use of chemical plant protection products, synthetic mineral fertilizers in the soil, where the humus content is increased by adding organic substances. Moreover, these are the products grown in soil, the mineral substance content of which is increased by applying natural mineral fertilizers; products were not manufactured with preservatives, hormone-containing drugs, and antibiotics. Ecological agriculture is also accompanied by social, ecological and economic

efficiency (Zyrin and Ilinova, 2016).

Table 1. *Ecological rating of the subjects of the Russian Federation. The accounting period is June 1, 2017 – August 31, 2018).*

Rating dynamics	The subject of the Russian Federation	Nature-protective index	Industrial Ecological Index	Socio-Ecological Index	Consolidated Environmental Index
-	Tambov Region	68/32	54/46	75/25	67/33
-	Altai Republic	67/33	37/63	70/30	60/40
-	Altai region	54/46	45/55	70/30	58/42
+4	St. Petersburg	33/67	51/49	73/27	56/44
-1	Chuvash Republic	48/52	36/64	74/26	56/44
-1	Ulyanovsk region	52/48	46/54	63/37	55/45
-	Moscow	27/73	53/47	73/27	55/45
-2	Belgorod region	42/58	49/51	69/31	55/45
+4	Murmansk region	51/49	45/55	65/35	55/45
-	Kursk region	58/42	37/63	64/36	54/46
+9	Komi Republic	56/44	37/63	65/35	54/46
+4	Magadan Region	70/30	31/69	59/41	53/47

The expansion of arable land as a result of introducing fallow land leads to the need to increase the livestock of animals, and this, in turn, increases the level of employment of the population in providing year-round work for people, creating additional jobs and solving the problems of rural employment (Nedelkin *et al.*, 2017; Yemelyanov, 2014a). Most Russian manufacturers of organic products is located in the European part of the Russian Federation and is concentrated in the Yaroslavl, Saratov, Rostov and Moscow Regions, as well as in Krasnodar Krai.

Experts of the Ministry of Agriculture of the Russian Federation emphasize that in 15-20 years Russia can occupy up to 10% of the world market for organic products and food, and organic agriculture itself can become a new area of global influence. For achieving this, the Russian Federation has everything: huge natural potential, vast reserves of fresh water and fertile land, etc. For example, today the countries of the Asia-Pacific region consider Russia as an area to produce organic products. This is especially true for the Far East of the country, which is a "young" zone of agriculture, since "150 years is not a long period of time for land".

In the authors' opinion, the development of agriculture, focused on the production of organic products, should be based on solving a list of interrelated primary tasks:

- ✓ conducting land monitoring in the main agricultural regions of the Russian Federation to determine the land potential, suitable to produce organic products;
- ✓ substantiating the methodological basis for the elaboration of a mechanism for the formation and development of agriculture, focused on the production of organic products at the state, regional and local levels;

- ✓ development and co-financing of programs aimed at the preservation and restoration of soil fertility of agricultural lands;
- ✓ implementation of programs aimed at increasing the level of knowledge and developing the skills of maintaining organic land use systems for agricultural manufacturers of various organizational and legal forms of ownership to overcome the lack of economic thinking and acquire an education level, which is adequate to the existing conditions;
- ✓ development of national standards for certifying agricultural organic products, as well as the formation of conditions for obtaining international environmental certification by organic products (Yemelyanov *et al.*, 2018b).

It is believed that relevant ministries, departments, public and private organizations with a certain share of participation in international environmental movements should take part in the process of forming a system of organic farming as a component of the integral agricultural system of the country. The fundamental task of the system of organic land use is the development of incentives for the production and sale of organic (ecologically friendly) food. The emerging system of organic farming should include the following activities:

- ✓ further development and adoption of the regulatory framework, which is necessary for the effective functioning of the system of organic farming and markets for selling organic products;
- ✓ making the necessary amendments in the current tax legislation of the Russian Federation aimed at providing support and economic incentives for the developing organic sector of agricultural production;
- ✓ elaborating a set of measures and adopting a state program under the project title "State support for agricultural manufacturers of organic (environmentally friendly) products";
- ✓ providing consulting and information support to manufacturers of organic products and forming an environmental culture of consumers;
- ✓ participation of international organizations and quality auditors in the field of environmental certification and labeling of organic products;
- ✓ organization of the environmental management system in national agricultural production;
- ✓ formation of a register of agricultural organizations, manufacturing organic products that meet the required parameters of international environmental standards for food products;
- ✓ formation of prerequisites for voluntary environmental certification of agricultural organizations and providing a label of "organic (environmentally friendly) product" to organic products manufactured by them, based on the declaration of these products for compliance with environmental requirements;
- ✓ promotion of organic products through advertising, round tables, exhibitions, fairs, competitions, media coverage and on agricultural

websites, covering successful activities of domestic and foreign agricultural manufacturers of organic products;

- ✓ organization of a centralized marketing service, promoting organic products of domestic agricultural manufacturers in the domestic and international sales markets.

The main condition for the effective functioning of the proposed system is the development of an organizational and economic mechanism for agricultural production of organic products in both large agricultural organizations and small organizational and legal forms of management (Korableva and Guseva, 2015; Sycheva *et al.,* 2018a; 2018b; Akhmetshin *et al.,* 2017b; Osadchy and Akhmetshin, 2015a; 2015b). In the conditions of competitive environment, it is important to provide opportunities for civilized and dynamic market development and the creation of a high level of competitiveness of the economy, which are the key elements among the national and regional priorities of any country and, therefore, the most important functions of state regulation (Yamova *et al.,* 2018; Akhmetshin *et al.,* 2018a; 2018b; Nagimov *et al.,* 2018; Polyakova *et al.,* 2018; Dmitrieva *et al.,* 2017; Sharafutdinov *et al.,* 2017; Latyshev *et al.,* 2015; Tarman, 2016).

4. Models and Results

In connection with the intensification of the negative anthropogenic impact of human activity on the environment, high rates of population growth, a delay in reproduction and restoration of natural resources, and the intensification of the production of material goods, primarily agriculture. Global warming will accelerate the processes of desertification, complicating the living conditions of the population and farming (Yemelyanov, 2014b). In this regard, the movement for environmental safety and the preservation of the environment, soil resources, water, renewable energy sources are becoming increasingly active; the Slow Food movement is expanding for healthy nutrition and preservation of the traditions of national and regional cuisine. In Russia, 2017 has been declared by the president as the year of ecology, which indicates the country's integration into the world trend.

The ecological safety of the vital activity of the population requires an integrated approach to solving problems of environmental conservation and ecosystem management of production processes and environmental management. Ecosystem management is one of six cross-cutting thematic priorities of the United Nations Environment Program (UNEP). The six cross-cutting thematic priorities are as follows: climate change; disasters and conflicts; ecosystem management; environmental governance; harmful substances and hazardous waste; resource efficiency – sustainable consumption and production. The organic land use sector should be formed in several consecutive and interrelated stages that will ensure the effective functioning of agriculture, focused on the production of organic products, in the future.

5. Conclusion

Russia's long-term goals are export-oriented agriculture and food industry, because the country has a unique export potential and acquires enormous natural resources for the production of environmentally friendly products (Rasskazova *et al.*, 2014). These are 20% of the world's freshwater reserves, 9% of the arable land of the planet (115 million hectares), 58% of the world chernozem reserves, 38.8 million hectares of fallow agricultural land (including fallows) that had not been chemicalized for a long time (Voronkova *et al.*, 2018c). Approximately 67% of arable land is concentrated in agricultural organizations, about 15% is accounted for by peasant farms (farming enterprises) and individual entrepreneurs, and 17% of arable land is used by the population's households. In the world, the main volume of organic crop production falls on farm enterprises and personal subsidiary farms. In this regard, it is necessary to pay attention to the importance of environmental and social responsibility of business.

The environmental functions and management of the resource potential of organic agriculture in the regions are performed by administrative departments, and regional ministries have been created. For example, the Ministry of Natural Resources and Environment of Altai Krai is the executive authority of Altai Krai, which implements the state policy in the field of environmental protection and nature management, water and forest relations, protection and use of wildlife objects, aquatic biological resources, as well as hunting and conservation of hunting resources. The Ministry executes general management and control over environmental management within the framework of its powers, and this requires the resolution of many issues related to the production and sale of environmental products.

Russia's ability to withstand compliance with international standards and be competitive in world markets where environmentally friendly agricultural products are in demand is quite high: huge reserves of land in Russia, the introduction of ecological farming systems need to be executed over large areas, coordinating with many small owners. It remains problematic to provide farmers with information on new, more efficient technical means, biotechnologies in organic agriculture and certification of organic products for ecological cleanliness, the safety of their manufactured products, use of intensive biotechnologies, financial support for organic agriculture, as well as processing and selling eco-products.

For the domestic economy, where about 27% of the population live in rural areas and more than 12% of the working-age population is employed in the field of agricultural production, the formation and development of agriculture focused on organic production will allow solving not only the problems of ecological safety of food and environment but also the social problems of rural areas by increasing the level of employment of rural residents. The authors believe that the strategic development of environmentally oriented food production will allow solving the

important national economic problem of import substitution – ensuring food safety of the state, saturating the domestic market with high-quality and environmentally safe products of domestic agricultural manufacturers and developing rural areas of the country.

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