Organic food production: search for territories and types of organizations

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Abstract. The choice of the region for the location of the production of ecologically pure food is substantiated, taking into account the results of the complex ecological zoning of Russia. Research shows that the Altai Territory has the necessary prerequisites for the transition to an environmentally oriented development of food production. The factors for the development of food production have been taken into account and grouped, which make it possible to reveal the potential for greening the regional agro-industrial complex. The ecological and economic conditions and the resource potential of the region determine the expediency of searching for the type of firms of the corresponding specialization. The working hypothesis is that the production of organic food is justified by two types of agricultural and processing organizations (newly created, low-profit or unprofitable). The application of the decomposition method made it possible to determine the basic development strategies of two types of organizations, taking into account the phases of the life cycle of the production of environmentally friendly food.

1. Introduction
As a leading idea, it is proposed to search for localized territories to locate the production of ecologically clean food and to determine the types of organizations of the corresponding specialization. It is advisable to start the definition of territories with the results of a spatial analysis of the ecological situation. Zoning in general and ecological and economic zoning in particular is the most important component of managing the development of the production of environmentally friendly food. It is zoning that performs the function of identifying spatial systems, creating the basis for various types of territorial administration. As a tool for spatial analysis and support of the management decision-making process, ecological and economic mapping is singled out, to the greatest extent associated with the generalization of a large amount of information, with its exact territorial binding in the most convenient form for comparison [1].

2. Materials and methods
The presented publications of maps characterizing the ecological situation in Russia make it possible to group the regions according to the degree of ecological tension, taking into account natural landscape and anthropogenic factors. Edited by V.M. Kotlyakov and N.F. Glazovsky in 2002 at the Institute of Geography of the Russian Academy of Sciences published a map "Comprehensive regionalization of the territory of Russia in the ecological and socio-economic situation" [1]. In 2010, the staff of the Institute of Global Climate and Ecology, based on statistical data on anthropogenic load, as well as data from monitoring the environment of urbanized areas, carried out a comparative comprehensive
assessment of the degree of tension in the environmental situation in the regions and federal districts of Russia. The indicator of a comprehensive assessment of pollution is calculated by summing up the scores of the ranked indicators of pollution of individual natural environments for each subject and is ranked in three groups: high environmental stress; medium environmental stress; low environmental stress. Environmental stress is understood as the level of environmental pollution that has developed as a result of the life of the urban population in the constituent entities of the Russian Federation, which can lead to a deterioration in the health and living conditions of the population. Analysis of the calculation results showed that low environmental stress is typical for the territories of the Far Eastern Federal District and parts of the regions of Western Siberia, in particular the Altai Territory and the Altai Republic [2].

Medico-ecological zoning of the country carried out by B.B. Prokhorov. [3] made it possible to identify territories with relatively homogeneous conditions for the formation of public health. In particular, the Altai-Novosibirsk region is characterized as an agrarian-industrial one with pre-comfortable and hypo-comfortable natural conditions, mainly a high ecological reserve, poorly developed social infrastructure.

A rating of 50 regions of Russia was compiled by Sokolova Zh.V. according to the degree of preference for the formation of markets for organic agriculture products [4]. When assessing Sokolova Zh.V. is based on the determination of integral score indicators obtained on the basis of taking into account a complex of multidimensional indicators within the selected criteria and subcriteria. The grouping of integral indicators allows us to identify the regions that are most suitable for the formation of the organic market, well-suited, suitable and partially suitable regions. The results of the study show that the regions with more or less balanced development within the framework of the groups of criteria of the external environment and groups of internal sectoral criteria gravitate towards the highest rating indicators. Altai Krai ranks 10th in the ranking and belongs to suitable territories for the formation of an organic market.

Based on the results of another environmental rating of the constituent entities of the Russian Federation, presented by the All-Russian public organization "Green Patrol" in 2020, the Altai Territory ranks fourth. The ideology of the rating is formed taking into account the principles of sustainable development in accordance with the Declaration of the UN Conference on Environment and Development, based on a comparative assessment of the regions in the field of environmental safety and environmental protection [5].

The results of the studies carried out in the field of complex ecological zoning make it possible to classify the Altai Territory as a territory with low ecological tension. This circumstance determines the need to determine the potential of the regional agro-industrial complex. Potential of the development region's agro-industrial complex is determined by natural and climatic conditions, land resources, the level of use of fixed assets, the financial position of organizations, their ability to adapt to environmental changes, etc.

Altai Territory is one of the typical regions with a rural type of settlement. Agriculture of the Altai Territory is one of the fundamental sectors of the region's economy. The share of the gross regional product by type of economic activity "Agriculture, forestry, hunting, fishing and fish farming" was 13.4%, which is the third indicator among the industries. The size of the rural population and the share of agriculture and forestry in the GRP indicate that the industry is basic for the region. Considering that a significant number of the rural population and the share of the gross regional product created by agriculture, it can be assumed that the Altai Territory belongs to the regions with a developed agricultural sector. The contribution of the agrarian sector of the Altai Territory to the gross regional product is significantly higher than in the Siberian Federal District and the Russian Federation, while the dynamics of the industry share is decreasing (for the period 2004-2018 it decreased from 23.3% to 13.4%), which may be associated with price disparity and low growth rates of agrarian production. The structure of production of agricultural products in the Altai Territory by category of farms indicates the concentration of production of more profitable types of products with the shortest period of turnover in agricultural organizations (poultry, sunflower, grain) [6]. The production of cattle and pig meat, milk, vegetables, and potatoes prevails in personal subsidiary plots. Farms are dominated by the production
of sunflower, cereals and legumes. The share of the farming sector in livestock production is insignificant. In turn, the transition of more costly and labor-intensive industries to personal subsidiary plots may in the future lead to an unstable development of agriculture in the region due to a decrease in the rural population and the impossibility of using innovations (equipment and technologies). Over the past 17 years in the Altai Territory there has been an increase in the volume of food imports, in particular milk and dairy products, meat, potatoes, vegetables and eggs. Intraregional production covers personal consumption by 239.1% of the population's demand in potatoes, 133.2% of the demand in meat and meat products, 174.9% of the demand for milk and dairy products, and 132.1% of the demand for eggs. A relatively favorable situation is noted for vegetables, 98.9% of the demand for which is covered by production in the Altai Territory. Comparison of the volumes of export-import of food, allows us to conclude that the balance between exported and imported milk and dairy products, meat and meat products, eggs is growing steadily. The growth in the balance of these types of products occurs against the background of a steady growth in the export of meat, milk and their processed products outside the Altai Territory. The high saturation of the food market of the Altai Territory with products of its own production, as well as the increase in its export volumes, testifies of competitiveness and potential of growth of the agricultural sector.

The introduction of smaller doses of mineral fertilizers is observed in the Altai Territory relative to the all-Russian level during 1993-2018. At the same time, the introduction of smaller doses of mineral fertilizers in the Altai Territory relative to the all-Russian level is observed throughout the study period. In 2018, in the Altai Territory, agricultural organizations applied mineral fertilizers per hectare of sowing 11.91 kg, which is 4.7 times less than the national value. This situation is negative from the point of view of the intensive type of farming, however, with the development of the production of organic food, it can act as a positive factor, allowing to minimize the time of transition from the traditional type of farming to ecosystem farming [7].

More than a thousand agricultural organizations function in the Altai Territory, of which about 25-30% are unprofitable every year. The level of profitability in crop and livestock production in the region for 2018 amounted to 18.3% and 8.8%, respectively.

3. Results
Analysis of the state, trends and economic structure of food production in the Altai Territory made it possible to determine the constraining factors. These include: the decline of the population in the region and the rural population in particular; unfavorable climatic conditions of food production for mass consumption (absence of differential rent I); the predominance in the structure of production of certain types of food of personal subsidiary plots with a low level of marketability; insufficient material and technical support of agricultural production; undeveloped selection and breeding work; low level of economic efficiency of production.

A prerequisite for the transition to an environmentally oriented development of food production is the substantiation of the most significant branches of regional specialization on the basis of calculating the coefficients of localization, per capita production and specialization of industries [8]. In the structure of processing industries in the Altai Territory, the largest share falls on the production of food products. Their share in the volume of production of manufacturing industries over the past few years is more than 40% [8]. The coefficient of localization of production traditionally takes on a value greater than one for two types of processing industries: food production; wood processing and production of wood products. In dynamics, the value coefficient of the localization increases for food production and decreases for wood processing and production of wood products. In the manufacturing industries of the Altai Territory, the highest potential for the development of “reasonable specialization” is possessed by food production - all coefficients in this production are more than one [8]. Also, a stimulating factor for the development of environmentally friendly food production in the Altai Territory is: the presence of minimally cultivated arable land, experience and traditions in food production, natural and climatic conditions for the production of unique types on food (buckwheat), a convenient geographical location (border area).
Taking into account the factors that determine the effectiveness of creating and developing the production of environmentally friendly food in certain areas is a necessary condition for realizing the potential of individual organizations on the basis of technological, organizational and economic measures. Greening business activities involves a set of interrelated organizational and economic measures, in particular: reducing the natural basis of agriculture, improving the means of production, introducing environmental protection technologies, greening the life cycle of food products \[9, 10\]. It can be assumed that organizations operating within the framework of the traditional approach to agricultural production, with a level of profitability sufficient for extended reproduction and well-functioning business processes, may not be interested in the transition to the production of organic food.

Taking into account the above, the production of organic food is more justified:

- newly created agricultural and processing organizations, peasant (farm) farms;
- low profitable or unprofitable agricultural and processing organizations, including those in the process of bankruptcy (at the stages of financial recovery or external management).

It is advisable to change the vector of development of organizations in the agro-industrial complex undergoing bankruptcy proceedings on the basis of technological reengineering - a reorganization mechanism based on a radical change in the technologies used \[11\]. This mechanism can be applied to organizations of the agro-industrial complex, includes measures to develop and implement a program for updating food production technologies, creating better innovations, and forming management and production units.

At the same time, agricultural and processing organizations in the process of bankruptcy, according to Federal Law No. 127 "On insolvency (bankruptcy)", can conduct applied research aimed at improving production technology and products \[12\]. Scientific and technical policy can be built on the basis of existing intellectual property objects, which implies their inventory, analysis of the effectiveness of use. The priority goal of organizations in the agro-industrial complex undergoing bankruptcy proceedings is self-preservation, including the greening of entrepreneurial activity.

The selection of two categories of organizations is due to the identical phases of development of activities in the external environment. The tools for managing the development of organic food production at the level of organizations can be: development strategies, monitoring the innovation market, integration with other actors, concentration of resources on applied research, implementation of investment projects. In the guidelines for the reform of enterprises (organizations) \[13\], forecasting the development of the external environment and planning coincide with the functions of strategic marketing. The latter presuppose an analysis of the market position, forecast of market development, analysis of the internal environment, development of marketing policy, formation of tasks for departments (research, production, financial, sales) to improve the position of the organization in the market. Thus, a subsystem is formed that structures the internal environment of the organization and establishes the prerequisites for creating strategies for the production of environmentally friendly food \[14\].

The system of strategies is intended for two categories of agricultural organizations (newly created agricultural and processing organizations, as well as low-profit or unprofitable agricultural and processing organizations, including those in the process of bankruptcy) and combines marketing functions with various phases of the life cycle of organic food.

1. For the created agricultural and processing organizations, peasant (farmer) households focused on the production of environmentally friendly food, the following phases of development in the external environment are proposed.

1.1. Growth (breakthrough) involves the development of the organic food market through reengineering. The life cycle phase is characterized by high risks and significant capital investments. Support is needed at the federal and subfederal levels (credit, tax, customs benefits) \[15\].

1.1.1. Concentrated growth (innovative development, production of environmentally friendly products, search for opportunities to improve market position or transition to a new market).
1.1.1. Strengthening market position through horizontal integration by establishing control over competitors.
1.1.1.2. Finding new markets for organic food.
1.1.1.3. Economic growth due to the production of environmentally friendly food and its sale in the developed market.
1.1.2. Integrated growth based on increasing the organization by adding new structures.
1.1.2.1. Strengthening market position through direct vertical integration - gaining control over distribution and sales structures. It is advisable with a high level of return on sales from intermediaries.
1.1.2.2. Strengthening the position due to reverse vertical integration - strengthening control over counterparties supplying raw materials and materials.
1.1.3. Diversified growth can be based on the development of organic food production as an additional activity.
1.1.3.1. Centralized diversification is based on leveraging the opportunities for organic food production within existing business processes. It is assumed that new food production should be organized taking into account the strengths of the organization and its potential.
1.1.3.2. Horizontal diversification is based on the organization of economic activities united by existing business processes, but not technologically related. In particular, the production of organic food can be oriented towards the consumer of food produced within the framework of the traditional approach.
1.1.3.3. Conglomerative diversification involves the creation of economic activities (production and sale of organic food) that are technologically unrelated with the main activity.
2. For low-profit or loss-making agricultural enterprises, including those in the process of bankruptcy, the following phases of development in the external environment are proposed.
  2.1. Self-preservation - ensuring the survival of an organization, its adaptation to market conditions, maintaining potential, including the sale of property, staff reduction, and the termination of products' production that are not in demand.
  2.1.1. Reducing costs by reducing direct production costs, increasing productivity, reducing staff.
  2.1.2. Reorganization. Sale or liquidation of one of the divisions in order to obtain funds to start more promising activities.
  2.1.3. Bankruptcy.
  2.1.3.1. Financial recovery. Changing the vector of development of agricultural organizations based on technological reengineering.
  2.1.3.2. External control. Similar to clause 2.2.3.1.
  2.1.4. Liquidation.
  With the successful implementation of the basic strategies, both categories of agricultural and processing organizations focused on the production of organic food should move to an evolutionary strategy.
  3.1 An evolutionary strategy (stabilization) is based on cost reduction, the use of only improving innovations and is not associated with government support.
  3.1.1. The strategy of careful promotion in the market (continuation of the programs started).
  3.1.2. No change.
  3.1.3. Refusal from long-term plans in favor of maximizing income. Reducing the cost of acquiring working capital and labor, as well as maximizing income from the sale of organic food.
4. Conclusion
The article substantiates the choice of the region for the location of the production of environmentally friendly food, taking into account the results of the complex ecological regionalization of Russia. Research shows that the Altai Territory has the necessary prerequisites for the transition to an environmentally oriented development of food production. The ecological and economic conditions and the resource potential of the Altai Territory determine the advisability of choosing the types of organizations and searching for localized intraregional sites for the development of production of
ecologically clean food. The basic types of organizations for the production of organic food are newly created, as well as low-profit or loss-making organizations, including those in the process of bankruptcy. For these types of organizations have been determined, basic strategies focused on the production of organic food. The presented recommendations will allow you to take the first steps in the formation of "smart" regional specialization.

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