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A METHODOLOGICAL APPROACH TO THE DEVELOPMENT OF ORGANIC FOOD PRODUCTION IN THE CONTEXT OF THE BUDGET CRISIS IN THE RUSSIAN FEDERATION

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Abstract

In this paper, we study classical and modern approaches to the formation of a scientifically based methodology for managing industrial processing of organic agricultural raw materials for the production of organic food. In the current crisis conditions in the Russian Federation of national budgets of all levels, the development of the organic food industry without a justified methodological approach is impractical. In most cases, the economy of organic production is not allocated to an independent field of study and is identified with the traditional economy of production, "organic food production" - there is industrial processing of organic raw materials in accordance with the requirements of organic production standards, isolated in space and subject to mandatory certification by specialized bodies quality control. We study the conditions for the development of organic production within an existing enterprise, as well as the mechanism for creating a separate unit for the production of organic food products. We show that industrial processing of organic products should be carried out on the basis of and strict observance of fundamental organizational and economic principles. In particular, while in traditional production deliveries can be seasonal or one-time, in organic food production a prerequisite must be guaranteed availability of suppliers or a hub of organic raw materials for at least a month of uninterrupted production. Moreover, the classical cluster approach in terms of organic production can be unrealizable and the author's concept of cooperative development of organic food production (industrial processing of organic products) is preferable.

Key words**:** *organic industrial production, methodical approach, integration and cooperation, cluster*

INTRODUCTION

For the sectors of agricultural production and processing at a certain period in the evolution of institutional relations, the most favorable development conditions arise [17], containing a combination of potentials and resources, the possibility of organizing communication between business entities and the optimal institutional superstructure at that time. This fully applies to the economy of organic production and processing of agricultural raw materials, which over the past 40 years has determined the key trends in consumer processes and, in the course of the development of post-industrial society and neocapitalist production, has become dominant in global consumption [7, 8]. Global patterns of development did not pass agricultural production processes in Russia, but were aggravated by excesses and distortions both in the formation of the legal framework and the consequences of the complete independence of the production choice of economic entities. As a result, a lack of understanding of the essence of organic production, an increase in inter-regional and intra-regional differentiation of processing enterprises by the level of development of production and economic potential, the absence of infrastructure facilities, the widening gap between the conditions of production of agricultural organic raw materials and processing capacities. Despite the widespread increase in organic producers declared by self-regulating organizations of organic producers, in many regions industrial organic processing of agricultural raw materials is only emerging or completely absent [19].

By organic food production, on the basis of existing regulatory legal acts, we mean the totality of production processing capacities of

enterprises that produce certified organic products ready for use in industrial volumes.
The development of organic food production in the Russian Federation is currently complicated by the presence of a number of institutional, sectoral and socio-economic factors, Table 1.

Table 1. Factor analysis of the organic processing industry

Institutional	regulatory framework	lack of full national regulatory framework in the field of organic production and processing
	labour reproduction	lack of highly qualified specialists in the field of organic agriculture and organic food production
	fiscal policy	high cost of borrowed funds in financial and credit organizations for legal entities [6]
	export policy	lack of a full and affordable infrastructure for the export of organic products
	licensing policy	lack of an established system of national certification, problems with the recognition of domestic certificates abroad
Industry (production)	production modernization costs	increase in the final retail price of the final product due to the high cost of machinery and equipment necessary for the organic production of food and organic agriculture [18]
	hidden pricing options	environmental protection, improving animal welfare [5], minimizing the use of mineral fertilizers and crop protection products and taking measures to develop rural areas
	certification costs	the need for mandatory certification of production processes
	production sharing	the requirement of mandatory isolation of organic production from traditional
	production and marketing infrastructure	lack of full-fledged logistics in the organic agriculture and organic food production industry, as well as stable supply channels for processing enterprises with organic raw materials of both plant and animal origin
	management subjectivity	distrust of managers of business entities to new high-cost technological processes of organic production [10]
Socio-economic	territorial differentiation	consumer demand for organic products is concentrated mainly in large cities
	consumer perception	low consumer literacy in the differences in organic products, eco and farm
	resistance to change	lack of a full understanding of the usefulness of consumption of organic products among the population
	differentiation of incomes	low purchasing power of the bulk of the region's population, redistribution of preferences towards savings
	structure of consumer demand	the highest concentration of organic products in the baby food segment, the minimum ratio of organic products in other consumer segments

Source: Compiled by the author based on the information from [5, 6, 10, 18].

The result of this is the proactive nature of the transition to organic production and processing technologies, the minimal scale of modernization of production capacities, low labor productivity and the profitability of economic entities in the agro-industrial complex. In this regard, the comprehension of modern scientific vision, the creative search for the necessary organizational approaches and the generalization of practice to solve the problems of managing the development of organic food production at the regional level become especially relevant.

MATERIALS AND METHODS

The development of organic production was considered in the fundamental works of a number of authors:
-The study of philosophy and general theoretical approaches to organic production (Rudolf Joseph Lorenz Steiner, Spiritual and

Scientific Foundations of the Successful Development of Agriculture. Agricultural Course, 1924. Koberwitz, Czech Republic) [15];
-The concept of organic farming (Albert Howard, The Waste Products of Agriculture: Their Utilization as Humus, Oxford: Humphrey Milford & Oxford University Press, 1931) [1];
-The organizational and economic mechanism for the development of organic farming (Lady Evelyn Barbara Balfour, The Living Soil and the Haughley Experiment, 1975) [12];
- Concepts and declarations in the areas of development of organic production (IFOAM - Organics International, 2008-2014) [9].
This review confirms the existence of a significant segment of scientific literature on the development of organic production. Nevertheless, in domestic and foreign sources, the problem of developing the production, engineering and social infrastructure of industrial processing enterprises is often omitted, which creates a theoretical and methodological vacuum in the selected industry. The study of the development of processing enterprises and, in particular, their transition to organic technologies for food production prompts the search for new ideas that enrich and develop management methods.
In preparing the article, scientific papers of Russian and world scientists on the topic under study [2, 3, 4, 13, 16], materials from research institutions were used. The objects of research are typical food processing industry enterprises that are potentially ready for the reception and processing of organic raw materials in accordance with Russian and international quality standards. In the study of theoretical and methodological aspects of organic production, monographic and logical methods were used. The study of the current state of development of processing activities was carried out on the basis of statistical and economic analysis, as well as a comparison of the results of the work by the comparative analysis method. The development of a methodology for identifying methodological foundations was carried out using abstract-logical and computational-constructive methods, the method of pairwise comparisons.

RESULTS AND DISCUSSIONS

In the research of the formation and functioning of the organic processing industry in the context of identifying the development potential of the production of organic products, we investigated the transition period at the food industry, when both traditional and organic products are present at the factory. To this end, a **method for the process separation of traditional and organic production (activation-assimilative method)** was developed and justified, based on their isolation from each other based on a system of measures for identifying batches of organic products, protection against mixing and substitution.
The existing historically developed system for processing agricultural raw materials is based on the postulate that if raw materials meet key quality parameters (fat content, protein content, fat thickness, oil content, etc.), then the raw materials are classified and sent to the main production. At the same time, processing enterprises do not need information on the conditions and methods of production of this raw material. The intensification processes adopted by agricultural producers are aimed at maximizing yield and productivity (Fig. 1.)
Organic technology basically requires that the raw materials used in the processing process be of environmentally friendly origin or close to it (the absence of mineral fertilizers, antibiotics, biological products, ionizing radiation, technological aids, etc. in the production process), which significantly increases the quality level of the required agricultural products and the conditions of its origin.
Our proposed method consists of two key functions:
1. **Activation** of production potential, the allocation of organic processing in an isolated structural unit, operational quality control at all stages from the purchase to processing and release of the finished organic product, interaction with state regulatory authorities and delivery to the place of sale;
2. **Assimilation** of the newly created organic unit in the overall production process with the formation of stable relationships and interdependencies from each other.

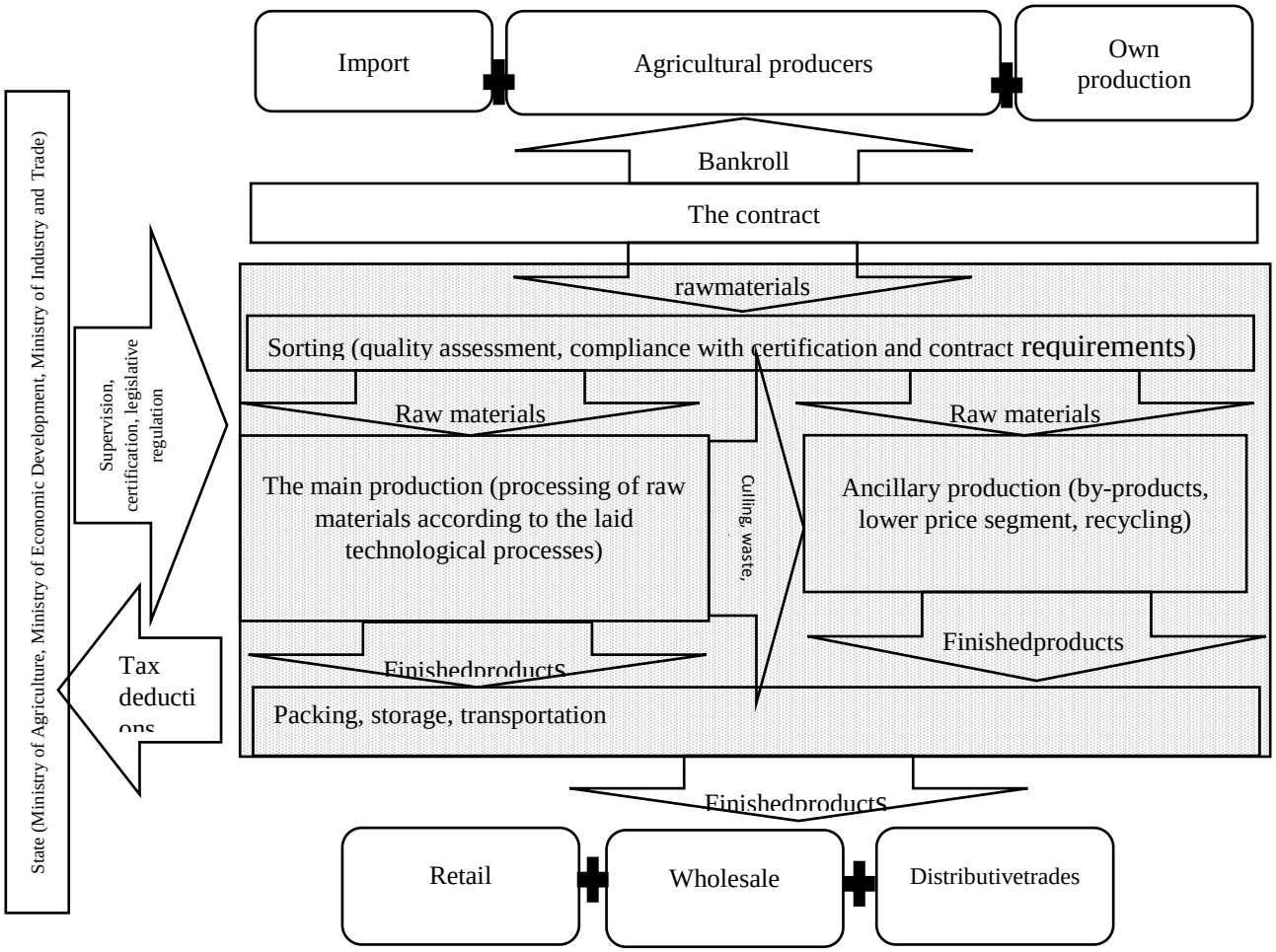

Fig.1. The current system for processing agricultural raw materials.
Source: developed by the author.

The activation function, in turn, is based on the implementation of the following priority principles for the organization of production:

- the principle of filling - the newly created organic production must be fully provided with certified organic (organic processing) and high-quality and clean (production using organic technology) raw materials from the moment the production process is launched for the future no less than 1 month in advance. This principle determines the preventive studies of agricultural producers of various forms of ownership in the home region and beyond for the conclusion of direct contracts for the supply of the required raw materials, as well as reserve supplies in case of interruptions and force majeure;
- the principle of local isolation - since the requirements for conducting organic processing provide for the absence of potentially polluting factors in the production, the commissioned production capacities of organic processing should be locally isolated from the main production in order to avoid the effects of the latter;
- the principle of operational control - consists in maintaining quality control and rejecting non-conforming raw material requirements by the processor's specialists, as well as the certificate holder (the state body authorized to conduct licensing and certification activities) from the moment a batch of raw materials arrives from the supplier until the finished goods are shipped to the retailer (i.e. hours into own distribution networks). Products rejected during the control should not be included in the final batch labeled "Organic". Rejected raw materials, in turn, should not enter the technological process of organic production. At all stages, supervisory specialists are required to make notes in the quality control journals of "Organic";
- the principle of openness - a processing company that undertakes to produce certified

organic products is obliged to constantly and tightly interact with control and supervisory authorities regarding the conformity of manufactured products to the requirements of Organic, and must also have the right to feedback and assistance from relevant state organs.

The assimilation function is based on strict observance of the following principles:

- the principle of process integration - organic processing and production using organic technology should not be carried out in isolation from the main production. The implementation of this principle is possible both in the course of procurement (if high-quality pure raw materials are found in the general supply, it can be redirected to the "clean workshop" for production using organic technology) and in the process of organic production (rejected semi-finished products, waste during production supervision and surplus organic production should be redirected to the recycling and production of other types of inorganic products), and in the course of monitoring the quality of the finished product (in The rejected product is deprived of the "Organic" mark and sold on a par with the products of the main production);
- the principle of interdependence - the conduct of organic production should not be carried out to the detriment of the core, just as, in turn, the conduct of the main production should not interfere with the implementation of the organic. Production processes should be built in close interdependence from each other and resources (labor, production, financial) should be distributed proportionally in equal priority orders.

The implementation of the activation-assimilative method contributes to the speedy adaptation of organic workshops in the technological process of existing enterprises, without prejudice to the main activity (Fig. 2).

Such an approach will allow maintaining stable production volumes, guaranteeing quality and compliance with licensing and certification requirements, as well as attracting additional investments both from private investors (innovative potential, high demand, stable production) and from government bodies authorized to distribute support and incentive funds (export potential, import substitution, closed production cycle).

In the conditions of uneven territorial and logistic distribution of material, labor and production resources of the administrative regions of the Saratov region, the implementation of the principles of organic production is significantly complicated. Initiative economic entities of the food and processing industry need to timely and comprehensively approach the organization of the process of supply and purchase of agricultural raw materials of quality corresponding to the certification of organic. For these purposes, the question of methodological support for the implementation of procurement activities from the standpoint of scientific validity and minimizing the costs associated with the process is urgently raised. Regardless of industry affiliation (plant growing or animal husbandry), processing enterprises are not able to provide for the most part independent production of the required volumes of raw materials for uninterrupted organic production, which determines the need for the development and scientific justification of methodological principles for the implementation of procurement measures. Agricultural production enterprises applying for the title of "organic producers" are required to withstand extremely high requirements for production technologies and the quality (including chemical composition) of agricultural raw materials produced.

The high cost of the above-mentioned measures is obvious and, in connection with this, these economic entities need to implement measures aimed at reducing costs and establishing solid channels for the sale of manufactured organic products.

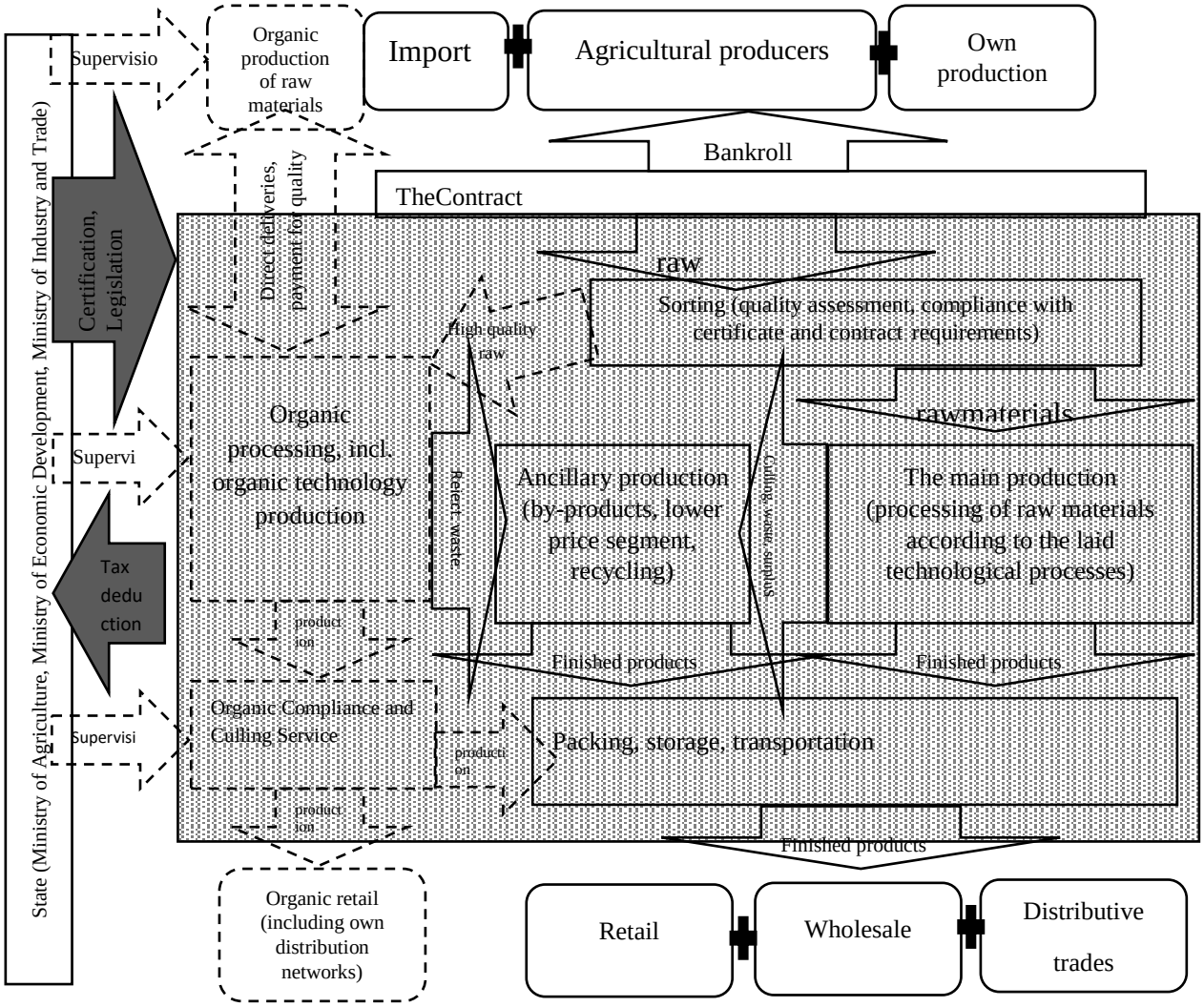

Fig. 2. A model of the organization of processing using the activation-assimilative method
Source: developed by the author

To date, the above prerequisites clearly demonstrate the urgent need for the development and implementation of scientifically based methods that can, in their effectiveness, facilitate the transition to organic production and create a sustainable supply chain linking organic producers with food processing plants certified for organic production.

In the course of research on the development of the scientific foundations of organic production, we deeply and comprehensively studied the regional characteristics of agricultural production, including organic production in the Russian Federation, identified certain industry-wide patterns and prerequisites that allowed us to develop and propose a **sufficiency method** consisting in the concentration of agricultural organic raw materials through the creation of raw material hubs for the purpose of subsequent distribution exporting it to processing enterprises, as well as for export within the framework of concluded agreements, partnership agreements and other forms of exchange agreements.

The hubs we offer should be large sorting nodes with facilities and equipment that allow the reception, storage, verification and transportation of agricultural organic raw materials. The territorial location of each hub should be justified by the equidistance from the key producers of raw materials to the hub's specialization (Fig. 3).

The key feature of the hub should be the maximum organizational simplicity and multifunctionality of activity. The hub's mission is to provide logistic support to the organic industry. In this regard, the hubs are called upon to implement transport, storage, partially trade, administrative and other

functions aimed at simplifying the procedure for the supply of agricultural organic raw materials.

As part of the implementation of the sufficiency method, consignments of agricultural organic raw materials will be accumulated and sorted by hubs and retrofitted as part of contractual obligations with processing enterprises.

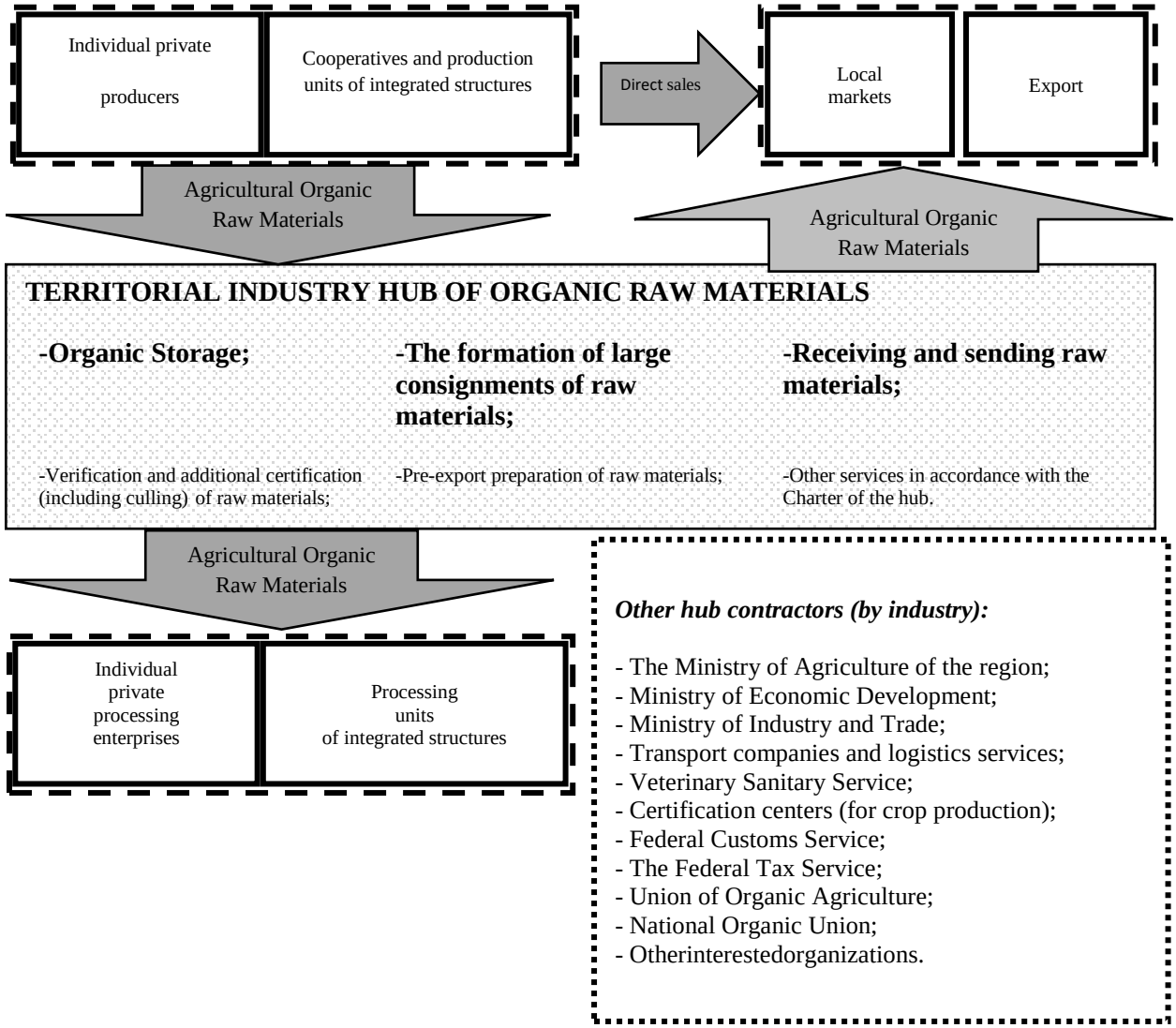

Fig. 3. Organizational and production model of the territorial-industrial hub of organic raw materials (sufficiency method)
Source: Compiled by the author

Thus, with the introduction of hubs, manufacturing enterprises eliminate the costs of promoting and marketing their own raw materials, focusing their attention and budget on maintaining and observing the requirements of Organic. An additional advantage of this method is the complete elimination of the threat of overstocking agricultural producers.

From the point of view of processing enterprises, the organization of hubs makes it easier to implement the activation-assimilative method, reduce the cost of purchasing products, minimize the risk of disruption of supplies, implement a triple system of confirming the quality and compliance of raw materials with organic requirements (manufacturer-hub-processor).

The widespread implementation of the sufficiency method will simplify the sales and supply of agricultural raw materials, realize the export potential of organic products, and reduce risks and costs for all participants in organic production.

Well-known and undeniable is the conclusion of M. Porter (1998), that the profitability of single companies, even according to the most optimistic forecasts, is significantly lower than that of integrated structures. A documented fact is the growing dynamics of the main indicators, expectations and potential of enterprises-subjects of integration, since in the process of developing the strategy, a combination of production capacities, accumulated capital, investment attractiveness and potential liquidity with a sufficient degree of representativeness is taken into account.

In the process of combining individual organizations into a single integral interdependent integrated structure, independent potentials merge into a common totality, which in turn allows achieving synergies and multiply increasing the efficiency, competitiveness and profitability of the resulting integrated totality.

Long-term studies of integration processes in agricultural sectors [14] make it highly probable that as a result of the creation of integrated structures, the potentials of industries and their constituent producers are realized more efficiently. At the same time, attention is focused not on targeted support for specific manufacturers or manufactured products, but on supporting accelerated identification and matching of economic interests of economic entities in the industry. At the same time, an increase in purchase prices, a decrease in production costs, and a reduction in transaction costs are achieved, which, ultimately, leads to an increase in production volumes by each specific enterprise and industry as a whole.

The ideal model for implementing **the method of organic integration** is the complex formation of near-cluster structures in the industry containing a closed production cycle from raw materials to ready-to-eat organic products (Fig. 4).

In the context of the crisis of budgets of all levels of the Russian Federation, and also taking into account the rather low level of development of agricultural production by industry average, the creation of an integrated structure specializing in organic production is impossible in the short and medium term due to the high depreciation of capital goods, low genetic potential in crop production, the lack of full-fledged systemic pedigree work in animal husbandry, the borrowing of business entities, as well as a number of subjective factors based on the reluctance of heads of agricultural enterprises to lose organizational independence after entering an integrated structure.

The only possible and least expensive option for implementing the method of organic integration is the creation of consumer supply and marketing cooperatives of organic production, which are naturally able to realize and popularize the production of organic raw materials among business entities, as well as ensure uninterrupted supply of appropriate quality to processing enterprises.

One of the strongest competitive advantages of the consumer cooperation system in organic production is the wide potential for diversification and integration of its activities.

The goal of diversification and integration is to achieve the synergy effect.

This effect is expressed in the fact that with the smooth interaction of departments and lines of activity, the sum of the indicators of their effectiveness when working separately is less than the efficiency of work in the system. At the same time, members of the consumer cooperative are financially interested in mutual development and are insurers of each other in case of force majeure circumstances.

If the participants in a consumer supply and marketing cooperative specialize in the collection and further sale of organic agricultural raw materials of their own production, then, respectively, the transaction and logistics costs are distributed between them evenly, and the profit received is distributed according to shares between all participants in the cooperative in equal shares, which contributes to an increase in sown area, technological modernization, increase labor productivity.

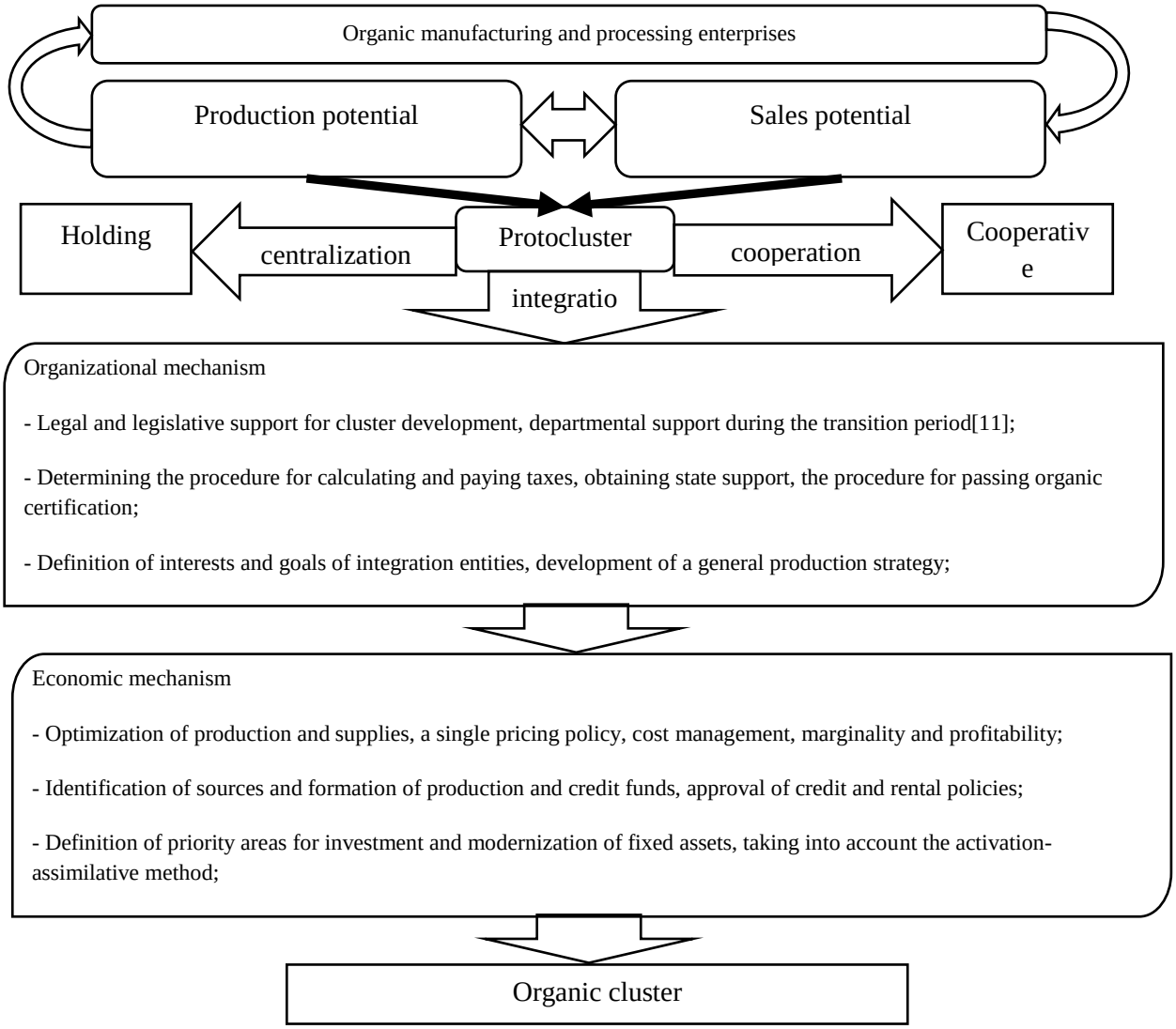

Fig. 4. A typical implementation model of the organic integration method
Source: Compiled by the author.

The advantages of cooperation in organic agriculture include the simplification of procurement procedures jointly by members of the cooperative, the simplification of the procedure for obtaining state support and subsidies, and the increase in the reliability of subjects of cooperation as borrowers for financial and credit institutions.

From the point of view of the processing industry, the conclusion of a contract for the supply of organic raw materials with a consumer cooperative if its participants have their own organic production is also more attractive in terms of reducing the risks of supply disruption, improving the reliability and quality of the supplied raw materials, as well as the possibility of concluding long-term contracts when developing a long-term development strategy. At the same time, unlike full integration, the processing enterprise does not lose organizational independence, since it is not a member of the cooperative and is not obliged to coordinate its actions and business processes with other shareholders.

As a result, the organizational and economic model of the agricultural organic consumer cooperative will be as follows (Fig. 5).

Thus, the agricultural organic consumer cooperative takes on the implementation of the principle of sufficiency, acting as an organic hub, able to accumulate organic raw materials through its activities, carrying out procurement activities at enterprises that are not members of the cooperative.

Implementation of the proposed methodological foundations for the production of organic food products increases the efficiency of integration processes, increases

production volumes, optimizes the composition and cost structure of agricultural production and processing enterprises, and reduces risks due to integration and cooperation ties.

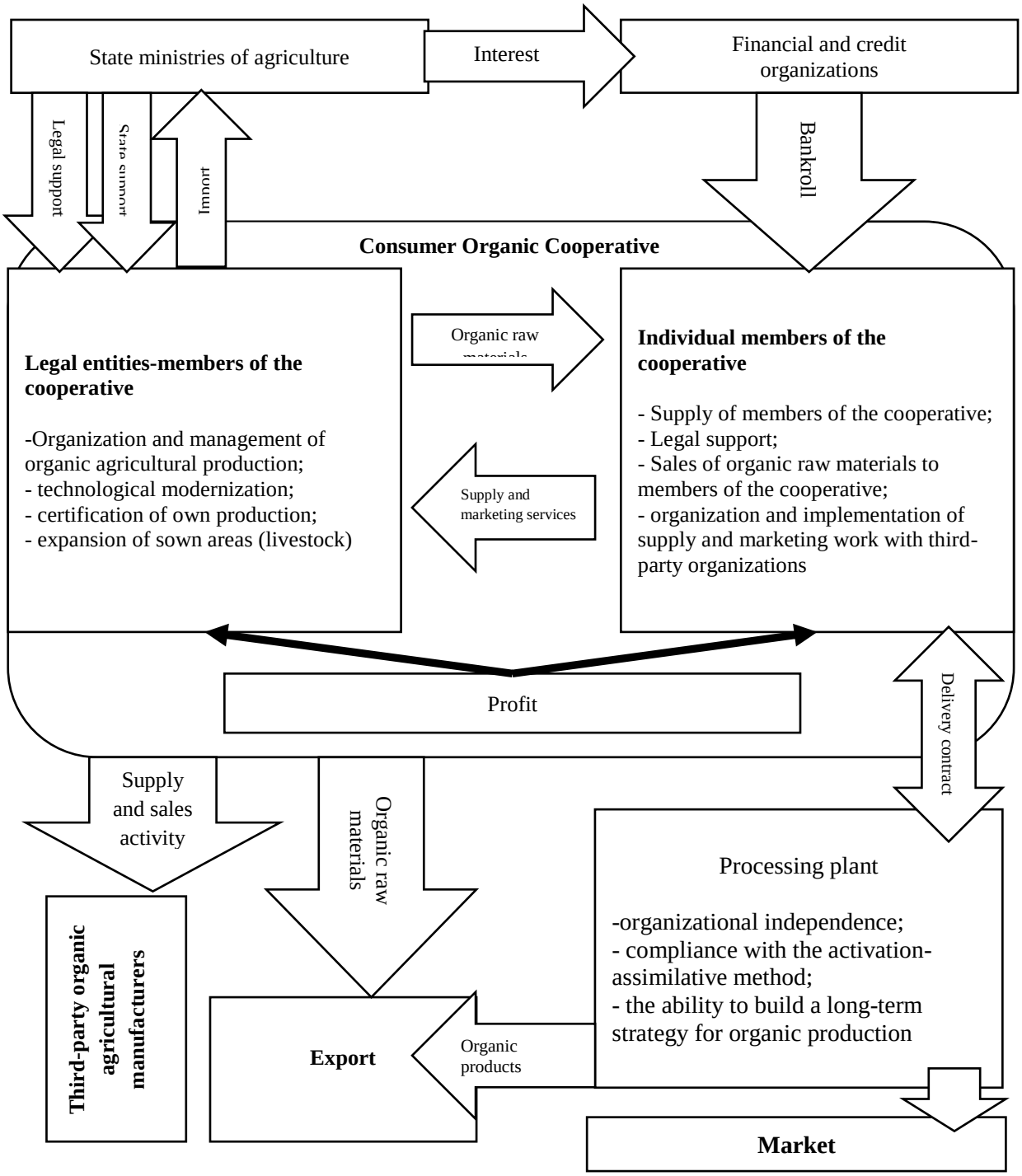

Fig. 5. Organizational and economic model of agricultural organic cooperation
Source: developed by the author.

Systematic development of production and consumer cooperative processes creates opportunities for the growth of production and processing of organic products, the expansion of organic production, the availability of loans, the improvement of the transition period for the creation of organic production, provides for the enlargement and diversification of production and, accordingly, increases the efficiency and competitiveness of organic agricultural producers and processing enterprises, as well as their products. As a result, the systematic

development of integration and cooperation processes will positively affect the development of the organic production industry of the Russian Federation as a whole.

CONCLUSIONS

The presented model of the methodological foundations of organic food production reflects a system of interrelated relationships between entities based on the account of the production potential of the latter. The model, together with the proposed cooperation mechanism, is a set of organizational and economic principles for the systemic development of food industry enterprises in Russia, designed to create deep ties between both organic and inorganic units of a processing enterprise, and with producers of organic raw materials.

The inclusion of all participants in organic production in the implementation of the proposed methodological foundations will clarify the need for strengthening and cooperation of organic enterprises, primarily in Russia, as a basis for increasing efficiency. and industry competitiveness in the region. Implementation of the proposed mechanism increases the efficiency of production processes, increases production volumes, optimizes the value chain of organic food products, reduces trade margins by implementing the sufficiency method on the hub platform. The systematic development of the processes of production and consumer cooperation creates opportunities for the growth of production and processing of products in the form of small businesses, the expansion of agricultural production, and the reduction of the subsidiary burden on state budgets of all levels. The logistics network ensures the consolidation and concentration of organic production and, accordingly, increases the efficiency and competitiveness of private farms and holdings, processing enterprises, hubs and their products. As a result, the systematic implementation of the proposed methodological foundations will positively affect the well-being of rural residents and economic entities of the organic industry and the degree to which their needs are satisfied.

REFERENCES

[1]Howard, A., 1931, The Waste Products of Agriculture: Their Utilization as Humus, Oxford: Humphrey Milford & Oxford University Press, p.5.
[2]Balfour, E.B., 1943, The living soil, UK, London: Faber and Faber Ltd., p.8.
[3]Best, H., 2010, Environmental concern and the adoption of organic agriculture. // Society and Natural Resources, Vol. 23(5):451–468.
[4]Best, H., 2009, Organic farming as a rational choice // Rationality and Society, Vol. 21(2): 197–224.
[5]Bromfield, L., 1954, Malabar Farm, London: Cassell & Co LTD, p.12.
[6]FiBL Statistics, 2019, European and global organic farming statistics, https://statistics.fibl.org, Accessed on 24 May 2019.
[7]Granfield, J., Henson, S., Hollida, J., 2010, The motives. Benefits. And problems of conversion to organic production, Agriculture and Human Values, Vol. 27(3):291–306.
[8]Howard, A., 1947, The soil and health: A study of organic agriculture. New York, USA: Devin-Adair Company, pp.13–19
[9]IFOAM – Organics International, 2008-2019, https://www.ifoam.bio/en/document-library, Accessed on 14 June 2019.
[10]King, F.H., 1911, Farmers of Forty Centuries, or Permanent Agriculture in China, Korea and Japan. Madison, pp.47–64.
[11]Koesling, M., Flaten, O., Lien, G., 2008, Factors influencing the conversion to organic farming in Norway, International Journal of Agricultural Resources, Governance and Ecology, Vol. 7(1):78–95.
[12]Balfour, L.E.B., 1975, The Living Soil and the Haughley Experiment, Suffolk, England, pp.61-64.
[13]Northbourne, L., 2003, Look to the Land, Hillsdale, NY, USA, https://books.google.ru/books?id=aHl0JooC9K4C&printsec=frontcover&hl=ru&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false, Accessed on 18 April 2019.
[14]Novikov, I., 2019, Regional Aspects of the Development of Clustering in the Dairy Branch, Comparative Economic Research-Central and Eastern Europe, Vol. 22(4):91–109.
[15]Paull, J., 2011, The secrets of Koberwitz: the diffusion of Rudolf Steiner's agriculture course and the founding of biodynamic agriculture, Journal of Social Research & Policy, 2(1): 19–29.
[16]Rodale, J.I., 1961, How to Grow Vegetables and Fruits by the Organic Method, Emmaus, PA: Rodale Books, pp.17-18.
[17]Sahm, H., 2013, Revision from organic to conventional agriculture: A review, Renewable Agriculture and Food Systems, Vol. 28(3):263–275.
[18]Schulze, E. S., 2015, Mitoder ohne Agrarindustrie? Stellungs nahme zu Kluter Helmut: Die Landwirtschaft in Sachsen im Vergleichzumanderen Bundeslandern. Endbericht, hrsg. Von der Landtagsfraktion Bundnis 90, Die

Grunen, Dresden, Veroffentlichungen der Leipziger Okonomischen Societat, № 24. Leipzig. 36 pp., http://www.leipzigersocietaet.de/publikationen/Heft24.pdf, Accessed on 21 November 2019.
[19]The World of Organic Agriculture / Statistics and Emerging Trends, 2019, https://shop.fibl.org/CHen/mwdownloads/download/link/id/1202/?re, Accessed on 14 October 2019.