

Sustainable approaches to the formation of regional livestock clusters

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Abstract. Russia's agricultural areas require additional state support to modernize production and processing complexes in the agro-industrial sector. In addition, the presence of large agricultural holdings does not provide opportunities for competition to small farms, which leads to a reduction in their number. In this situation, it is necessary to cooperate and integrate large and small businesses in the livestock industry to redistribute efforts and specialization of farms. The article considers the peculiarities of the organization of the cluster model of agribusiness in the sphere of livestock production. Conclusions are drawn about the directions and algorithms of re-profiling and specialization of farming in the conditions of the cluster approach.

1 Introduction

The production of livestock products (beef) does not appear to be an attractive area of investment due to the longer production cycle and the difficulty of keeping animals without their own feed base. Difficult agro-climatic conditions in most of Russia, lack of stable markets, competition from foreign importers from South America — all these factors act as major barriers to the development of domestic beef cattle breeding. In addition, the lack of a national breeding base and seed material produces additional obstacles to stable production. High costs of keeping, breeding, and growing animals of meat breeds, the lack of extensive state subsidies for beef stock require the search for new forms of organization of business models of farming in the beef cattle breeding industry [1, 2].

Assessment of the overall dynamics of production of meat livestock and poultry products in Russia for the period 2013-2023 shows an increase of, 3269 thousand tonnes, which allows

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us to judge about the self-sufficiency of meat products in the domestic food market (Figure 1).

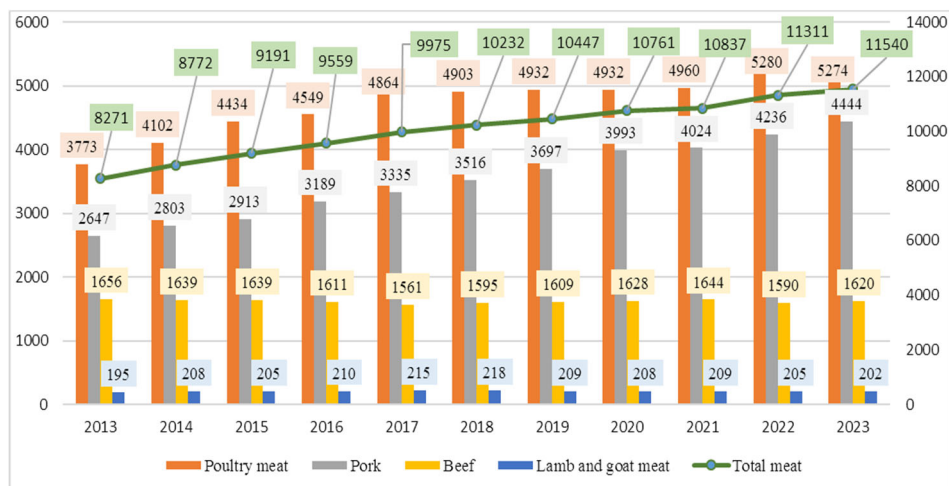


Fig. 1. Meat production volumes in Russia, a thousand tonnes in slaughter weight.

The analysis of the structure of meat production has shown that the main share by the end of 2023 is still poultry meat up to 45.7%, pork takes a share of 38.5%, beef — 14%, mutton and goat meat — 1.75%. The above figures confirm the existence of the problem and unattractiveness of beef cattle breeding as an investment.

Foreign countries — leaders in specialization in beef cattle breeding (PRC, USA, Brazil) have been practicing the model of cluster organization of meat production for many years. As a rule, hundreds of small farmers are in contact with large meat producers, who buy animals and birds from them, send them to specialized farms for rearing and then harvest them at meat processing complexes and sell them [3, 4]. The cluster leader company provides support to its counterparties (consulting, veterinary, technological, financial), thus ensuring a uniform standard of production and quality.

2 Materials and methods

The main theoretical and empirical basis for writing this study was the works of Russian and foreign authors that reveal the principles of cluster activity organization in agricultural production. In order to form the general concept of the work, the methods of scientific research were applied, based on the generation of new knowledge, systematization of existing experience, hypothesis building and analogies.

The actual digital material served as an illustrative example of the results of the AIC sector and individual livestock clusters. It was taken from the reporting analytical documents of the Federal State Statistics Service of the Russian Federation, the Ministry of Agriculture of the Russian Federation, and individual analytical agencies. The statistical material was processed using the methods of graphical and economic analysis, and the methods of generalization, logic, and comparison were used to generate conclusions.

3 Results and discussion

The sectors of the Russian AIC, which have been demonstrating record crop and livestock production in recent years, are in need of organizational and infrastructural support. In fact,

many agricultural organizations today operate in isolation without interacting with each other, which in some cases complicates the solution of many organizational issues (sales, transportation, procurement, information, consulting) [5].

The experience of many developed countries specializing in agricultural production has proven that without cooperation, it is very difficult for small farms to survive in a highly competitive environment where large agroholdings with powerful financial and technological resources operate. Examples of crop clusters in France, a network of livestock feedlots in Canada, food clusters in Austria, livestock and greenhouse clusters in the Netherlands, airparks in China and Mexico. These prove by their results the viability of the cluster model of business organization in the AIC.

The Russian practice of implementing the cluster approach in agriculture began with the Belgorod Region, which was the first to unite and create a powerful meat processing cluster in 2014, which currently provides 15 million people with meat products. Today, the cluster approach is being implemented in many agricultural regions specializing in meat production.

For example, the Voronezh region has built its own meat cluster, which includes all enterprises from small farms to the largest meat producers (LLC “Ecoproduct”, GC “Zarechye” and others), as well as scientific centers and crop enterprises that provide livestock farming with fodder [6, 7]. The main idea of creating such a cluster was to preserve for the region all stages of creating a surplus product (from genetic research to the realization of finished meat forms).

Another example of clustering of beef cattle breeding is the launch in 2023 of the construction of a meat agro-cluster in the Buryat Republic, with an investment of RUB 4 billion. The peculiarity of such a cluster will lie in its vertically integrated architecture, including the production of feed crops, meat production, processing of raw materials and its sale. The cluster should stimulate the creation of small farms specializing in meat livestock farming in the region, and will also provide local residents with new jobs [8].

Volga regions The Republic of Bashkortostan and the Orenburg Region registered the first Agro-Industrial Cluster of the Volga Federal District in 2022, bringing together 10 major meat industry enterprises, 4 educational and technological organizations. The core of the cluster is made up of enterprises belonging to the largest agricultural holding of the Republic of Bashkortostan, GC “Tavros”. The average turnover of products of this cluster is about 25 billion rubles, the number of jobs created is 3000, the level of cooperation is from 72% to 92%.

Examples of implementation of the cluster approach in different regions of Russia have shown that it is an open system within which farms and large specialized companies interact harmoniously [9]. The cluster has a developed network of intraoperative links and communication channels, through which all cluster members interact with the integrator company (the core) that manages these links. Let's consider schematically a typical cluster architecture (Figure 2).

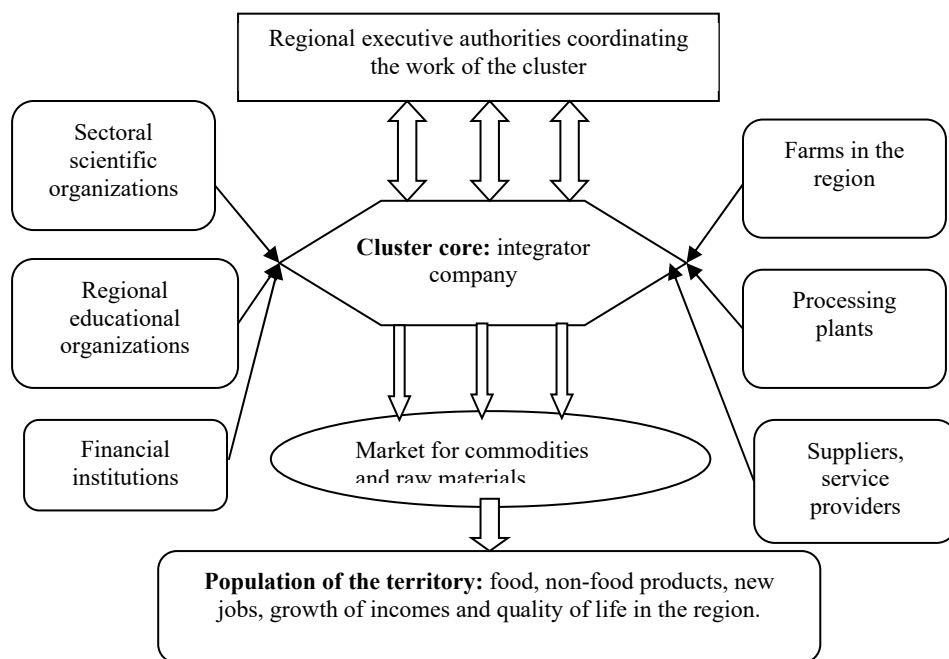


Fig. 2. Architecture of a typical Territory Agro-cluster.

The agro-cluster structure presented in Fig. 2 allows us to identify its place and role in the production structure of the territory. The core of the cluster is an accumulating platform that connects and closes the main flows of information, resources and interconnects the counter interests of various cluster participants. The main consumers of the effects will be the residents of the region (jobs, income growth) and the regional administration (growth in the number of residents, revenues to the regional budget, growth in the quality of life in the territory).

The cluster design allows improving communication between agricultural producers, to implement decisions quickly, to reduce the time of search and feedback, to ensure and control the implementation of operational activities. Within the cluster, small farmers are provided with a certain protection and guarantee of fulfillment of obligations by a more powerful partner. The integrator in this case is an organizer and an umpire who gives protection and negotiates between the participants. In addition, to realize large purchases, the integrator buys up small quantities of livestock and is able to make large deliveries for agricultural holdings. In this association, each participant gets certain advantages [10, 11].

The assessment of the potential for expanding cluster development in the agro-industrial complex showed that 30-40 thousand hectares of agricultural land is required for its creation. At the same time, for the livestock cluster will also be suitable and unproblematic areas (ravines, faults, undergrowth), which can serve for cattle grazing in the pasture period. The capacity of such a cluster is estimated at 15 thousand animals of meat breeds, which will be served by a staff of 100 people and about 150 farms. The peculiarity of such a business scheme lies in new opportunities for villagers to self-dealing and provide a stable income in the places of permanent residence [12, 13].

Rural areas of Russia, which are now in a state of slow decline and degradation due to the outflow of population to large cities. Thanks to this approach, they receive a new impetus for the development of their own production base and receive resources for the creation of social

infrastructure for local residents. This approach is realized in the presence of strong state support for the agro-industrial complex and coordination of the cluster's work on the part of the regional administration.

Cash flows through the cluster will be controlled by the integrator company, which will redistribute them taking into account the needs of all participants (in infrastructure services, veterinary support, technological support, uninterrupted supply of feed, seeds and sales of finished products) [14, 15]. In addition, the cluster will keep accurate records of all incoming and outgoing flows, as it will reflect the real picture of the cluster's performance and the effect it has on a particular territory.

Farmers who will form the basis for the livestock cluster can join the cluster on a contractual basis [16]. For example, they are certified to prove their qualifications, then contracted to manage a small livestock farm with clear cow-calf targets. The farmer will work for a fee, the amount of which depends on the indicators obtained (number of calves, weight gain of young animals). Then, after 2–3 years of work, the farmer has the right to purchase this farm on favorable terms and continue working in the cow-calf system, but already as the owner of his own business. This model is unique for Russia, as it has not been applied, so it can be adapted within the cluster and attract young initiative specialists willing to work in the AIC sector [17, 18].

Thus, the cluster approach has many advantages compared to other structures operating in the sector. Lack of motivation of young specialists to work in rural areas, high risks of selling finished products, lack of financial support, high entry parameters into the industry, etc. factors do not allow scaling livestock farms within the framework of sustainable rural development.

4 Conclusion

In conclusion, let us summarize and emphasize the main advantages that the cluster approach of the livestock sector provides for all stakeholders.

Firstly, the state and regions are primarily interested in the development of the production base in rural areas, which are now gradually shrinking due to the migration outflow of population to large cities. State subsidies and social payments have not solved this problem, so new models and solutions are needed to overcome the current situation. The creation of a cluster with a certain specialization (livestock breeding) in a depressed area allows activating entrepreneurial initiatives and form a new production base with sustainable financial flows.

Secondly, today the population of rural areas migrates to the cities due to the lack of sources of income, lack of necessary social infrastructure in the villages. A cluster that combines several enterprises and opens opportunities for farming under the contract model creates necessary jobs, motivates peasants to engage in productive activities in the places of permanent residence, thereby increasing the welfare of families. It also creates a revenue base for the administration of territories to create the necessary infrastructure (kindergarten, school, hospital, public transport, communications) in the area.

Thirdly, activation of the livestock breeding sector will form a production base of meat raw materials for processing enterprises. Thus, food security and sustainability of the state will grow, as deep-processed products with high added value will be produced inside the country. Export supplies of Russian meat products to friendly countries will continue, and the revenue part of the state budget will be filled.

The presented directions of increasing the sustainability of regional development will allow forming new trends for future economic growth through the activation of entrepreneurial activity in rural areas. In this case, the livestock cluster model acts as a mechanism for implementing the strategy of progressive movement of the national economy.

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