
Directions to Improve Economic Efficiency of Regional Production

I. N. Sycheva¹, O. Yu. Voronkova², T. M. Vorozheykina³,
G. R. Yusupova⁴, A. N. Semenova^{5,6}, A. E. Ilyin⁷

Abstract:

The paper provides theoretical grounding and the directions for improving the economic efficiency of the regional feedstuff production. The study develops a conceptual model of distributing management functions of feedstuff production between the regional authorities of state sectoral and economic management and the district level.

The authors suggest the methodology for calculating potential capacity of intraregional feedstuff market, considering the demands of all categories of agricultural manufacturers.

The study examines possibilities for implementing the strategy of diversified growth and development of the intraregional feedstuff market, including the terms of interaction between the large and micro-business inside the industry and cooperation of micro-business feedstuff manufacturers with agricultural production.

The authors have developed the methodology for assessing the efficiency of feedstuff production, based on the aggregate estimation of the management organization, conditions for the development of feedstuff production and changes in the feedstuff production and livestock breeding industry.

Keywords: *Development of feedstuff production, institutional mechanism, method for efficiency determination.*

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¹I.I. Polzunov Altai state technical university, Barnaul, Russia, madam.si4eva2010@yandex.ru

²Altai state University, Barnaul, Russia, olka2004@yandex.ru

³The Financial University under the Government of the Russian Federation, Russian State Agrarian University - Moscow Agricultural Academy named after K.A. Timiryazev, Moscow, Russia, vorozheykina@gmail.com

⁴Kazan Innovative University named after V. G. Timiryasov, Kazan, Russia, y-gulnarin@mail.ru

⁵Plekhanov Russian University of Economics, Moscow, Russia; sevenovaalbina@mail.ru

⁶Moscow Institute of Economics, Moscow, Russia; sevenovaalbina@mail.ru

⁷Kursk State Agricultural Academy, Kursk, Russia, ilyinalekevg@yandex.ru

1. Introduction

The development of feedstuff production has a strategic character as it directly affects the efficiency of livestock breeding addressing the issue of import substitution in the domestic agro-industrial market. However, as compared to other industries of the agro-industrial complex (AIC) the feedstuff production in the region does not have its own development strategy due to several reasons:

- ✓ the economic entities of the AIC subject to different sectoral authorities – some of them – to the agriculture, others – to the food industry;
- ✓ the strategies developed at the federal level focus on the implementation of large-scale projects. Therefore, the regions fallen beyond the programs of their implementation have no independent programs of support for feedstuff production. Due to this it, is only supported by means of the other departmental programs;
- ✓ regional authorities direct their efforts to the support of the collective sector of agricultural production, mainly major agricultural manufacturers. The agricultural micro-business being low-income and excluded from the official sales markets do not receive enough feedstuff which is one of the reasons of 50% underutilization of feedstuff plants (Peshkova *et al.*, 2017; Cherepovitsyn and Ilinova, 2018; Kaiyrbayeva *et al.*, 2018; Marliyah *et al.*, 2018).

Thus, the problem of the systematic complex approach to the development of feedstuff production and its strategic management is quite urgent. The objective of the research is to develop the theoretical and methodological provisions for improving the feedstuff production in the region.

2. Methodology

At the beginning of the 1990s under the active development of the business activity in Russia the economic science considered the purchase and sale of commodities focused on meeting the consumer demands and income maximization as a link in the theoretical chain "enterprise-external environment" (Gvishiani, 1970), being individual in regard to every economic entity (Borisova, 2002; Gerchikova, 1996; Kuchinsky, 2002; Pungin, 2001; Taranov *et al.*, 2013; Cherepovitsyn *et al.*, 2017; Zyrin and Ilinova, 2016; Aleksandrova *et al.*, 2015; Akhmetshin *et al.*, 2018a; 2018b; Sharafutdinov *et al.*, 2017; Dmitrieva *et al.*, 2017; Chernopyatov *et al.*, 2018). The state of the environment comes to the fore.

At the end of the 1980s-the beginning of the 1990s, the strategic management became applicable in the state and municipal management (Nagimov *et al.*, 2018; Polyakova *et al.*, 2018; Khairutdinov *et al.*, 2018; Kamolov, 2017). The aggregation of results of these studies has allowed scientists to formulate the management task with regard to the economic entity as the support of development of the main types

of production activity of an enterprise during a long period of time and sustainable profit by ensuring stable position in the certain commodity markets due to production of competitive products and active marketing activity (Ageeva, 2004; Ayvazyan *et al.*, 1998; Diane and Bukerel, 1993; Borisova, 2004; Akhmetshin *et al.*, 2018d; Plotnikov *et al.*, 2018a; 2018b; Lebedeva *et al.*, 2016; Gurieva *et al.*, 2016; Mullakhmetov *et al.*, 2016; Mahajan, and Golahit, 2017; Afzal *et al.*, 2018).

Modern studies do not adequately reflect the problem of managing feedstuff production capable of satisfying the demand for all types of agricultural business. The theoretical and methodological base of research was formed by the works of the classical authors and modern foreign and national scientists and economists specializing in the management of feedstuff production. The scientific works and the normative legal documents of the federal and regional authorities regarding the problems of the development of agricultural industries (Aleksandrova *et al.*, 2016), small and medium business, along with authors' personal developments served as the initial basis of research. The authors used the following methods of scientific research: monographic, economic and statistic, grouping methods, correlation and regression analysis, abstract and logic, calculation and constructive, comparative and analytical and other methods of research.

3. Results and Discussion

Currently, about 70 sectors of the national economy participate directly or indirectly in the production of the AIC final product (Voronkova *et al.*, 2018b). In the total specific weight of the AIC industries, the feedstuff production accounts for 10% (Grigoryeva, 2014, Ministry of Agriculture of the Russian Federation). The structure and level of development of livestock breeding in the region form the demand for types of animal feedingstuff.

The key to the efficiency of livestock breeding is this holistic balanced feedstuff. In 2014, the share of holistic feeds in the European countries amounted to 80-98%, in Russia it was about 36% for beef cattle breeding, 55% for pig breeding, 88% for poultry breeding (Shkunkova and Postovalov, 1988). At the same time, the requirements for various feedstuff components depend on the age-sex group and the season (housing season or grazing season), etc. Naturally, the provision with holistic feeds is reflected in the profitability of beef production, which has been declining annually regardless of the industry. This is reflected in Table 1.

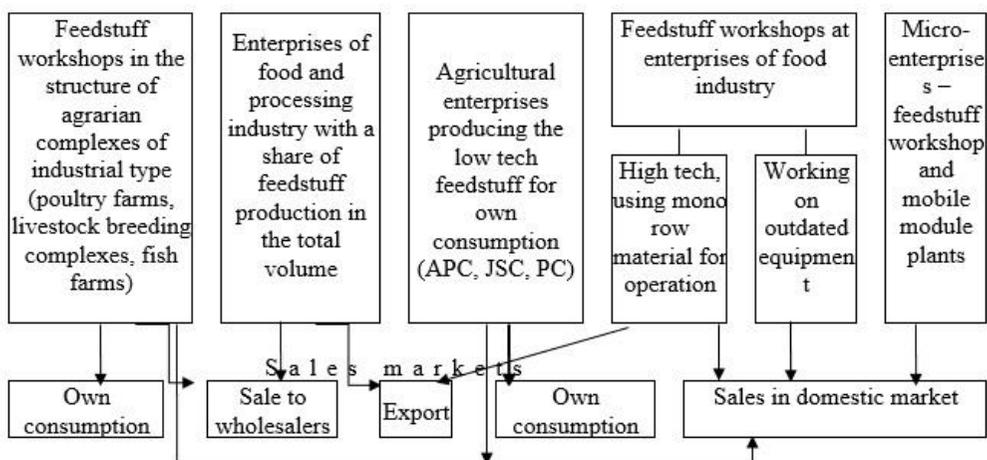
Table 1. Dynamics of the level of profitability and sale of animal products in the Russian Federation (excluding industrial processing)

	2010	2011	2012	2013	2014	2014 to 2010, ±
The level of profitability from the sale of cattle meat, %	-19.6	-26.2	-21.0	-21.6	-32.9	-13.3
The level of profitability from the	27.7	25.6	25.9	30.6	8.3	-19.4

sale of pork, %						
The level of profitability from the sale of poultry meat (all types), %	25.0	19.1	13.5	18.4	2.5	-22.5
The level of profitability from the sale of milk, %	4.0	18.6	15.3	11.8	14.4	10.4
The level of profitability from the sale of eggs (all types), %	20.2	13.8	11.0	14.7	17.2	-3

The feedstuff production in the region is an aggregate of the economic entities located on the territory with the particular administrative borders manufacturing homogeneous products demanded in the certain segment of the market with a single administrative authority. As an object of strategic management, the feedstuff production is presented by five types of enterprises, each of which has its own sales market that predetermines the selection of their development strategy (Akhmetshin, 2017a) (Figure1).

Figure 1. Types of feedstuff manufacturers and the sales channels for their products



The Altai Territory covers the area of 167 996 sq.km. This territory is home to about 2.4 mln. people, 44.3% of them is rural population. The total area of agricultural lands is 10273.5 thousand hectares, including 6567.4 thousand hectares of tilled fields and 3428.9 thousand hectares of forage lands, that determines its agricultural direction. The share of agriculture of the territory in the gross regional product is from 18.5% to 20% depending upon the weather conditions. With the all-Russia volume of production of agricultural products of 3790.8 bln rubles, the share of the Altai Territory (121.3 bln rubles) was only 3.2% in 2014 (Official site of the Altai Territory).

Almost all feedstuff production of the Altai Territory is concentrated in the districts of location of the large livestock breeding complexes (Zonalny, Klyuchevsky,

Pavlovsky, Pervomaysky, Smolensky, Tabunsky, Troitsky, Khabarsky and Tselinny districts, Aleysk, Barnaul, Biysk and Rubtsovsk). The districts with the largest population of beef cattle in private subsidiary farms and family farms do not provide for such production facilities. However, there is practically no infrastructure of providing the agricultural micro-business with feedstuff.

The planning functions of the feedstuff production are distributed among the three levels of management entities: state-owned sectoral, economic sectoral and economic entities. The study justifies that the strategy of diversified growth directed to the development of the intraregional market is the general strategy for the regional feedstuff production with favorable natural and weather conditions for agriculture (Voronkova *et al.*, 2018a). The authors believe that under the development strategy of feedstuff production and with the formation of relevant economic authority will ensure the development of a unified feedstuff production over the next 5 years. This will be formed based on the cooperation of the large and small business, modern manufacturing technologies, intraregional production of protein, vitamin and mineral supplements (PVMS) and plant raw material for their production (Smirnova and Rudenko, 2016; Sycheva *et al.*, 2018; Krotkova, 2016).

The authors suggest developing the mechanism of providing the agricultural micro-business with feedstuff based on participation of the large and medium business, cooperation principle and state support. The industry entities will not only manufacture feedstuff but also provide services of individual selection of their composition and delivery to consumers. The authors offer to include wholesale supplies of feedstuff, amino acids and PVMS into the functions of the large and medium feedstuff plants at the local level, to provide consultants to form the structure of their market products and assist in the acquisition of the new equipment. There are 22 large animal feedstuff plants in the Altai Territory, the workload of which does not exceed 50%. The change of strategy in the domestic market could ensure their development and the complete loading of the production facilities.

The economic management system will be based on the delegation of powers of strategic management by the economic entities, and organization of infrastructure of interaction of large and small business, consumers and suppliers. When grounding the demand for the equipment and their territorial location for micro-enterprises of feedstuff production the authors considered the demand for feedstuff first in those territories where dairy cattle breeding is efficiently managed by individual farms (Table 2). The problem of financing the purchase and installation of this equipment is offered to be solved based on public-private partnership (Kolesnikov *et al.*, 2018; Kozlov *et al.*, 2018). For this purpose, the authors have determined the share of all participants of the projects, considering the conditions of co-financing between the budget of the Russian Federation and the Altai Territory: 7.1 mln. rubles will be required from the federal budget, 0.4 mln. rubles – from the regional budget and 3.2 mln. rubles – from the entrepreneurs in total. Following the fact that the maintenance of the individual private subsidiary farms is rather expensive, it was proposed to

consolidate them around a small animal feedstuff production and form a cooperative of feedstuff consumers, which would spend 40.0-41.0 thousand rubles for the purchase of the equipment. The same cooperative will be engaged in the sale of products manufactured by the participants (Figure 2). Otherwise, there will be no growth in the volumes of feedstuff consumption.

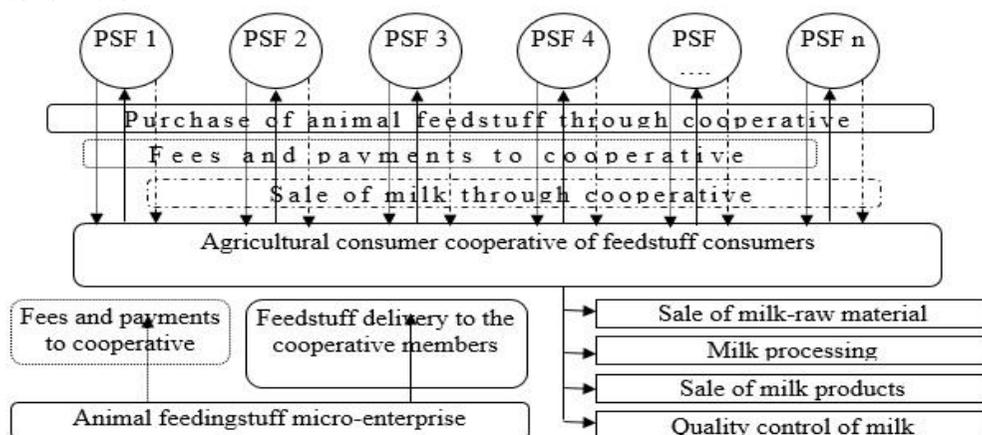
Table 2. Calculation of the number of plants of different brands to provide the territory with the potential volume of feedstuff

Territory (city, municipal district)	Potential demand for animal feedingstu ff, tons	Number of equipment, brand					
		Prok-150		Prok -500-M		Prok -500	
		Producti on Volume per year, tons	Numb er of plants	Producti on Volume per year, tons	Num ber of plants	Producti on Volume per year, tons	Numb er of plants
Novoaltaisk	5432,448	600	9,1	3120	1,7	1560	3,48
Belokurikha	1896,09	600	3,2	3120	0,6	1560	1,22
Loktevsky	62883,87	600	104,8	3120	20,2	1560	40,31
Solton	15362,68	600	25,6	3120	4,9	1560	9,85
Egoryevsky	35832,33	600	59,7	3120	11,5	1560	22,97
Tselinny	49420,21	600	82,4	3120	15,8	1560	31,68
Kurinsky	56672,61	600	94,5	3120	18,2	1560	36,33
Kamensky	37959,02	600	63,3	3120	12,2	1560	24,33
Kalmansky	19580,05	600	32,6	3120	6,3	1560	12,55
Pankrushikhin sky	49199,33	600	82,0	3120	15,8	1560	31,54
Biysk	5356,646	600	8,9	3120	1,7	1560	3,43

In other municipalities, the authors suggest deciding on the question of the location of feedstuff micro-enterprises in close cooperation with the major feedstuff plants as potential investors (Akhmetshin et al., 2017b). The study justifies the number of livestock of dairy herd, necessary for the smooth operation of feedstuff plants: for "Prok-500-M" – 1733 animals, "Prok-500" – 867 animals. The population of herd animals will determine the number of private subsidiary farms – members of the cooperative for the territory.

The authors offer to include the production of feedstuff mixes for various types of agricultural animals into the functions of animal feedstuff micro-enterprises along with pre-packing of feedstuff produced by the large and medium animal feedstuff plants and manufactured independently. These functions should also include the delivery of feedstuff to consumers, consultation services to the agricultural manufacturers regarding the formation of the rations of animals, the organization of feeding and storage of feedstuff, active participation in the formation of the agricultural consumer cooperatives for provision with the feedstuff.

Figure 2. Business functioning of the agricultural cooperative of feedstuff consumers



The efficiency of strategic management of the feedstuff production in the region could be defined with a set of indicators (64) and criteria of their estimation (satisfactory, unsatisfactory, good) that are estimated by the experts (Table 3) (Akhmetshin *et al.*, 2018c). Those include public servants of the state and municipal authorities, managers of animal feedstuff factories, heads of the family farms and owners of the private subsidiary farms, 24 people in total.

Table 3. Indicators for measuring the efficiency of strategic management of feedstuff production in the region

Criteria	Number of indicators
Operation in accordance with the strategy of feedstuff production	5
State of management entities	2
State of the intraregional market of feedstuff	17
Operating efficiency of feedstuff production entities	24
General state of the industry	2
State of the infrastructure of industry development	10
Conditions for business in the municipal district	4

The total number of indicators in every category relating to the general number of indicators allows revealing the state (quality) of feedstuff production management in the region. The indicators that fall into the "unsatisfactory" category indicate the most problematic elements in the system. Summarizing the expert survey showed that the state of management is on the edge between "unsatisfactory" and "satisfactory", inclining to the satisfactory only due to seven positions.

4. Conclusion

Feedstuff production in the region is a weakly structured system, the elements of which (economic entities of the large, medium and small business) diverge in their

interests and the departmental affiliation that decreases the efficiency of the strategic management in the industry. In this regard, the authors suggested adding the task of consolidation of the economic entities for the formation of the single market space of the region and distributing functions according to their implementation between the state and economic management bodies.

The study presents an algorithm for the strategic analysis of feedstuff production in the region. The method of strategic analysis was supplemented by the method for calculating the provision of the intraregional market with feedstuff. The authors provide a theoretical grounding for the algorithm of strategic planning of feedstuff production in the region. In the development of the planning methodology, questions have been proposed to substantiate strategic alternatives for the development of feedstuff production and the sequence of their selection. As a result of the study, the authors have systematized the tasks for the regional authorities and the methods for their achievement. The functions of strategic planning were distributed among the three levels of management – state and economic regional branch management bodies and economic entities of the large feedstuff plants.

The main development tendencies of the livestock breeding of the Altai Territory represented almost by all types of agricultural animals, that provide the market products, are the active development of the large agricultural business, actively supported by the state within the frameworks of the development program of beef and dairy cattle breeding. During the years of implementation of the latter 67 animal feedstuff plants were put into operation and, therefore, in the collective sector it is fully provided with feedstuff. The study has proved that the provision of the intraregional market with animal feedstuff is max. 52% and the demand for animal feedstuff of the beef and dairy breeding in the Altai Territory is 1159.77 thousand tons per year.

The segment of the agricultural micro-business with a low effective demand is under-provided with feedstuff. The main threats to the subjects of feedstuff production include the decrease in the number of beef cattle population in the collective sector and the private subsidiary farms, the transfer of the latter to the breeding of small ruminants (which leads to the necessity of diversification of the feedstuff production), the low level of solvency and financial literacy of the population in the questions of feedstuff use, and competition from suppliers in other regions. The main opportunities for the development of the feed milling industry of the region include efficient livestock breeding in private farms, where about 50% of the cattle livestock is contained, and the booming farming sector (the growth of the cattle population by 85-94%), mainly dealing with beef cattle breeding.

The feedstuff production is profitable; it updates the production facilities constantly. The processing enterprises build and modernize feedstuff plants and workshops independently – 6 enterprises with the average day capacity from 120 to 540 tons of animal feedingstuff products per day have been put into operation. It is planned to

build a plant of vitamin and mineral supplements for animal feedstuff. However, the production facilities of the aggregate animal feedstuff are used only at 50%. Almost all feedstuff production is concentrated in the districts of location of the large livestock breeding complexes. There are no production facilities in the districts of the prevailing location of beef cattle in the private subsidiary farms and family farms. Moreover, there is no logistics for their provision with the feedstuff.

The feedstuff production has dual reporting line: the production located at the agricultural enterprises is subordinated to the chief administrator of the farm, the production located at the grain mills and meat-processing plants is subordinated to the administration of food industry. This decreases the efficiency of its management in general and makes strategic planning impossible. Strategic management functions of the feedstuff production in the region are divided among the three entities – state-owned sectoral (development of strategy and its annual adjustment, support of its infrastructure of implementation), economic management body (development of strategic plan and monitoring its implementation, implementation of all types of functional strategies, development of the regional program of support of the feedstuff production in the region) and municipal authorities (support of small business and consumer cooperation, territorial distribution of animal feedstuff plants, control over the use of state support funds).

The authors suggest determining the efficiency of strategic management of the feedstuff production in the region through a set of indicators (64) and criteria of their estimation (satisfactory, unsatisfactory, good) that are estimated by the experts. The maximal number of responses in every category regarding the total number of indicators allows revealing the state (quality) of management of the feedstuff production in the region, while the indicators that fall into the "unsatisfactory" category indicate the most problematic elements in the system.

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