Food security insurance in industrial region

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Abstract. Providing the population of Russia with dairy products of its own production determines the food independence of the country, which depends on the development of the national agro-industrial complex. In this case, the possibility of increasing the productivity of animals with the lowest cost of production plays an important role. The solution of problems of development of animal farming is socially relevant today. The analysis of publications on the studied aspects of the formation of science-based system of dairy farming at the regional level, a comparative analysis of natural quantities characterizing the effectiveness of dairy cattle breeding are the main methods of research used in the work. According to our study rates of increase in volumes of products of livestock production in comparison with crop production, led to the fact that the livestock production became the leading industry in formation of gross output of agriculture of Chelyabinsk region. Using such indicator as consumption of basic food products per capita we concluded that the coconsumption of main products of a delivery concedes to the recommended medical norms therefore a part of food is imported from other regions of the Russian Federation. The problems inherent in branch of dairy cattle breeding of Russia are characteristic also of Chelyabinsk region. Reduction of a livestock of the cattle continues, body height of efficiency doesn't compensate decrease in gross production of milk, doesn't provide a breeding. However, the dairy cattle breeding makes enough significant contribution to the volume of a regional product and ensuring food security of the region therefore it is necessary to find paths of effective use of capacity of the given industry for stabilization of economy.

1. Introduction

Providing the population of Russia with dairy products of its own production determines the food independence of the country which depends on the development of the national agro-industrial complex [1].

Nowadays Russia, with its huge potential in the agricultural sector, is forced to import more than 40% of the food consumed from abroad. In connection with the introduction of sanctions against Russia, the transition to an innovative way of development of dairy farming and feed production, in particular, is vital and inevitable, as it will contribute to the saturation of food of domestic production [2].

The doctrine of food security of the Russian Federation defines the threshold values of milk production and dairy products (in terms of milk) – not less than 90% of total consumption. To this date in the Chelyabinsk region this figure is not met. The share of dairy products of own production is 47% in the region.
The main task is to bring dairy products to the parameters determined by the regional target Program "Development of agriculture in Chelyabinsk region for 2013-2020".

In our opinion, import substitution must also be viewed as an important economic tool for implementing the state’s development strategy, characterized by the modernization of a number of sectors of the national economy, taking into account their competitive and geographical characteristics. The success of the development of dairy cattle depends on the level and usefulness of animal feeding, optimal conditions, the rate of increase in genetic potential, the use of highly efficient technologies.

In this connection, research to identify ways of effective management of dairy cattle will be essential.

2. Materials and methods
The analysis of publications on the studied aspects of the formation of science-based system of dairy farming at the regional level, a comparative analysis of natural quantities characterizing the effectiveness of dairy cattle breeding are the main methods of research used in the work [3]. All marked indicators are viewed in dynamics. The statistical data on the functioning of the agricultural sector of the Chelyabinsk region are the sources of information [1].

The agro-industrial complex of the Russian Federation is considered to be an integral part of the national economic complex. In inter-sectoral relations the agricultural sector uses products from 80 sectors of the national economy. In the same case it supplies raw materials and different products to more than 70 other industries. Inter-sectoral calculations show that each employee of agriculture guarantees employment of 7 people in other sectors of the economy. The living standards and welfare of the residents, the volume and feeding device, the average daily profit, the use of products and services, the social conditions of life in much degree depend on AIC.

The success of the development of dairy cattle depends on the level and usefulness of animal feeding, optimal conditions, the rate of increase in their genetic potential, the use of highly efficient technologies. In this connection, research of identifying ways of effective management of dairy cattle will be essential [4]. Chelyabinsk region has historically developed as a zone of developed animal farming, especially dairy. Dairy and dairy and meat farming are the leading branches of the agro-industrial complex of the region. In 1990 animal farming has produced 64% of the gross output of agriculture at current prices. In 2010 the share of livestock products amounted to 67% in the structure of gross agricultural production (Table 1).

| Year | Gross output, million rubles | Crop farming | Animal farming |
|------|-----------------------------|--------------|---------------|
|      |                             | million rubles | % | million rubles | % |
| 1990 | 1961                        | 712          | 36 | 1249          | 64 |
| 2006 | 46465                       | 24120        | 52 | 22345         | 48 |
| 2007 | 50501                       | 25055        | 50 | 25446         | 50 |
| 2008 | 63611                       | 30518        | 48 | 33093         | 52 |
| 2009 | 62174                       | 26749        | 43 | 35425         | 57 |
| 2010 | 59567                       | 19882        | 33 | 39685         | 67 |
| 2013 | 79998                       | 30105        | 37 | 49893         | 63 |
| 2014 | 88380                       | 33106        | 38 | 55274         | 62 |
| 2015 | 118268                      | 44123        | 37 | 74145         | 63 |
| 2016 | 128372                      | 48009        | 37 | 80362         | 63 |

The decrease in production is largely due to the fact that the agricultural producer was unprepared for the transition to market relations which occurred without the creation of an appropriate economic base in the agricultural sector.
In 2016, the volume of gross agricultural output in the region amounted to 128.372 million rubles (growth of 84% by 2012), including crop farming – 48.009 million rubles (growth of 2 times), animal farming – 80.362 million rubles (growth of 1.7 times).

3. Research results

Thus, on the basis of the received results it is logical to draw the following conclusions:

1. Rates of increase in volumes of products of livestock production in comparison with crop production, led to the fact that the livestock production became the leading industry in formation of gross output of agriculture of Chelyabinsk region;
2. Consumption of main products of a delivery concedes to the recommended medical norms therefore a part of food is imported from other regions of the Russian Federation;
3. The problems inherent in branch of dairy cattle breeding of Russia are characteristic also of Chelyabinsk region. Reduction of a livestock of the cattle continues, body height of efficiency doesn't compensate decrease in gross production of milk, doesn't provide a breeding.
4. The dairy cattle breeding makes enough significant contribution to the volume of a regional product and ensuring food security of the region therefore it is necessary to find paths of effective use of capacity of the given industry for stabilization of economy.

With a pronounced extensive nature of agriculture for the production of livestock products per capita in recent years, the region has occupied one of the leading places in the Ural Federal district. In Russia in 1991 consumption of basic food per capita was the following: meat – 69 kg, milk – 347 kg, eggs – 288 PCs. In 1991 in the Chelyabinsk region 178.5 tons of meat, 1040.5 thousand tons of milk, 1113.5 million eggs were produced in all categories of farms which were per capita 66 kg of meat in slaughter weight, 283 kg of milk, 279 pieces of eggs. During the years of reforms consumption of basic food products decreased and in 2009 it amounted to the level of 1991: in Russia – meat and meat products – 97%, milk and dairy products – 71%; in the Chelyabinsk region, respectively, 108% (increased due to poultry, 64%, 92% (table 2).

The economic condition and economic activity of an agricultural production is determined by resource indicators. Fertile agricultural land; arable land; sown area; livestock, its pedigree and tribal composition and some others are the main ones.

Table 2. Consumption of basic food products per capita, kg

| Region                  | Years   |          |          |          |          |
|-------------------------|---------|----------|----------|----------|----------|
|                         | 2005    | 2006     | 2007     | 2008     | 2009     |
| **Meat and meat products** |         |          |          |          |          |
| Russian Federation      | 55      | 59       | 62       | 66       | 67       |
| Ural Federal district   | 54      | 56       | 59       | 64       | 64       |
| Chelyabinsk region      | 59      | 63       | 65       | 70       | 71       |
| **Milk and dairy products** |         |          |          |          |          |
| Russian Federation      | 234     | 238      | 241      | 243      | 246      |
| Ural Federal district   | 194     | 201      | 204      | 205      | 209      |
| Chelyabinsk region      | 181     | 180      | 199      | 204      | 202      |
| **Eggs, pieces**        |         |          |          |          |          |
| Russian Federation      | 251     | 257      | 256      | 254      | 262      |
| Ural Federal district   | 261     | 265      | 264      | 262      | 268      |
| Chelyabinsk region      | 248     | 258      | 258      | 253      | 258      |

For the analyzed period these indicators in the Chelyabinsk region have undergone a sharp change and, as a rule, in the direction of deterioration. Thus, the sown area by 2010 decreased by 25% compared to 1995. The number of cattle decreased by 39% and the number of pigs decreased by 10.4%.
The decrease in the number of livestock in recent years is mainly due to the following reasons: the lack of working capital of producers, high costs of animal maintenance [5], low purchase prices for products that do not cover the costs, weak food supply, high prices for feed, low level of reproduction of the herd, insufficient staffing of livestock farms by livestock workers.

Nowadays there are some positive trends in the development of animal farming but the situation has not yet been fully stabilized. There is still a reduction in the number of cattle. More than 4 thousand cows are eliminated from the main herd every year.

In 2010 the milking herds in the agricultural organizations of the region decreased by 12.8 thousand heads, which is 7.5% of the total number (Table 3).

Table 3. Main indicators of milk production in Russia, Ural Federal district and Chelyabinsk region in 2005-2016

| Region                  | 2005   | 2010   | 2012   | 2013   | 2014   | 2015   | 2016   |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|
| Number of cows in farms of all categories, thousand heads |        |        |        |        |        |        |        |
| Russian Federation      | 4522.2 | 8844.8 | 8858.6 | 8661.0 | 8531.1 | 8408.1 | 8263.4 |
| Ural Federal district   | 559.1  | 515.0  | 482.6  | 466.9  | 425.7  | 412.7  | 404.4  |
| Chelyabinsk region      | 191.1  | 177.3  | 160.5  | 138.2  | 133.1  | 125.9  |        |
| Milk yield per 1 cow in agricultural organizations, per year, kg |        |        |        |        |        |        |        |
| Russian Federation      | 3292   | 4189   | 4521   | 150.9  | 4841   | 5140   | 5370   |
| Ural Federal district   | 3360   | 4487   | 4876   | 4519   | 5355   | 5594   | 5778   |
| Chelyabinsk region      | 2762   | 3762   | 3792   | 4896   | 4272   | 4869   | 5036   |
| Milk production in farms of all categories, thousand tons |        |        |        |        |        |        |        |
| Russian Federation      | 34069.9| 31847.3| 31755.8| 30526.2| 30790.9| 30796.9| 30757.9|
| Ural Federal district   | 1952.2 | 2096.2 | 2077.9 | 2023.9 | 1998.2 | 1904.7 | 1897.8 |
| Chelyabinsk region      | 531.7  | 584.9  | 524.8  | 494.7  | 484.1  | 466.5  | 455.2  |

One of the main reasons why farms give up cows and refuse dairy business is the shortage of workers in the village and the deterioration of livestock facilities [6]. If in 2005 in the region 48.1 thousand people were employed in the peasant labor, including 24.8 thousand people in animal farming, in 2010 their number decreased to 31.0 and 18.1 thousand and continues to decline. Significant deterioration of production capacity remains an important problem [7]. Cooling the milk, increasing the grade and storage require special equipment and high costs.

4. Conclusion

Thus, the main activities in the framework of improving the effectiveness of support for regional agriculture can be grouped into 9 main vectors:

1. Maintaining state support for the development of the industry and improving the efficiency of budget spending for these purposes;
2. More active involvement of not only state financial resources into the AIC of the region, but also funds from private investors;
3. Increased attention to the topic of innovation in the agro-industrial complex, effectiveness in the integration of the interaction of science, agricultural producers, the use of advanced technologies;
4. Staffing;
5. Development of a competitive environment in the agro-industrial complex, protection of the Omsk food market from unfair, poor-quality competition;
6. Organization of complete processing cycles for all agricultural products;
7. Ensuring the accelerated development of priority sub-sectors of agriculture, primarily livestock (including dairy and beef cattle);
8. Formation of a full-fledged bond of government and business not through separate fragments of interaction with agricultural enterprises and public associations, but through a systematic approach;

9. Increasing the attractiveness of life in the countryside.

All the above allows us to conclude that the rate of increase in livestock production compared to crop farming, led to the fact that livestock has become a leading sector of the formation of gross agricultural output of the Chelyabinsk region. Supporting agriculture, the state allows the national product to be competitive. In terms of import substitution demand for products in the industry is increasing that meets the high quality of requirements, analogues of which are under embargo, however, for the implementation of the strategy requires timely support. The state should provide agricultural producers with the necessary amount of support for the implementation of the program.

The strategic objectives of the development of dairy cattle in the region are the development of modern dairy farming as the main sector of employment of rural residents, the production of high-quality competitive products, ensuring of guaranteed profitability to all participants of the dairy industry [8], the creation of an attractive investment climate.

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