Innovative and investment activity as the basis for the formation of production potential and sustainable development of dairy cattle breeding

O Yu Gavrilova and M A Fedorova
Krasnoyarsk State Agrarian University, 90 Mira Av., Krasnoyarsk, 660049, Russia

E-mail: marina-grande@yandex.ru

Abstract. The formation of the production potential and sustainable development of the dairy cattle breeding industry as a whole is impossible without the innovative and investment activity of business entities. The innovative activity of organizations in the agricultural sector is much lower than the average Russian level, which acts as a deterrent to the development of agriculture. As practice shows it is necessary to develop tools for forming the production potential of dairy cattle breeding on an innovative basis for the dairy cattle breeding industry. At the same time, the low level of innovation implementation is completely dependent on the low level of investment activity. In addition, the two types of activity are affected by the specifics of the dairy cattle breeding industry, in particular, the low investment attractiveness of the industry is observed as a result of the long return on funds invested in the dairy cattle breeding industry, and as a result, production modernization is proceeding at a slower rate than is claimed.

1. Introduction
At present, the following global problems of the Russian economy remain achieving sustainable agricultural development, building productive capacities, ensuring food security, increasing competitiveness, and improving the quality of life of the population. The solution of the sounded problems is possible only with the growing role of investment and innovative activity of the domestic agricultural sector, including dairy cattle breeding.

2. The purpose of the study
To analyse modern trends of investment and innovative activity in general and in the industry of dairy cattle breeding in Russia and Krasnoyarsk region as well.

The sustainable development of the state is directly influenced by the sustainable development of the region and sustainable development of the region, in turn, depends on sustainable development of individual sectors, among which the leading one is dairy farming [1]. Dairy cattle breeding in Krasnoyarsk territory is economically and socially important for the region. At the same time as the author of the work [2] considers the basic blocks that constitute a model of sustainable development of dairy cattle breeding are the economic and social subsystems, the external environment which shapes the ecological subsystem. In the structure of commodity products of agriculture, its proportion in dynamics for the last five years is in the range 25-30% and is dominant. For the dairy sector of the region characterized by the same trends, as in the whole country, contributing to the further degradation of the sector is expressed in the reduction of the population and slow growth of productivity of dairy herds.
Sustainable development of dairy cattle breeding, as in the whole agricultural sector, requires the formation of production capacity of the industry, which in turn is not possible without the use of a different kind of innovation typical for this particular sector.

In Russia most of the agricultural organizations are characterized by technological backwardness, and the introduction of technological innovations is the most important for the present.

We analyse the innovative activity of organizations in Russian regions, based on the official data of the Federal State Statistic Service [3].

Table 1. The proportion of organizations implementing technological innovations, in the total number of organizations surveyed, by constituent entities of the Russian Federation, %.

| Year | Index                      | 2014 | 2015 | 2016 | 2017 By the 3rd edition of the Oslo Guide criteria | 2018 By the 4th edition of the Oslo Guide criteria |
|------|----------------------------|------|------|------|--------------------------------------------------|--------------------------------------------------|
|      |                            |      |      |      |                                                 |                                                 |
| 2014 | Russia - total             | 8.8  | 8.3  | 7.3  | 7.5                                              | 20.8                                             |
| 2015 | Central F D               | 9.8  | 9.8  | 9.0  | 8.6                                              | 24.6                                             |
| 2016 | Northwestern F D          | 8.9  | 8.1  | 7.1  | 7.6                                              | 21.4                                             |
|      | Southern F D              | 6.7  | 6.7  | 6.2  | 7.5                                              | 18.5                                             |
|      | North Caucasian F D       | 5.8  | 4.4  | 2.6  | 2.9                                              | 11.3                                             |
|      | Volga F D                 | 10.4 | 9.5  | 8.4  | 8.1                                              | 19.9                                             |
|      | Urals F D                 | 7.1  | 6.7  | 6.5  | 7.3                                              | 24.6                                             |
|      | Siberian Federal District | 8.2  | 7.6  | 6.2  | 6.7                                              | 17.0                                             |
|      | - Krasnoyarsk territory   | 8.4  | 7.8  | 6.1  | 6.1                                              | 19.2                                             |
|      | Far Eastern F D           | 7.4  | 6.0  | 5.4  | 5.1                                              | 18.2                                             |

The innovative activity of organizations across Russian regions varies significantly, it is evidenced by official data, in particular, the level of the indicator in the Krasnoyarsk territory in 2018 amounted to 16.4%, which is slightly higher than in the Siberian Federal District (16.0%), but lower than the average Russian level (19.8%), in addition, there is a decrease in the indicator compared to the previous 2017 year.

If we analyse the innovation activity of organizations by industry sector as a whole in Russia, it should be noted that the proportion of organizations engaged in this type of innovation in industry is 9.2%, and in agriculture only 3.4% [3]. In terms of innovation activity in industry, Russia occupies the 28th position among the leading European countries, and it should be noted that in Belgium, which occupies the first position it is 59.7% [4].

Table 2. The proportion of organizations implementing technological innovations, in the total number of organizations surveyed, in the Russian Federation, by type of economic activity in agriculture, % [3].

| Index                          | 2017 By the 3rd edition of the Oslo Guide criteria | 2018 By the 4th edition of the Oslo Guide criteria |
|-------------------------------|--------------------------------------------------|--------------------------------------------------|
|                                |                                                  |                                                  |
| Russia - total                 | 7.5                                              | 20.8                                             |
| - annual crop cultivation      | 3.9                                              | 6.2                                              |
| - perennial crops cultivation  | 2.6                                              | 6.9                                              |
| - animal husbandry             | 2.9                                              | 4.4                                              |

An analysis of the level of technological innovation implementation by type of economic activity in agriculture showed that in 2018, the share of organizations engaged in technological innovation in the livestock industry amounted to 4.7%, which is four times lower than the average level in Russia (19.8%).
This lag is not unacceptable, since it reduces the possibility of providing the population with livestock products in accordance with the criteria reflected in the Russian Federation's Food Security Doctrine.

In addition, it should be noted that the unevenness of this indicator is observed in the regions as well, in particular, the proportion of organizations implementing technological innovations, in the total number of organizations examined in the livestock industry in the Krasnoyarsk territory in 2017 amounted to 1.8% [3], which is more than two times lower than in Russia as a whole.

To introduce innovations in dairy cattle breeding, it is necessary to ensure conditions for the formation of innovative activity in the industry, i.e. to develop tools for the formation of the production potential of dairy cattle breeding on an innovative basis. “The production potential of an enterprise (or an individual industry) is its capabilities, expressed in terms of volume of production in physical terms, which depends both on the quantity, quality and ratio of resources, and on the level of their return” [5]. We will justify possible tools for forming the production potential of dairy cattle breeding:

1. Creation of regional information and consulting services or consulting companies. The modern economy is characterized by a large flow of diverse information, including on the introduction of innovation, the formation of innovative processes, investment opportunities in innovation, the formation of investment activity of agricultural organizations as a whole, as well as the effectiveness of introducing one or another innovation in specific production conditions. Against the background of this information flow, it is difficult for managers and specialists of organizations to independently monitor this information; consulting companies can provide significant assistance.

2. When developing the program of production modernization or technical re-equipment is necessary to conduct a technical audit, the purpose of which is the examination and development of recommendations for the implementation of organizational and technical measures aimed at improving the competitiveness of existing production facilities either as a separate technological solutions. Quality process audit allows agricultural producers to solve a number of immediate issues: to reveal reserves of increase of efficiency of use of production funds (growth capital productivity); to increase productivity; improve product quality and reduce production costs.

3. Complex modernization of technological processes in branch of dairy cattle breeding. The modernization of the sector should be considered in the context of the policy of modernization of the Russian economy, at least in the framework of the "Strategy of machine-technological modernization of agriculture of Russia until 2020" as one of its main priorities. Modernization of branch of dairy cattle breeding may affect two areas – modernization of fixed and working capital and the modernization of the control system industry. Industry modernization is the process of improving the quality of cultivated breeds of farm animals, technology of production, machinery and equipment, organization of production and labour.

4. To ensure the technical security of branch of dairy cattle breeding. The effect of the above-said strategy is causally related to the provision of technological security of agrarian sector, and of branch of dairy cattle breeding in particular, through the development of national agricultural machinery.

5. Formation of an investment climate. The lack of equity financial resources to ensure innovative development is one of the primary problems of agricultural production, respectively, ensuring reasonable access to financial resources is the lever of innovative activity of agricultural organizations.

6. Retraining system. To raise the level of technological and technical knowledge in the industry by creating an innovative development system, modernizing the training process as the basis for the formation of innovative agroeconomics in general at the Russian level, as well as in the industry context.

Innovation activity is completely dependent on the investment activity of business entities; therefore, it is advisable to analyse them simultaneously.

As a result of structural transformations, since the beginning of the 1990s, the agricultural sector has undergone changes, reflected in a decrease in milk production, the number of livestock in the dairy sector and a decrease in the production potential of the industry. A new impetus for the restoration of dairy cattle breeding was the State Program "Development of Agriculture and Regulation of Agricultural Products, Raw Materials and Food Markets for 2020".
The amount of investments aimed at the development of agriculture in recent years is 2-4% of the total investment in fixed assets. Figure 1 shows the volume of investment aimed at the development of agriculture in the regional context.

![Figure 1. Investments in fixed assets aimed at the development of agriculture, million rubles [6].](image)

The scale of investments in fixed assets aimed at the development of agriculture for the analysed period throughout the country and the Siberian Federal District has a tendency to increase. The increase in investment in 2018 compared to 2015 amounted to 43%. In the Krasnoyarsk Territory, a paradoxical situation is observed, as a result of which, in the reporting year in relation to the base year 2015, there was a decrease in investments by 10.6% and amounted to 4978.1 million rubles. The maximum investment infusion in the Krasnoyarsk Territory is observed in 2017 - 6647.3 million rubles.

Investment activity in dairy cattle breeding is expressed in a one-time investment of cash and material resources and should be aimed primarily at modernizing existing and building new livestock complexes and farms. Figure 2 shows the dynamics of commissioning of premises for cattle.

![Figure 2. Commissioning of facilities for cattle, thousand cattle places [6, 7, 8].](image)

The scale of commissioning of livestock buildings for cattle has various vectors in dynamics over the period under review, both in the direction of increase and decrease. In 2010, 500 cattle places were introduced in the Krasnoyarsk territory. On the whole, this indicator reached a value of 111.1 thousand cattle places in the Russian Federation, in the Siberian Federal District - 16.5 thousand cattle places. It
should be noted that by the reporting year 2018, this indicator in the region increased 2.2 times, in the Russian Federation - 2.2 times. It should also be noted that during the study period the highest peak in the commissioning of premises in the region and the Siberian Federal District was observed in 2012. The specific weight of the premises put into operation for cattle in the Territory in relation to the level in the Siberian Federal District is 6.7%.

In our opinion, the analysis of the data presented in figure 2 indicates an unfavourable dynamics in the studied area and determines the need to increase investment and innovative activity in dairy cattle breeding, aimed at eliminating destructive phenomena in the growth of dairy production, as well as ensuring the growth of production potential and sustainable development. However, it should be noted that in the next few years, starting from 2019 to 2031, it is planned to implement 75 projects with a total investment of 61.3 billion rubles [9], which will undoubtedly serve as an impetus for sustainable development of the agricultural sector.

As a result of the long return on investment in dairy cattle breeding, there is a low investment attractiveness of the industry, and as a result, production modernization is proceeding at a slower pace than is claimed.

The investment attractiveness of the dairy industry is adversely affected by the high borrowing of agricultural organizations, which is caused by the “refusal” of banking institutions to provide loans at a reduced rate (ordinary consumer loans at a high rate are offered). The noted difficulties in attracting financial resources, as well as the low availability of equity financial resources, negatively affect the development of dairy cattle breeding. We believe that in order to solve the problems noted, it is necessary in the first instance to ensure a high level of awareness of the diversity of industry-specific innovations, as well as increase the availability of investment credit resources.

3. Conclusion
Sustainable development of dairy cattle breeding, as well as the agrarian sector of the economy as a whole, requires the formation of the production potential of the industry, which, in turn, is not possible without using the achievements of scientific and technological progress specific to this area. However, an analysis of the level of introduction of technological innovations in agriculture indicates that in the livestock industry the proportion of organizations engaged in technological innovations is several times lower than the average Russian level. This lag is one of the many destructive phenomena, which is not unacceptable since there is a risk of lowering food security in Russia.

To introduce innovations in dairy cattle breeding, it is necessary to ensure conditions for the formation of innovative activity in the industry, i.e. to develop tools for the formation of production potential and increase the level of investment activity. In recent years, the amount of investment aimed at the development of agriculture is only 2-4% of the total investment in fixed assets. In our opinion, weak investment, and innovative activity in the dairy subsector of livestock breeding has a detrimental effect on the whole mechanism of formation of production potential and sustainable development of dairy cattle breeding.

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