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INNOVATION ACTIVITY AS A MAJOR FACTOR IN DEVELOPMENT OF AGRICULTURE

Intensive innovation activity has become an essential part of development in agricultural sector nowadays. Moreover, it is considered to be the major factor in the system of those contributing to the development and efficiency of production in the market economy. The strategy of shaping and advancing of the innovation system in the sector is aimed at creating and assimilating the novelties which will make it possible to launch a new technological structure of production and ensure enterprises' competitiveness in both domestic and international markets. The given article deals with conditions and factors affecting the innovative development of farming as well as describes priority trends in development of innovation activities in agriculture of the region.

Keywords: innovation, agriculture, competitiveness.

At present a new innovation-based paradigm of development in world economy is being established. Russia cannot remain indifferent to the processes and is due to promote innovation activities in all the sectors of its national economy, including agriculture. Transition to the innovative type of development is caused not only by the urgent need for solving the problems of the Russian agricultural sector, but also by the goals and objectives set in this area.

Innovation activity has become a major factor in development of agriculture in the modern world while its maximum employment is the only way to overcome the crisis and to promote a steady progress in farming. Considering the ever-increasing dynamism of social and economic changes alongside with the growing pressure from the world economy Russia has to make a rapid transfer to the innovative mode of development in agriculture, to re-establish the strategically important economic sector on the qualitatively different technical basis meeting the up-to-date tendencies. Otherwise, the agrarian sector of the economy of the country is doomed to desperately lag behind and turn ultimately noncompetitive. [5]

Farmers all over the world strive for reinforcement of high-technology in their production of which economically developed countries can serve as the best example. It is this particular tendency that enables them to keep the balance of food demand and supply in the domestic market, provides the opportunities to easily penetrate into the leading world markets, to oust and bring to ruin the national commodity producers. Hence, the Russian Federation has no other way

but to set and consistently fulfill the task of innovative development in agriculture. A laborious study of Russian and foreign sources of information on the subject proved that innovative development implies, first and foremost, constructive and creative dynamics paving the way for creation and implementation of novelties. Some researchers regard innovative development in complex with science, while others believe it to be a post-scientific activity when a complete innovative product comes into practical use. So, what is meant by the term "innovative product"?

An innovative product is an outcome of innovative activities which meets the following requirements:

- it is an implementation of an object of intellectual property;
- it fits the required scientific and technological levels;
- it is an original product or it manifests higher scientific and economic performance than its counterparts;
- it is competitive.

An innovative agro-industrial enterprise is a medium for an innovative product. The question arises: "What is an innovative enterprise?" It has become universally accepted to refer to an enterprise as an innovative if over 70% of its total output in monetary terms for an accountable tax period is gained due to innovative products. Should this criterion be applied to Russian enterprises, it will reveal that the number of innovative enterprises in the agrarian sector is really small.

Taking all the above-mentioned into account, the problem of innovative development can be formulated in the following way: what measures must be taken in order to promote innovative activities in the Russian farming. The

problem has grown particularly acute since the country's transition to market economy.

The urgency of the problem has been repeatedly highlighted in the annual messages of ex-President V.V. Putin to the Federal Assembly of the RF. The issues concerning legislative support of innovative activities have been discussed in parliamentary hearings of the State Duma. The quantity of articles, books and textbooks published as well as the number of conferences and other events related to innovative policies in the Russian economy in general, and in farming in particular have significantly increased. Innovation activity can be defined as the activity which results in production of radically new goods, services and knowledge based on scientific research findings, and this, in its turn, helps develop something which has never existed before. A distinguishing feature of any innovative activity is appearance of a competitive product on the market. A combination of all the ideas represents an innovative activity in its traditional interpretation. [1]

In the foreign countries the transformation of scientific and technical achievements into market products is the most prestigious and significant business. Today the greatest benefit is derived from selling intellectual products (software, licenses, know-how and trade marks). In recent years for some reasons there has been a certain recession in the innovative activity of the agrarian science. Even the existing innovative potential of the agrarian and industrial complex is used within the limits of 4-5 %. For comparison - this parameter in the USA exceeds 50 %.

Many scientific and technical products do not become innovative; every

year many innovative products remain unclaimed in the sphere of agriculture. The analysis of the scientific basis of the agrarian and industrial complex has shown that out of the general number of the finished, accepted and paid-up products and out of the applied scientific and technical products which were recommended for adoption - only 2-3 % were produced in the limited amount, 4-5 % were produced in one or two sectors, and as for 60-70 % of products, 2-3 years later customers, development contractors and consumers of scientific and technical products did not know what had happened to them.

This situation is a consequence of the significant deterioration of the financial condition of the organizations of the agrarian and industrial complex. In the recent years there has been a sharp reduction of money spent on the scientific and applied research. Per 1 hectare of farmland it has been reduced by more than 2 times in comparison with 1990. At the same time in 18 developed countries within the last three decades it has been increased from 0,96 up to 2,2 % of GDP related to agriculture. It turns out that all the world increases its spending on agricultural research while in our country these expenses are reduced.

In the formation of the effective innovative progress of the agrarian and industrial complex little attention is paid to studying the demand for innovations. Marketing has not become the integral element of orders for scientific research and products yet. As a rule, when the projects are selected no profound economic expertise is conducted, the parameters of efficiency and risks are not analyzed, the diagrams of the received results in manufacture are not presented. It leads to what we have mentioned before - many products do not become innovative.

The researchers note that in the current conditions of the innovative agricultural development the role of the information and advisory services significantly increases while their activity needs to be improved, new employees are demanded. The reason why it is so important is that nowadays people working in the sphere of farming do not pay much attention to the scientific innovations, which is connected with

the low economic development of the enterprises.

The experience of the countries abroad (Japan, China, South Korea, the United States, Germany and others) proves that the key element in the successful promotion of products to the market is the level of the management of the design cycle. According to the statistics, overseas for one scientific developer there are 10 managers who complete the work according to the standards demanded, so the products can be introduced. In Russia at the moment, unfortunately, there is an inverse proportion.

The current state of the innovation sphere in Russia indicates serious problems of its functioning – they include lack of clear government policy. Also, agricultural commodity producers have little motivation and interest in the development of innovations. In recent years the modern agricultural science has been investigating the problem of development of the agricultural production in a consistent innovative way, the experts analyze the current state of the industry, the main directions of restoration and further development of the material and technical basis of crops and livestock, the role of the agricultural science in innovations. However, there are some theoretical, methodological and practical problems related to the processes which still need to be solved and argued. These problems are getting more and more topical nowadays, as on the basis of innovations in agriculture we need to face the challenges of the sustainable development of rural areas, we need to improve the quality of life in rural areas for further increases in the efficiency of agricultural production. [3]

The innovation process includes the following steps «science - technology - production - consumption.» In the agrarian and industrial complex the innovation process represents a constant transformation of scientific research and development into new or improved products, materials, new technologies, new forms of organization and management, and applying them in the production for obtaining some effect.

The intensification of the innovation processes is closely connected with the ability of the agrarian economy to cope

with the crisis, also, with the ability of the rural economy and other areas of agrarian and industrial complex to stably function and to be able to compete in the sphere of food production.

The analysis of the social and economic situation in the agrarian sector of the last post-reform years shows that they use the outdated technology, plant varieties and breeds of livestock as well as imperfect methods and forms of organization of production and management. There are no well-tested mechanisms of the innovation activity, there is no system of scientific and technical information that could be corresponding to the market economy and there are no proven effective schemes of cooperation of research institutions with the innovation structures.

The extremely low innovation activity is also connected with the imperfection of the organizing and economic mechanisms of introduction of innovations. This contributes to the degradation of the complex industries, which leads to the increased production costs and low competitiveness of production, impedes social and economic development of the rural areas, drastically reduces the quality of life in rural areas.

The innovation processes in the agrarian and industrial complex have their own specific features. They are distinguished by a variety of regional, sectoral, functional, technological and organizational features. The analysis of the conditions and factors influencing the innovation progress of the agrarian and industrial complex, has allowed us to divide them into negative (constraining the innovation progress) and positive (assisting the acceleration of the innovation processes) conditions (fig. 1). [5]

The conditions and factors that contribute to the innovative development of AIC include the transition to market methods of management, natural resources, significant scientific and educational potential, a large domestic food market, the ability to produce ecologically safe natural foods.

The departmental disunity and the weakening of the scientific potential within the agricultural science should be noted as negative conditions or factors. The domestic agricultural science is characterized by high degree

Conditions and factors of innovative development in AIC		
<i>Negative</i>	<i>Positive</i>	
Departmental disunity and weakening of the scientific potential within the agricultural science		Withdrawal from the administrative management of the economy
High risk of innovative processes in agriculture		Diversity of economic management
Difficult financial situation of organizations		Preserved scientific, educational and industrial capacity
Disparity in prices for agricultural and industrial goods		Capacious food market
Low wages in agriculture, deficit of skilled workers, managers and specialists		Use of technologies
Contraction in domestic demand for food	Decrease in population food self-sufficiency and increase in the share of imports in food banks	
Strengthening of monopoly in AIC and trading markets criminalization	Reduction of state support to the agricultural sector and public funding of scientific and technical programs	
Absence of national innovation policy and strategy	Inadequate lending system, high interest rates on loans to innovation and investment projects	
Absence of a system of management and coordination	Inadequate training of AIC organizations staff in innovation management aspects	

Fig. 1. Conditions and factors affecting the innovative development of AIC.

of complexity of the organizational structure and departmental disunity (more than 20 ministries and agencies involved in addressing agricultural issues); the diversity of science, technology and innovation; a large proportion of studies on regional, sectorial and interdisciplinary aspects; long-term studies of some problems related to the reproduction process. This specificity makes it difficult to manage the agrarian research and the agricultural science in general.

Reduced allocations for science during the reforms resulted in an outflow of young scientists.

One of the features of agriculture is that along with the industrial means of production living organisms – animals and plants – are actively involved in the reproduction process. Their development is subject to the action of natural laws, and it depends on such factors such as climate, weather, heat, moisture, light, and food. V.R. Williams wrote: “For their flourish plants require of a continuous presence or a continuous inflow of four groups of factors – light, heat, water, and nutrients under a continuous condition of simultaneous and joint presence of all four factors in optimal quantities, in absolute equivalence and independence”. [2]

Expanded reproduction in agriculture proceeds in interaction

of economic and natural biological processes. That’s why in innovation management it is necessary to consider not only requirements of economic laws, but also laws of nature: equivalence, indispensability and complexity of vital factors, law of minimum, optimum and maximum. The law of indispensability of factors of production is reflected in the fact that it is impossible for example to compensate fertilizers through selection, the problems of agrotechnics through sort, food through breeding. According to the law of minimum, the growth of production can be held back because of the factor, which is the minimum. For example, the level of productivity of livestock is determined by the substance, most of which is in the food ration. According to the law of maximum the exceeding of some nutrient over the need of animal will not lead to the increase of its productivity. The complex character of innovations in agro-industrial complex makes special demands on innovation mechanism (regulatory and legal framework of the innovation development, organization and management, innovation marketing, development of innovation structure).

In the agriculture even a slightest omission causes unwanted aftermath. K.A. Timiryasev noted: «Nowhere, may be in no other activity is not necessary

to weigh so many different conditions of success, nowhere you need so multilateral data, nowhere can the exceeding of one-sided point of view lead to such failure as in agriculture».

The difficulty of agriculture and its features predetermine the singularity of approaches and methods of management of the innovation process, the combination of different types of innovation, the amplification of the role of the state in the stimulation of the innovations.

It should be noted, that the difficulty and the peculiarities of agriculture are characterized by high level of risks of innovation processes in the agrarian sector. The risk of the financing of the scientific-production outcomes, the risk of the temporary gap between the costs and outcomes, the uncertainty of demand for innovation production are the causes, why the investors don’t want to invest into the development of the agriculture.

For activation of the innovation processes it is necessary to provide the conditions for the extended reproduction in the agrarian sphere, primarily to improve the financial state of enterprises. To the conditions and factors which inhibit the extension of innovations also belong the decline in domestic demand on food, the reduction of the state support of agricultural sector and of the state financing of scientific and

technical programs, underdevelopment of the credit system, high rates on loans, absence of innovation infrastructure and state innovation policy and strategy, insufficient level of training of personnel staff in the agrarian enterprises in area of innovation management.

One of the main obstacles of transition to the path of innovation development is acute shortage of well qualified managers and specialists. Innovative type of development of the agrarian economy is highly determined by the scientific and technical policy of region, by the formation of regional innovation mechanism. Subjects of the Federation have an important role in the realization of the antirecessionary program, by using of novation in genetics and selection, technology, organization, management and social sphere.

To the number of priorities of the development of innovation processes in the regional agriculture belong:

Technological equipment of the agricultural organizations;

Energy- and resource-saving

technologies of production, storage and recycling of the agricultural production;

Reproduction of soil fertility, prevention of all kind of its degradation, development of adaptation technologies of agroecosystems and agrolandscapes;

Development of production of organic products in agriculture. In the North there is an unique possibility to concentrate the production of environmentally friendly products on huge land resources, to work out the technologies of organic husbandry;

Creation of modern system of information and infrastructure support of innovation activity in agriculture;

Development of state innovation policy and strategy on federal and regional level targeted on the formation of advanced technological structures;

Formation of organizational and economic mechanism of functioning of the agriculture on the innovational level;

Strengthening of the role of state organizations in the activation of innovation activity;

Development of region and

municipal innovation programs of agricultural development;

Improvement of the training system for personnel in the innovation activity, which provides the increasing of innovation activity of organizations and commercialization of research results.

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