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INNOVATIVE DEVELOPMENT OF AGRICULTURAL PRODUCTION: PROBLEMS AND SOLUTIONS OF THE AGRARIAN ECONOMY

Abstract. This article discusses not only the problems that need to be solved in the economy today in each direction of research work, but also issues related to the innovative development of agricultural production in the future. **The purpose of the work**. Innovative development of agricultural production in the Republic of Uzbekistan and scientific and methodological substantiation of economic problems and solutions. **Method of work.** A method for determining the effectiveness of financial resources of agrarian science in the Republic of Uzbekistan was proposed, and a comparative study of scientific knowledge was conducted on the most favorable direction for the innovative development of agricultural production. **Results.** Improving the mechanism of financing the system of scientific supply of agriculture, scientific support for the effective development of the network, specific content as a strategic goal of agricultural activities, the variety of climatic and soil conditions of the regions, as well as the development of the sphere are associated with biological processes. **The scale of the results.** The results of the study are the use of a mechanism for the implementation of a large-scale introduction of scientific developments into practice and the transfer of production to the path of scientific innovation development. **Conclusion.** Agriculture is mainly associated with the development of scientific products intended for the development of production, as well as the organization of fundamental and priority applied research carried out by agrarian science, including the scientific support of a competitive product that meets modern requirements in order to create promising scientific developments.

Key words: Agrarian science, agricultural sector, scientific research, scientific developments, scientific product, scientific-production, scientific development, scientific potential, mechanism, improvement.

Introduction. Agriculture–is one of the leading spheres of the economy of the Republic of Uzbekistan. The main priority of the agricultural sector is to

provide the population of the country with food products and industries with hom oshyo. The agricultural sector has long provided the population with food and clothing, which is its most important function in the social sphere. Adequate provision of the population with food products and a high level of purchasing power of the population prevent the emergence of social tension in each country. Also, rural areas are considered the habitat of the population and determine its lifestyle.

In the field of Agriculture, favorable conditions for research work should be created in order to apply new technological achievements, to determine its effect. The introduction of scientific developments in agriculture and the development of scientific institutions according to the results of the study, it is important to improve the mechanism of practical implementation of scientific developments, as well as direct part of the profits received to science. Such a mechanism should include: Organization of direct participation of authors and scientific institutions in the introduction of scientific developments in agriculture; increasing the author's interest in working on the introduction of scientific developments; creation of financial resources for conducting research on new topics in scientific institutions; continuous improvement of the mechanism for stimulating agriculture.

Therefore, it will be necessary to invest in the agricultural economy and finance the introduction of scientific developments, as well as improve the mechanism of direct participation of subjects using scientific developments in this process. Investments and innovations aimed at developing intellectual potential in our country are one of the main factors in the development of the agricultural economy in the future.

In the regions, the further development of agricultural production, creation of a scientifically sound system of regional agriculture taking into account the current state of each region, first, shall make up one of the important features in addressing the issues, listed in the agrarian sector [1].

The research carried out today is mainly linked to the production process of agricultural products. Little attention is paid to the financing of research on the issues of improving techniques and technologies in the latest processes from the production of products.

Materials and methods. Theoretical and methodological foundations of the issues of the scientific foundations of innovative development of production in the agricultural sphere were studied by scientists from foreign countries and the Republic of Uzbekistan on the basis of economic reforms in their research on the strategy of innovative development of Agriculture in the economy.

According to Professor Slepneva, the complexity of agricultural production and its peculiarities determine the need to improve the approaches and methods of innovative management used today, to strengthen the role of the state in stimulating innovation [2].

V.F. In Fedorenko research provides a detailed description of the priorities of innovative development in the sphere: crop production related to the improvement of methods of selection of crops with high productive potential, the development of scientifically sound systems of agriculture and seed production, ensuring the ecological purity of agricultural products [3].

G. Mintzberg defined innovation as a means to overcome established and established patterns of behavior. In this interpretation, the simple development of the production of new products does not become an innovation if it does not lead to changes in the behavior of economic entities [4].

Denying such an interpretation of the concept of "innovation", M. Porter believed that "most innovations are incremental and routine in nature", they are more the result of accumulating a large amount of small new knowledge than one grandiose scientific and technical breakthrough [5].

The comparative characteristic of interpretations of "innovation" and "innovation" in order to understand their nature and the definition of scientific approaches to the control, as a separate step of the innovation process, as well as a set of elements to obtain economic benefits [6].

The main problems of manufacturers of agricultural products: due to the rapid increase in prices for the necessary technical means, the possibility of their purchase decreases, which leads to a weakening of the material technical base of farms and the depreciation of existing equipment [7].

As a result of the influence of the main problems of producers of agricultural products, at the expense of the unit of resources spent, agricultural products have a negative impact on the growth of production efficiency.

In the sustainable development of the country's national economy is associated with the improvement of Agrarian science and agricultural production.

It is known that the main goal of the economic reforms being implemented in the sectors of the economy of the Republic of Uzbekistan is to improve the economic and social conditions of the country's population.

The scientific development of the country's agricultural sphere is important, including: improving the scientific supply system; development of unconventional methods of financing research work; increasing the effectiveness of funds directed to research work; development of a mechanism for stimulating the introduction of

scientific results into practice.

At the new stage of economic reforms carried out in our country, an important basis was the scientific development of agricultural production and ensuring their effective implementation.

The share of Agriculture in the formation of the country's gross domestic product should be assessed. This can be seen through the following indicators (figure 2).

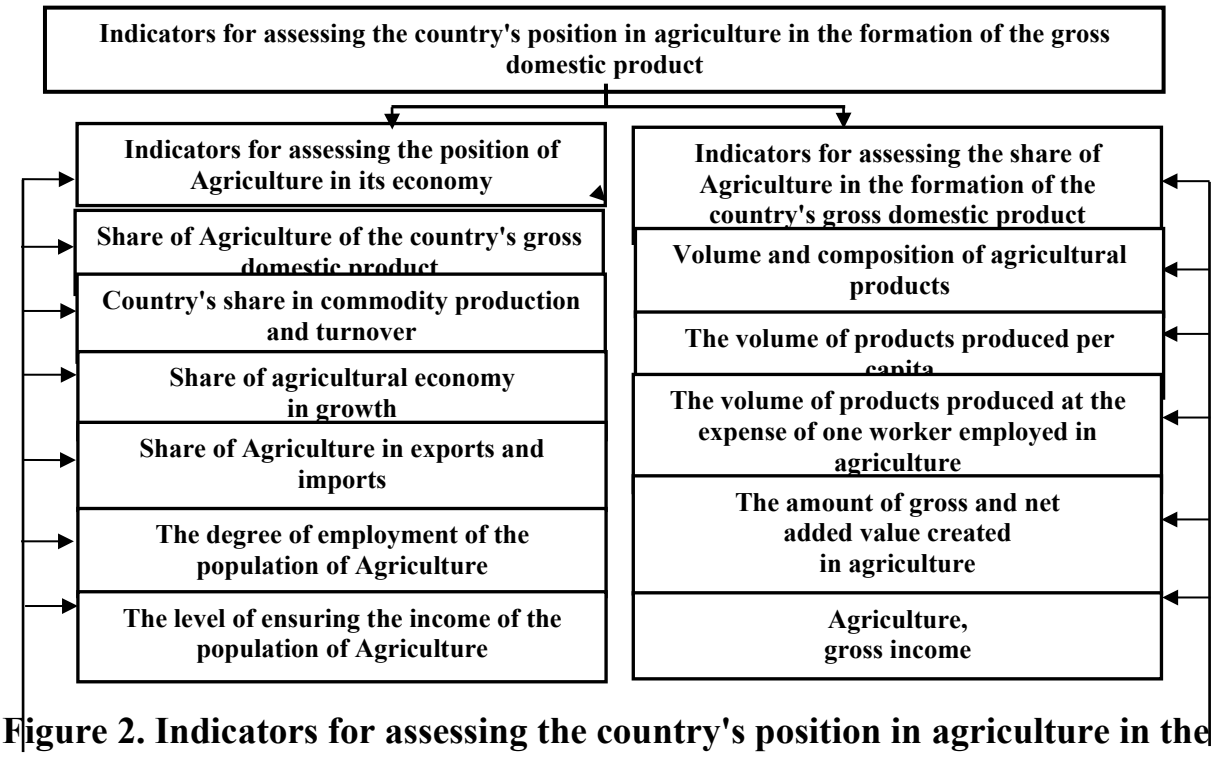

Figure 2. Indicators for assessing the country's position in agriculture in the formation of the gross domestic product[1].

The role of Agriculture in ensuring the economic growth of the country is as follows: supplies food to the population; provides industrial enterprises with raw materials; acting as a market to other sectors of the economy, it serves as a consumer of the resources developed in them.

The process of production of products in agriculture, combining social and biological processes, allows the population to maintain an ecological balance providing the population with food products, along with the supply of raw materials to sphere enterprises, as well as ensuring the socio-demographic development of those working in the industry. That is, agriculture solves extremely important problems at the same time, such as maintaining both production and social, environmental and demographic balance.

Therefore, the assessment of the share of Agriculture in the country's gross domestic product consists of three components related to its activities: production of agricultural products; material and Technical Supply and service system; it is

[1]Source: Compiled on the basis of the author's research.

necessary to approach the systems of processing and selling finished products taking into account the final results.

Agricultural issues. The main attention to agrarian Science in the country is paid to the issues of the priority direction of the scientific development of agricultural production. Despite the measures taken in agriculture, there are still a number of unresolved issues in agriculture and research institutes.

In the conditions of the country's economic reforms in the field of agriculture, it also requires an increase in the price and quality of the products of farms and peasant farms.

The country should study the problems that related ministries, departments, farms, organizations, farms and peasant farms should be solved by investors, evaluate their relevance, summarize and select [8].

The implementation of a scientific project provides an opportunity to raise the scientific supply of the country's agriculture to a new level. The problems that the country faces in agrarian science can be attributed to a system such as (figure 3).

Problems that hinder the increase in the efficiency of agricultural research work, the reasons for their origin		
№	**Problems**	**Causes of origin**
1	Low coefficient of introduction of completed scientific work lack of balance between supply and demand for scientific and technical achievements.	The lack of balance between supply and demand for scientific developments, achievements of Science and technology leads to a lower coeficient of implementation. Most of the current scientific developments are aimed at increasing the production of products. The main emphasis is on production technology. 90 percent of research work is carried out on this, including 60 percent in the field of crop production. Not enough attention is paid to the technologies of that time before and after the production of products.
2	The need to improve the system of Agrarian science and the method of conducting research.	The regions in the country are more based on quantitative indicators than on quality indicators. In the process of choosing a topic, approving it and conducting research, superficial approaches continue. The priority of quantitative indicators leads to an increase in the incomes of farmers and peasants, the preservation of technologies aimed at preserving the environment, a decrease in the competitiveness of agricultural products in the

		international market and a decrease in the level of development.
3	The need to improve the management system of Agrarian science.	There is no connection between research institutes, higher education institutions and relations of production, administrative and economic relations. The duplication of each other in research work, the sending of funds on small topics, the lack of coordination between networks, ministries and departments, the human factor and the low efficiency of other resources hinder innovative development.
4	Shortage of scientific personnel in the scientific-research system of the agricultural sector.	Studies show that for every 10 thousand inhabitants living in the village there are 34 agricultural scientific workers. This pointer is very low. The shift of agricultural scientific technical staff to other fields, where young people prefer to be expert for more Computer Engineering, Biotechnology and economic management systems, can lead to disruption between older and younger scientists. With this condition, agrarian science can collide over the next few decades.
5	The lack of improvement of the state program for the development of Science and technology in the agrarian sphere.	It is this factor that causes a decrease in the scale of research in the agrarian sphere and a decrease in the level of introduction of technological achievements in science. Currently, research work in agriculture is being funded in the amount of 0.1-0.3% of the gross agricultural product, which in some years is even lower. Laboratory equipment for conducting research in the agricultural sector is outdated, the work of scientific workers is at a low level. These are obstacles to the development of Agrarian science and the introduction of completed scientific developments.
6	Lack of knowledge of farmers and peasants about the organization of production.	Of farms and peasant farms cultural and knowledge level low, it prevents the formation of an effective demand for the product of science and technology and its introduction. This situation not only reduces the level of implementation of technical achievements in practice, but also reduces the effectiveness of the use of new technologies, and also leads to a higher risk of using new technology.

Figure 3. Classification of problems that hinder the increase in the effectiveness of agricultural research work in the context of economic reforms[2].

Currently, the development of Agrarian science consists in an in-depth analysis of the listed problems facing science.

Research institutions in each direction of agricultural scientific supply today will need to conduct a large-scale scientific research not only on the problems for which a scientific solution should be found, but also on the problems associated with the development of Agriculture in the future. Based on this, it will be necessary to radically revise and improve the mechanism of selection and financing of research topics of scientific institutions and scientists.

The result of the study of a number of important problems is that the untimely introduction of ready-made scientific developments into production or its late introduction has a certain negative impact on the country's economy. Also: first of all, failure to solve problems in time leads scientists to waste their time, and the late presentation of scientific solutions that need to be introduced into life, as well as the negative effects on their investment, leads to a low level of research; secondly, the delay in solving important problems, the solution of which is considered relevant, leads to a low level of quantity, quality, competitiveness of products and an increase in costs.

The second important issue, further development is advanced techniques and technologies, high-yielding varieties and related to the creation of breeds of productive livestock and the large-scale establishment of their introduction into practice. It should be noted that since the past stages of economic reform are associated with institutional, organizational and legal issues, the processes of introducing these scientific developments into practice are associated with significant expenditure of funds. The measures to be introduced will certainly be related to investment and innovation processes.

On the example of the use of Information Technology in the scientific work Zhukovskaya, attributive models of innovative solutions were identified [9].

It is also noticeable that the introduction of completed work on practical scientific research in proportion to the above situation has also slowed down, and the current mechanism in this regard is not working enough.

The method of solving tasks in the field of Agriculture, problems and issues solutions.

Solving the problems facing agrarian science and agricultural production today (figure 4).

[2]Source: Developed on the basis of the author's research.

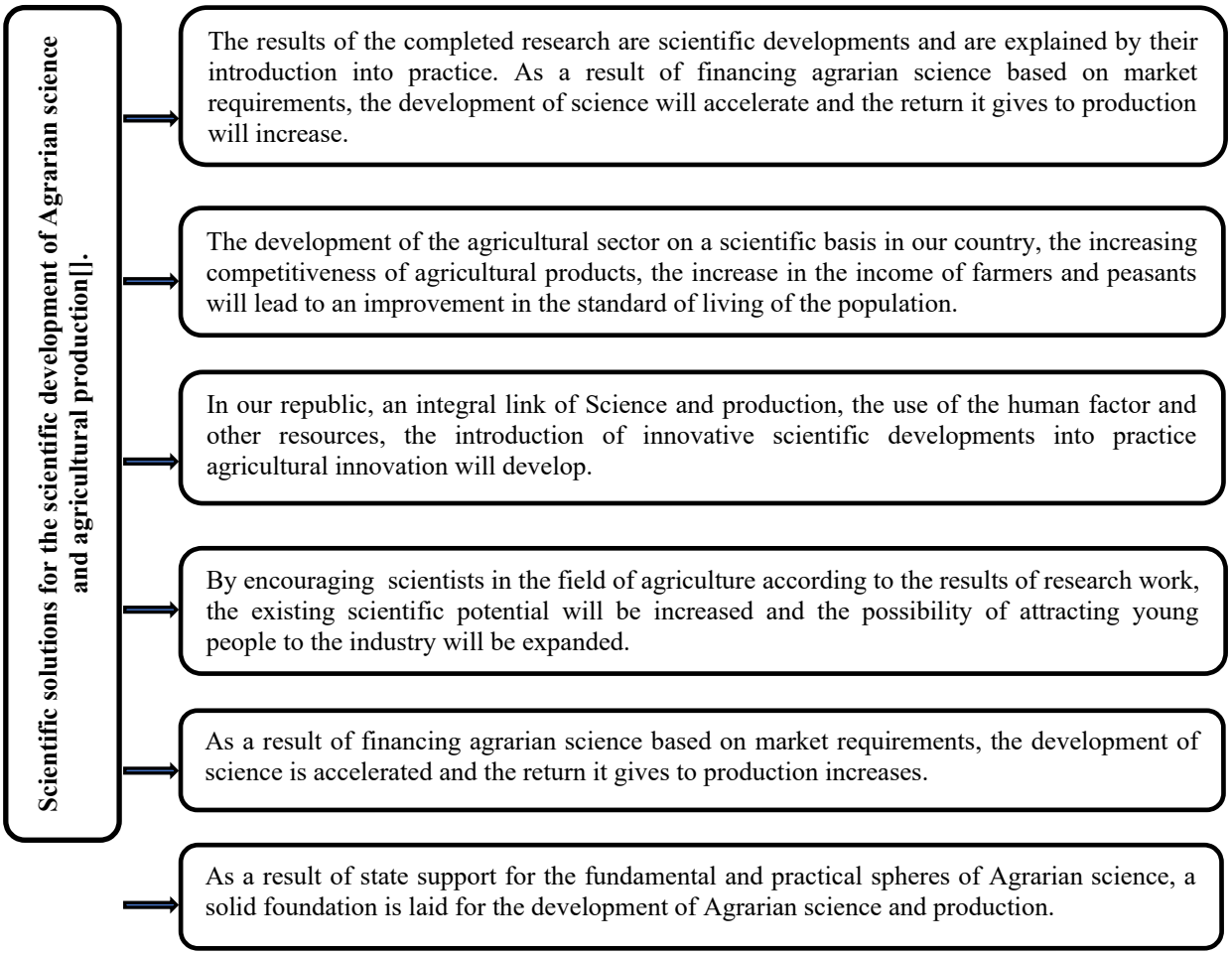

Figure 4. Scientific solutions for the scientific development of Agrarian science and agricultural production[[3]].

In the process of research carried out in finding these solutions, it is necessary that not only scientific research institutions and higher education institutions engaged in science participate, but also the ministries, departments and, of course, the private sector in which the government is required.

The solution of agricultural problems, in turn, is associated with the creation of additional value by diversifying the composition of crops, increasing productivity and livestock productivity, increasing the product quality indicator, reducing losses in the cultivation, collection, transportation and storage of products, developing product processing and marketing issues.

The need to improve the system of scientific provision of Agriculture: determined by the role of the industry in the country's economy, which, in turn, determines the directions for the development of this agricultural sector; ways to develop the field on a scientific basis; determining the priorities of research work; the need to finance research work and increase the efficiency of.

[3]Source: developed by the author.

There are various methods of innovative development of agricultural production, the active use of which increases the production efficiency of the agricultural sector.

Agricultural activities should be adapted to the method of solving tasks in two areas. Methods of solving tasks in the agricultural direction:

- First direction; management of the activities of higher educational institutions and research institutes in the structure of agriculture, the selection of Personnel, their placement, management of postgraduate and doctoral activities, financing, strengthening the material and technical base of scientific institutions, coordination of construction, repair work and other economic activities in agriculture. This direction should include such tasks as managing economic and financial affairs of scientific institutions. This direction should be headed by the scientific center in agriculture.

- Second direction; it is advisable to organize a system that comprehensively summarizes agricultural work, contributes to the integration of Science and production with each other, contributes to the implementation of research results, provides agricultural arable land with guaranteed water, provides rational and targeted use of water, supports the introduction of water-saving technologies in agriculture. As well as involvement of advanced experience of developed countries in agricultural production.

These methods are considered scientific solutions to the problem of solving agricultural tasks.

Such a change in the current structural structure of the country's agricultural system looks like this: increasing the responsibility of researchers, to increase the efficiency of funds aimed at agricultural research. Makes it possible to comprehensively objectively evaluate completed scientific work, including evaluating its effectiveness.

The most optimal direction for the scientific development of the country's agriculture is the implementation of projects, and it is envisaged to solve two issues at once. Implementation of agricultural projects and issues solutions:

- First issue; The fact that one scientific innovation introduced in agriculture is not associated with other scientific innovations in this direction, is not bound by the organizational and economic side, does not provide an opportunity to effectively use from scientific news. In addition, the system of creating projects in agriculture is also not sufficiently established, more precisely, it is necessary to develop specialized enterprises producing projects. It must be said that the customers for the project are also not clear.

- Second issue; We believe that by concentrating financial resources and the mechanism of its use, it will be appropriate to approach the solution of problems as follows. To develop the economy of the country's agrarian sector, it is advisable to introduce a scientific project, to establish special cooperatives that introduce projects, taking into account the difficulty of implementation by farms and peasant farms. Such cooperatives are engaged in the design, creation and implementation of innovative projects. These cooperatives, called “cooperative for the creation and implementation of innovative projects in agriculture”, are in a non-governmental form and work on a commercial basis. In this regard, the issue of the scale of the introduction of innovative projects should also be considered. Agricultural enterprises limit the possibility of implementing an innovation project due to the small size of the land area and production costs, lack of financial resources and, in most cases, the cost of introducing innovations does not justify itself.

The first is to find sources of funding for the structure and mechanism for introducing scientific innovations.

The second is that these resources are concentrated financial resources, and it is also necessary to develop a mechanism for its use.

It provides an opportunity to dwell on these two directions separately, to study the problems in them in more detail, to improve their effective mechanism.

It is obvious that with the introduction of digital technologies and modern agro biotechnologies, automation and robotization of agricultural sector, the list of specialties and competencies of agricultural workers will expand [10].

In our opinion, the researcher and the consumerist of the research results are also obliged to be attached to one system, to create a mechanism of economic relations between them, based on mutual equality, independence.

Such a system can be implemented on the basis of a scientific project. It combines all the factors listed above and ends with the sale of its final product. Thus, as an important link in the introduction of scientific developments, it is necessary to transfer agriculture to the path of scientific innovation development. At the same time, the volume of incomprehensible research for the current consumer is decreasing. The study will be aimed at achieving the set goal and result.

Results

From the introduction of scientific developments in agricultural sectors, it is advisable to take as a basis the economic efficiency that can be obtained at the expense of one hectare. In this case, it is recommended to take the following indicators:

The implementation of these functions is mainly carried out through investments using internal and external sources of financing [11].

- the rate of increase in the yield of agricultural crops due to the introduction of scientific developments (Yi);

- increased level of quality of agricultural products grown due to the introduction of scientific developments (Qi);

- the degree of reduction of Labor consumption on one hectare of arable land, due to the introduction of scientific developments (Lcr);

- the rate of decline in the cost of material and technical resources within one hectare of arable land, due to the introduction of scientific developments (MTcd);

Based on these indicators, it is proposed to calculate the economic efficiency of scientific developments in the following formula (IS):

$$IS¿ \frac{Yi_n}{Yi_o}+\frac{Qi_n}{Qi_o}+\frac{Lcr_o}{Lcr_n}+\frac{MTcd_o}{MTcd_n}\geq 1, \text{ [4]}.$$

Here: Yi_n, Yi_o - to increase the yield of new crops obtained due to the introduction of scientific developments (Yi_n) and the level of old productivity up to the introduction (Yi_o), (c/ga);

Qi_n, Qi_o - an increase in the quality of new products obtained due to the introduction of scientific developments (Qi_n) and an increase in the quality of their old products before the introduction (Qio), (dollar/ga);

Lcr_n, Lcr_o - a reduction in the consumption of new Labor obtained as a result of the introduction of scientific developments (Lcr_n)-and the degree of reduction of old Labor consumption up to the introduction (Lcr_o), (man-hour/ga);

$MTcd_n$, $MTcd_o$ - a decrease in the cost of new material and technical resources obtained due to the introduction of scientific developments ($MTcd_n$) and a decrease in the cost of old material and technical resources up to the introduction ($MTcd_o$) (expense-dollar/ga);

Here, the final result obtained must have a coefficient greater than "1" or equal to 1", otherwise, if the final result obtained is less than "1", the economic effect of the introduction of scientific developments is considered unattainable, and the scientific result is denied.

In our opinion, the research associated with the introduction of scientific developments is the result of scientific activity in practice in order to increase the efficiency and competitiveness of production in agriculture, provide scientific products, improve the quality indicators of goods.

[4]Source: This formula was developed on the basis of research.

Prices based on the effect obtained as a result of the introduction of scientific developments in agricultural sectors prevent price differences between researchers and consumers. Because in this case it is determined by the real impact that can be obtained as a result of the implementation of innovations to farmer farms and peasant farms.

The transition of producers of agricultural products to the path of innovation creates the basis for an increase in the efficiency of production of this product.

Discussion of finding solutions based on our research on the factors identified in the gricultural sector and its aspects in eliminating the problems associated with them.

Factors of innovation activity of subjects of the agricultural sector: scientific support of the scientific development of the sphere, selection of priorities in mastering scientific achievements in agricultural production; accelerate the development of innovations that meet the requirements of agricultural production; economic incentives for the results of scientific activities of employees of the sphere; the interest of agricultural commodity producers in additional incentives from the introduction of scientific developments; the concept of scientific developments recommended in agricultural networks in order to master the production of commodity producers; scientific and organizational training of personnel at all levels of the research process.

Problems in agrarian science that are extremely relevant today: improving the regulatory framework of land relations; improving the financial condition of the country's agricultural sectors; it is necessary to work on improving the relations of economic entities and the interrelationships of the directions of the state agrarian policy.

The tasks set to accelerate the introduction of scientific and technical achievements in the field should be prepared for the training of scientific personnel and their research in market conditions.

It is known that today in the rapidly developing world market, the volume of food products of genetic modification is increasing. In developed countries for the cultivation of food products based on gene engineering, great research is being carried out, and for us, to know the pros or cons of this process, we must also have the appropriate knowledge and a scientific base.

Problems of the agricultural sector which affect the improvement and development of the technological process were identified. It was emphasized that new technologies can reconstruct the structure of the agricultural industry and provide the population with agricultural products [12].

Determination of the entities from the scientific product user today, then that's, choosing a research topic of the entities, order give, financing and its role in the implementation of the completed research work and participation will have to be clarified. It is difficult to find the right solution to the problems listed above without clarifying these issues.

Conclusion and Recommendations

As a result of the research carried out, the following basic scientific conclusions were developed.

The following problems may arise with expanding the scope of research work in the agricultural sector and improving the financing system, the reason for which is as follows: no mechanism has been created for a new approach to research work; a new system of financing research work has not been introduced; scientific product users are currently using this product for free; insufficient knowledge and lack of information about the use of scientific developments in agriculture and the benefits of new technologies; there are not enough concepts of farmers and peasant farms in production, in terms of improving their finances and the benefits they receive; there is not enough environment in agricultural production to introduce innovations in science and technology and technology.

One of the important aspects is the further development of agricultural production in the regions, the creation of a scientifically based system of regional agriculture, based primarily on the current state of each region, in solving the problems listed in the agricultural sectors.

Recommendations for use as a new solution to agricultural problems: introduction of advanced technical-technological, organizational and economic solutions in agricultural activities; high-yielding varieties, livestock, elite seeds, which are characterized as a complex process, are the creation of highly effective agricultural techniques and aggregates. The orientation of agricultural enterprises on the path of scientific development can be determined by analyzing the ability, capabilities and readiness of farms and peasant farms for innovation.

References

1. Babadjanov Abdirashid Musayevich. (2021) Scientific-research in the agrarian sphere: Financing, improvement and innovation. International journal of innovations in engineering research and technology [IJIERT] Volume 8, Issue 4, ISSN: 2394-3696. – Pp. 45-52.

2. L.R. Slepneva. (2014) Innovative development of agriculture in Russia: State and prospects. Journal. BULLETIN OF VSGUTU. Moscow: – No. 6. – Pp. 134-139.

3. Fedorenko V.F. (2011) Scientific and information support of innovative development in the field of agriculture: scientific publishing house. Moscow: FGBNU. "Rosinformagrotech", – 368 p.

4. Mintzberg, G. (2000) School of Strategies [Text] /G. Mintzberg. - Peter Publishing House, – 332 p.

5. Porter, M.E. (2006) Competition: A textbook / M.E. Porter. Moscow: Ed. House "Williams", – 608 p.

6. Goncharov Pavel Viktorovich. (2016) Retrospective analysis of the concept of innovation, its role in development of agricultural enterprises//Modern Management Technology. ISSN 2226-9339. Moscow: –№3 (63).

https://sovman.ru/article/6302/

7. Babadjanov A.M. (2011) Effective use of scientific cum technologically achievements and financing innovative projects in the agricultural sphere//«Agricultural Sciences», USA., VoI. 2, No. 1, – Pp. 28-33

8. Kookuyeva V.V. (2021) The role of the Innovation Assistance Fund in the implementation of the state innovation policy / V. V. Kookuyeva // Economics and entrepreneurship. Moscow. – Vol. 15, – No. 2. – Pp. 326-332.

9. Zhukovskaya I.V., Usarova I.A., Pavlova I.V. (2021) Attributive model of innovative solutions: from theory to practice = Attributive model of innovative solutions: from theory to practice /I. V. Zhukovskaya, I. A. Usarova, I. V. Pavlova // Microeconomics. Moscow. – № 1. – Pp. 22–26.

10. Fassakhova G.R. Staffing of agrarian economy: challenges and solutions. (2020) BIO Web of Conferences 27(13). DOI:10.1051/bioconf/20202700146

11. Molchanova L.A., Benderyk T.G. Growth Factors of investment attractiveness of regions in the context of sustainable development of the economy of the state / L.A. Molchanova, T.G. Benderuk // Competitiveness in the global world: Economics, science, technology. – 2017. – №11 (58). – Pp. 1452-1456

12. Nechaev A.S. NechaevDevelopment of innovative technologies in the agricultural industry. BIO Web of Conferences , 010 (2023) CIBTA-II-2023.

https://doi.org/10.1051/bioconf/20237101043