Analysis of the level of implementation and use of innovations in the agricultural sector of Uzbekistan

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Abstract. Consistent measures are being implemented in the Republic of Uzbekistan to ensure wider integration of science, education and production, to create and apply new knowledge, to introduce innovative technologies and best practices. However, the results of the research on the introduction of innovative technologies and the development of the agrarian sector do not reach the lowest levels of the sec-tor, and the problems that have not been solved for years prevent the agricultural sector from developing more rapidly. In order to assess the level of use of innovations and information-advisory services in agriculture, the article carried out a social survey of different categories of participants of the innovation process using the expert evaluation method. Based on the results of the research, the trainings and seminars held in order to increase the knowledge and skills of the farmers on the use of innovative technologies, their ability to apply them in practice, the demand for innovations and the directions of the innovations being introduced, and the forms of providing information about the innovations in agriculture for farmers and peasants are presented. Also, the author expressed his views on the results of the introduction and use of innovations in the agricultural sector. Keywords: innovation, innovative technologies, knowledge, skills, farms, field days, educational seminar, training, new varieties, plant protection products, techniques and technologies.

1 Introduction

In accordance with world experience, the creation, introduction and wide distribution of new products, services and technological processes based on knowledge has become an important factor in the volume of production, employment and investments, improving product quality, saving labor and material costs, increasing labor productivity, intensive production organization requires the formation of the model and the improvement of its efficiency [1-5]. An important factor in the growth of competitiveness of any country is based on its step-by-step transition to the path of innovative development [6].

According to scientists, in the 21st century, an important role in solving the strategically important problems of various countries will be played by the knowledge-based economy or the innovative economy [7, 8]. Over the past 15 years, the number of people working in the field of innovation has doubled in the United States and Western Europe, and quadrupled in

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Southeast Asia. The share of innovative active industrial enterprises in the European Union is more than 56 percent. In the developed countries of the world, 75 percent of the gross domestic product comes from innovations [9].

Innovations appear as important tools to meet the growing demand and to integrate the sustainable production, processing, distribution and consumption of food products, waste reduction and help to expand the set of networks known as the food system [10]. According to scientists' estimates, by the year 2050, the population of the planet Earth will reach 9.6 billion, and in order to provide them with food, it will be necessary to increase production by 60% compared to today [11]. If we pay attention to foreign trends, the number of innovations created per 1 million population (recognized in foreign patent offices): in the USA – 261.7; in Japan – 213.0; in Germany – 206.3; in France – 171.9; In Russia, it is 1.3 [12].

Today, consistent measures are being implemented in the Republic of Uzbekistan to ensure wider integration of science, education and production, to create and apply new knowledge, to introduce innovative technologies and best practices. However, the results of the research on the introduction of innovative technologies and the development of the agrarian sector do not reach the lowest levels of the sector, and the problems that have not been solved for years prevent the agricultural sector from developing more rapidly. Therefore, in the future, in the agrarian sector, "... creation of effective mechanisms for the dissemination of knowledge integrated with production of research, education and consulting services, development of the system of science, education, information and consulting services" [1] is defined as a priority task. This situation requires conducting systematic research on the use of innovative technologies in agriculture.

2 Materials and Methods

In order to evaluate the level of use of innovations and information and advisory services in agriculture, the author used the expert evaluation method, and different categories of participants of the innovation process (farm managers; Council of farmers, peasant farms and private landowners and heads of provincial departments of the Ministry of Agriculture; heads of scientific research institutes) social survey was carried out. The total number of respondents who took part in the social survey was 321, of which 150 are heads of farms. The survey process covered all quantitative (in terms of land area) groups typical (homogeneous) in the district.

Questionnaires were prepared separately for each category of participants, the results of which were reflected in this article.

The information consultation center includes the process of putting theoretical knowledge into practice [13]. At this point, it should be noted that, according to them, information advisory centers do not only provide technical knowledge, but also operate through institutional mechanisms. Because the activity of the information advisory centers directly interacts with the recipients of information, the difference of opinion of the parties, their action towards a common goal acquires social importance.

As Aker [13] noted in his scientific work, agriculture plays an important role in the economy of developing countries. Direct and indirect factors influence the increase of productivity in agriculture. For example, natural factors, agricultural technology, mineral fertilizers and their use, activities of the information advisory center, etc. Among them, the effective operation of the information advisory center significantly increases the access to information related to agriculture. . Gebremedhin and others [14, 15] also emphasized that the activity of information advisory centers depends on the development of agriculture. In addition, as mentioned by Knickel [16], there are various factors that influence the increase of farm income from an economic point of view.

As in the case of the German state, in this scientific work, the provision of information advisory centers by various (public and private) organizations was shown, and the provision of information advisory services by private organizations was considered as a growing direction and development [17, 18].

Hofman and others [19] analyzed the activity of information centers in Germany. According to them, information and advisory services are provided by state ministries, the Chamber of Agriculture and private organizations. According to them, information and consultation centers should provide the necessary information for agricultural production and work directly with them. At this point, it should be noted that the importance of involving downstream users (for example, farms) in the financing and monitoring of information centers in the German state has been mentioned. Also, a number of problems were mentioned, for example, the number of tasks and the lack of opportunities to fulfill them, management and motivation, i.e., deficiencies in terms of employee job satisfaction, employee qualifications, etc.

3 Results and Discussion

In order to study the level of use of innovations and information-consulting services in the provinces, 156 heads of provincial and district departments of the Council of Farmers, Farmers and Private Estate Land Owners (in 5 districts from each province) and heads of provincial and district departments of the Ministry of Agriculture and 150 people of Tashkent province (Parkent, Kibray and Yangi Yol Districts), Khorezm (Khonka, Bogot, and Yangiarik Districts), Fergana (Altiariq, Kuvasoy, and Kuva Districts), Navoi Province (Kyziltepa, Khatirchi, and Karmana Districts), Surkhandarya Province (Oltinsoy, Uzun, and Denov districts) farm managers (10 farms from each district) participated.

The answers to the question of how many times you participated in training and courses to improve your knowledge and skills in the last three years were as follows: I participated – 88.7% (133 people); did not participate – 11.3% (17 people) (Fig. 1).

The answers to the question of whether you were able to apply the knowledge you received in training and courses in practice were as follows: yes – 85.7% (114 people); no – 14.3% (19 people).

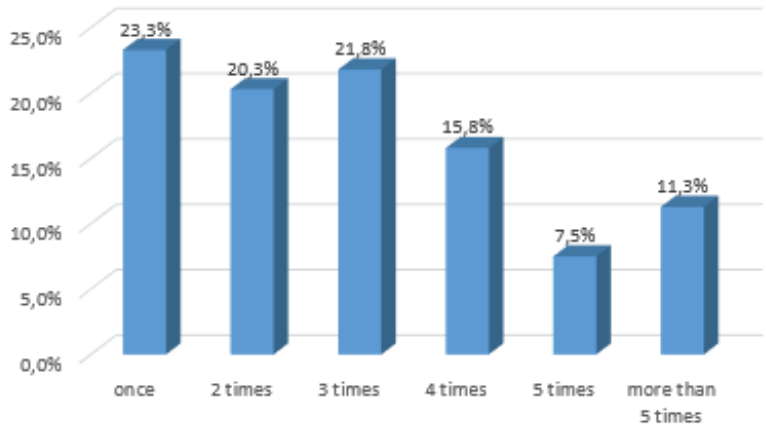

Fig. 1. Participation in training and courses for the improvement of knowledge and skills of farm managers in the last 3 years.

In total, 96% of respondents (114 people) responded positively (that there is a demand) to the question about the existence of demand for innovation (new knowledge).

The question of how you would like to receive information about innovations was answered as follows (several answer options are provided) (Figure 2).

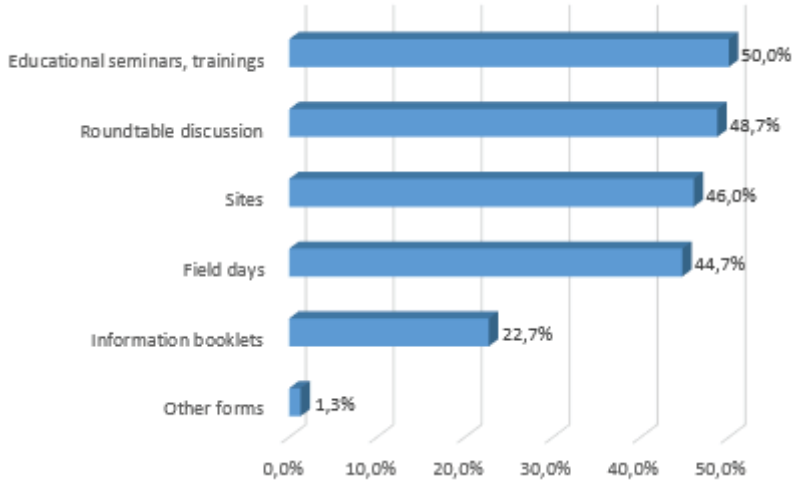

Fig. 2. Forms that farmer want to receive information about innovations, %.

The next question examines the directions of innovation for which there is a demand (Figure 3):

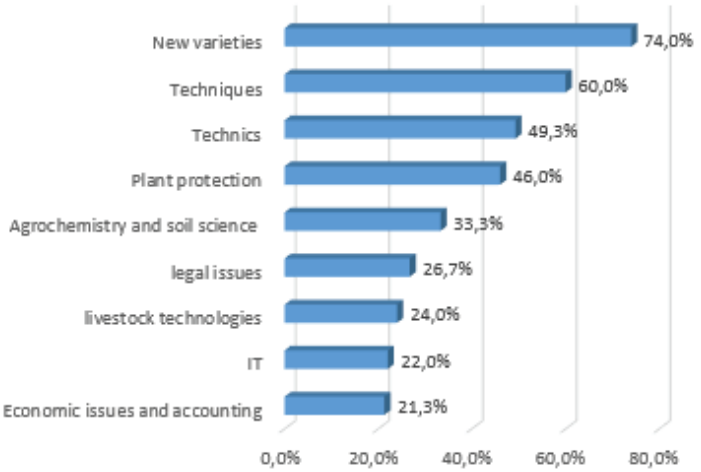

Fig. 3. Areas of innovation for which there is a demand, %.

When asked whether you used a loan or lease to innovate in your business, 30 percent (45 people) answered yes.

In total, 63.3% of managers (95 people) gave a positive answer to the question whether you are ready to attract masters, academic staff and researchers to develop your economic activity and apply innovations.

In the concluding part of the questionnaire, the heads of the farms pointed out the problems faced by their farms in production activities and gave their suggestions for further development of the agricultural network.

The following answers were received from the survey participants to the question "Is there a demand for innovations?" (Figure 4):

- representatives of the Council of farmers, peasant households and private homestead landowners - 100% (78 answers) gave an affirmative answer.

- representatives of the provinceal (province and district) administration of the Ministry of Agriculture - 100% (78 answers) gave an affirmative answer.

The following answers were received to the question "In which area of innovation is there a demand?"

"Do you have information about innovative developments in the field of agriculture?" 89.8% (70 answers) of the representatives of the district and provinceal branches of the Council of Farmers, Peasant Farms and Private Land Owners and 92.3% (72 answers) of the representatives of the provinceal and district administration of the Ministry of Agriculture gave an affirmative answer to the question. In what forms do you provide information on innovation in agriculture for farmers, farms and private landowners?" - the answers to the question were obtained as follows (several options are provided).

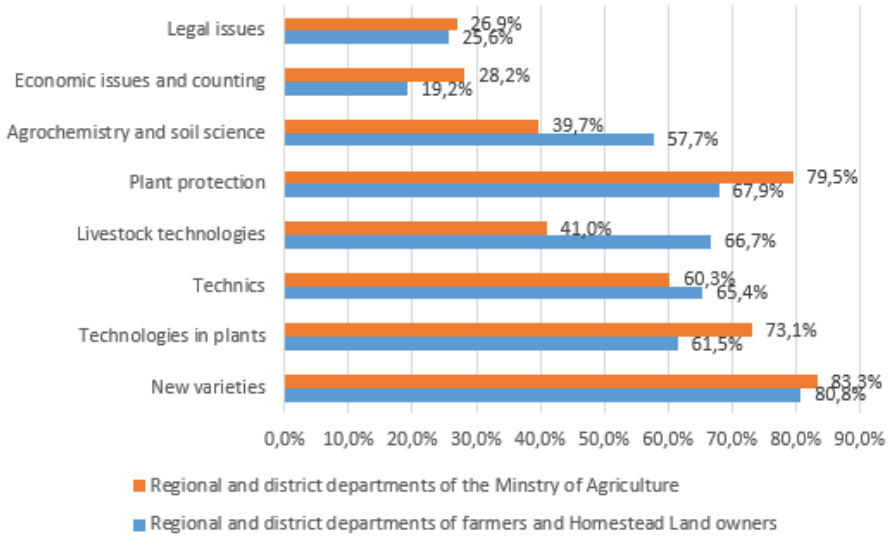

Fig. 4. Areas where innovation in demand.

The next question is the readiness of organizations to provide information and advisory services to farmers, peasant farms and private landowners. who recognized as middle level [4].

Most of the respondents answered the question about the ability of your organization to select and train personnel to provide information and advisory services to farmers and peasant farms.

The next question, the issue of need for funding from the budget of the surveyed organizations was considered, and the representatives of district and provinceal departments of the Council of Farmers and Private Land Owners showed a low level of need, and the level of need of representatives of provinceal and district departments of the Ministry of Agriculture was high (Figure 5).

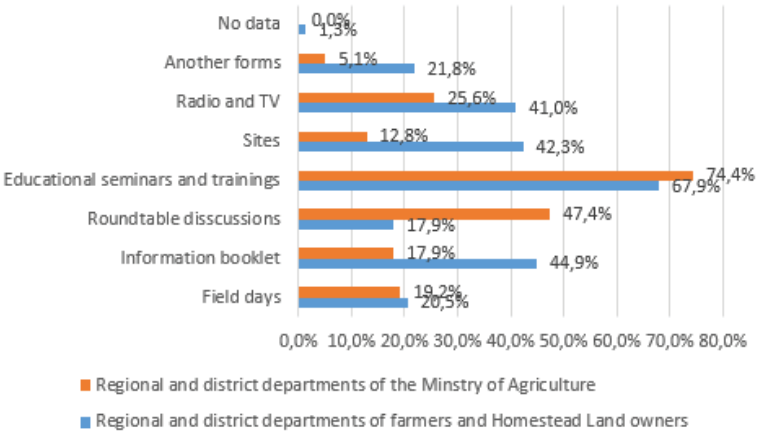

Fig. 5. Forms of submission of innovations in agriculture for farmers, farms and private homestead land owners.

In order to study the level of introduction of innovations and the use of information and consulting services in the provinces, a social survey was carried out based on the expert method through a questionnaire created for the heads of research institutes (ITI). 13 Research Institute leaders participated in the survey.

To the question "What organizations do you cooperate with on the issues of agricultural development?" (several options are provided) (Figure 6).

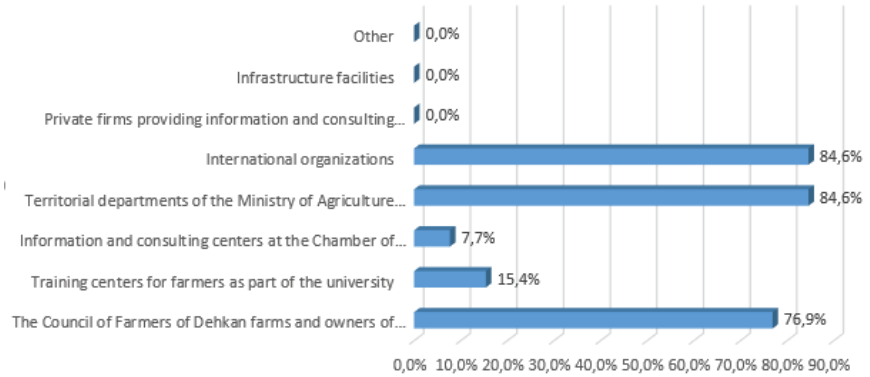

Fig. 6. What organizations cooperates with on issues of agricultural development.

The participants of the survey answered the question "In which areas of scientific research are conducted in your organization?" (Figure 7).

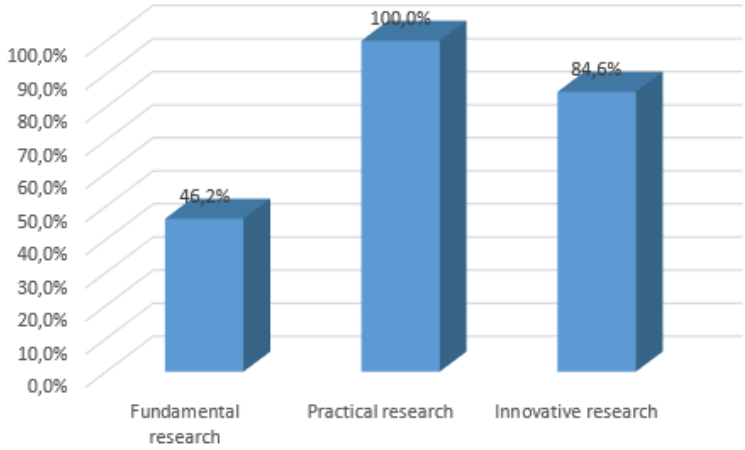

Fig. 7. Areas of scientific research conducted at research institutes.

The following answers were received to the question "Sources of funding of scientific research" (several options are provided) (Figure 8).

The following answers were received to the question about whether the activity of your organization depends on the provinceal policy of assisting the management of the agro-industrial complex to provide information and advisory services to farmers and peasant farms:

- at a high level – 7.7% (1 answer);
- medium level – 84.6% (11 answers

- at a low level – 7.7% (1 answer).

In the next question, it was considered that the activity of the organization does not depend on the financial situation of farmers and peasants, and the following answers were received:

- high – 7.7% (1 answer);
- medium – 76.9% (10 answers);
- low – 15.4% (2 answers).

All those participating in the survey gave an affirmative answer to the last question: "Is it necessary to create a system for spreading innovations and introducing them to agricultural production?".

4 Conclusions

When researching the level of use of innovations in the activities of farms of our republic, the obtained results show that the innovative activities of these farms were characterized by a medium level of activity. 56.6% of the managers who participated in the survey confirmed that the profit increased due to the increase in productivity and the decrease in the cost of the manufactured product as a result of applying the acquired knowledge and skills in their activities. These are highly qualified, enterprising farmers who have practical experience in farming and produce competitive products.

Heads of farms participating in the survey for 33.2 percent, the average level of using innovative developments in their activities is characteristic: they are currently using previous technologies and methods of management in an effort to increase their rating and level of

production organization. 10.2 percent of farm managers are characterized by a low level of innovation use, which indicates their indifference to innovation.

In general, farms that have the opportunity to attract credit for the use of innovative technologies have a high level of profit, and they have achieved the optimal realization of their economic interests.

Therefore, the further development of farms on an innovative basis is inextricably linked with the growth of investments and accumulation of capital.

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