1.2. IMPORTANCE AND ROLE AHROINNOVATIONS IN THE SYSTEM FORMATION OF THE ENTERPRISE COMPETITIVENESS

Saturation of the market of agricultural production leads to increased competition, which increases the importance of innovation and justifies the need for strategic changes in the production process of agrarian enterprises. The introduction of new technologies with the correct organization of labor and control can provide the necessary level of economic sustainability of economic agents of the agro-industrial complex. At the same time, the transition of agro-industrial production to the innovative model of development acquires a special significance. Maximizing the use of the opportunities of the environment, the ability to quickly adapt to constant changes is a key to maintaining an adequate level of competitiveness based on the established steady competitive advantage.

The issue of increasing the competitiveness and keeping their own positions in the market is on the agenda of each manager. In order to ensure stable competitive advantages, that is, those that are difficult to copy by competitors, the agrarian enterprise must constantly make managerial decisions regarding the improvement of activities, including the production process. The improvement of the latter should take place on an innovative basis, ensure the reduction of the unit cost of production, and increase its qualitative characteristics. In this case, it is more expedient to invest in the prospect of activity rather than an attempt to get quick profit. Therefore, the question of choosing an innovative product in the agrarian sector, the correctness of the organization of the process of its implementation, the training of employees, providing information support is quite relevant This is evidenced by the large number of publications on this issue.

Namely, the main theoretical positions related to the disclosure of the essence and content of innovations, innovative processes and innovation activities in agricultural enterprises were investigated in the works of V. Ambrosov[1], M. Kropivko[2], O. Datsiy, M. Zubets, P. Muzyk, P. Sabluk , O. Krisalniy, V. Sitnik, V. Tregobchuk, O. Shkilova[3], O. Shubravskaya[4], and others.

The purpose of the article is to justify the importance of introducing innovative agrarian technologies in order to ensure the competitiveness of agrarian enterprises.

In accordance with the provisions of the Single Integrated Strategy and Action Plan for Agricultural and Rural Development in Ukraine for the period from 2015 to 2020, the transition to an innovative way of development has been taken as a basis for state policy[5]. Innovation is recognized as an important factor in ensuring the competitiveness of domestic production and a prerequisite for the sustainable development of rural areas in general.

At present, there is a certain innovation-investment crisis in agricultural production, the outcome of which is the need to find sources of financing for the introduction of innovations. Projects on the introduction of innovative agrotechnologies, taking into account the high cost of modern machines and equipment, as well as capital investment in the processing of agricultural

[1] Ambrosov, V.Ya., Marenych, T.H. (2007): Velykotovarni pidpryiemstva yak osnova vprovadzhennia innovatsii [Large trade enterprises as the basis of innovation]. The Economy of Agro-Industrial Complex, vol. 6, pp.14–20.

[2] Kropyvko, M.F., Orlova, T.S. (2007): Orhanizatsiyni formy innovatsiy u sil′s′kohospodars′komu vyrobnytstvi z vykorystannyam potentsialu ahrarnoyi nauky [Organizational forms of introduce innovations in agricultural production using the potential of agrarian science]. Ekonomika APK - – Economy AIC, vol. 7, pp. 11—18.

[3] Shkilov O.V.(2011): Innovatsiino – investytsiine zabezpechennia silskohohospodarsskoho vyrobnytstva ta yohonaslidky [Innovative investment support for agricultural production and its consequences]. Ahrosvit – Agrosuites, vol.4, pp. 2-5.

[4] Shubravs'ka, O. (2012): Innovatsijnyj rozvytok ahrarnoho sektora ekonomiky Ukrainy: teoretyko-metodolohichnyj aspekt [Innovative development of the agricultural sector of Ukraine: Theoretical aspects]. Ekonomika Ukrainy - Ukraine economy, vol.1, pp. 27–35.

[5] Yedyna kompleksna stratehiia ta plan dii rozvytku silskoho hospodarstva ta silskykh terytorii v Ukraini na 2015 – 2020 roky [The uniform complex strategy and the action plan of development of agriculture and rural territories in Ukraine for 2015 - 2020], Ministerstvo ahrarnoi poliyky ta prodovolstva Ukrainy. Available at: http://www.minagro.gov.ua/node/16025.

products, are usually associated with multimillion-dollar costs. Innovative agrotechnologies are used, above all, in enterprises with large massifs of agricultural land[1].

Since a large agroholding, given the size of its land bank, has more opportunities for introducing agro-innovations than a small farm.

The State Target Program for Sustainable Development of Rural Territories of Ukraine for the period up to 2020 declares: stimulation of innovative development of agro-industrial production and rural territories, including:

Provision of financial support for the purchase of complex agricultural machinery;

Development and implementation of a special scientific and technical program for substantiating the ways of development of rural territories;

Stimulating the development of the infrastructure of the innovation market in the agroindustrial complex.

The situation in the agrarian market is characterized by increased competition, markets are saturated with a large number of goods within a single commodity group, competitiveness is formed either by reducing the price of sales, such as the implementation of wholesale batch of products, or at the expense of quality higher than that of competitors. This increases the importance of innovation, changes in the production of agrarian enterprises, the implementation of which in the new technologies provides the necessary level of economic development of economic agents of the agro-industrial complex. Competition plays the role of regulator of the rates and volumes of production, prompting the manufacturer to introduce scientific and technical achievements, increase productivity, improve technology, organization of work, etc.

Innovation and competitiveness are interconnected. A well-known scientist in the field of strategic management of competitive behavior - Michael Porter, argued that competitiveness is not inherited and not a consequence of available resources or labor, but is based on the constant use of innovation. Therefore, the value of innovation activity of enterprises is intensifying; there is a need for the formation of innovative potential and the creation of investment funds for development, which will enable to improve existing ones and to master new competitive technologies. Only in this direction, agrarian enterprises will be able to provide an economic[2].

Innovation means innovation in a variety of industries and spheres of activity, as well as their use in order to increase the efficiency and competitiveness of production and management. In scientific literature, you can find many definitions, which the authors give the term "innovation", depending on the object and subject of their research.

So, according to J. Schumpeter's definition. Innovation should be interpreted as a change in order to introduce and use new types of consumer goods, new production and vehicles, markets and forms of organization in the industry[3]. Other scholars of the problem under investigation disclose innovation as a process in which an invention or idea takes on economic content[4]. Or, innovation is a socio-technical and economic process that is due to the practical use of ideas and inventions leads to the creation of the best in their properties of products, technologies, and if the innovation is oriented towards economic profit, profit, its appearance on the market can bring additional income[5].

P.A. Fatkhutdinov considers innovation as the result of the introduction of innovation in order to change the object of management and obtain an economic, social, environmental, scientific and technical or other kind of effect. In this case, the innovation refers to the design of the result of

[1] Maznyev, G., Dudnyk, O. (2015): Planuvannya finansovogo zabezpechennya innovacijnih agrotehnologij v umovah riznogo finansovogo stanu pidpriyemstv [Planning of financial support of innovative agro-technologies in the condition of different financial status of enterprises]. Visnik HNTUSG - KhNTUSG Bulletin, Vol.161, p. 61

[2] Dudnyk, O., Minenko, S. (2019): Diagnostika konkurentospromozhnosti v upravlinni pidpriyemstvom [Diagnosis of competitiveness in enterprise management]. Visnik HNTUSG - KhNTUSG Bulletin, no 200, p. 211

[3] Shumpeter, J. (1982): Teoriia ekonomicheskogo razvitiya [Theory of economic development]. Progress Moscow, Russia, p.455

[4] Tviss, B. (1989): Upravlenie nauchno-tehnicheskimi novovvedeniyami [Management of scientific and technical innovations]. Translated from English, Ekonomika, 271 p.

[5] Santo, B. (1990): Innovatsiya kak sredstvo ekonomicheskogo razvitiya [Innovation as the economic development funds]. Progress, Moscow, Russia, 295 p.

fundamental, applied research, development or experimental work in any field of activity to increase its efficiency[1].

No less interesting is the consideration of innovation in the broad sense of the profitable use of innovations in the form of new technologies, types of products, organizational and technical and socio-economic decisions of a production, financial, commercial or other nature[2]. The authors note that innovation is the final result of the creation and development (introduction) of a fundamentally new or modified means (innovation) that satisfies specific social needs and gives a number of effects (economic, scientific, technical, social, environmental)[3].

In accordance with international standards, innovation is treated as the result of innovation, which has been implemented as a new or improved product introduced on the market, a new or improved technological process used in practice or in a new approach to social services[4].

The analysis of different concepts of innovation makes it possible to conclude that the essence of innovation is to make changes that make up the functional content of the enterprise's innovation activity. The changes inherent in innovation transformation include the use of new technology, new technological processes or new market supply of production; introduction of products with new properties; use of new raw materials; changes in the organization of production and its logistical support; emergence of new markets[5].

Innovation - is "the embodiment of new forms of organization of labor and management, covering not only a separate enterprise, but their totality, industry."[6]

Various innovations are applied in agriculture, but this process has a mostly point-oriented character, and innovations themselves are called agronomy. Approaches to the interpretation of this category are shown in Table 1.

Table 1. Modern interpretation of the category "agronomy"

Authors	Definition
Buhvostov Yu.[7]	.he result of work, obtained through the application of new scientific knowledge, transforming the process of functioning and development of the industrial and economic system of agroindustrial complex in the direction of increasing its efficiency, stability and systemic quality of relations
Shubravska O.[8]	innovations that are implemented in the agrarian sector and ensure the growth of economic, ecological and social effects there.
Kot O.[9]	systematic introduction of research results into the agrarian sphere leading to positive qualitative and quantitative changes in the

[1] Santo, B. (1990): Innovatsiya kak sredstvo ekonomicheskogo razvitiya [Innovation as the economic development funds]. Progress, Moscow, Russia, 295 p.

[2] Morozov, Yu. (1997): Innovatsionnyy menedzhment [Innovative Management], tutorial, NNGU, N.Novgorod, Russia, p. 186

[3] Sokolov, D.V., Titov, A.B., Shabanova, M.M. (1997): Predposylki analiza i formirovanie innovatsionnoy politiki [Background analysis and formation of innovation policy], GUJeF, St.-Peterburg, Russia, p 32.

[4] Gohberg, L.M. (1996): Statistika nauki i innovaciy. Kratkiy terminologicheskiy slovar [Statistics of science and innovation. A short glossary of terms], Centr issledovaniy i statistiki nauki, Moscow, Russia, p.221

[5] Shumpeter, J. (1982): Teoriia ekonomicheskogo razvitiya [Theory of economic development], Progress Moscow, Russia, p.455

[6] Sabluk, P.T. (2001): Pidvyshchennia roli ahrarnoi ekonomichnoi nauky u fornuvanni ta realizatsii ahrarnoi polityky v Ukraini [The increase the role of agrarian science in forming and realization of agrarian policy in Ukraine], Ekonomika APK – Economy AIC, vol. 3, pp. 3—10.

[7] Buhvostov, YU.V. (2009): Determiniruyushchee vozdejstvie investicij na formirovanie ekonomiki innovacionnogo tipa (na primere agrarnogo sektora) [Determining impact of investment on the formation of an innovative type of economy (on the example of the agricultural sector)]. Extended abstract of candidate`s tesis. Moskva.

[8] Shubravs'ka, O.V. (2010): Innovatsijni transfor-matsii ahroprodovol'choho sektora ekonomiky: svitovi ten-dentsii ta vitchyzniani realii [Innovative transformation of agri-food sector: global trends and local realities]. Ekonomika i prohnozuvannia - Economy and forecasting, vol. 3, pp. 90–102.

[9] Kot, O.V. (2008): Teoretychni aspekty innovatsiinoho rozvytku ahrarnoho sektoru ekonomiky ta yoho orhanizatsiiho – ekonomichne zabezpechennia [Theoretical aspects of innovative development of the agrarian sector of the economy and its organizational and economic provision]. Problemy nauky – Problems of science, vol.9, pp. 30-37

Authors	Definition
	characterization of interactions between the biosphere and the technosphere, and also improves the state of the environment
Kravchenko N.[1]	the final result of the introduction of new or improved products (services): technology, technology, variety, breed, organization of production, its management system for the purpose of obtaining different types of effect and ensuring the process of expanded reproduction
Popova O.[2]	innovation that affects directly (or indirectly, within the technological chain) processes involving the person, the machine (equipment, instrument, etc.) and the component of the environment (animal, plant, etc.) of existence which in the natural environment (without human involvement) is impossible or possible with the loss of basic functional characteristics
Yankovska O.[3]	the final result of the introduction of innovation in the field of agriculture (a variety of plants, animal breeds, plant protection products or animals, cultivation technologies, etc.): which led to economic, social, environmental and other species

Innovation activities are an important part of accelerating the development of agriculture. In the agrarian sector, unlike other spheres, the development of innovation is more slowly, requiring special attention. Innovative processes in agriculture have certain features related to its specificity, namely: the presence of living organisms, seasonality, dependence on climatic conditions and type of soils and increased risks, etc.

The introduction of innovations in the agrarian sector is not an absolute guarantee of increasing the competitiveness of manufactured products and increasing the share of this product on the market.

The development of innovations in agrarian enterprises can be carried out primarily through the interaction of external and internal environments, through the development of the constituent internal environment and available resource potential. In an unstable environment, innovative development is carried out mainly at large enterprises due to its own financial capabilities. Improvement of the situation is possible only with the establishment of a system of mechanisms for attracting foreign financial resources from the state[4].

For agrarian enterprises the introduction of innovations into production is first of all: the dyjitalization of accounting, the use of drones, precision farming systems, modernization of machinery, etc. The directions of innovative improvement of agricultural production are shown in Figure 1.

[1] Kravchenko, N. P. (2011): Obosnovanie prioritetnyh innovacij v rastenievodstve i ocenka ih effektivnosti (teoriya, metodologiya, praktika) [Justification of priority innovations in plant growing and assessment of their effectiveness (theory, methodology, practice)] Extended abstract of candidate`s tesis. Majkop.

[2] Popova, O. V. (2007): Voprosy metodologii upravleniya innovacionnymi processami v APK [Questions of methodology of management of innovative processes in agriculture.] Upravlenie obshchestvennymi i ekonomicheskimi sistemami - Management of social and economic systems. Vol.1. doi: http://bali.ostu.ru/umc/zj2007_1.php.

[3] Yankovska, O. I. (2010): Osoblyvosti innovatsii v silskomu hospodarstvi. [Features of innovations in agriculture]. Ekonomika. Upravlinnia. Innovatsii: elektronne naukove fakhove vydannia - Economy. Management. Innovations: electronic scientific professional publication, vol.2(4): URL: http://www.nbuv.gov.ua/e-journals/eui/2010_2/10yaoiicg.pdf.

[4] Shkilov, O.V.(2011): Innovatsiino – investytsiine zabezpechennia silskohohospodarsskoho vyrobnytstva ta yohonaslidky [Innovative investment support for agricultural production and its consequences]. Ahrosvit – Agrosuites, vol.4, pp. 2-5.

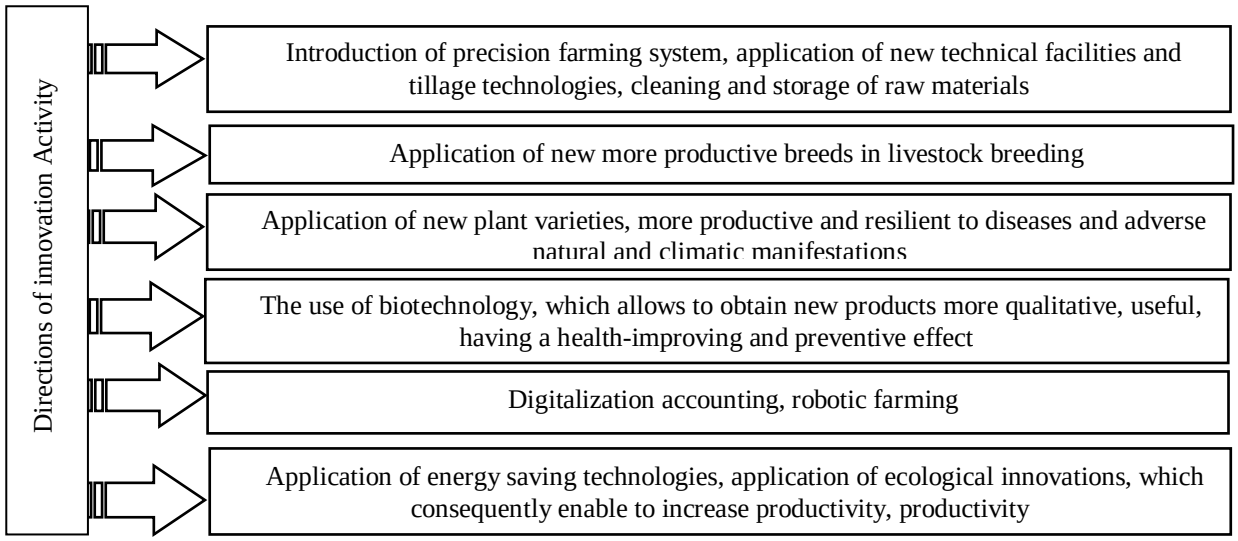

Fig. 1. Areas of innovative improvement of agricultural production

Leading experts point out that the issue of improving agricultural production is currently aimed at maximizing control with the use of resources and reducing unreasonable losses, while abroad they are aimed at raising the quality indicators - productivity growth.

By subject and field of application in agriculture it is expedient to allocate biological, technical, technological, chemical, economic, social, managerial, environmental and marketing innovations (Table 2)

Table 2. Classification of innovations by subject and sphere of application in agriculture

Classification mark	Type of innovation
Biological	- new varieties and hybrids of agricultural plants; - new breeds, types of animals and birds; - creation of plants and animals resistant to diseases and pests, unfavorable environmental factors
Technical	- use of new types of equipment and equipment
Technological	- new technologies of processing of agricultural crops; - new technologies in animal husbandry; - scientific - conditioned systems of agriculture and animal husbandry; - new resource-saving technologies of production and storage of agricultural products; - ecologization of agriculture.
Chemical	- new fertilizers and their systems; - new plant protection products;
Economic	- new forms of organization, planning and management; - new forms and mechanisms of innovative development of the enterprise
Social	- providing favorable conditions for life, work and rest of the rural population
Innovations in Management	- new forms of organization and motivation of work; - New methods of effective personnel management
Marketing	- access to new segments of the market; - Improving the quality of products and expanding the range; - new distribution channels

Source using[1].

[1] Trehobchuk, V. (2006): Innovatsiino-investysiinyi rozvytok natsionalnoho APK: problemy, napriamky,mekhanizmy [Innovation and investment development of the national AIC: problems, directions and mechanisms], Ekonomika Ukrainy - Ukraine economy, vol. 2, pp. 4–12.

Across the globe, innovative approaches to soil cultivation are being actively used to increase crop yield and microelement preservation. As a result, it is possible to increase the volume of production and reduce the constant costs per unit of output and compete in the market at the expense of lower selling prices, but such technology may have a negative impact on the quality of the product. A separate variant of crop cultivation technologies is Minni-Till (minimal impact on soil during cultivation): Non-Till (zero tillage) and Strip-till (Straw tillage): Their use allows farmers to preserve the soil from erosion, reduce the consumption of fuel and lubricants, fertilizers, plant protection products, optimize crop rotation and increase the productivity of one hectare of arable land, which will result in a decrease in the cost price of agricultural production and increase its quality.

The availability of the Internet and the proliferation of digital technologies contribute to the development of robotic farming and accounting deductibility. For precision farming based on ground maps, the use of satellites and drones, as well as additional data from the Internet, the latest technology allows you to increase the volume of manufactured products, with the use of less resources and allocated space. The use of such a field monitoring system for one farm costs about 20 thousand UAH per year. For example, Digital Farming Products helps optimize field and field potential in 15 countries worldwide, and Climate Corporation advises and provides technologies that transform field data into information that is needed to increase crop yields, improve efficiency and timely manage risks, agrarians in 21 countries.

The use of unmanned aerial vehicles is already a requirement of the present. With the use of drones, measure the fields, analyze the state of crops, spray the plant protection products, monitor the preservation of crops in the field, etc. However, the cost of one dron starts from 50 thousand UAH and not every farmer can afford these costs. The advantages of using this technology are to ensure that labor costs are reduced to certain jobs, the ability to pollinate fields in the absence of bees, to apply fertilizers and plant protection products to the point, and encourage young people to develop and work in the agrarian sector, since working in a company with high-tech equipment is prestigious.

Also, the achievements of the space industry, in particular using Rapid Eye, CORINE Land Cover (Coordinate Information on the Environment): Global Positioning System (GPS): are also used to monitor fields, yields, amount of required fertilizers, and herbicides.

Quite interesting is the Dutch project VanderSat. Its action is innovative in modern conditions and differs from already well-known systems of space monitoring in fields, namely, it collects data not from satellite images, but using microwave sensors. The advantage of this system is to obtain information in all weather conditions and cloudiness.

The livestock industry is not deprived of innovative solutions. Scientific research is carried out in the direction of raising the productivity of animals, automation of processes and intellectual analysis of the state of animal health. Artificial intelligence captures the basic habits of animals, forms a database of information received, and then when changing behavior makes a conclusion about their health.

As you can see, there is a sufficient number of innovative projects, both domestic and foreign. One of the main innovators in agriculture in Ukraine is a network of research institutes of UAAS and the Ministry of Agrarian Policy of Ukraine.

At the initiative of the National Academy of Agrarian Sciences of Ukraine and the Ministry of Agrarian Policy and Food with the aim of streamlining the system of scientific support of agricultural production of administrative areas, raising the level of innovation in the agrarian sector of the economy, the effective impact of agrarian science on the competitiveness of agribusiness in each region of Ukraine, centers of scientific support of agro-industrial production (APO)[1].

In order to compare the state of financing research and development in GDP of foreign countries and Ukraine, we have taken available publicly available data for 2017. As you can see from Figure 2.

[1] Ministry of Agrarian Policy and Food of Ukraine [Official site of the Ministry of Agrarian Policy of Ukraine]. Available at: http://www.minagro.gov.ua.

The share of research and development expenditures in Ukraine's GDP is only 0.45%, whereas in Germany it is 2.94%.

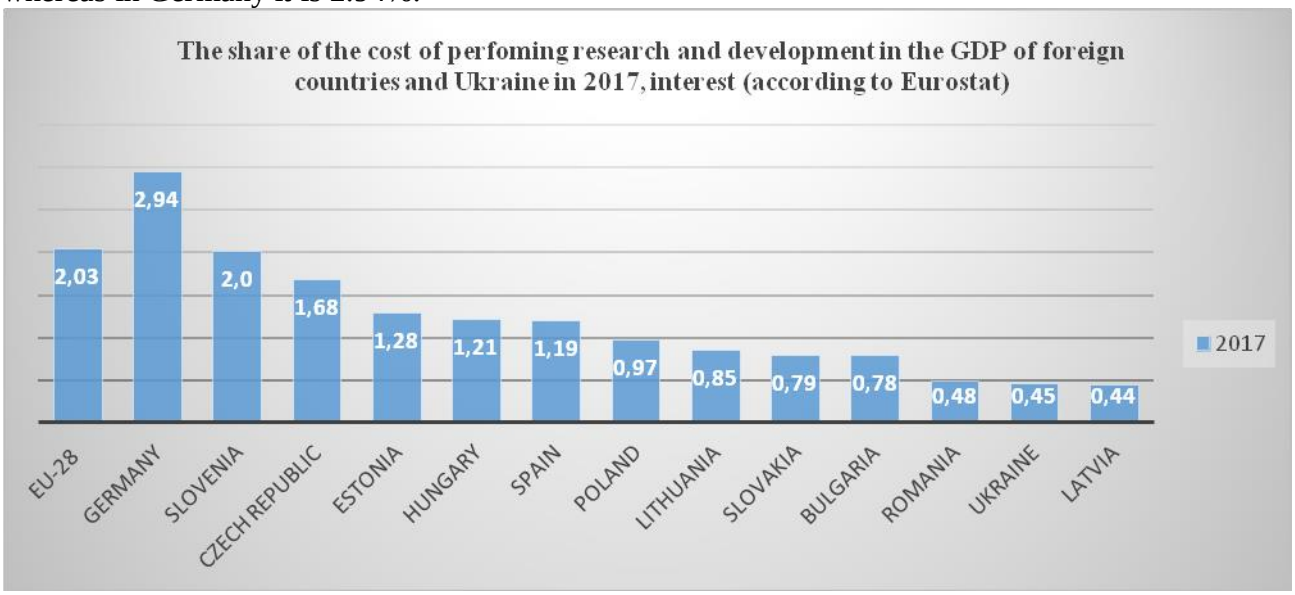

Fig. 2. Comparison of the state of financing of research and development in GDP of foreign countries and Ukraine in 2017,%[1]

Scientific researches require annual large-scale financing and comprehensive state support, since this depends on the scientific level and the quality of innovations, which is extremely important in the conditions of dissemination in the Ukrainian market of scientific and technical products of competitive foreign technologies and technologies that are not inferior to their technical and economic parameters. and sometimes even surpass domestic analogues. This is especially true for imports of agricultural machinery, seeds of foreign plant varieties and plant protection products. Financial support for innovation is also required at other stages of the innovation process, as the stimulation of implementation should provide the demand for domestic research. The development of innovation in agriculture in Ukraine is an important direction in increasing the competitive advantages of both an individual company and the country as a whole, since the agrarian sector of economically developed countries is gradually becoming a science-intensive industry.[2]

Ukraine has the potential to intensify innovation. Thus, according to the Global Competitiveness Report in 2017/2018, Ukraine ranked 81th by the Global Competitiveness Index, which is 4 points less than in the previous period. It is worth noting the decline in indicators for all positions except for infrastructure (+3): labor market efficiency (+13) and innovations (+9):

Table 3. Changes in Ukraine's place in the Global Competitiveness Index

Indicator	2013/ 2014	2014/ 2015	2015/ 2016	2016/ 2017	2017/ 2018	Change 2017/2018 to 2016/2017
Place of Ukraine by Global Competitiveness Index,	84	76	79	85	81	-4
Including the subdecins:						
Institutions	143	130	132	129	118	-11
Infrastructure	70	68	82	75	78	3
Macroeconomic conditions	112	105	104	128	121	-7
Healthcare and basic education	1	43	n/a	54	53	-1
Higher education and professional development	54	40	39	33	35	2

[1] State Statistics Committee of Ukraine, Statistical information.

[2] Zubets, M.V., Bezuglyi, M.D. (2010): Ekonomichni aspekty reformuvannya agrarno-promyslovogo kompleksu Ukrayiny [Economic aspects of reform of the agro-industrial complex of Ukraine], Agrarna nauka..

Efficiency of commodity markets	106	112	99	108	101	-7
Labour market efficiency	125	80	87	73	86	13
Development of financial markets	109	107	101	130	120	-10
Technological readiness	106	85	96	85	81	-4
Market Size	36	38	46	47	47	0
Business Excellence	81	99	61	98	90	-8
Innovation	100	81	52	52	61	9

Formed on the basis of the Global Competitiveness Report 2016-2018[1]

In general, the relationship between the innovation activity of an agrarian enterprise and the level of competitiveness can be reflected in the logical chain, presented in Fig. Therefore, the first step in this process is to research the market of innovations and the activities of competitors in order to ensure that the introduction of an innovative product can create a competitive advantage. The next step is to study the investment potential of the company, find sources of funding for innovations, and assess the human potential. In the context of the global necessity of increasing the volume of agricultural production and the need for competitiveness in the foreign market, they choose an innovative product that can increase the output of 1 hectare or 1 head of cattle, while preserving quality or improving it.

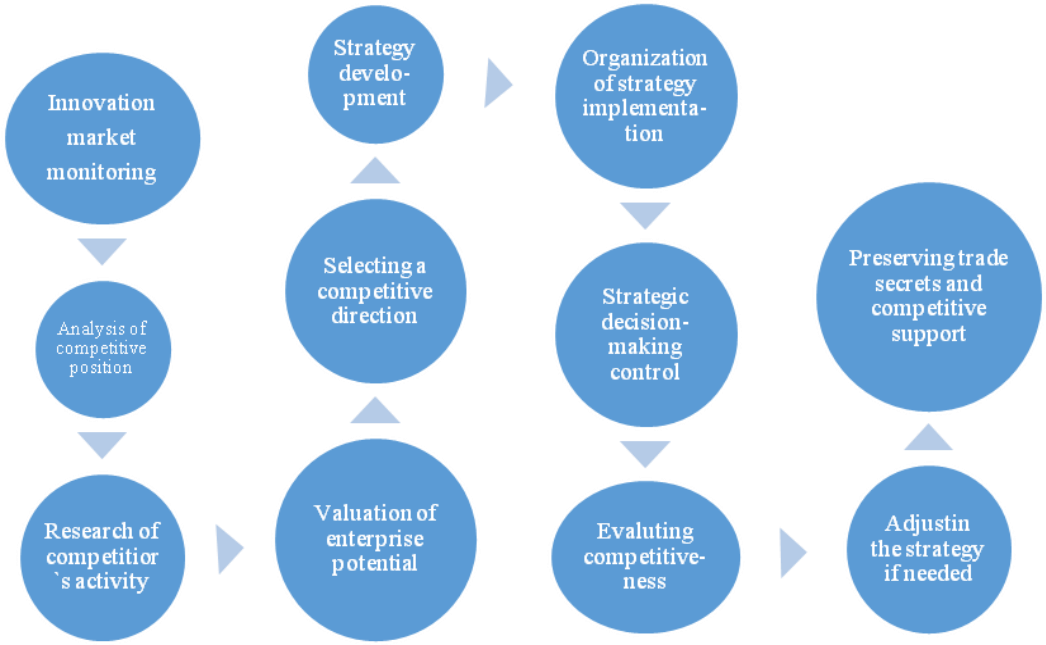

Fig. 3. Interconnection of innovative activity of agrarian enterprise and level of competitiveness

The introduction of such changes is strategic, and therefore should be accompanied by an appropriate functional strategy for innovation development of production, which will correlate with the strategies of competitive behavior of the enterprise and the general strategy of enterprise development. It is imperative to monitor the implementation and implementation of strategic decisions and actions to maintain its own technology from competitors.

In the end, it should be noted that in the immediate and strategic perspective, taking into account the innovation factor should be one of the decisive conditions for the further development of agrarian enterprises. Today, there are a number of theoretical and applied problems that hinder the effective implementation of innovations, which should encourage the activation of state support and the establishment of partnerships between state structures and the private sector of the economy aimed at ensuring the competitiveness of commodity producers, including on foreign markets, to

[1] Global Competitiveness Report 2017–2018/ World Economic Forum. –[Електронний ресурс]. – Режим доступу:http://www3.weforum.org/docs/GCR20172018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf

increase the efficiency indicators of production and economic activity and create opportunities for investment.

Science does not stand still - scientists are offering more and more innovative solutions in agribusiness. The task of the same managers of enterprises in a timely manner to choose for themselves that innovative direction, which is not used by competitors and on this basis create competitive advantages. It is important to remember that timely identified and used innovation can be an opportunity for enterprise development, and hesitation on its implementation or a long stage of implementation or not maintaining its own commercial secrets will lead to the threat of activity and the risk of loss of resources.

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