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THEORETICAL AND METHODOLOGICAL BASIS OF CREATING SCIENTIFIC DEVELOPMENTS WITH HIGH INNOVATION POTENTIAL

Setting the problem. Market transformations in the agricultural sector of the country require conceptual changes in scientific support of the industry, proof of completed scientific developments to customers, providing high technology products according to market needs and conditions of the innovative model of economic growth.

In this regard, the formation of an effective mechanism for research and innovation activity of research institutions in order to create competitive innovations and transfer them into production acquires an important value.

There are problems of scientific activity in the market conditions with the formation of a certain mechanism of transforming scientific achievements into products that are suitable for sale on the scientific capacious market in connection with the inertness of agricultural scientific sphere.

We must admit that the creation and developing of such mechanism would allow research institutions to implement their own achievements and to receive funds of refinancing further research.

For implementation the innovative model of scientific development, providing legal protection of research results, their competitiveness and effective use of intellectual products for scientific institutions in the system of the National Academy of Agrarian Sciences of Ukraine creates innovative infrastructure, appropriate mechanisms are implemented.

Therefore, further improvement of approaches for implementation the innovative component of research and innovation process in the sphere of agricultural science, development of effective mechanisms of the innovation process in the research

institutions of agrarian sphere in order to increase the effectiveness of scientific research.

Analysis of recent research and publications. The famous scientists considered the issues of innovative activity. Among them are: A. V. Hryniov [2], S. M. Illiashenko, R. A. Fatkhutdinov [8], S.A. Volodin [4; 5], O. S. Fedonin [9], I. M. Riepina, O. I. Oleksiuk [3], N. S. Krasnokutska, O. B. Butnik-Siverskyi and others.

However, the specifics of the scientific and innovation activity of research institutions of agrarian sphere and the process of scientific and technical developments with high innovation potential requires additional coverage. In this context, scientific innovating is the one system that allows you to combine individual stages of scientific and innovation process in a coherent system of innovation production.

Setting the objective. The purpose of this article is the formation of the theoretical and methodological principles of efficient production system of scientific developments – the method of scientific innovating.

The main material of the research. Today the issue of competitiveness own scientific developments, the formation of an effective mechanism for bringing development to the state of innovation and implementation of innovations that will make it possible to obtain additional sources of funding for further research is topical for agricultural science. In this context, scientific innovating is the one system that allows you to combine individual stages in the coherent system of innovation production.

Science innovating – is a system of pragmatic creativity in the scientific sphere that involves the construction of scientific and innovation process in order to create the competitive high technology products with high innovation potential.

According to the scheme of scientific and innovative processing [4] the main stages of the innovation creation is the creation of scientific developments, capitalization of developments (substantiation the development to the state, suitable for realization on the market) and the commercialization of innovations. This

organization in the scientific research institutions of agrarian sphere involves the transformation of their activity in the following aspects:

1. *Improving the efficiency of solving problems at the expense of* ***creative search*** *while using heuristic principles for intensification the creative activity of employees of scientific institutions.* The subject of creative innovating of scientific and innovation activity is aimed at the scientific and creative process and its final innovative result. Therefore, base of methodology of creative innovating is knowledge about innovative technologies, creatology of innovative thinking and behavioral of scientist and creator, methodological principles of creative creativity. Creativity, creative thinking is an integral part of scientific research. The creative approach, search for new unconventional solutions of posed problems is a guarantee for the success of commercial, transfer activity of scientific and research institutions, the basis of their development.

The science that studies the creative activity is called heuristics. The principles formulated within the framework of heuristics were used in the scientific research: the principle of freedom of thinking, the principle of purposefulness, the principle of contradiction, the principle of objection, the principle of “Occam's Razor”, the principle of comprehensiveness, the principle of “To overtake no catching”. The last principle is intended to life by uneven development of sciences in different countries and scientific collectives (schools). The algorithm for implementing this principle is as follows: 1) the cutting edge of science is studied (the newest achievements); 2) the problem of knowledge is absorbed; 3) the relevant problem to solve is chosen or formed new; 4) using data of leading edge science for solving; 5) from the available prior knowledge is taught only what has relevant to the investigated problem [1].

Using these principles creates the preconditions for creation the perspectives, competitive solutions of posed problems on the basis of creative search, with using algorithms for enhance the creative activity of executors of scientific and research works.

2. The organization of the scientific process on the basis of ***program and target approach*** *that involves projecting the results of research –scientific developments –*

on the basis of certain perspective directions of the industry development and economic expediency for conducting researches.

Program and target method is used according to the system of scientific innovating for planning scientific and innovation process. According to the definition, program and target research method is a method of researches and achievement of the intended final result by programming and coordination for the goals and stages of labor members of a particular creative process, one of the promising ways accelerating scientific and technological progress, improving the scientific potential. It allows effectively coordinate research aims with available resources by means of programs [2].

Management of scientific and research process by the program and target methods will allow to concentrate scientific and creative potential for development identified priority directions, stimulating the creation and promotion of the necessary scientific and innovation developments to the market. The objective of the research institution activity shifted from scientific development to create innovation transfer, namely implementation of the innovative products that, in general, is a complex with using of several completed scientific developments. In this regard, it is necessary restructuring of research institutions activity, the transition from its own scientific activity to scientific and innovation activity on the basis of scientific innovating. The shift of the objectives from the sphere of knowledge creation to the sphere of their use occurs in order to increase the innovation potential of research institutions.

According to S.A. Volodin [5] concretization of program and target method and objectivity of scientific and innovation relationships provides the introduction of innovative ordering system of scientific and technical products. Proceeding from the principle of pragmatic relations “customer-executant”, in planning scientific and innovation process the system provides to form a clear description and accurate parameters for the product that is ordered.

As we can see, target and oriented approach contributes to unite of the various organizational structures – entities of the innovation process – for achievement of the common goals.

The contracting authorities of innovations, implementing organizations of SRRDW, consulting and market firms and others are the subjects of the innovative process, which are combined in the conveyor of innovative providing. The need for coordination interests of the subjects of innovation process provides the priority objectives of innovation activity to the objectives of the scientific process. Therefore, the results of scientific activity should be determined according to the needs of the next stage – commercialization of innovations.

3. *The organization of* ***identification, classification and hoarding*** *of resources of the scientific and innovative process.* The process of knowledge formalization and developments that are used in the scientific and innovation process are assumed there.

Usually proper importance is not given to the process of identification, use and retention of such scientific and technical information that may have commercial success. But using this mechanism in competitive conditions will make it possible to generate new innovations by combining new and existing innovations.

The purpose of identification knowledge is the identification of elements (quanta) of scientific and technical knowledge and formalization, documentation of this knowledge not in the form of research reports, where the process of knowledge creation is displayed, but in the form of scientific development, where applied research results are formalized. It is advisable to conduct the formulation of these results, using the terminology of thesauruses: formulating the essence of the object, properties and relationships with other objects.

4. The organization and formalization of the process for implementation ***legal support*** *in the transformation of scientific developments is in innovations and transfer of innovation.*

This aspect relates to the settlement of legal relations between all subjects of scientific and innovative process to allocate the copyright and property rights on the

created intellectual property and the protection and security of property rights to this objects intellectual property.

According to the definition, intellectual property is fixed legal rights to results of intellectual creative activity of man in scientific, industrial, literary, artistic and other areas. These rights relate to the displayed information in it rather than a material object. The object of intellectual property rights has immaterial nature, which determines its specific feature as information: in the transmission of information from one entity to another, it appears in the other subject, but does not disappear in the first, because the right to object of intellectual property can be used many times. But the immateriality of objects of intellectual property also has a negative feature – information may be spread without permission, leading to its unauthorized use. Therefore specific feature shall be its conservation and protection, namely, such that takes into account the peculiarities of this object rights. As you can see, the legal question is important in innovation activity because in the scientific institutions need to develop a mechanism of legal protection and the protection of the created objects of innovation rights.

5. *The solution of **economic issues** of capitalization and commercialization of innovations:* organizing and formalizing the process of accounting and cost estimation of scientific developments; the organization and formalizing the process of creating and commercializing of innovative products (formation of innovative product, marketing activity, development of business projects, etc.).

The question of knowledge value arise objective in its use as a commodity, information product on the knowledge-intensive market. Fair value of information products is defined as the price at which a seller agrees to sell the goods and the buyer to buy it in the competitive market.

Capitalization of the objects of intellectual property provides a range of measures to transform the IPO on the intellectual capital of the organization – an intellectual resource for profit in the process of economic activity.

Important moment on the stage of capitalization is understanding that the final product that will be represented on the market, has an integrated, comprehensive

nature, that is formed as a set of (complex) scientific research and scientific and technical knowledge, as well as high technology products.

The product integrates with the separate components – objects scientific capacious market – for the fullest satisfaction needs of the market as a commodity. Thus, the integrated scientific capacious product includes intellectual (intangible) component (objects of intellectual property and scientific and technological support of their use) and material component (intensive products or equipment for the use of intellectual property).

In agricultural production, particularly in crop production scientific capacious product integrates the following components:

– product – objects of industrial property protected by property ownership rights, such as a grade of plants, patent for invention or utility model;

– process – scientific and technological support – a set of elements of technology that allow you to implement OIP;

– scientific capacious products – seed of grades or hybrids of plants.

It should be noted that innovation in the form of an integrated scientific capacious product most appropriately defined as the innovative technology, so that the term "technology" the most fully include all integrated components, and determine technology as innovative provides the presence novelty and usefulness in it.

At the stage of commercialization by the system of innovation providing OIP such complex innovative products are represented on the scientific capacious market as innovative project which combines material and intellectual components of the complex innovative product.

The mechanism of generation and transformation of scientific knowledge into innovative products is based on principles of program and target approach to the creation of innovative products and represents a cybernetic scheme of sequential processes where the information block at the output of the previous process is the input for the next process.

It provides the implementation of three steps (processes) in the framework of scientific and innovation process of the institution: the creation of scientific development, capitalization and commercialization.

At the first stage we obtain the scientific development (innovation), which is at the second stage acquires the features of the goods, and at the third – is implemented at the market as an innovative product.

The general scheme of scientific and innovation process in the context of its components are presented in Fig. 1.

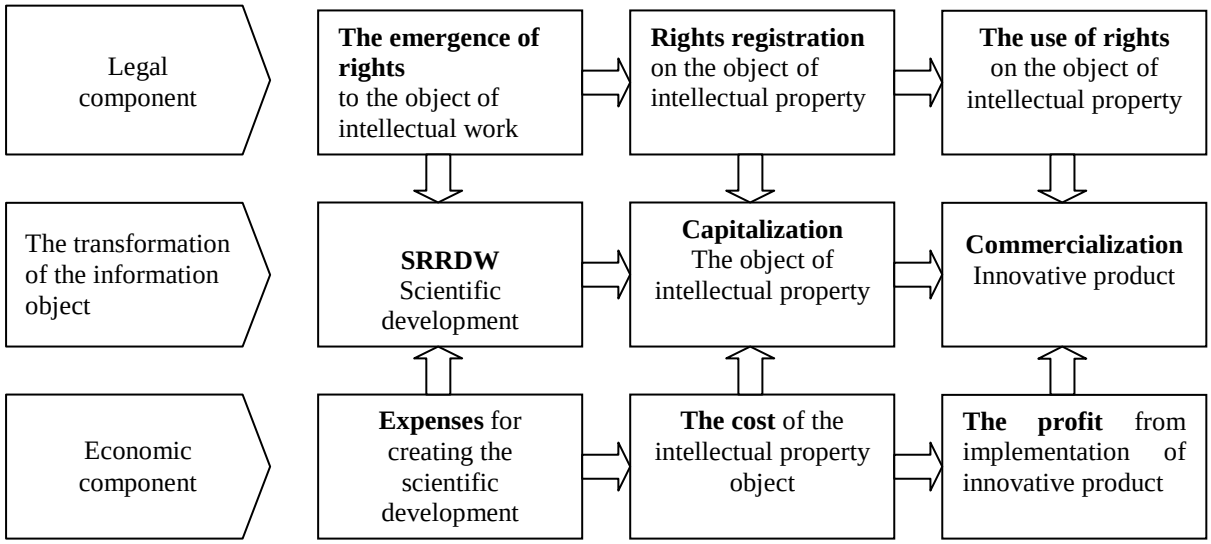

Figure 1. Scheme of research and innovation process

Source: Developed by the author

Capitalization is understood as a set of measures regarding the definition of the objects, conservation, protection and company valuation, land parcels, securities, objects of intellectual property, etc. by calculating the sum of the expected revenues for the whole period of their use, accounting and entry into economic accounting [5].

Commercialization is a process associated with the practical application of scientific research and development for the purpose to introduce new and improved products to the market, services or processes to obtain commercial effect.

Commercialization usually begins where scientific researches have already largely completed and obtained clearly defined product that have the properties and benefits that represent commercial value. It ends when the innovative product successfully launched on the market, in general, when you reach break-even point.

Research and innovation process can be represented as a transformational flow of objects of knowledge that has information, legal and economic components. The information aspect of transformational objects of the scientific innovation process leads to the use of elements of knowledge (information) as the basis of the innovative product. The information has immaterial nature, so you should take into account this aspect in the formation of transformational flow of objects of scientific and innovation process.

The results of scientific and innovation process is the innovative product, which is based on scientific knowledge, namely information objects that have intangible nature. Immateriality of information product determines the specificity of its protection and unauthorized use, which applies the Institute of Law. Use of information objects in the role of goods on the market determines its cost estimation and solving economic issues related to its production and realization.

Using knowledge as an asset of the organization requires organizational and legal measures for the selection, calculation, evaluation and protection during use.

S. Kniazev [6] notes that conventionally distinguish two types of protection the information that are used in business, that two types of information security: passive and active.

Passive protection is characterized by the fact that the owner of the information gives it a regime of openness and accessibility for all stakeholders, but these people can not use it for commercial purposes. The exclusive right to authorize anyone to use this information belongs to the owner. Patent and copyright establish such information protection. Protecting the interests of the owner of information in the event of unauthorized use is realized in a judicial order under the legislation in Ukraine.

Active protection of information is more suitable for the protection of commercial secrets against the unauthorized use by the owner, due to the fact that the owner establishes a certain regime of access, for example, limiting access to information in the narrow circle of specialists from a number of staff, organizes

restricted area at the enterprise, using media information, making it impossible to unauthorized copying, etc. [6].

In the process of becoming innovative knowledge economy, including scientific and technical knowledge takes the form of goods. Capitalization of objects of intellectual property provides complex of measures to transform the IPO on the intellectual capital of the organization – an intellectual resource for profit in the process of economic activity.

The question of value of knowledge arises objectively in its use as a commodity, information product at the scientific capacious market.

Fair value of information products is defined as the price at which a seller agrees to sell the goods and the buyer to buy it in terms of market competition.

Conclusions and further research. Thus, research and innovative activity carried out as a purposeful creative process where modern methodological tools of creativity involving for increasing its effectiveness.

The mechanisms for orientation this activity is revealed based on program and target approach that allows you to create the parameters of the final product at the planning stage. The result of research and innovative activity is the creation of research and innovative products capable to satisfy the market demand. The method of scientific innovating is the method combines the above approaches to create competitive technical and scientific products. It creates new approaches to research and innovative activity of research institutions of agrarian sector, in particular to increase the innovative capacity of created products.

It is necessary to form an effective system of production development, the main aspects of this is creative approach to generation of the developments based on the modern methods of creatology, target and oriented approach to research and innovation, rather than actual research activity, dealing with organizational issues concerning operation by established developments: their classification, identification and hoarding, solving legal issues related to property rights for scientific and technological development, solving economic issues regarding assessing the value and determining the price on created developments.

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Чекамова О.І. ТЕОРЕТИКО-МЕТОДОЛОГІЧНІ ЗАСАДИ СТВОРЕННЯ НАУКОВИХ РОЗРОБОК З ВИСОКИМ ІННОВАЦІЙНИМ ПОТЕНЦІАЛОМ

Мета. Формування теоретико-методологічних засад системи ефективного продукування наукових розробок – методу наукового інновінгу.

Методика дослідження. Методи дослідження базуються на використанні загальнонаукових методів обробки інформації, зокрема аналізу і синтезу, наукової абстракції і т.д. У роботі використано системний підхід при розгляді процесу створення, капіталізації та трансферту інновацій. У процесі досліджень використовується системний підхід до об'єкта досліджень, програмно-цільовий метод та ін.

Результати. Встановлено, що науково-інноваційна діяльність здійснюється як цілеспрямований творчий процес, де для підвищення її ефективності задіяні сучасні методичні інструменти творчості. Виявлено, що механізми спрямування цієї діяльності розкриваються на основі програмно-цільового підходу, який дозволяє формувати параметри кінцевого продукту на стадії планування. Обґрунтовано метод наукового інновінгу, який поєднує вищеназвані підходи до створення конкурентоспроможної науково-технічної продукції і формує нові підходи до науково-інноваційної діяльності наукових установ аграрної сфери, зокрема до підвищення інноваційного потенціалу створюваних продуктів.

Наукова новизна. Запропоновано метод підвищення інноваційного потенціалу інтелектуальних продуктів на основі застосування системи наукового інновінгу, складовими якого є використання інструментарію активних знань творчості та програмно-цільового підходу, формування чітких формальних процедур капіталізації і комерціалізації новацій, оцінки їх вартості та постановки на бухгалтерський облік.

Практична значущість. Метод наукового інновінгу формує нові підходи до науково-інноваційної діяльності наукових установ аграрної сфери, зокрема до підвищення інноваційного потенціалу створюваних науково-інноваційних розробок і, як наслідок, підвищення цінності виконання прикладних досліджень.

Ключові слова: науковий інновінг, креативність, програмно-цільовий підхід, капіталізація інновацій, комерціалізація інновацій

Чекамова Е.И. ТЕОРЕТИКО-МЕТОДОЛОГИЧЕСКИЕ ОСНОВЫ СОЗДАНИЯ НАУЧНЫХ РАЗРАБОТОК С ВЫСОКИМ ИННОВАЦИОННЫМ ПОТЕНЦИАЛОМ

Цель. Формирование теоретико-методологических основ системы эффективного продуцирования научных разработок – метода научного инновинга.

Методика исследования. Методы исследования базируются на использовании общенаучных методов обработки информации, в частности анализа и синтеза, научной абстракции и т.д. В работе использован системный подход при рассмотрении процесса создания, капитализации и трансферта инноваций. В процессе исследований используется системный подход к объекту исследований, программно-целевой метод и др. .

Результаты. Научно-инновационная деятельность осуществляется как целенаправленный творческий процесс, где для повышения ее эффективности задействованы современные методические инструменты творчества. Механизмы направления этой деятельности раскрывается на основе программно-целевого подхода, позволяющего формировать параметры конечного продукта на стадии планирования. Результатом научно-инновационной деятельности является создание научно-инновационной продукции, способной удовлетворить рыночный спрос. Метод, сочетающий вышеназванные подходы к созданию конкурентоспособной научно-технической продукции, является методом научного инновинга. Он формирует новые подходы к научно-инновационной деятельности научных учреждений аграрной сферы, в частности к повышению инновационного потенциала создаваемых продуктов.

Научная новизна. Предложен метод повышения инновационного потенциала интеллектуальных продуктов в рисоводстве на основе применения системы научного инновинга, составляющими которого являются использование инструментария активных знаний творчества и программно-целевого подхода, формирования четких формальных процедур капитализации и коммерциализации новаций, оценки их стоимости и постановки на бухгалтерский учет.

Практическая значимость. Метод научного инновинга формирует новые подходы к научно-инновационной деятельности научных учреждений аграрной сферы, в частности к повышению инновационного потенциала создаваемых научно-инновационных разработок и, как следствие, повышение ценности выполнение прикладных исследований.

Ключевые слова: научный инновинг, креативность, программно-целевой подход, капитализация инноваций, коммерциализация инноваций

Chekamova O.I. THEORETICAL AND METHODOLOGICAL BASIS CREATING SCIENTIFIC DEVELOPMENTS WITH HIGH INNOVATION POTENTIAL

Purpose. The purpose of forming the theoretical and methodological principles of efficient production of scientific development - scientific method innoving.

Methodology of research. Methods of investigation based on the use of general scientific information processing methods, in particular the analysis and synthesis, etc. of abstraction In this paper we used a systematic approach when considering the process of creation, capitalization and transfer of innovation. During the study used a systematic approach to the object of research, program-target method, and others.

Findings. Research and innovation activities are carried out as a deliberate creative process in which to improve its effectiveness involving modern methodological tools of creativity. The mechanisms channeling this activity is revealed based on software-based approach that allows you to create the parameters of the final product at the planning stage. The result of research and innovation activities is the creation of research and innovative products that can meet market demand. The method combines the above approaches to create a competitive R & D products, is the scientific method innoving. It creates a new approach to research and innovation activity agrarian sector research institutions, in particular to increase the innovative capacity created products.

Originality. A method of increasing the innovative potential of intelligent products in rice cultivation through the application of scientific innoving, elements of which are tool using active knowledge creation and performance-based approach, the formation of clear formal processes of capitalization and commercialization of innovations, assess their costs and performances in accounting.

Practical value. A method scientific innoving creates new approaches to research and innovation activity agrarian sector research institutions, in particular to increase the innovative capacity created by scientific innovation and, consequently, increase the value of performance applied research.

Key words: scientific innoving, creativity, target-oriented approach, the capitalization of innovation, commercialization of innovations