

The development of education and scientific agroindustrial formations in Ukraine

Rozwój rolno-przemysłowych formacji edukacyjnych i naukowych na Ukrainie

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ABSTRACT

The article analyzed the activity of higher education institutions of Ukraine aimed at training specialists in agricultural production. It has been proved that the creation of educational and scientific agroindustrial formations will not only make it possible to combine educational, scientific and production activities, but also fully cover the entire industrial innovation and commercial production cycle, and sale of agroindustrial complex. Education and research of agroindustrial formation are the vertically integrated scientific and educational structures with innovative production enterprises of agroindustrial complex.

Keywords: agroindustrial complex, innovation infrastructure, education and scientific agroindustrial formation, higher education institution.

W artykule zanalizowano działalność instytucji szkolnictwa wyższego na Ukrainie mającą na celu przeszkolenie specjalistów z zakresu wytwórczości rolniczej. Zostało dowiedzione, że stworzenie rolno-przemysłowych formacji edukacyjnych i naukowych pozwoli nie tylko na łączenie działań edukacyjnych, naukowych i produkcji, ale także w pełni pokryje cały cykl innowacji przemysłowej, wytwórczości handlowej i sprzedaży kompleksu rolno-przemysłowego. Edukacja i badania agropremysłowej formacji są pionowo zintegrowanymi strukturami naukowymi i edukacyjnymi z innowacyjnie ukierunkowaną produkcją przedsiębiorstw kompleksu agropremysłowego.

Słowa kluczowe: kompleks agropremysłowy, infrastruktura innowacji, agropremysłowa formacja edukacyjna i naukowa, instytucja szkolnictwa wyższego.

STRESZCZENIE

Introduction

Providing the food security of the population, production of the agricultural goods, which is competitive on the world market, increasing the export potential the economy – all of this applies to the agricultural complex functional objectives. In modern world, conditions of economic production development of competitive products is impossible without the use of innovative technologies. Problems of using innovative technologies are particularly acute in agriculture because of poor state of technological support. The infrastructure refers to the agroindustrial complex, including innovation, which can provide effective implementation of scientific and technological activities in agricultural production, acting one of the forms providing of innovative development of agriculture.

Analysis of recent researches and publications

The problems of development of agroindustrial complex are investigated in the works of many scientists, economists and practitioners. Significant achievements in solving this problem have been made by the following researchers: V. Andreychuk, V. Bondarenko, N. Bilousko, V. Galushko, M. Hazuda, M. Gladiy, J. Deriy, M. Demyanenko, M. Ilchuk, O. Ermolenko, M. Krapivko, M. Lendel, Y. Lupenko, M. Malik, G. Pidlisetsky, V. Rossokha, O. Chubukova, V. Sitnik, V. Yakovenko and others.

The creation and functioning of integrated agroindustrial structures devoted to the work of scholars such as: P. Borshevsky, L. Deyneko, A. Lisieckiy, I. Lukinov, V. Trehobchuk, M. Hvesyk,

M. Horunjiy, M. Chumachenko and others. Issue of providing the innovative development of regional industrial complexes dedicated works by: A. Amosha, P. Haidutsky, V. Heyts, V. Ilyashenko, P. Sabluk and others.

However, despite the large number of scientific publications that emphasize the research relevance, the innovation infrastructure agroindustrial complex development problems by creating educational and scientific agroindustrial formations have not been sufficiently developed and opened.

The purpose of the article is to study the development of educational and scientific agro-industrial formations in Ukraine. To achieve this goal, the following tasks were solved:

- it was found that there are educational and scientific agro-industrial formations;
- the main functions of the innovation infrastructure were identified, which include educational-scientific agroindustrial formations;
- obstacles to the development of innovation infrastructure and educational-scientific formations in Ukraine were identified;
- the existing educational-scientific agroindustrial formations in Ukraine, as well as scientific centers and laboratories, were researched;
- it was substantiated that the synergetic effect is obtained from the activity of educational and scientific agroindustrial formations for the development of the agroindustrial complex, higher educational establishments, local authorities and the population.

Results of the research

The development of innovation infrastructure is a means of improving relationships between education, science and industry. Attraction innovative technologies and world-class production their own innovations will promote the development of innovation infrastructure, creation of educational and scientific agroindustrial formations and their interaction with each other. Education and research agroindustrial formation are the vertically integrated scientific and educational structures with innovative directed production enterprises of agroindustrial complex. They are formed on the basis of higher education institutions and promote multi-discipline scientific research, attracting students, faculty and entrepreneurs to innovation process, according to the needs regional agroindustrial complexes. These formations give an opportunity to be interested and coordinated activities of different economic and legal structures in the innovative direction of regional agroindustrial complexes.

Actually, the idea of this association is not new. Even in the 70-80s of the last century scientific production associations by regional agroindustrial cooperative association type, agroindustrial enterprises in inter-farm irrigation, agrochemicals, seed were created. But the fragmentation of the interests eventually leveled the advantages of such formations and led them to self-destruct. In the current economic conditions, innovative orientation is capable to promote the development of innovation infrastructure through the creation of educational and scientific agroindustrial formations.

The creation of educational and scientific agroindustrial formations is responsible to public directions development of agroindustrial complex and innovative infrastructure, which specified in the "Concept of the state system of agricultural extension" and the Law of Ukraine (<http://zakon4.rada.gov.ua/laws/show/2017>), "About innovation activity" (The Law of Ukraine *About innovation activity* 2002), "About education" (Law of Ukraine *About education* 1991), "About state regulation of activities in technology transfer" (The Law of Ukraine *About state regulation of activities in technology transfer, 2006*) and so on. In general, the innovation infrastructure include: technoparks, technopolises, business incubators, innovation research and technology centers, business innovation and telecommunications networks, consulting firms and others. Innovation infrastructure contributes to the implementation and accelerates the full innovation cycle – from design to application and commercialization of innovation, including agriculture, and aims at providing organizational and economic support of education, research and innovation at various levels of management. The main functions of the innovation infrastructure include:

- ensuring and support the relationship between the subjects agriculture and business innovation infrastructure;
- information, consulting, industrial, technological, financial support for education, research and innovation;
- promoting specialization and cooperation of education, research and innovation in the agro-industrial sector;
- training of qualified personnel for agriculture;
- for legal regulation of science and innovation;
- certification, standardization of scientific and innovative products and more.

There are certain obstacles for the development of innovation infrastructure in the current economic conditions, namely:

- insufficient effective demand of agro-industrial complexes on the performance of innovative infrastructure;
- limited at a financial support for the development of innovation infrastructure for the state and regional authorities;
- poor institutional support of innovation infrastructure and research innovation activity, failure to comply with legislation on budget funding of scientific activity, the absence of preferences for the development, implementation and commercialization of innovative domestic products;
- low interest of agricultural business organizations in financial and credit support for innovation and research innovation activity;
- underdevelopment of innovation infrastructure's certain elements, such as technology transfer centers, innovative electronic exchanges, the mechanisms of venture financing and insurance of scientific innovation and more.
- It should be noted that today in Ukraine the certain components of the innovation infrastructure has already created in the form of educational and scientific agroindustrial formations. These examples may be:
 - firstly, Institute of economics and management of agrarian-industrial complex created on the base Kyiv national economic university (Institute of economic and management of agrarian-industrial complex of State high educational establishment "Vadym Hetman Kyiv national economic university") which have purpose is: research, educational and implementation of scientific and technological activities in agroindustrial production, substantiation of practical recommendations to improve the competitiveness of products and agriculture (https://kneu.edu.ua/ua/science_kneu/ndi/instytut_ekonomiky_ta_menedzmentu_agropromyslovogo/);
 - secondly, Ukrainian scientific research institute of agricultural radiology that created on the base National university of bioresources and environmental sciences of Ukraine; Research and design institute of standards and technology ecosafety and organic products and Ukrainian laboratory of quality and safety of agroindustrial complex products. Through such subdivisions university combines education, research, production, innovation, information and advisory activities regarding problems of environment, bioresources of land and water ecosystems, the introduction of new environmental and energy-saving agricultural technologies, quality standards of agricultural products, processed products and the environment (<https://nubip.edu.ua/about/>);
 - thirdly Science park "Agroperspektiva", which created on the base Mykolayiv state agrarian university that also combines educational, scientific-technical and innovative activity aimed at the functioning of regional innovation systems, restoration of high-tech capital of agroindustrial complex, technology transfer, efficient use of scientific, human resource capacity in high agricultural technologies, etc (<http://www.mnau.edu.ua/ua/index.html>).

The above establishments are educational institutions of IVth level of accreditation institutions with the status of the research type, based on which created educational and scientific agroindustrial formations. The development of innovative infrastructure and the creation such educational and scientific agroindustrial formations allow to efficiently use the research, logistics, human resources of higher education institutions, promote commercialization of research results, and increase revenues to local and national budgets (Tulchynska.2009). Besides the educational and scientific agroindustrial formations based on other universities operate various research centers and laboratories, as exemplified by:

- Lviv national agrarian university, on which base created “Innovation center” in order to ensure the effective interconnection of education and science and production in agriculture(<http://lnau.lviv.ua/lnau/index.php/uk/nd/nc.html>);
- Vinnytsia national agrarian university, on which base was created two research institutes, such as Research Institute of biofuels, biomass and efficiency of their use and consumption and Research design institute of technology(http://www.vsau.org/web/vsau/vsau.nsf/webgr_view/GrHZCSV);
- Kherson state agrarian university, which operates based on “Problem research laboratory of ecological and ameliorative monitoring of agricultural systems dry steppe zone named professor D. Shaposhnikov “(<http://www.ksau.kherson.ua/>).

However, it should be noted that Ukraine’s current educational and scientific base for creating educational and scientific agroindustrial formations is much broader. So in Ukraine there are universities that produce professionals in the agroindustrial sector, as Bilotserkiivskiy agrarian national university(<http://www.btsau.kiev.ua/>); Dnipro state agrarian economics university (<http://www.dsau.dp.ua/ua/page/navchalno-naukovij-nstitut-ekonomki.html>); Odessa state agrarian universty (<http://osau.edu.ua/>); Podolsky state agricultural and technical university (<http://www.pdatu.edu.ua/>); Sumy national agrarian university(<http://sau.sumy.ua/>); Tavriyskiy state agrarian technological university(<http://www.tsaa.org.ua/>); Kharkiv national agrarian university (<http://knau.kharkov.ua/dendropark.html>). It should create educational and scientific agroindustrial formations, based on these specialized institutions of higher education, which would make it possible to combine their long experience in the educational activities of scientific production.

Creation and effective operation of educational and scientific agroindustrial formations provide a synergetic effect not only for the development of agroindustrial complex but also for higher education institutions, local authorities and population.

So, establishment on the basis of higher education institutions education and research agroindustrial formations will allow to:

- combine educational and scientific activities of agroindustrial manufacturing;
- keep schools of university science and increase the scientific potential of the university;
- stimulate research activities in higher education and improve the quality of educational services;
- direct research development and research and design works in the interests of the needs of both agriculture and the regions;

- increase the level of professionalism of the teaching staff, which having gained through practical experience;
- holding practice on innovation-active enterprises of regional agroindustrial complex;
- revive international scientific and technical activities and participate in innovative international research projects;
- establish cooperation with external contractors, business, regional and local authorities, credit and financial institutions etc.
- increase the motivation of both students and teachers to research and implementation of scientific and technical activity in the manufacturing sector of agroindustrial complex;
- employ university graduates in the relevant specialty;
- attract in commercialization of innovation results the additional financial resources for the development of higher education.

The creation of educational and scientific agroindustrial formations for local authorities will:

- increasing the number of innovation-active enterprises of regional agroindustrial complex;
- improving the welfare of the population, including in rural areas, due to real employment in the specialty of university graduates;
- increasing the number of highly qualified specialists in regional agroindustrial complex, taking into account regional labor market demand by integrating education, research, technology and innovation;
- implementation of research works commissioned by local authorities and regional agroindustrial enterprises;
- creation of jobs in the regional labor market;
- increasing local budget revenues from the production of competitive agroindustrial products;
- practical implementation of strategies for innovation and agroindustrial development of regions.

Activities of education and agroindustrial research formations and using the existing educational and research base should take into account the needs of regions in the areas of innovation developments and regional features of climatic, agrotechnological, social and other conditions.

Regional and local authorities should make efforts as guarantor and intermediary for enhancing participation of innovation active agroindustrial enterprises in attracting financial resources to the development of education and research agroindustrial formations. The interaction of education and scientific agroindustrial formations with regional and local authorities will allow to revive the process attracting financial resources that will help to reduce the time from generate new ideas to their implementation and give noticeable results not only in the development of innovation infrastructure in the region and their agroindustrial complex, but also in social-economic development of the region.

Creation of educational and scientific agroindustrial formations will cover all aspects of education, research and innovation process, to combine of regional agroindustrial complex, to direct the efforts not only on knowledge transfer in universities, but also

in their practical use. The development of innovation infrastructure, in our opinion, promote the development of agricultural sector in the region, with the activities of the innovation infrastructure should take into account:

- the strategic priorities of agriculture regions – an innovative orientation of achieve development priorities contribute to solving the complex problems of socio-economic development of regions and the country as a whole;
- dominance of science and innovation products in those areas that are most attractive to investors and they have prospects of greater economic benefit from their development and implementation in the future in agriculture regions;
- requirements and international standards in terms of reference for European integration processes that will lead to synergetic effect for the development of agro-industrial region complexes from intensification international cooperation on innovation basis;
- the potential opportunities and existing resources of subjects in agricultural complex of the region.

Conclusions

Therefore, the analysis of higher education in Ukraine aimed at the training professionals of agroindustrial production provides an opportunity to note of underdevelopment educational and scientific agroindustrial formations on their base. The development of innovation infrastructure through the creation of educational and scientific agroindustrial formations promote the combining of interests and resources of higher education institutions, local authorities, enterprises of agroindustrial complex and financial institutions, which in turn will affect the development of regional agriculture.

The development of innovation infrastructure through the operation of educational and scientific agroindustrial formations will allow to:

- improve the industrial and logistics businesses of regional agroindustrial complex;
- reduce the time from design to implementation of innovation in agroindustrial complex;
- attract financial and credit resources with the support of local and regional authorities in innovation in the relevant areas for meeting the needs of the regions;
- improve food security by increasing production of competitive products of agroindustrial complex, including the world market;
- create additional workplaces in the regional labor market and employ a highly rural young staff for improving the welfare of the region and so on.

Creation of educational and scientific agroindustrial formations will enable not only to combine educational, scientific and production activities, and fully cover the entire innovation industrial and commercial production cycle and sale of agroindustrial complex. The development of innovation infrastructure through the creation of educational and scientific agroindustrial formations will contribute to the development of regional agroindustrial complex

and innovation potential of the regions by transforming innovative products into specific result of agroindustrial complex production.

Further line of innovation infrastructure research development of regional agroindustrial complexes is to develop recommendations for the creation of regional innovation centers for development of agroindustrial complexes.

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