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Olena Shubravska

AGRICULTURAL INNOVATIONS: MAIN DIRECTIONS OF DEVELOPMENT

Institute for economics and forecasting NAS of Ukraine

Abstract: *The importance of innovations for ensuring ecological, economic and climatic sustainability of the agricultural sector is substantiated. The main directions of modern innovation activity in the agrosphere are determined. Restrictions on the introduction of breakthrough innovations in agricultural production in Ukraine are outlined. Ways to ensure the development of the domestic agri-food sector on an innovative basis are proposed.*

Key words: agrarian innovation activity; sustainability ensuring; breakthrough innovations.

Agriculture all over the world is facing serious challenges, primarily due to climate change and rising demand for food. To meet such demand, agricultural production, as well as the areas of processing and marketing of agri-food products, must constantly develop, adapt to modern changes in the global environment and improve. Agricultural production is in dire need of support in the form of knowledge, information and management services. All this is connected with the introduction of innovative solutions in the agricultural sector. In modern conditions, the innovation factor becomes crucial in the process of ensuring the progressive development of both socio-economic systems as a whole and their individual sectors, including and agricultural. At present, characterized by growing global food demand, rising prices, sharp climate fluctuations that provoke crop volatility and unpredictability in the global agricultural market, the innovative component of agri-food development is increasingly given attention as one of the key factors stabilizing rural production.

In this regard, the search for new technologies that can increase the efficiency of agricultural management under natural resources constraints, including degradation of arable land and depletion of fresh water sources. It is obvious that the implementation of full-scale targeted research requires a lot of financial resources, which significantly narrows the list of states that can ensure such work, obtain adequate results and their further implementation. Therefore, the problem of availability of modern agricultural technologies for both poorer countries and small agricultural producers must also be solved.

Lack of funds for most farmers and underdeveloped national agro-innovation systems are cited by international experts as among the main causes of crises and structural distortions in the national agricultural sectors of developing countries, as well as the global food crisis and current and future food market uncertainty. The need to expand funding for agricultural research is largely due to the need for the industry to adapt to climate change and mitigate its effects. In particular, this applies to research on the breeding and use of seeds of drought-resistant varieties of agricultural plants, drought forecasting, assessment of their impact and early warning systems.

In addition, it is considered necessary to maintain the course of sustainable development ("recovery") of agricultural sectors in developing countries, including by intensifying agricultural production, increasing its productivity through the use of scientific approaches and local experience in the interests of protection, conservation and restoration of natural resources, limiting the use of pollutants, in particular, expensive input factors of production, especially agrochemicals. Ensuring the implementation of such a strategy is through increased investment in agriculture in such priority areas as: development of agricultural infrastructure; R&D in crop and livestock production, including the creation of environmentally friendly technologies; a system of measures to promote best practices and technologies, the use of information and communications technologies, as well as monitoring and planning of agricultural production.

The information needs of farmers are increasing as they must take more complex decisions on land use, crop selection, choice of markets and other areas that impact the livelihoods of their families and communities. [1]. As investment in agricultural technology increases dramatically around the world in response to the threats noted above, the industry must quickly commercialize new technologies that will help farmers respond to and

build resilience. At the same time, investments in agricultural technologies are currently growing rapidly, but do not necessarily turn into practical innovations [2].

All this, as well as the generalization of research on innovation in agriculture and related fields confirms that the most advanced is the development of environmentally friendly systems of agriculture and agro-economy in general, which already allow to significantly increase production efficiency based on biotechnology and the quality of the products, while maintaining the natural resource potential. Along with this direction, the foundation of the innovative breakthrough is formed by energy-saving technologies and related bioenergy, which are the key to reducing human dependence on non-renewable energy sources. Under the influence of these processes there are significant transformations of the world agrosphere, which, in turn, bring changes in the domestic agri-food development.

Thus, agrobiotechnologies (genetic modification, marker selection, selection of agricultural crops for the production of second-generation biofuels, creation of biopesticides, biofertilizers, enzymes), as well as the development of ecologically oriented systems of agriculture and agro-management are recognized as the main directions of modern innovation in the global agrosphere.

Most scientists attribute modern innovations in the field of agri-food supply mainly to the rapid growth of biotechnology. Terms such as bioenergy, bio agriculture, organic cropping, etc. are becoming more and more common in the scientific community. What they have in common is that each of the activities they characterize is based on the use of biological (renewable) resources, and innovative biotechnologies are used to increase the efficiency of production processes. The purpose of creating and using bioproducts and bioprocesses is to change traditional production by introducing alternatives to chemical raw materials and chemical technologies.

The accelerated development of agrobiotechnologies and agro-economy is an objective world trend, which, although not so strong, can be found in the field of domestic agricultural production. At the same time, the main volumes of investments in the agrarian sector of Ukraine are steadily directed to the most profitable and export-oriented component of production, namely - in the cultivation of cereals and oilseeds. At the same time, investments in intangible assets (rights to commercial designations, industrial property objects, copyrights, patents, etc., ie in own innovative developments) are insignificant - 1.9% of all investments [3]. This indicates a lack of potential for an innovative breakthrough in the sector in the near future.

Given the state of affairs in the field of innovation of the domestic agricultural sector, it can be stated that there is no systemic basis for its development, which provides for the existence and mutual coherence of priorities, as well as a combination of innovation and structural change. Some achievements are local in nature and are mainly related to breeding activities. The natural result of all this is the consolidation of the status of an outsider in the field of agrobiotechnology development for the country and its agricultural subdivision.

To ensure the development of the agri-food sector on an innovative basis, it is necessary to form a multilevel system of information, logistics and financial support, access to which should be open to agricultural research units, producers and consumers of certain products for each group, and develop principles and mechanisms of interaction and determine the degree of responsibility for their observance by all participants in such a system, including the state.

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Shubravska Olena Vasylivna **–** doctor of economics, Professor, Head of the Department of Forms and methods of management in the agri-food complex, Institute for economics and forecasting NAS of Ukraine, Kyiv, e-mail:shubravska@gmail.com