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AGROECOLOGICAL PRODUCTION INFRASTRUCTURE OF AGRO-INDUSTRIAL COMPLEX: PROBLEMS AND SOLUTIONS

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ABSTRACT

In Ukraine, there are practically no structures capable of providing high-quality environmental control over agricultural production; this situation is acquiring critical significance. Therefore, the problems of forming a specialized agroecological service within the production infrastructure are urgent and re-quire scientific research and justification. The issues of formation of specialized agroecological services within the production infrastructure capable of providing high-quality environmental con-trol over agricultural production have not been studied. Issues related to the development of the production infrastructure in the context of ensuring the improvement of the environmental safety of agricultur-al production and the efficient use of the resource potential of the agricultural sector of the economy have not been sufficiently studied. The research paper analyzes the problems in the interaction of industrial infrastructure with agroecological production. The basic principles of sustain-able development of the agroindustrial complex in the context of socio-economic transformations that will produce a fundamental ecological recon-struction of all business entities are suggested. Agricultural enterprises are not able to maintain a constant capital-labor ratio, which leads to a decrease in the growth rate of production of the final product. In this case, it is important to determine the duration of the transition period in changing economic growth rates and the policy of introducing inno-vative forms of scientific and technological progress into individual technologi-cal processes (capital-intensive or fund-saving), which should be directed to environmentally safe agricultural production. Agricultural enterprises are not able to maintain a stable capital-labour ratio, which leads to a decrease in the growth rate of production of the final product. In this case, it is important to determine the duration of the transition period in changing economic growth rates and the policy of introducing inno-vative forms of scientific and technological progress into individual technologi-cal processes

(capital-intensive or capital-saving), which should be aimed at environmentally safe agricultural production.

Key words: Industrial infrastructure, Environmental safety, Agroecology, Economic integration, Environmental and economic regulation.

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1. INTRODUCTION

1.1. Topicality of the research

Over the past decades, there has been a sharp increase in the negative impact of the economic activity of society on the qualitative condition of the environment. Intensification of agricultural production in its time led to the emergence of many negative environmental effects, in particular those associated with environmental pollution. This is the result of neglect of the environmental safety rules in the use of land, water and air recourses, the dangerous use of mineral and organic fertilizers, pesticides, fungicides, various toxic chemicals in the fight against pests, weeds and diseases in crop production and so on. Today, when there are practically no structures in Ukraine capable of providing high-quality environmental control over agricultural production, this situation becomes critical. Therefore, the problems of forming a specialized agro-ecological service within the production infrastructure are urgent and require scientific research and justification.

1.2. Problem statement

Today, the issues of organization and functioning of the production infrastructure of agricultural entities in market relations, when the existing system is destroyed and the new one has not yet been created, have not been sufficiently studied.

The hopes that the problem of increasing the economic integration of producers, suppliers of material and technical resources and services with rural producers would be solved automatically, through market mechanisms, that prices would become cheaper and the quality of services would improve, equivalent exchange and administrative relations would be ensured, failed. The measures of the state to improve the situation were discrete.

In this regard, scientific generalizations of the practice of organizing production infrastructure in agricultural entities, analysis of the level of scrutiny of the problem suggest that the published works mainly dealt with general concepts of building infrastructure and services in the agroindustrial sector, developing areas of maintenance supply, agrochemical, transport service, leasing and repair of equipment. However, the formation of a specialized agroecological service within the production infrastructure that is able to provide high-quality environmental control over agricultural production has been insufficiently studied.

1.3. Selection of unexplored parts of the entire problem

At the same time, the issues of the development of the production infrastructure in the context of ensuring the improvement of the environmental safety of agricultural production and the efficient use of the resource potential of the agricultural sector of the economy have not been sufficiently studied.

The objective of this study is to theoretically substantiate the need for and reveal the essence and principles of organizing an agro-ecological industrial infrastructure and to develop proposals for the formation and determination of the functions of an agroecological service department as part of an agroindustrial complex.

2. RESEARCH FINDINGS

At the present stage of development of the economy, the agrarian policy of Ukraine is aimed at meeting the food needs of the population, ensuring food independence as part of the state's security, fundamentally reforming economic, social and legal relations in the agrarian sector, establishing market-type agricultural entities, creating multistructural agrarian economy, effective integration of the agroindustrial complex into the world food market.

The agrarian sphere is the most important component of the economic basis of the country. The consumer market is formed by more than 70% by foodstuffs and products made of domestic agricultural raw materials. The agroindustrial complex is integrated into the overall structure of the national economy, and miscalculations in the agrarian sector adversely affect the economic situation of the country as a whole.

Market directions of economic reforms in the economic system of the agrarian sector of the economy have caused tangible changes in its internal structure and socio-economic relations, the need to develop basic measures to overcome the decline in production and ensure state support for economic growth. This necessitates the creation of a concept of sustainable development based on the integration of economic, environmental, social and political aspects.

Activities and methods of partial implementation of the model of market relations in the agroindustrial complex in Ukraine in 1991-2017 did not sufficiently ensure the establishment of effective economic relations, did not stop the decline in agricultural production, the sharp deterioration in the social parameters of life of agricultural producers.

However, as indicated in the Concept of the State Target Program for the Development of the Agrarian Sector of the Economy by 2021 [1], the current situation in the industry does not allow overcoming negative phenomena.

In the face of declining solvency of the population, the level of consumption of milk, meat, fish, fruit, grapes per person is significantly lower than scientifically grounded standards. The production volumes of high-protein canned products based on meat and fish, as well as products for therapeutic and preventive nutrition of children, are insufficient.

Certain stabilization and increasing volumes of agricultural production in 2010-2017 (+28%) allowed to increase the level of consumption of basic foodstuffs per capita, but it still remains below scientifically grounded standards.

The acute problems in the countryside are lack of motivation to work, poverty, labour migration, unemployment, the decline of the social infrastructure, deepening of the demographic crisis and the extinction of villages.

Decline in the demographic reproduction and labour potential of the village picks up a threatening pace. According to the data of 2017, the rural population of Ukraine numbered a bit over 13 million people. Of these, 20 thousand people left the villages. In general, the rural population decreased by almost 100,000 people in 2017.

The decrease in the population of Ukraine is mainly due to its rural part, the decrease of which over the past 16 years amounted to 2.9 million, or 18.1%, which is 60% higher than the urban population decrease rate.

Migration processes have intensified, especially among rural youth, which is the main cause of the degradation of Ukrainian villages today. Rural employment declined.

Deindustrialization of agriculture has become threatening. The share of agriculture in Ukraine's GDP returned to the 2000 level of 17.1% (source: the World Bank). Then the share decreased, reaching the lowest level - 7.5 - in 2007. After the 2008 crisis, the growth of the role of the agricultural sector in GDP resumed. This trend was accompanied by an increase in its exports. In this context, an alarming increase in the share of exports of commodities (agricultural and mineral raw materials) should be noted. It increased from 24.4% in 2012 to 30.5% in 2017 in the total volume of merchandise exports.

The level of provision of agriculture with tractors, combines and other equipment amounts to 45-50 percent of the need. More than 90 percent of the hardware requires immediate replacement due to deterioration.

Stabilization of the development of branches of the agrarian sector is possible primarily in restoring the efficiency of the production potential as a combination of individual types of agricultural resources and, in particular, the production infrastructure of the agroindustrial complex of the country on an innovative, environmentally-friendly basis.

The main measures of the State Targeted Program for the Development of the Agrarian Sector of the Economy by 2021 are aimed at meeting domestic needs for food and agricultural raw materials and increasing export potential: in crop production, they should contribute to the restructuring of industries, adapting the structure of crop areas to the market conditions, widespread introduction of resource-saving, environmentally friendly technologies for the cultivation of soil and the cultivation of agricultural crops, etc.; in animal husbandry - ensure the creation of conditions for the introduction of resource-saving technologies for the production of highly efficient competitive livestock products. At the same time, the problems of system development of high-tech and efficient eco-friendly production infrastructure, capable of ensuring the preservation of soil fertility and the environment, as well as the production of "green" agricultural products, remained secondary.

The economic efficiency of the agro-ecological industrial infrastructure of the agroindustrial complex, regardless of the level of management the ownership structure, is a multidimensional economic category, the quantitative characterization of which requires a scientifically grounded system of assessments on the integrated analysis of the interaction of all technological, technical, economic, organizational and environmental factors influencing the level of efficiency while minimizing the costs of all types of recourses per unit of agricultural product.

Considering the unsatisfactory material and technical support of enterprises of the agroindustrial complex, especially purely agricultural ones, it is impossible to ignore such an important element of infrastructure support as wholesale markets for chemical products, machinery and equipment, vehicles and fuels, which significantly affect the production efficiency and quality of agricultural products. In Ukraine, this segment of the market infrastructure of the agroindustrial complex remains underdeveloped. The volumes of stock exchange transactions for chemical products in recent years has decreased by almost 1.8 times, which is largely due to both the organizational factor and the financial capabilities of enterprises in the agricultural sector. The problem of providing agricultural producers of Ukraine, including farms, with means of production can be solved by using the potential of leasing activities.

First of all, the development of the infrastructure of the agroindustrial complex requires an integrated approach, which consists in creating its integral model that takes into account production, organizational, functional and structural factors, as well as the characteristics of commodity markets at the regional, national and international levels.

The most important function of the production infrastructure of the agroindustrial complex is to ensure the continuity of the process of reproduction of the entire complex, in all areas and divisions in order to timely bring quality products from producer to consumer. This function is concretized in such economic activities as procurement, storage, transportation, packaging, maintenance and technical support, agrochemical, veterinary and sanitary services, etc.

The scale of development of the production infrastructure is not an end in itself; it is determined by the volumes of agricultural production and agricultural processing industries. The production infrastructure should have integration qualities, that is, as a result of activities, certain types of production should become a complex, and the ratio between the successive stages of the formation of the final product of the agroindustrial complex in terms of its main technical, economic and financial parameters should form its functional structure. It has been established that the optimal volume of production infrastructure is 10% of the output of the entire agroindustrial complex, and the effect of balancing all areas of the agroindustrial complex can reach 15% of the total increase in its production.

The intensification of investment activities in the agro-industrial complex in recent years has had a positive impact on the technical condition of the storage facilities: they are gradually being equipped with the equipment for cooling and creating a controlled gas environment. This is especially true for joint-stock companies, where funds are accumulated that allow the introduction of technological innovations that help reduce losses in the process of storing agricultural products and foodstuffs.

The increase in the efficiency of the agroindustrial complex was not contributed either also by the fact that the number of motor transport enterprises serving agricultural production reduced by almost 2 thousand units, and their fleet - by 20%. In the face of a decrease in the production volume of the agroindustrial complex, the most significant losses were sustained by motor transport enterprises, which were on an independent balance sheet and whose activities became unprofitable.

At the present stage in all countries of the world, the basis for innovation in the agroindustrial complex is the development and introduction of new types of tare and packaging materials, the progressive changes in which allow for the comprehensive mechanization of production processes and improving the efficiency of loading and unloading operations.

The general and specific problems of the production infrastructure of the agroindustrial complex must be solved in the process of forming a competitive agroindustrial production that ensures the food security of the state. Therefore, in the conditions of the emergence and development of market relations, scientifically grounded methodological foundations for ensuring the sustainable development of agricultural production are necessary provided an extensive network of production infrastructure based on ensuring agroecological management as well as rational and efficient resource use.

In order to attract more attention of the state to the problem of infrastructural support for environmentally friendly agricultural production, we suggest:

a) at the theoretical level – distinguish the concept of “agro-ecological production infrastructure in the system of ecological and economic concepts and categories, the essence of which is that it is a system of services maintaining agricultural production, which in the process and based on the results of their activities guarantee the preservation of natural resources and the environment, as well as the production of environmentally friendly products;

b) at the practical level - create specialized agro-ecological services in the production infrastructure network, which should be entrusted with advisory and controlling functions and ensure the development of agroecological agricultural production in the regions.

Ukraine is known worldwide for its rich resource base and, in terms of membership in the WTO, has become one of the leading food exporters. When entering the world market, Ukrainian producers of agricultural products and food products must take into account the conditions under which their products and goods must be of high quality and safe, comply with international and European quality standards, and be competitive.

At the same time, current production changes are taking place due to the revaluation of values, the formation of new development priorities. The old truth is being realized at the new level: the land that feeds people must receive care and protection in return. This new environmental ethics is perceived throughout the world as the basic principle of sustainable development. The main paradigm of sustainable development is that meeting the needs of the current generation should not jeopardize the opportunities and rights of future generations to meet their needs. Sustainable development implies the need not only to use natural resources, but also to preserve and develop them, to carry out economic activities on the basis of environmental responsibility, which means the need to take into account the possible impact of this activity on the environment in the process of making management decisions.

All this is the main reason for the significant change in the production of agricultural products, the expansion of the production of "green" (organic) products, the restoration of organic farming, the development and implementation of cleaner production technologies.

In Ukraine, in accordance with the Sustainable Development Strategy of Ukraine, one of the principles of sustainable development is "... ensuring the ecological and economic balance of the development of individual regions against the background of close interregional economic cooperation under the terms of harmonization with national needs and national security interests" [2].

We believe that the ways to implement the state policy of sustainable development of the agroindustrial complex are the following:

- Attraction of internal and external investment resources for the development of agricultural production;

- Creation of favourable conditions for the direction of long-term foreign investments in the innovation sphere;

- Search for and direction of domestic financial investments in the restoration and development of the industrial infrastructure of the agroindustrial complex;

- Development and adoption of organizational measures for the development and implementation of high-performance agricultural technologies;

- Ensuring the implementation of environmentally sound principles of agriculture and adapted to local conditions of technologies and farming systems to protect the land from pollution and depletion.

In our opinion, the sustainable development of the agrarian economy can be viewed as a complex development, which, on the basis of the principles of purposeful existence, rational use of natural resources, economic efficiency and social justice, provides environmental, economic and social services to all members of society, while maintaining natural environmental socio-economic systems in a stable condition, and serves the purpose of satisfying the normal spiritual and material needs of the present and future generations, as well as the full development of personality.

The draft concept lacks in the list of principles of sustainable development the principles provided for in many international documents, which, in fact, determine the content of sustainable development. These are:

• World outlook, for example: the integrity of the biosphere and the interdependence of all its components; the value of all forms of life on earth, respect for nature;

• Principles of shared responsibility, for example: common care and shared human responsibility for the state of the environment, protection, preservation and restoration of natural ecosystems, preservation of biodiversity;

• Human rights, for example: the right of all people, including future generations, to a clean and healthy environment (Article 50 of the Constitution of Ukraine), the right to participate in decision-making processes that affect the environment, the right of all people to economic, social, political and cultural development; the interdependence of common human rights and the rights to peace, development and clean environment;

• Principles of sustainable development themselves, for example, the "polluter pays" principle, the elimination of unsustainable types of production and consumption, the pro-active principle and the policy of preventing possible environmental cataclysms, the development and introduction of environmentally friendly technologies;

• Principles of justice, for example: equality of women and men, including equality in management and decision-making;

• Principles of management and security, for example, the responsibility of public institutions for compensating victims of environmental disasters and restoring damaged ecosystems; environmental education and training, strengthening non-governmental organizations and increasing their participation in decision-making processes;

• Principles of environmental protection, for example, the development of national environmental standards and monitoring, prevention of transboundary environmental problems, scientific research and development of scientific cooperation in the field of nature conservation and sustainable development, prevention of ecosystem degradation as a result of military activities, preservation of cultural and natural heritage etc.

The implementation of these principles will provide a fundamental ecological reconstruction of all business entities in Ukraine in the conditions of socio-economic transformations that occur in extreme environmental conditions, so that it can be adequately admitted by the European Union.

3. CONCLUSIONS

Thus, the material and technical conditions for raising the level of agricultural production in modern conditions are created on an insufficiently large scale, which is the reason for the decline in employment of the rural able-bodied population. In the present conditions, agricultural enterprises are not able to maintain constant capital-labour ratio, which leads to a decrease in the growth rate of production of the final product. In this case, it is important to determine the duration of the transition period in changing the economic growth rate and the policy of introducing innovative forms of scientific and technological progress into certain technological processes (capital-intensive or capital-saving), which should be directed to environmentally safe agricultural production.

Determining the efficiency of agricultural production should be based on a systemic approach and rely on the theory of reproduction, economic growth and sustainable development. This implies taking into account the level of development of the productive forces and production relations, stages of economic relations - production, exchange, distribution and consumption, factors of economic growth. At the macro level, efficiency is the degree of use of the resource potential of society in the production and sale of products (works, services), in creating national income and its component - profit; at the micro level - the degree

of utilization of the resource potential of an enterprise in the production and sale of products, in obtaining gross income and its component - profit.

Such an approach makes it possible to compare the actual results achieved with a possible one, makes it possible to identify the scope of missed opportunities, comprehensively ascertain their cause and, on this basis, develop measures to make better use of the resource potential of production. The creation of a scientifically grounded strategy of socio-economic transformations in society, a new strategy of regional economic policy, directions for improving the territorial organization of production and managing the resource potential of the regions of Ukraine depend on solving the problem of increasing production efficiency.

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