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Features innovative software development investment in agricultural production

Scientific problem. Nowadays, innovation and investment actives in the agricultural industry as well as the overall development of a modern model of the economy is a priority in Ukraine. This draws attention to forming a strategy for diversifying the innovative and investment development of the agricultural industry in current post-crisis economic environment.

The importance of innovation and investment actives in the agricultural industry is being actualized through increased competition and enhanced by the industry specificities. The relevance of justifying a strategy for diversifying the innovative and investment development of the agricultural industry is difficult to be overestimated. Solving this issue determines whether the agricultural industry becomes economically powerful or rolls down to the lowest level turning into a raw materials appendage for other countries.

Analysis of recent researches and publications. The issues of innovative and investment development were addressed by foreign and national scientists including: V. Andriichuk, S. Volodin [2, 3], O. Vytvytska [1], P. Haidutskyi, V. Haets, O. Hudz [4], O. Datsii [5], P. Drucker, L. Zaburanna [6], S. Kuznets, L. Kurilo [10], M. Limitovskiyi, Y. Lupenko [12], P. Makarenko, M. Malik [12], V. Mesel-Veselyak [12], M. Porter [14], T. Rateringer [15], C. Freeman [17], W. Sharpe [16], P. Sabluk [10], V. Sytnyk, P. Stetsyuk, R. Solow, L. Soti,

B. Twiss, R. Fatkhutdinov, H. Freeman, W. Hartman, H. Haushtein, A. Schpidhoff, O. Shpykuliak [10], J. Schumpeter and others. At the same time, despite the huge number of scientific papers, issues relating to the prospects and problems of innovative and investment development of the agricultural industry have been considered insufficiently. In national and foreign scientific publications, a very little attention is paid to the development and intensification of innovation and investment in the agriculture industry; a sufficient volume of actionable researches that would become a basis to a theoretical rationale for necessity and methodological approaches to form a strategy for diversifying the innovative and investment development of the agricultural industry in current post-crisis economic environment has not been not accumulated.

The objective of the article is to outline issues of innovative and investment development of the agricultural industry in Ukraine and justify the necessity of and methodological approaches to the strategy for diversifying the innovative and investment development of the agricultural industry in current post-crisis economic environment.

Statement of the main results of the study. The need for diversifying the innovative and investment development of the agricultural industry is justified by the fact that, currently, the technological structure of the agricultural industry does not meet modern requirements, so simply replicating it can not provide the agriculture area with economic growth and com-

petitiveness. The structural deformations are mainly caused by a significant share of energy-intensive industries. Trends comprising high costs of the agricultural industry and its low innovativeness remain unchanged.

Changes in the agricultural sector should be aimed at improving proportions within the agricultural industry and forming a structure of agricultural production which would meet the needs of the domestic market, as well as balancing the production capacities. These should be exercises by stimulating the fourth and higher modes of development, enhancing innovation-oriented industries for agricultural production of new ones and substantially improved types of agricultural products based on energy-efficient technologies and equipment, expanding the range of agricultural products, especially in the areas that form the consumer market offer.

So, more than 2/3 of the total agricultural products account for industries producing raw materials. Orientation of the production structure at raw materials and its dedication mainly to export needs makes the agro-industry and agricultural economy as a whole extremely dependent on external markets, impedes the development of the internal market and reduces the possibility of the national development in agriculture, leads to irrational use of natural resources, especially the land.

Currently, in Ukrainian agricultural production, the third and fourth technological innovativeness modes are dominant (the share of which is about 80%). The fifth (6-8% of total production) and sixth technological innovativeness modes (1-3%) are bio-and nanotechnologies-based. The high-tech industries of the 5th and 6th technological innovativeness modes are located mainly in Kyiv, Kharkiv and Lviv oblasts. The export commodity structure also stays irrational with the share of finished products being 30-35% and the share of raw materials being 65-70% (in the global export structure, finished products occupy 77.5% while raw materials and semi-finished products - only 12.5%). It should be noted that the above trends do not imply the need of completely discontinue raw materials production but require creating an environment for dynamic growth in processing and exporting food and finished products.

The problem of technical condition of agricultural industry is extremely sharp. The high

degree of deterioration of production assets in most agricultural enterprises does not allow national producers to sustain competition with western manufacturers in quality of released food products even in the domestic market. Therefore, an important task faced by the the Ukrainian farming industry is its modernization and finding ways to improve the efficiency. The basis of solving this issue is the intensification of technological and product innovations in the process of diversifying the innovative and investment development of the agricultural industry. Development of new technologies is a basis for market competition, the primary mean of raising efficiency of agricultural industry and improving products quality.

The current situation in Ukraine is different. In the absence of funding, agricultural companies reduce production of high-technology products preferring to produce technically simple and cheap ones.

Lately, only one innovate direction dominates in agricultural industry being the introduction of new technological means in order to expand the products range while the development of new technologies is considered minor by agricultural companies. That leads to negative consequences being the reduction of promising innovative developments, decrease in their quality and level of novelty, breaking proportions of existing scientific and technical potential in the agricultural sector as well as insufficient innovativeness in agricultural businesses.

It should also be noted that, in purchasing scientific and technical achievements in form of licenses for use of an agricultural property, Ukrainian producers prefer national developments because of their lower price. The development of critical core complex technologies (Macro technologies) is also of a great importance having a significant impact on the efficiency of agricultural industry, products quality, increase in export potential and providing transition to a new innovative technological mode (designing composite products, high-efficiency separation of mixtures, technologies of substances with special and anomalous properties, nanotechnologies) [7]. One of the priorities of diversifying the innovative and investment development of the agricultural industry is the reduction of energy-intensive industries through development of knowledge-based in-

dustries and industries with low energy and material intensity. In other words, the factor of energy efficiency is among the key ones as its level determines the operational efficiency and competitiveness of an agricultural industry.

So, in recent years, reduction of energy intensity of agricultural industry is provided mostly by the influence of structural factors. We should note that, during this period, the share of energy in the cost of agricultural products reduced in proportion to a grow in production volumes resulting in the dynamics of growth of products output being ahead of the dynamics of energy consumption.

For maintaining the existing rate of decrease in energy intensity of agricultural industry (4-6% annually), should immediately engage the technological factor of the energy saving potential [13]. The most effective and large-scale energy-saving opportunities are as follows: implementation of new energy-saving technologies and equipment; improvement of existing technologies and equipment; reduction of energy losses; improvement of products quality, development and reduction of losses of raw materials; substitution and selection of the most efficient energy carriers. Therefore, issues associated with the implementation of energy efficient technologies and equipment in all areas of the agricultural economy acquire the great importance (the total of energy-saving projects implemented in production is very small).

The rise in the price of energy carriers makes the effective functioning and development of many agricultural enterprises impossible without significant loads aimed at reducing the energy cost share in the cost of agricultural products as well as efficient use of energy resources. A basis for reducing power intensity of agricultural products in all areas of the agricultural economy is the development of effective state regulations system in the energy saving.

This will allow, the first, to improve the structure of final energy consumption by substituting critical fuel types while increasing the efficiency of agricultural industry. At the same time, it is necessary to increase the pace in implementing energy efficiency technologies that will reduce the energy demand per a unit of output.

This requires, first, to audit the developments of national scientists and adopt, on the state level, decisions for their support and

large-scale implementation, and, secondly, to search systematically for the most effective global developments. The special attention should be paid at involvement of secondary resources and local energy sources. [13]

This issue can be solved through the use of economic incentives - cheaper credits, VAT exemptions, exemption from taxation of profits earned through the introduction of energy-efficient and energy-saving technologies, exemption from import fees for materials, equipment and components imported into Ukraine and used for production of equipment that runs on alternative energy sources.

Currently, an unfavorable situation formed in the meat and dairy industry resulting from a decrease in demand for its products primarily on foreign markets through technological backwardness of the products comparing to overseas processing enterprises in this area. Development of agricultural machinery is essential for technical re-equipment of agricultural industry, and therefore should increase its share in the overall structure of the industry, but only increasing its level of innovativeness.

Unfortunately, the share of high technology products is constantly decreasing in the structure of agricultural engineering. As a result, this will lead to solving the internal problems through procuring equipment and technologies and falling into a long-term technological dependence on external sources [11, p. 160].

Strategic directions for the development of agricultural machinery should be the production of complex agricultural machinery as well as technologies and equipment ensuring innovation in all other sub-industries within the agricultural industry. Priority sub-industries that determine the technological level of the agricultural engineering are the production of means for implementing energy saving technologies, manufacturing processing equipment for modernization of the agricultural industry. Also, a basis for diversifying the innovative and investment development of the agricultural industry is the increase in efficiency of food production and exercising active policy in import substitution. Development of the agricultural industry should be carried out by its technical and technological re-equipment based on environmentally friendly technologies.

A particular attention should be paid at the development of new types of agricultural products.

Should create an environment for diversification of agricultural industry and optimizing its structure by increasing the items range of new stocks.

The main focus in the development of agricultural industry should be made not on rising the amount indicators but also on the products quality based on transition to innovative technologies [8, p. 779]. Therefore, should restructure the agricultural industry only based on innovative diversification. Transformations in agricultural industry should be aimed at increasing the share of knowledge-intensive and high-tech industries and technological renovation of industries.

In the food industry, should increase the use of highly efficient biotechnologies. A significant increase in the production with a focus on domestic consumers by harmonizing the raw materials base and enhancing the protection of domestic producers should be a strategic priority for the agricultural industry.

Should also take measures to ensure the competitiveness of agricultural industry by renewal of production assets and implementation of modern organizational forms of managing agribusiness [9]. Thus, diversifying the innovative and investment development of the agricultural industry will facilitate: optimization of the agricultural industry structure with an enhanced role of the internal market and accelerated development of knowledge-intensive and high-tech types of agricultural activities; innovative and technological modernization with increase in the share of new technological modes providing for deep processing and release of final consumption products; implementation of energy-efficient development model with extended use of alternative and renewable energy sources, diversification of energy supply and formation of an effective capacity generating structure, introduction of environmentally friendly processes. Should emphasize that for diversifying the innovative and investment development of the agricultural industry, the process of innovations expansion must change from a centralized one to a local one when particular regions, due to local innovation processes, become "innovation points of growth" of the agricultural economy [4].

However, the international experience shows that no successful regional innovation is possible without an adequate state support at local,

regional and national level. Successful diversifying the innovative and investment development of the agricultural industry needs a government support of priority sectors in accordance with the principles of fair competition for all market participants.

In order to enhance innovations, use internal organizational potentials of agricultural enterprises in course of diversifying their activities, create conditions for development of all sub-industries in the agricultural industry through expansion and implementation of innovation, need to enhance and implement the innovative and investment development of the agricultural industry.

Conclusions. When planning the state policies in innovative and investment development of the agricultural industry, must realize that structuring it in present form is impossible and economically not feasible.

There is a need for a clear innovative and investment state policy for development of the agricultural industry providing for a set of measures stimulating the promotion of agro-industrial products at the national and foreign markets, supporting agricultural exports and protection of local producers, flexible regulation of prices and tariffs of natural monopolies and so on. In the regions, local conditions should be taken into account: scientific, technical, financial, economic, industrial, social, and educational opportunities should be evaluated in order to support innovative and investment development of the agricultural industry, needs of agricultural enterprises in technological innovations and economic potential needed to deliver them should be studied. It will ensure the control of the process, enhance innovative and investment activities, and legally strengthen the innovative direction of the agricultural industry development in each region.

Preparation of similar programs has long been a standard in the EU. Now, these have been designed and operate in nearly 100 European regions, and their main areas are IT, biotechnology, nanotechnology, new materials and energy technologies. Searching for a strategy of innovative and investment development of the agricultural industry should define a direction to upgrade the existing production capacities, introduce structural changes in the agricultural sector basing on reduction of the costs in the

agricultural industry in order to select the most favorable option for the development of sub-industries considering the regulatory environment. Today, not only the resources held by an agro-industry are important, but also an ability of the authorities and agricultural businesses, in response to market challenges, to adapt quickly the existing resources as well as develop and create and innovative ones.

In conditions of private agricultural business dominating, the authorities are able to impact on business exclusively through creation of an attractive business climate in the region. An important factor promoting the innovative and investment development of the agricultural industry is creating state programs that should support the development and expansion of in-

novations and stimulate conditions for their implementation.

However, as the experience of the EU countries, Japan, Korea and China demonstrates, these are not a guarantee of effectiveness of innovative and investment activities but the allow to coordinate measures for intensifying measures to stimulate these activities, provide for control over the expenditure of funds [4, p. 8]. Addressing issues of diversifying the innovative and investment development of the agricultural industry is impossible without improvement of the legal framework and encourage mechanisms based on tax, fiscal, depreciation and investment policies leverage, creation of an infrastructure to support innovations in farming industry, providing scientific and technical activities with qualified personnel.

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