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FINANCIAL SUPPORT STRATEGY FOR INNOVATIVE AGRICULTURAL ENGINEERING DEVELOPMENT

STRATEGIA ZAPEWNIENIA FINANSOWEGO INNOWACYJNEGO ROZWOJU MASZYN ROLNICZYCH

СТРАТЕГИЯ ФИНАНСОВОГО ОБЕСПЕЧЕНИЯ ИННОВАЦИОННОГО РАЗВИТИЯ СЕЛЬСКОХОЗЯЙСТВЕННОГО МАШИНОСТРОЕНИЯ

Abstract


The factors of the influence of the external environment on the strategy of financial support as an integral part of the strategy of innovative agricultural engineering development have been considered. The stages of its formation with focus on market conditions have been determined. The directions of the implementation of the strategy for financial support for innovative agricultural engineering development have been described, the conditions of participation of investors and the mechanism of its implementation have been presented.

Keywords: *strategy, financial support, innovation development, agricultural engineering, investor, investment opportunities, technical and technological base, production program.*

Streszczenie

Uwzględniono wpływ czynników środowiska na strategię wsparcia finansowego jako integralną część strategii rozwoju innowacji maszyn rolniczych. Wyznaczono etapy jej powstawania z naciskiem na warunki rynkowe. Opisano kierunki realizacji strategii

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wsparcia finansowego dla innowacyjnego rozwoju inżynierii rolniczej, warunki uczestnictwa inwestorów oraz przedstawiono mechanizm jej realizacji.

Słowa kluczowe: *strategia, wsparcie finansowe, innowacyjny rozwój, przemysł maszyn rolniczych, inwestor, możliwości inwestycyjne, baza techniczna i technologiczna, program produkcji.*

Аннотация

Рассмотрены факторы влияния внешней среды на стратегию финансового обеспечения как составляющую стратегии инновационного развития сельскохозяйственного машиностроения и определены этапы ее формирования с ориентацией на рыночные условия хозяйствования. Охарактеризованы направления реализации стратегии финансового обеспечения инновационного развития сельскохозяйственного машиностроения, приведены условия участия инвесторов и механизм ее реализации.

Ключевые слова: *стратегия, финансовое обеспечение, инновационное развитие, сельскохозяйственное машиностроение, инвестор, инвестиционные возможности, технико-технологическая база, производственная программа.*


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JEL Classification: G 000, L 100, O 100

Statement of the problem in general outlook and its connection with important scientific and practical tasks.

The speed of technological changes of the world leaders in agricultural engineering, the active innovative renewal of fixed production assets, machinery and equipment for the agricultural sector, the severe competitive pressure from foreign producers of these products require domestic producers to concentrate their efforts on the innovative development of their own fixed production assets and the creation of new samples of an agricultural machinery and equipment. However, the external environment with its challenges and threats (increase in financial costs for innovative development due to rising prices for innovative activity; lack of financial support from the state; increase in competition from foreign producers of agricultural engineering; economic and political crisis in the country; unfavorable

investment climate in Ukraine and in particular, low solvent demand for products of agricultural engineering; instability of the national currency rate; unfavorable conditions for entrepreneurship, which leads to the de-industrialization of the Ukrainian economy, etc.), as well as the unsatisfactory level of funding for innovative agricultural engineering development inhibit innovation processes. In order to overcome these obstacles in the path of the innovative development of agricultural engineering and the intensification of innovation processes, it is important to develop an effective strategy of financial support for innovative development of the specified sub-sector of mechanical engineering. To develop such a strategy, it is necessary to analyze the need for certain

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innovative changes in relation to the innovative development of the technical and technological base of the production and

the innovative upgrade of products of agricultural engineering enterprises in accordance with the needs of farmers and other producers of agricultural products.

Analysis of latest research where the solution of the problem was initiated.

The features and stages of financial security strategy development in various sectors of the economy were studied by Ukrainian scientists such as O. Nagornaya (Nahorna, O., 2012), E. Shakhvalova

(Shakhvalova I., 2015), O. Kotsyurba (Kotsyurba O., 2015), N. Tanklevskaya, A. Kovaleva (Tanklevska N., Kovaleva A., 2016), I. Abramova, Yu. Melnik (Abramova I., Melnik Yu., 2017) and etc.

Aims of paper. Methods.

The purpose of the paper is to develop the mechanism for implementation of the financial support strategy for innovative agricultural engineering development. The following methods have been used to achieve the goal: methods of logical generalization (to substantiate the need to develop an effective strategy for the financial

support for innovative changes in the development of the technical and technological base of production and the production program of agricultural engineering enterprises); a graphical visualization method (for visual presentation of information).

Exposition of main material of research with complete substantiation of obtained scientific results.

Identification of the need for innovation and determination of the amount of their funding make it possible to formulate requirements for the development of a set of measures regarding the financial support for innovative changes in agricultural engineering. The innovative changes in this sub-sector of mechanical engineering concern precisely the technic and technological innovations that are aimed at technological renewal of products and fixed production assets, which provide the production of these products. During the introduction of technical and technological innovations, the question that has to be answered is to organize own research and development or to use of technology transfer. This is determined by two factors:

– rate of ageing of a certain type of innovation;

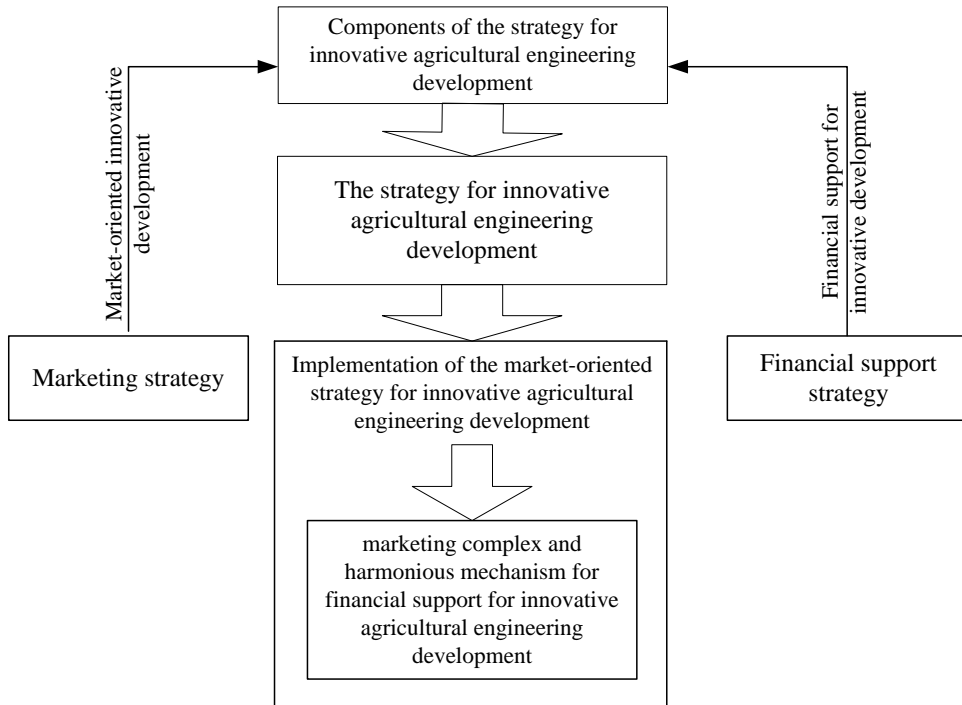
– volumes of expenses for the creation of the demanded innovations and their introduction.

In many cases, the issue is solved in favor of technology transfer if time requires high-speed solutions in the field of innovation changes and when the technological depreciation of fixed assets impedes the production of competitive products.

In agricultural engineering, upon the condition of implementation of innovative changes, all functional strategies (financial support, innovation, production, marketing) are interrelated that provides a market-oriented innovative development in this sub-sector of mechanical engineering. The implementation of the financial support strategy controls the processes of prediction and adjustment of financial flows in accordance with the harmonization of the innovative development of the components

of agricultural engineering, namely, the technical and technological basis of production and production program, taking into account the needs of the market. Thus, this is closely related to innovation and marketing strategies (Fig. 1).

Fig. 1 Interconnection of strategies in innovative agricultural engineering development

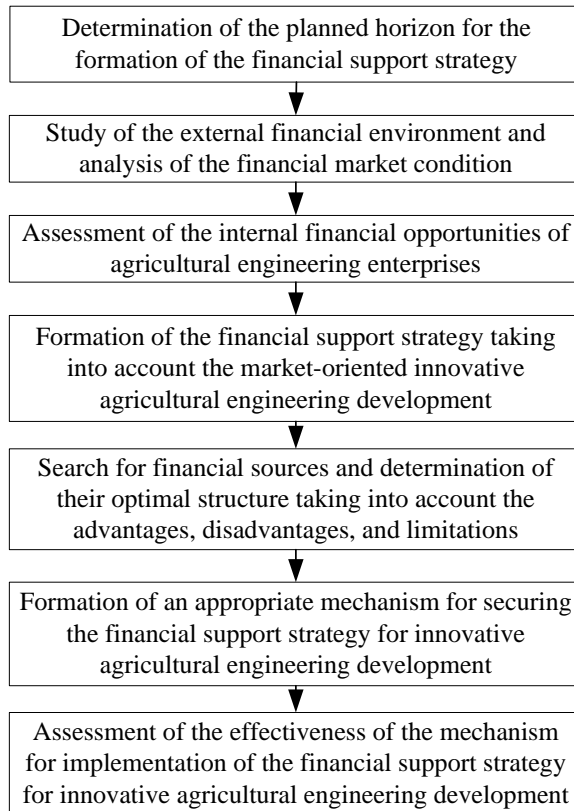


Source: compiled by the authors.

Proceeding from the fact that the strategy of financial support is developed for a long term (from 3 years and more), its main task is to determine the sources of financial resources, schemes for attracting funds in accordance with the identified needs for innovative agricultural engineering development. One of the most important tasks of the financial support strategy is to provide innovative agricultural engineering development with the necessary financial resources in sufficient volumes. The market orientation of the innovative agricultural

engineering development is ensured by its marketing strategy, which allows studying the market needs in the long term, and the possibility of market-oriented innovation changes is guaranteed by the financial support strategy. The financial support strategy is crucial for the implementation of innovative agricultural engineering development. The development of the financial support strategy for innovative agricultural engineering development involves a series of successive stages (Fig. 2).

Fig. 2 Stages of the formation of the financial support strategy for innovative development agricultural engineering



Source: compiled by the authors.

At the stage of determination of the planned horizon for the formation of the financial support strategy, the overall period of its formation is determined taking into account the goals and objectives set. The study of the external financial environment in the framework of the formation of the financial support strategy, the search and

analysis of financial sources, the assessment of acceptability and opportunities for their attraction are carried out at the next stage of the strategy, taking into account a number of macroeconomic factors relating to financial, economic, legal, marketing, social, and scientific-technical factors of influence on the implementation of the strategy (Table 1).

Table 1. Factors of the influence of the external environment on the formation of the financial support strategy for innovative agricultural engineering development

Group of factors	Main components
Financial	National currency rate and the state of money circulation. Perfection of the tax system in the country. Investment policy of the country.
Economic	Current state of the economy and trends in its change. Implementation of the state property privatization program. Mechanism for denationalization and privatization of property. Demonopolization of production. Direction and implementation of state innovation policy.
Legal	Stability and perfection of the regulatory framework for innovative investment activity. State guarantees for the protection of private investment and the reservation of property rights.
Marketing	Orientation of production to market requirements and needs. Fighting for sales markets, intensification of the use of marketing tools to find own niche on the market. Creation of new marketing tools for product promotion on the market.
Social	Level of the social protection of population. Formation of social policy of the state. State policy on creating new jobs and increasing labor potential. Increasing social standards and quality of life for the broad masses of population.
Scientific and technological	Development of scientific and technological progress. Technical and technological level of production. The pace of innovative and investment development of the real sector of the economy.

Source: compiled by the authors.

The next stage of the strategy formation is devoted to the analysis and assessment of the internal environment of agricultural engineering and the opportunities for attracting its own financial resources sources (profit, depreciation deductions, etc.) for financial support for the innovative development of the specified sub-sector of mechanical engineering.

The market-orientated strategy that envisaged in the next stage includes the research of the market of innovative products of agricultural engineering, the determination of unsatisfied consumer needs for agricultural machinery and trends in the development of demand for the future. The analysis of the market condition of innovative products of

agricultural engineering determines the directions of the scientific research aimed at implementing ideas for the creation of innovative products. It is expected to be solvent demand for such products, as a result of their guaranteed commercial use, which will provide a practically significant result for both the investor and consumers. The market orientation of the financial support strategy, which is carried out at this stage, involves the analysis of potential sales markets and trial marketing of innovative products, which guarantees a positive result of the implementation of innovative projects in the sub-sector of agricultural engineering.

The market orientation of the financial support strategy allows minimizing the

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main risks of investment activity associated with market uncertainty. The guaranteed demand of consumers for innovative products of agricultural engineering enterprises enables investors to avoid a scenario of the commercial failure of the proposed innovative models of agricultural machinery and equipment that are brought to market.

The market-oriented focus of the financial support strategy provides a high guarantee of reliable and efficient use of the attracted financial resources, which creates favorable conditions for investors to participate in innovative projects at agricultural engineering enterprises.

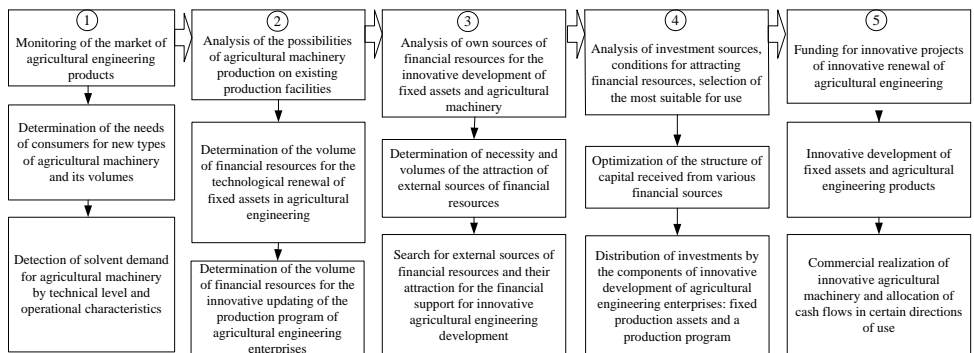
The stage of the search for financial sources and determination of their optimal structure is quite significant in the system

of financial support strategy and precedes the stage of formation of the marketing complex and harmonious mechanism for financial support for innovative agricultural engineering development.

The final stage of the financial support strategy concerns the assessment of the effectiveness of the mechanism.

The stages of the formation of the financial support strategy for innovative agricultural engineering development have something in common with the directions of its implementation, where the relevant tasks and the results of the implementation of certain measures are formulated and aimed at the consistent solution of the problems related to the financial support for innovations in this sub-sector of mechanical engineering (Fig. 3).

Fig. 3 – Directions for implementation of the financial support strategy for innovative agricultural engineering development



Source: compiled by the authors.

The technical and technological condition of the domestic agricultural engineering shows that the main volumes of investment resources should be directed towards the innovative development of their fixed assets, however, the innovative upgrade of the agricultural engineering itself requires considerable funds. For today, the financial capabilities of agricultural machinery do

not provide an innovative upgrade and support in the proper operating state of fixed production assets of agricultural machinery and equipment, as well as the development of new agricultural machinery.

There is an urgent need to develop an effective mechanism for the search, accumu-

lation, and distribution of financial resources that will provide innovative agricultural engineering development with financial resources in the long term.

The experience of the financial support for the innovative development of the real sector of the economy shows that direct financial support of investment processes and state regulation are based on the relevant financial institutions, using schemes and tools that had been developed for the long period of the development of market relations. The innovative development of domestic agricultural engineering requires significant investments; however, the banking system of Ukraine and the financial market are not able to provide the innovative upgrade of the industry with financial resources.

The main source of investment remains the own funds of agricultural engineering enterprises. Since 2013, bank loans and state budget funds have not involved in the necessary amount of the innovative development both fixed production assets of agricultural machinery and agricultural machinery itself.

Funding sources in a certain way determine the types and schemes of investing in innovative processes. In all cases, investors who use their own, borrowed or attracted funds must be confident in returning costs and ensuring an acceptable level of profitability.

The world tendencies of funding for the innovative development of the machine-building industry show that private investments, bank loans, and venture capital should become the main resources in Ukraine, which has moved to the direction of transformations.

However, on the one hand, the funds of private investors are not fully invested due to the unfavorable investment climate in the agricultural machinery sector, on the other hand, the use of debt capital for the implementation of innovation projects is not acceptable, as financial risks restrain investors from taking out significant lending resources from banks for a long time.

Among the main factors restraining the use of bank loans, especially for long-term are the following: significant credit risk; high-interest rates; lack of interest of banks in lending long-term projects, where is the low rate of cash flow.

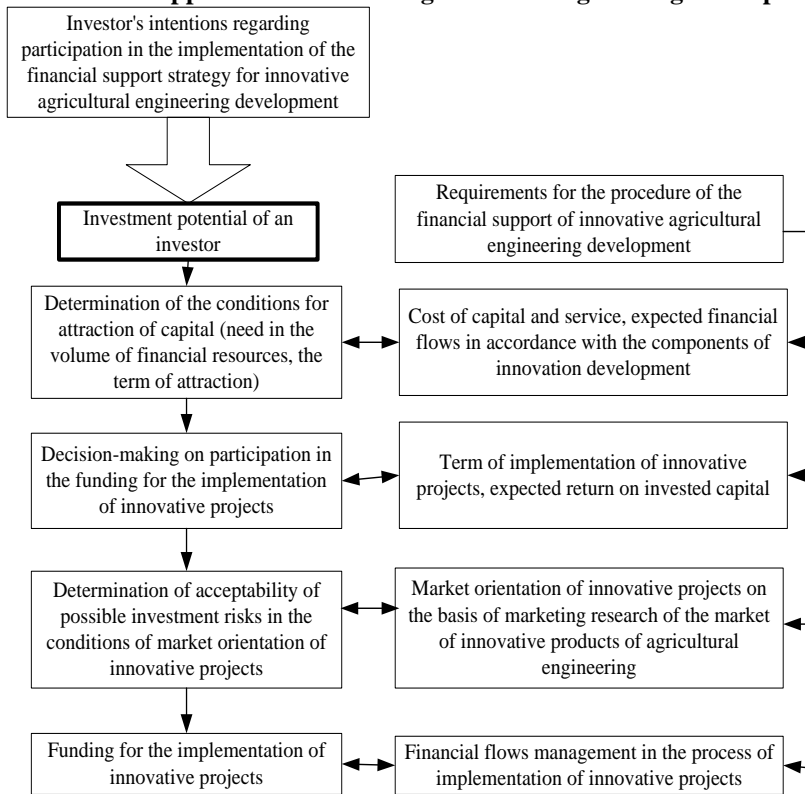
With regard to venture capital, its use is widespread in countries with developed market relations.

In Ukraine, the use of venture capital is appropriate as an additional source of funding for innovation processes in the real economy, in particular, in the sub-sector of agricultural engineering.

Venture companies specializing in risky financial investment, translate their possibilities into actions in terms of participation in perspective innovative projects, which ensure a high return on invested capital at the proper conditions of their implementation.

Any investor who plans to use his investment opportunities in the context of implementing the financial support strategy for innovative agricultural engineering development must conduct their analysis and assessment in terms of their acceptability, convenience and reliability of use for the innovation needs of this sub-sector of mechanical engineering (Fig. 4).

Fig. 4 – Conditions for the participation of investors in implementing the strategy for financial support for innovative agricultural engineering development



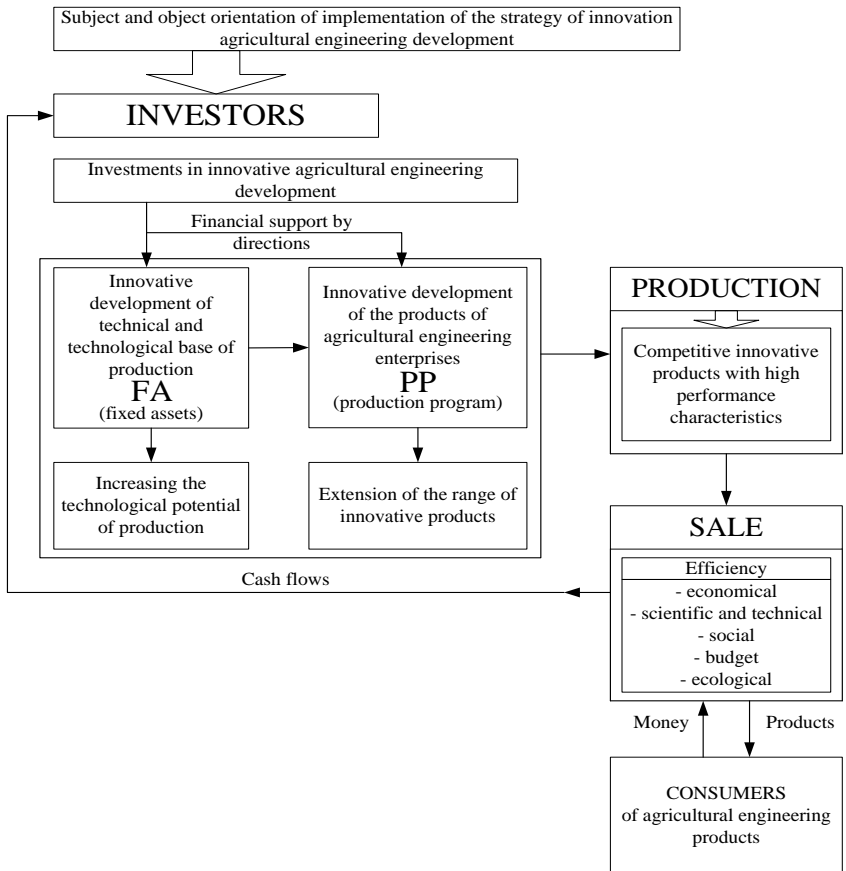
Source: compiled by the authors.

The approach to search for investors is the most responsible stage in implementing the financial support strategy for innovative agricultural engineering development. Rational use of financial resources and the application of effective mechanisms for financial support for innovations in the sub-sector of agricultural engineering provide minimization of financial losses,

reduce investment risks, increase the efficiency of innovative processes.

The key subject in the system of financial support for innovations is the investor. The investor takes the basic positions in implementing the financial support strategy for innovative agricultural engineering development (Fig. 5)

Fig. 5 – Implementation of the financial support strategy for innovative agricultural engineering development



Source: compiled by the authors.

Conclusions.

To overcome a prolonged financial crisis and reorient a domestic agricultural engineering to the innovative and investment path of development, it is necessary to create new approaches to the search, attraction and accumulation of financial resources, to develop and implement the new funding mechanisms that can, under the conditions of limited resources, meet the financial needs of innovative development of this sub-sector of mechanical engineering.

The market-oriented innovative development of the domestic agricultural engineering, state financial support for the industry, and introduction of a special regime of investment activity will ensure a favorable investment climate, which will activate an innovative and investment activity and will bring the indicated sector of mechanical engineering to the path of economic growth.

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References:

1. Abramova, I., Melnik, Yu. (2017). *Strategic orienters of financial provision for the development of city passenger transport*. Visnyk ZhNAEU (Herald of ZhNAEU). no. 2. pp. 93-97 (in Ukrainian)
2. Kotsiurba, O. (2015) *Formation of Strategy for Financial Support of Housing and Communal Sector Enterprises*. Derzhava ta rehiony (State and regions). no. 5. Retrieved from http://www.econom.stateandregions.zp.ua/journal/2015/5_2015/14.pdf (in Ukrainian)
3. Nahorna, O.V. (2012). *Strategy financial providing of the enterprises communal economy: essence and features*. Efektyvna ekonomika (Effective economy). no. 9. Retrieved from <http://www.economy.nayka.com.ua/?op=1&z=1385> (in Ukrainian)
4. Tanklevska, N., Kovaleva A. (2016). *The bases of formation of strategy of financial providing of agricultural enterprises*. Naukovyi visnyk Uzhhorodskoho natsionalnoho universytetu (Scientific Bulletin of Uzhhorod University). no. 7. pp. 123-127 (in Ukrainian).
5. Shakhvalova, I. (2015). *The strategy of financing the reproduction of fixed assets in agriculture*. Naukovyi chasopys NPU imeni M.P. Drahomanova (Scientific Journal National Pedagogical Dragomanov University). no. 30. pp. 50-56 (in Ukrainian).