

1.10. FEATURES OF INNOVATION-INVESTMENT ACTIVITY IN THE FIELD OF PLANTING

The modernization of the Ukrainian economy, the implementation of scientific and technological progress, leads to global changes that have a significant impact on modern society. The main task of the socio-economic development of Ukraine in the context of external challenges is the orientation towards the introduction of innovations, maximizing the use of new factors of economic growth. Innovations are expanding the capabilities of agricultural producers, influencing the socio-economic development of rural areas. Thus, an increase in the intensification of agricultural production on the basis of the active introduction of innovations in the leading field of agriculture in the country – crop production is relevant.

The crop production sector is engaged in the cultivation of crops for the production of crop production, serves as a raw material base for the development of agricultural production sectors, and affects the food security of the country. Crop production can be considered in the industrial and technological aspects.

From an industrial point of view, the branch represents the doctrine of technically perfect and cost-effective growing of crops, which allows you to get maximum yields with high quality produced products.

From a technological point of view, crop production is a scientifically grounded system of agriculture, which includes a set of interrelated agro-technical, land reclamation and organizational and economic actions to support and enhance soil fertility.

The level of crop development depends on the state of livestock, the level of gross national product and gross regional product. The structure of the crop branch is shown in the figure 1.

The complex of priority tasks, which are solved by the branch, includes:

- studying the laws of obtaining a crop;
- identification of reserves of agricultural production growth,
- improvement of technologies of cultivation of agricultural crops.

The natural and climatic conditions in the zones of the Steppe, Forest-steppe and Polissya differ substantially, causing differences in the location and technologies of cultivating crops, which is directly determined by the action of the complex of natural factors:

- the height of the snow cover;
- the depth of freezing of the soil;
- dates of the first and last frosts;
- the sum of active temperatures;
- the duration of the frosty period and periods with average daily temperature above 0°C, above + 50° C and above + 100°C;
- the number of sunny days in a year and in a frosty period;
- amount of precipitation;
- annual radiation balance;
- water resources availability;
- types of soils;
- relief of the area, etc.

The difference between the existing placement of crops and the variants of their possible cultivation is due to the compliance of the biological characteristics of agricultural crops with the types of natural environment in conjunction with modern agricultural systems and indicators of economic efficiency of production.

Crop production is developed in Ukraine in all natural areas of the country. Plant features are associated with its distribution in directions. The field of plant growing includes the cultivation of grain and leguminous crops, melons and vegetables, forage crops, potatoes, cultivation of technical crops, perennial plantations – orchards and vineyards. A universal feature of plant growing can be considered the need for large areas of land.

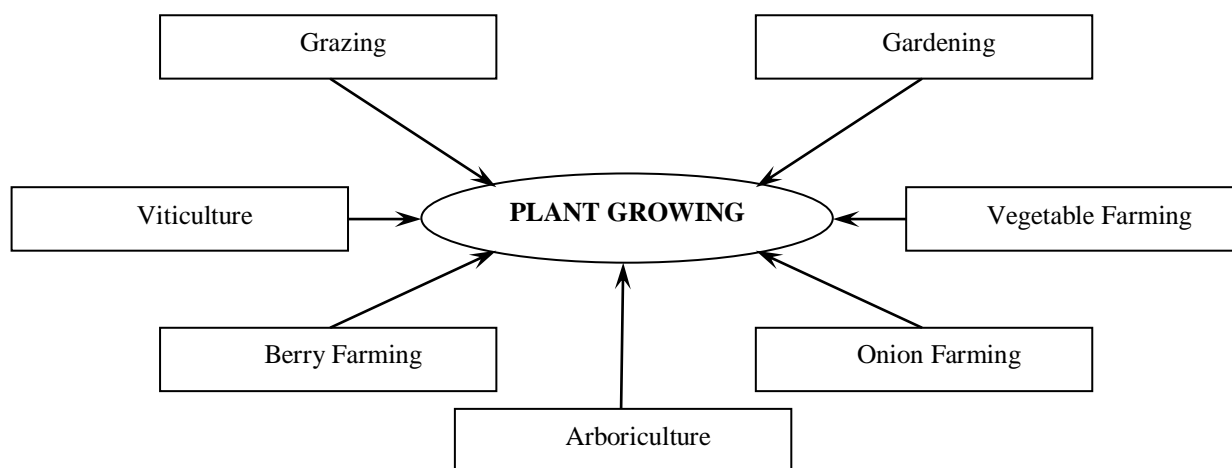


Fig. 1. Production structure of the field of plant growing

Economic growth in crop production is largely determined by the intensity of investment and innovation activity, its directions and performance. Creation of economic and other prerequisites for a mass influx of innovations and investments in the agrarian sector is an important element of the state agricultural policy, which is part of the national policy.

Innovative activity is a system of measures aimed at obtaining a new or improved product or service, a new way of producing them through the use of scientific, scientific and technical and intellectual potential, meeting the demand and needs of society as a whole in innovations.

In the opinion of scientists¹ Innovative activities are all scientific, technological, organizational, financial and commercial activities that actually lead to innovation or conceived for this purpose. Some types of innovation activities are innovative in themselves, others do not have this property, but they are also necessary for innovation. Innovation activities also include research and development that are not directly related to the preparation of any particular innovation

In accordance with the Law "On Investment Activity" Innovation activity – one of the forms of investment activity, carried out in order to implement the achievements of scientific and technological progress in production and social sphere².

The essence of innovative activity in the agrarian sector of the economy is the development and implementation of agrarian production of advanced methods of farming, based on the methods of effective production, the application of a new generation of technology, the use of a new personnel policy, taking into account the accumulated scientific and innovative potential³.

Innovative processes in agroindustrial production have their own specifics. They differ in a variety of regional, sectoral, functional, technological and organizational peculiarities. Thus, agrarian innovation is an innovation implemented in the agrarian sector of the economy in order to increase the efficiency of its activities and ensure a stable and expanded reproduction of agro-industrial production, the implementation in the economic practice of the results of research and development in the form of new varieties of plants, breeds and species of animals and birds, new technologies in crop production, livestock and processing industry, new fertilizers and plant protection products and animals, new methods of prevention and treatment of animals and poultry, new or improved their food products, materials, new forms of organization and management of various spheres of economy, new approaches to social services, which allow to increase the

¹ Hnylianska, L., Hryshchuk, A., Hurniak, I., Zahvoiska, L., Makara, O., Petrynka, V., Yurynets, Z. (2013): Innovatsiyniyi postup ekonomiky Ukrainy: problemy, tendentsii, potentsial zrostannia [Innovative progress of Ukraine's economy: problems, trends, growth potential]. Lviv : Liha-Pres, p. 295.

² Zakon Ukrainy «Pro investytsiynu diialnist» vid 18 veresnia 1991 r. № 1560 [Law of Ukraine «On investment activity» of September 18, 1991 No 1560]. (1991): Vidomosti Verkhovnoi Rady Ukrainy – Information Of The Verkhovna Rada Of Ukraine, No. 47.

³ Polehenka, M.A. (2017): Osoblyvosti innovatsiynoi diialnosti v ahropromyslovykh pidpriemstvakh Ukrainy [Characteristics of innovation activity in agro-industrial enterprises of Ukraine]. Ahrosvit – Agromir, No. 6, pp. 49-54.

efficiency of production. The innovative processes in agriculture have a direct impact on the peculiarities of agricultural production. After all, in the agrarian sector, the main factor of production is land; therefore, this sphere of production has a number of specific features in comparison with other branches, in particular: the close connection with the reproduction of living organisms, the seasonal nature of production, the high level of risks, etc. In view of this, the peculiarities of innovations that are implemented in agrarian enterprises include: considerable length of the development process and, in general, the improvement character of innovation, the key role of research institutions in the process of developing innovation, taking into account the climatic conditions and the regional character of the development of innovations¹.

Saranchuk G.M. outlines the main features of innovative activity in agroindustrial production, among which:

- variety of agricultural products and products of its processing, a significant difference in the technologies of their production;
- significant differentiation of individual regions of the country according to agrotechnological production conditions;
- dependence of technologies used in agriculture from natural conditions;
- the dispersal of agricultural production in a large area;
- a large difference in the periods of production of certain types of agricultural products;
- isolation of agricultural producers from scientific institutions engaged in the production of scientific and technical products;
- lack of organizational and economic mechanism for transferring scientific achievements to agricultural commodity producers².

For agrarian enterprises introduction of innovations in production is first of all introduction of new technologies of agricultural production; application of new, more productive breeds in livestock breeding and new plant varieties, more productive and resistant to diseases and unfavorable to natural and climatic manifestations; use of biotechnology, which allows to receive more qualitative, useful products having a health and preventive effect; application of new technical means and technologies of cultivation of soil, cleaning and storage of raw materials; application of energy saving technologies, application of ecological innovations, which, accordingly, allow to increase yield, productivity, minimize costs and guarantee the safety of the environment³.

As Yankovskaya O.I. There are a number of features of the innovation process in agriculture:

- long process of innovation development;
- Innovations are, as a rule, of an improving character;
- research of living organisms;
- the leading role of research institutions;
- dependence on the natural zone and climate⁴.

Consequently, innovative activity in agro industrial production is a set of consistent actions in using the results of scientific research, advanced production experience in the creation of new or improved agricultural products, products of its processing, or improved technology and organization of their production.

Innovation activity varies by nature, scale and methods of influencing production, economy.

¹ Yankovska, O.I. (2010): Osoblyvosti innovatsii v silskomu hospodarstvi [Features of innovations in agriculture]. Ekonomika. Upravlinnia. Innovatsii – Economics. Management. Innovations, No. 2. [online]. [Cited 01.06.2019]. Available online: http://nbuv.gov.ua/UJRN/eui_2010_2_54

² Saranchuk, H.M. (2010): Innovatsiinyi rozvytok silskoho hospodarstva yak osnova pidvyshchennia yoho konkurentospromozhnosti [Innovative development of agriculture as a basis for improving its competitiveness]. Innovatsiina ekonomika – Innovative economy, No. 1, pp. 26-32.

³ Polehenka, M.A. (2017): Osoblyvosti innovatsiinoi diialnosti v ahropromyslovykh pidpriemstvakh Ukrainy [Characteristics of innovation activity in agro-industrial enterprises of Ukraine]. Ahrosvit – Agromir, No. 6, pp. 49-54.

⁴ Yankovska, O.I. (2009): Innovatsiinyi protses u silskomu hospodarstvi [Innovation process in agriculture]. Nauka i ekonomika: nauko-teoretychnyi zhurnal Khmelnytskoho ekonomichnoho universytetu – Science and Economics: scientific and theoretical journal Khmelnytsky University of Economics, No. 4 (16): Vol. 2, pp. 54-58.

Innovations that are carried out on a mass scale, act as an innovation process. The innovation process is divided into two phases: the creation of innovation and its diffusion (diffusion):

Innovative processes in agro industrial production differ in regional, sectoral, functional, technological and organizational peculiarities.

The peculiarities of the innovation process in agro industrial production include:

– a variety of agricultural products and a wide range of products for processing, which determine the significant differences in the technologies of their cultivation, production, storage and processing;

– the influence of natural and weather conditions on the technology of growing crops;

– the gap in production periods by type of agricultural products and products of its processing;

– Different social level of agricultural workers, which requires training and raising their qualifications, consistent education;

– high territorial dispersion of production, differentiation of regions and even zones within regions according to production conditions¹.

According to Vinichenko I.I., innovative development of agricultural production enterprises is possible only on the basis of the corresponding model, which should take into account regional peculiarities of agro-industrial production and possibilities of innovative development. That is why for financial provision of innovative development of agro-industrial complex it is necessary to concentrate capital on priority directions of development, in particular education, science, progressive technologies, entrepreneurial activity in the market of high-tech products; to ensure the organization of competitive agricultural production, which is possible due to the concentration of investments in the priority areas, in particular the implementation of investments in the development of human capital, which is the basis for the development and introduction of new knowledge of the organizational, technological, economic, environmental direction; reorienting investments in the development of agricultural sectors with a relatively high intensity of production, which now require an early revival on a new technical and technological basis, provide for the creation of additional jobs in the countryside and the production of import substitutes; to implement investment and innovation projects for the construction of industrial facilities for the processing of energy products and bio-fuel production, which will promote the production of alternative types of environmentally friendly fuel, utilization of surpluses of agricultural products and intermediate products of industrial production, creation of new jobs, increase of incomes of rural population and revenues to budget².

The dialectics of the concepts of "innovation" and "investment" is such that investment is a necessary, if not the only, condition for the emergence and spread of innovations. Innovations are not possible without investment.

Among the variety of thoughts about the concept of "investment" in the works of scientists-agrarians, there are basically two definitions:

– expenses – investments are considered as expenses for the reproduction of fixed and working capital;

– resource – investment of funds for the acquisition of various property. At the same time, the totality of the sources of innovation represents an innovative potential, and sources of investment are investment potential.

If we consider investment in relation to innovation, then it should be recognized that investment processes can stimulate not only innovation. Investments in the most general form are long-term investments of state or private capital in different spheres and branches of economy both inside the country and abroad. Investments, in our opinion, are a means, an instrument for the

¹ Polehenka, M.A. (2017): Osoblyvosti innovatsiinoi diialnosti v ahropromyslovykh pidpriemstvakh Ukrainy [Characteristics of innovation activity in agro-industrial enterprises of Ukraine]. Ahrosvit – Agromir, No. 6, pp. 49-54.

² Vinichenko, I.I. (2012): Innovatsiina diialnist ahrarnykh pidpriemstv: stan ta priorytety [Innovative activity of agricultural enterprises: status and priorities]. Biuletyn Mizhnarodnoho Nobelivskoho ekonomichnoho forumu – Bulletin of the International Nobel economic forum, No. 1 (5): Vol. 1, pp. 44-48.

development of innovations. The interaction of innovations and investments, which leads to certain results and helps to increase the efficiency of production, allows us to consider these categories in unity in order to study the main aspects of innovation and investment in crop production.

Innovation and investment activity is due to economic interests, achievement of high results and efficiency of reproductive processes.

The works of classics of economic thought, as well as modern scholars, consider the motives of entrepreneurial investment of funds in innovation, the efficiency of the investment process, but insufficient, in our opinion, attention is paid to the issues of innovation of investment objects, stabilization of the transition of plant growing to a qualitatively new level of development in conditions further integration of Ukraine into the global economic system.

Schumpeter J. defines innovation as "a new scientific and organizational combination of production factors, motivated by entrepreneurial spirit"¹.

Santo B. identifies innovation with the techno-economic process, "which, through the practical use of ideas and inventions, leads to the creation of the best in their properties of products and technologies, and if the innovation is oriented towards economic profit (profit): its appearance on the market can bring additional income"².

Numerous works of domestic scientists based on different approaches to the definition of "innovation" give the opportunity to classify innovations, including in agriculture, in particular in crop production:

- biological – new varieties and hybrids of agricultural plants;
- technical – use of new types of equipment and equipment;
- technological – scientifically grounded and ecologically conditioned systems of agriculture; new resource-saving technologies of production and storage of agricultural products;
- chemical – new fertilizer systems; new means of plant protection;
- economic – new forms of organization of work; new forms and mechanisms of innovative development of the enterprise;
- social – providing favorable conditions for life, work and recreation of rural population;
- managerial – new forms of organization and motivation of labor; new methods of effective human resources management;
- marketing – access to new segments of the market; Improving the quality of products and expanding assortment; new distribution channels of products.

Definition of this concept is manifested in identifying innovations with innovation; with innovative activity; with the production of new products, qualitatively different from the previous analogue; with the ultimate result of innovation activity.

Scientists mainly share innovation and investment processes, and their relationship is paid attention in a few studies.

So Schumpeter J. notes that "innovations involve investments ... Big innovations entail the creation of new enterprises and new equipment"³.

Kravchenko N.A. investment-innovation activity is defined as the process of implementing the results of intellectual work in various types of property and intellectual property that have a monetary value and are invested in objects of entrepreneurial and other activities, which results in the formation of profit or other socio-economic effect⁴.

¹ Shumpeter, J. (1982): Teorija jekonomicheskogo razvitija: issledovaniya predprinimatel'skoj pribyli, kapitala, kredita, procenta i cikla kon'junktury [Theory of economic development: studies of business profits, capital, credit, interest and the cycle of market]. Moscow : Progress, p. 864.

² Santo, B. (1990): Innovacija kak sredstvo jekonomicheskogo razvitija [Innovation as a tool for economic development]. (Trans): B.V. Sazonov (Ed.): Moscow : Progress, p. 296.

³ Shumpeter, J. (1982): Teorija jekonomicheskogo razvitija: issledovaniya predprinimatel'skoj pribyli, kapitala, kredita, procenta i cikla kon'junktury [Theory of economic development: studies of business profits, capital, credit, interest and the cycle of market]. Moscow : Progress, p. 864.

⁴ Kravchenko, N.A. (2011): Investytsiina skladova innovatsiinoho rozvytku [Investment component of innovative development]. Teoretychni i praktychni aspekty ekonomiky ta intelektualnoi vlasnosti : zbirnyk naukovykh prats –

According to Gerashchenko T.M. innovation and investment activity is the long-term use of own and borrowed investment resources of organizations for the purpose of innovation, which entails an increase in economic capital in monetary and / or material-real form¹.

Cherep A.V. and Markov SV believe that "innovation-investment activity is an economic-social-legal category that reflects a set of practical measures for the use of intellectual labor, the results of which are expressed in a new (previously unknown) or improvement of the existing properties of the object with the attraction of investment resources in order to getting profit and other positive effect (social, environmental, etc.)»². At the same time, the authors explain their point of view on these features of determining the content of the category of "innovation and investment activity:

- innovation and investment activity – is an economic category aimed at profit making, and to achieve this involve the subjects and objects of the economic system (state, entrepreneurs, property and savings of individuals and legal entities, etc.);

- a social category, since it is focused not only on profit, but also on satisfaction of social needs, for example, raising the level and quality of life;

- the legal category, subjects and objects of innovation and investment activity develop according to the laws and legal acts of Ukraine, and the state performs functions of management and regulation of the processes of this development;

- the relationship between investment and innovation lies in the fact that there is a close relationship between them. Investments are a resource of capital reproduction as a value that generates a flow of income and realizes its purpose only through materialization in innovations.

According to Nechaev V.I., Artemova E.I. and Kravchenko N.P. investments are "a necessary condition and the main source of innovation activity, and promote the implementation of an innovative model of economic growth in the agroindustrial complex³.

In turn, Borodin K.G. notes that the innovation-investment project is a program of research, development, research, organizational, production, commercial and other events, organized according to terms and executors and secured by the necessary investments, interconnected by the program purposes⁴.

In our opinion, innovation and investment activity in crop production is a system of relations between business entities regarding the attraction of the results of intellectual activity in the economic turnover and the generation of new knowledge based on long-term investments of state and / or private capital into crop production and its infrastructure in order to meet public needs and profit. Innovative and investment activity should ensure the obtaining of the economic effect of the integrated implementation of the innovative and investment potential of the crop production.

The innovation process is carried out with the help of innovations that influence the growth of the social product and internal savings, the latter, in turn, serve as a source and resource for the intensification of effective innovation and investment activity. The interconnection and unity of investment and innovation determine the direction of sustainable development of the socio-

Theoretical and practical aspects of Economics and intellectual property : collection of scientific papers. Mariupol : DVNZ Pryazovskoho natsionalnoho tekhnichnoho universytetu, pp. 23-27.

¹ Gerashhenkova, T.M. (2013): Teoreticheskie aspekty innovacionno-investicionnoj dejatel'nosti [Theoretical aspects of innovative-investment activity]. Izvestija Sochinskogo gosudarstvennogo universiteta – News of the Sochi state University, No. 4-1(27): pp. 55-62.

² Cherep, A.V., Markova, S.V. (2010): Teoretychni aspekty formuvannia innovatsiino-investytsiinoi diialnosti [Theoretical aspects of the formation of innovation and investment activity]. Innovatsiina ekonomika : Vseukrainskyi naukovo-vyrobnychyj zhurnal – Innovative economy : all-Ukrainian scientific and production journal. Ternopil : DVNZ Ternopil'skyi instytut ahropromyslovoho vyrobnytstva, No. 17, pp. 154-158.

³ Nechaev, V.I., Artemova, E.I., Kravchenko, N.P. (2010): Problemy ocenki jefektivnosti innovacionno-investicionnyh proektov v rastenievodstve [Problems of efficiency evaluation of innovation and investment projects in crop production]. APK: jekonomika, upravlenie – AIC: economy, management, No. 12, pp.22-27.

⁴ Borodin, K.G. (2014): Model' analiza prognozov razvitija agroproduktivnyh rynkov v uslovijah menjajushhihsja mer zashhity i investirovaniya [Model of analysis of forecasts of development of agri-food markets in the context of changing measures of protection and investment]. Nikonovskie chtenija – Nikon readings, No. 19, pp. 74-76.

economic system.

Innovation and investment in crop production requires long-term investments and high costs for the formation and modernization of the material and technical base on an innovative basis, as well as the development of intellectual property objects. Without investment support, the innovation potential can not be realized, despite its scientific and technical significance.

Investment activity stimulates the creation and dissemination of innovations, the reverse effect of innovation activity is realized through the effect of reproduction of expended factors of production, including innovative products and technologies.

Innovation-investment process can be structured according to types of innovations and investments, factors, sources of innovations and investment resources. Integrating investment and innovation into a single process generates a synergistic effect¹:

$$S_{EFI} = S_{INN} + S_{INV} , \quad (1)$$

where S_{EFI} – the synergistic effect of integrating innovations and investments into a single innovation-investment process;

S_{INN} – synergistic component of the complex of innovative factors;

S_{INV} – synergetic component of investment factors.

The combination of innovative ideas with investment opportunities takes place at the stage of preliminary and final feasibility studies. In the course of carrying out investment and innovation activities, while observing the principles of the efficiency of the use of material and technical resources and intellectual capital, the effect of objective laws, which corresponds to certain patterns inherent in the dialectic of investment in innovation. Laws, laws and principles of plant organization should be taken into account in investment and innovation activities.

The investment and innovation potential of plant growing shows the extent of the industry's ability to fulfill its goals of achieving the goals of innovation development, characterizes the degree of readiness for the implementation of technical and technological transformations and infrastructure transformations and is characterized by the specifics of formation and reproduction.

Innovative and investment activity in crop production as a system of relations between investors, producers (owners) and consumers of science-intensive and high-tech products, in relation to attracting into the economic turnover of the results of intellectual activity, ultimately, is aimed at satisfying social needs.

An important role in shaping the market for innovative products and technologies in crop production is to rationalize the processes of their reproduction. Therefore, in the investment and innovation activity model, the processes of creating innovation based on investment closely interact with the subsystem of their market distribution (Figure 2)².

Investment and innovation activity is formed in the field of economic relations, forming a certain unity and integrity of objects of innovative application of capital, the actual process of investing with its inherent risks, a system of market promotion and commercialization of innovations.

In the conditions of Ukraine's orientation in the world economy, the need to re-equip the agrarian sector of the national economy, in particular, the crop production, the increase of production volumes and the level of competitiveness of agricultural products, one of the promising directions of development of agrarian enterprises of Ukraine is the use of innovative approaches to the implementation of economic activity.

¹ Orehova, M.S., Gurnovich, T.G. (2018): *Prioritetnye napravleniya razvitiya innovacionno-investicionnoj dejatel'nosti v rasteniyevodstve* [Priority directions of development of innovation and investment activity in crop production]. Moscow : Izd. dom «Mirakl'», p. 116.

² Orehova, M.S., Gurnovich, T.G. (2018): *Prioritetnye napravleniya razvitiya innovacionno-investicionnoj dejatel'nosti v rasteniyevodstve* [Priority directions of development of innovation and investment activity in crop production]. Moscow : Izd. dom «Mirakl'», p. 116.

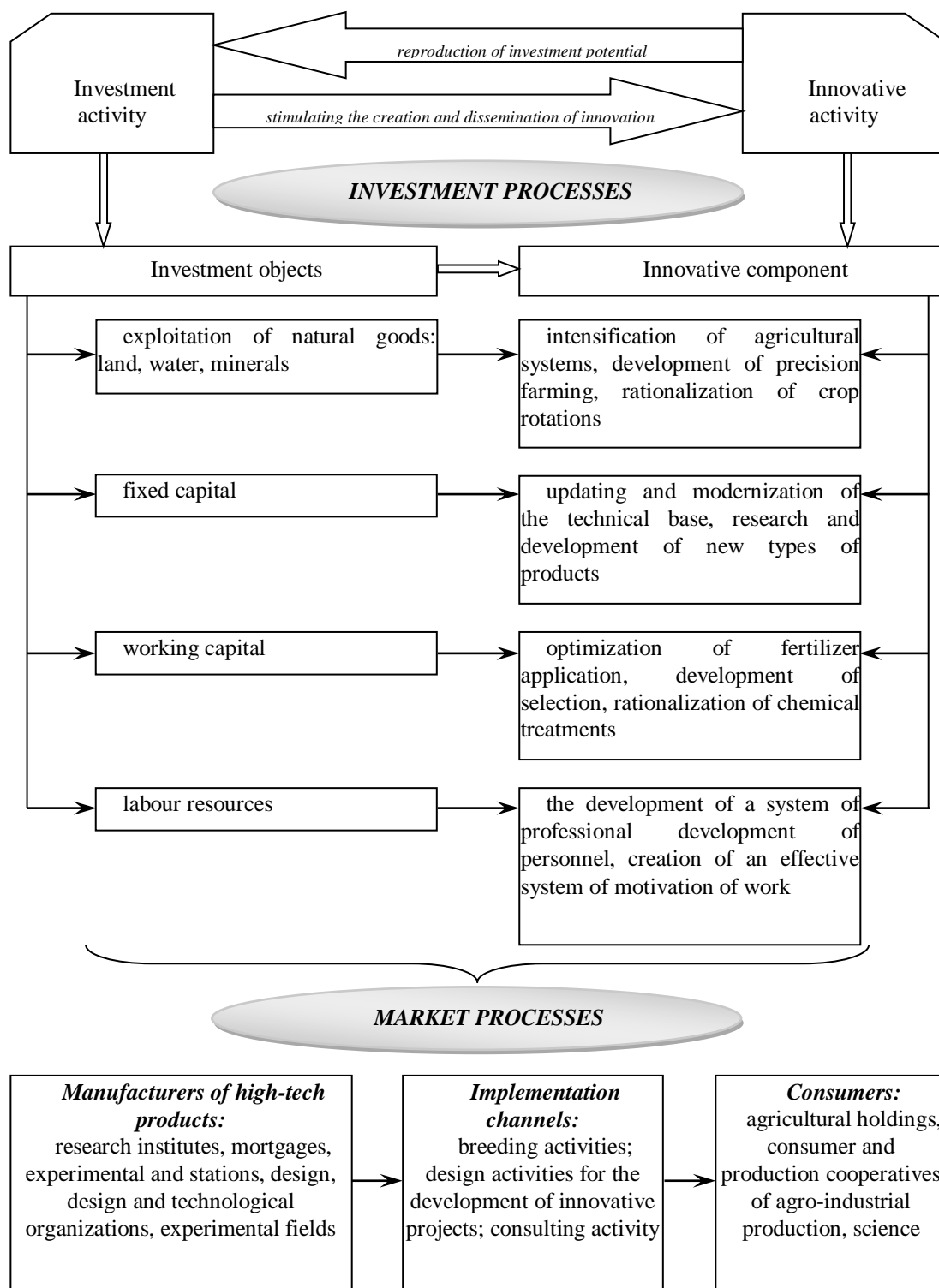


Fig. 2. Model of investment-innovation activity in the field of plant growing

In the current conditions of economic management, the development of the agrarian sector should be ensured by "... through innovation and investment, strengthening the material and technical basis of the agricultural sector, the introduction of environmentally safe, resource-saving and energy saving technologies"¹. That is why the priorities in the development of innovation and investment in the agrarian sector of the Ukrainian economy, in particular, the crop production sector, include:

¹ Derzhavna tsilova prohrama rozvytku ukrainskoho sela na period do 2015 roku [The state target program of development of the Ukrainian village for the period till 2015]. (2007): Resolution of the Cabinet of Ministers of Ukraine of September 19, 2007, No. 1158, p. 6.

- technological re-equipment of the field of plant growing;
- application of resource-saving technologies of growing of agricultural crops
- application of technologies of organic farming;
- fertility reproduction of soils;
- creation of a modern system of informational and infrastructural provision of innovation activity;
- improvement of the personnel training system, which provides increase of innovative activity of enterprises and commercialization of results of scientific researches.

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