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**SPATIAL PLANNING OF LAND USE IN THE SCIENTIFIC
RESEARCH SYSTEM OF THE NATIONAL ACADEMY OF AGRARIAN
SCIENCES OF UKRAINE**

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The issue of spatial organization and interactions, the influence of spatial development processes of research land use in the NAAS system is investigated. The spatial development of multidimensional ecological-economic systems in modern conditions requires a new methodological substantiation of approaches to the synergetic study of the economics of scientific research as the interaction of microeconomic agents, regional, national and global interactions, including the study of various spatial forms of land-use organization of scientific institutions and enterprises as centers coordination and accumulation of environmental, economic and social relationships between individual economic entities, territorial associations or regions. It has been substantiated that, in the NAAS system, the effectiveness of the spatial economy of research land use is determined by the zonal, territorial, and intrafarm features of the organization of research land use. Also justified is the need to establish a differentiated mode of use, protection and reproduction of land (soil) and other natural resources in accordance with the functional zoning of research land use, in particular, the allocation of such zones: 1) the area of research fields; 2) the area of growing elite seeds and planting material of agricultural crops; 3) a zone of regulated use; 4) the zone of conservation of agro-soil, environmental, historical and cultural complexes and objects valuable for agrarian science; 5) economic zone.

Keywords. Space planning, research land use, territorial land management.

Relevance (Introduction). The study of the development of economics suggests that most scholars - representatives of classical economic schools in the study of the problems of the development of the national economy rely primarily on the time component, while not paying due attention to spatial aspects. In this aspect, the English researcher Professor M. Blaug marked the isolation of spatial science from classical economic theories and the study of recent economic phenomena beyond their spatial characteristics [1, p. 568].

Analysis of Recent Researches and Publications. The ignorance of the classic schools of spatial factors was expressed by many world-known scholars of our time, including H. Bos, W. Izard, P. Krugman. The need to take into account spatial factors in economic research also draws attention to the Nobel laureate of economics (2008) P. Krugman (USA), who observes that "the economy exists and occupies a place on the map ..." [2].

Despite the fact that a number of leading Ukrainian scientists, in particular, MI Dolishniy, SI Doroguntsov, V. S. Kravtsev, A. G. Mazur, I. R. Mihasyuk, L. T. Shevchuk and many others consider this problem in their papers, the study of spatial development problems is not yet at the center of attention of Ukrainian economic science as a whole, and agrarian in particular.

At the same time, the process of forming a common holistic methodology for studying the problems of spatial development of agrarian science and the creation of an effective mechanism for its regulation in the researches of NAAS scientific institutions is still far from the requirements of the modern spatial economy. In our opinion, it should be carried out in the direction of maximizing the use of scientific developments of representatives of various fields of knowledge, the subject of which is the planning, land management and land use, who represents scientific institutions and enterprises in the NAAS system. Generalization of the initial provisions of numerous scientific theories will make theoretical substantiation of the integrated system of management of spatial development of land use of institutions and enterprises of the National Academy of Sciences and the increase of the efficiency of its functioning in general and increase the efficiency of

agrarian research possible. The above causes the need for their study, systematization and adaptation to the present conditions. Insufficient consideration of spatial (territorial) features of the development of scientific research of land use significantly reduces the practical value of the recommendations of NAAS scientists.

Purpose. study of spatial (territorial) features of development of scientific research of land use in NAAS of Ukraine.

Results. Each stage of socio-economic and social progress transforms the conditions of a spatial organization, including self-organization, entrepreneurship, in accordance with the new challenges and objectives of spatial development of business and society as a whole. A significant part of Ukrainian scientists share the position that the concept of "territorial organization" is based on the sign of the placement of objects for obtaining an economic and social effect. After all, the territorial organization requires substantiation of the scientific basis for the allocation of production and enterprises, taking into account their economic efficiency and possible environmental damage [3].

For example, A. Tretyak [4, p. 285-286] introducing the concept of "territorial land management" as a spatial land management organization of the territory, states that it covers various branches of the economy, different types of organization, enterprises, institutions: agricultural, industrial, transport, etc. A characteristic feature of the territorial land management, as he believes is the fact that "territorial land management" is carried out simultaneously in the territory of councils or groups of land ownership and land use, and sometimes in the territory of entire administrative districts.

Consequently, spatial organization includes a complex of processes of purposeful economic activity of subjects of entrepreneurship, including research in the agrarian sphere (supplemented by authors), in a certain territory and is the result (product) of territorial economic activity in the past and present period, the mechanism of placement new objects, a system of relations between economic

entities and local authorities and communities, the form of territorial integration of production and population settlement [5, p. 16].

However, the issue of spatial organization of research activities in the agrarian sphere goes beyond the existing models and tools of modern economic theory, since within the limits of agrarian science already there is a part of theoretical possibilities of the answer to the questions of optimal placement of factors of scientific agrarian research for obtaining the best microeconomic effect, the influence of spatial economic processes on the level and dynamics of the development of national agrarian science, which mechanisms of state economic policy are necessary for stimulating economic subjects in the context of the spatial distribution of land use research. However, the experimental possibilities are not yet available.

Let's consider this problem on the example of research activities organization in the field of agrarian science on one of the land use research territories of the NAAS system – the State Research Institute "Askaniiske." Thus, in the context of the spatial development of scientific researches of the NAAS in the Kherson region, the following directions are important:

- conservation of natural biodiversity;
- reducing land cultivation and combating desertification;
- reduction of degradation processes on irrigated lands and increase of their use efficiency, as well as water resources;
- formation of integrated management system for land use and water use;
- ensuring spatial stability of land use, which is used for scientific purposes.

Let us dwell briefly on some of them. The direction of conservation of natural biodiversity is connected with the placement of the land use of the SRI "Askaniiske" in the buffer zone of the Biosphere Reserve Askania Nova, which is also in the scientific research system of the National Academy of Sciences of Ukraine. Inclusion of the Askaniya-Nova Reserve in the international biosphere reserve system has become not only a confirmation of the special uniqueness and

scientific importance of protected ecosystems, but also foresees its participation in the global system of biosphere monitoring. The status of the biosphere reserve presupposes "besides the most important biomes in the world, the landscapes that arose as a result of the application of traditional farming methods, as well as degraded ecosystems that have not lost their ability to recover" [6]. According to this provision, the territory of the biosphere reserve "Askania-Nova" with the total area of 33397.6 hectares includes [7,8]:

✚ a protected nucleus with an area of 11054 hectares in the Northern and Southern sections of the virgin steppe and the grasslands of the Great Chapel wetlands;

✚ a buffer strip around the protected nucleus (which includes the lands of the SRI "Askaniiske", Figure 1);

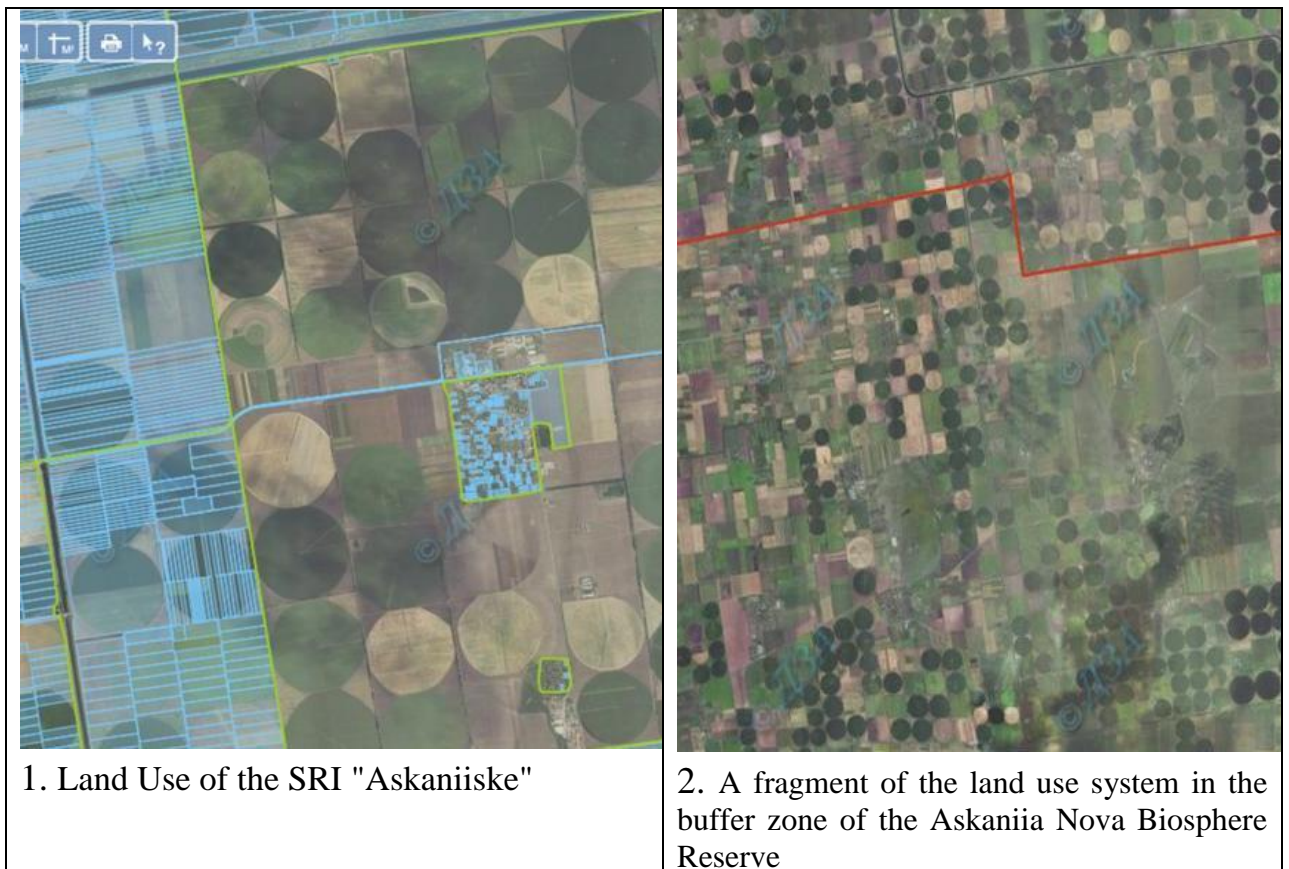
✚ the zone of experimental management within the experimental farms Askaniya-Nova, Molochne, Markeevo of the Institute of Livestock in the steppe areas and Askaniiske of the Institute of Irrigated Agriculture of the Ukrainian Academy of Agrarian Sciences.

Such spatial zoning of the biosphere reserve presupposes, on a very compact area, a practically complete and consistent series of natural-economic geosystems characteristic of the region, including:

- virgin steppe with different regimes (absolutely reserved, temporary not used agricultural lands, hayfields, pastures of the Great Chapel) and the term of reservation (from 1898, 1927, 1966 pp.);
- dry farming with a long history of development of 25, 40, 80 years;
- irrigated land (irrigation period from 15 to 35 years), which includes the lands of the SRI "Askaniiske" (Fig. 2);
- irrigated botanical park (period of irrigation of trees from 20 to 100 years);
- pastures within land use farms.



Figure 1. The boundaries of the buffer zone of the Askaniia Nova Biosphere Reserve with the inclusion of the land use of the SRI "Askaniiske"



1. Land Use of the SRI "Askaniiske"

2. A fragment of the land use system in the buffer zone of the Askaniia Nova Biosphere Reserve

Figure 2. Characteristics of Irrigated Land in the Land Use System of the SRI "Askaniiske"

The territory of the biosphere reserve borders on the protected steppe, through which the ancient Azov-Black Sea migration path of birds runs (Figure 3). The

buffer strip of the biosphere reserve contributes to the concentration of birds during spans. However, setting the width and limits of the buffer zone requires additional research.

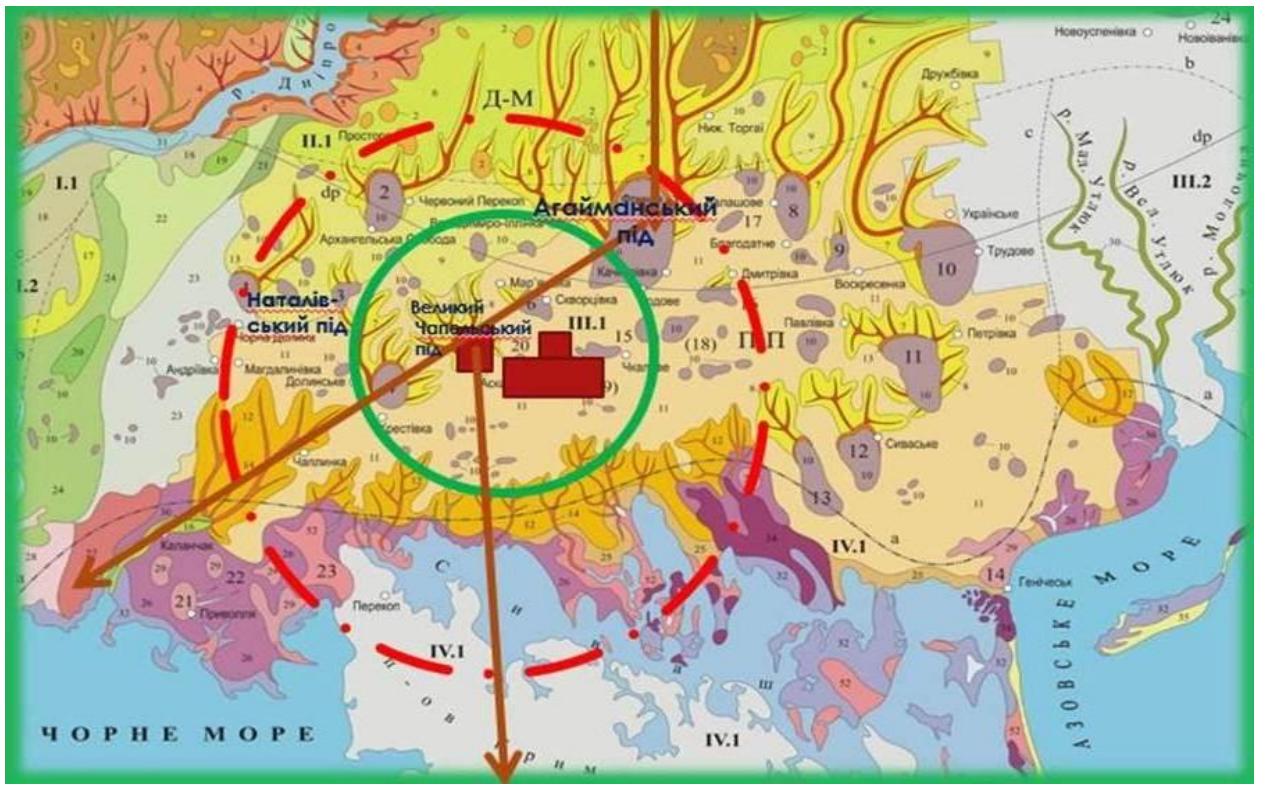


Figure 3. Daily interaction of rare birds of the Biosphere Reserve "Askaniia Nova" with the surrounding land use territories

Problems of direct reduction of cultivation and combating desertification characterize the land use of the SRI "Askaniiske", which has a high (critical) level of agricultural development – 95.5%, while in Ukraine it is 53.9%, and Kherson oblast – 51.5% (Table 1). The level of agricultural land cultivation, respectively, reaches 99.4%, 78.4% and 90.3%.

Only due to irrigation within the limits of land use a necessary microclimate for the cultivation of agricultural crops is created. However, such a state of intensive use of land requires constant monitoring and appropriate scientific substantiation of the eco-system of land use and agriculture.

Table 1. Comparative characteristics of the cultivation level of the land fund of the SRI "Askaniiske" as of 01.01.2016 [9]

Region, oblast	Arable land		
	Total area, thousand hectares	Of the total area of land, %	Of the total area of the agricultural land, %
Ukraine	32541,3	53,9	78,4
Kherson Oblast	1777,9	51,5	90,3
SRI "Askaniiske"	5,57	95,5	99,4

The indicated factors influencing the spatial location of the system of land use research have a zonal nature. However, the territorial and internal organization of the use and protection of lands of the SRI "Askaniiske" relates to its spatial formation. In particular, it is the establishment of a differentiated regime for the use, protection and reproduction of land (soil) and other natural resources in accordance with the functional zoning of land use research and development, in particular the allocation of such zones [10, 11]:

❖ **area of scientific research fields** – intended for basic research in the field of agriculture, including on irrigated and drained lands, plant growing, horticulture, viticulture, protection of soils and restoration of the most valuable properties of the soils and natural complexes, the regime of which is determined in accordance with the requirements established by the Regulation on research fields, approved by the Presidium of the NAAS, on the submission of academic councils of scientific-research institutions;

❖ **growing area of elite seeds and planting material of crops** – intended for placement of breeding and seed crop rotation, of growing areas of new varieties of fruit and berries, grapes and hops, taking into account the conditions of cultivation of original and elite seeds, observance of technologies and varieties of agricultural machinery, the regime of which is determined by the land management project in relation to the territories organization;

❖ **zone of regulated use** - intended for the placement of special fodder crop rotation with the production of feed for the needs of breeding cattle, experimental research on irrigated and drained lands, promotion of scientific developments, testing of new technology and technologies, the regime of which is determined by the land management project regarding the organization of the territory;

❖ **zone of preservation of agro-environmental, nature protection and historical and cultural complexes and objects valuable for the agrarian science**, the regime of which is determined by the legislation of Ukraine and the Presidium of the National Academy of Agrarian Sciences of Ukraine;

❖ **Business zone** – within its boundaries, economic activity, aimed at fulfilling tasks entrusted to a scientific institution, including research facilities and enterprises is conducted.

The internal organization of the use and protection of land and other natural resources is due to the design of the placement (organization) of research and fields and their work areas of crop rotation.

Conclusion (Discussion). At present, the process of theoretical and methodological reflection of a scientific system that describes the spatial organization and interactions, the impact of the processes of spatial development of land use research and development in the system of NAAS, taking into account macro- and microeconomic dynamics, is at an initial stage and needs further study. After all, spatial development of multidimensional ecological and economic systems in modern conditions requires a new methodological substantiation of approaches to synergetic study of the economy of scientific researches as the interaction of microeconomic agents, regional, national and global interactions, including the study of various spatial forms of organization of land use of scientific institutions and enterprises as centers of coordination and accumulation of ecological, economical and social interrelations between separate economic subjects, territorial communities or regions. In the NAAS system of land use, the

effectiveness of the spatial economy is due to the zonal, territorial and in-farm features of the organization of land use research and development.

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Третяк А.М., Дорош Й.М., Третяк В.М., Дюміна К.О.

Просторове планування землекористування в системі наукових досліджень НААН

Досліджено питання просторової організації та взаємодій, впливу процесів просторового розвитку науково-дослідницького землекористування в системі НААН. Просторовий розвиток багатомірних еколого-економічних систем у сучасних умовах потребує нового методологічного обґрунтування підходів до синергетичного вивчення економіки наукових досліджень як взаємодії мікроекономічних агентів, регіональних, національних і глобальних взаємодій, у т. ч. дослідження різних просторових форм організації землекористування наукових установ і підприємств як осередків координації і акумуляції екологічних, економічних і соціальних взаємозв'язків між окремими економічними суб'єктами, територіальними громадами чи регіонами. Обґрунтовано, що в системі НААН ефективність просторової економіки науково-дослідницького землекористування

обумовлена зональними, територіальними та внутрігосподарськими особливостями організації науково-дослідницького землекористування. Відповідно обґрунтована, необхідність встановлення диференційованого режиму використання, охорони та відтворення земельних (грунтових) і інших природних ресурсів згідно з функціональним зонуванням науково-дослідницького землекористування, зокрема виділення таких його зон: 1) зона науково-дослідних полів; 2) зона вирощування елітного насіння та садивного матеріалу сільськогосподарських культур; 3) зона регульованого використання; 4) зона збереження цінних для аграрної науки агроґрунтових, природоохоронних та історико-культурних комплексів і об'єктів; 5) господарська зона.

Ключові слова. Просторове планування, науково-дослідницьке землекористування, територіальний землеустрій.

Третяк А.Н., И.М. Дорош, Третяк В. Н., Дюмина К.О.

Пространственное планирование землепользования в системе научных исследований НААН

Аннотация. Исследован вопрос пространственной организации и взаимодействий, влияющих на процессы пространственного развития научно-исследовательского землепользования в системе НААН. Пространственное развитие многомерных эколого-экономических систем в современных условиях требуют нового методологического обоснования подходов к синергетическому изучению экономики научных исследований как взаимодействия микроэкономических агентов, региональных, национальных и глобальных взаимодействий, в т. ч. исследование различных пространственных форм организации землепользования научных учреждений и предприятий как центров координации и аккумуляции экологических, экономических и социальных взаимосвязей между отдельными экономическими субъектами, территориальными объединениями или регионами. Обосновано, что в системе НААН эффективность пространственной экономики научно-исследовательского землепользования обусловлена зональными, территориальными и внутрихозяйственными особенностями организации научно-исследовательского землепользования. Также обоснована, необходимость установления дифференцированного режима использования, охраны и воспроизводства земельных (почвенных) и других природных ресурсов в соответствии с функциональным зонированием научно-исследовательского землепользования, в частности выделение таких его зон: 1) зона научно-исследовательских полей; 2) зона выращивания элитных семян и посадочного материала сельскохозяйственных культур 3) зона регулируемого

использования; 4) зона сохранения ценных для аграрной науки агропочвенных, природоохранных и историко-культурных комплексов и объектов; 5) хозяйственная зона.

Ключевые слова. Просторное планирование, научно-исследовательское землепользование, территориальное землеустройство.