SECTION 7.
BIOLOGY AND BIOTECHNOLOGY

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LAND RESOURCES, THEIR CLASSIFICATION AND EVALUATION

Abstract: *Currently, the influence of people on landscape components is felt everywhere. One of the specific and main forms of this influence is agricultural production. In geography, a model of the interaction of territorial-production and natural-territorial systems, which works according to various laws of development, has been developed. The zone of interaction between production (agriculture) and natural systems is land with natural (climate, topography, soil and vegetation) and production (arable land and pasture) components. Harmonization of the relationship between these systems is primarily carried out through the rational use of land resources, and the criterion of rational use is socio-ecological and economic efficiency.*

Introduction

Among the diversity of natural resources, land occupies a special place. The existence and development of society is inextricably linked with the land, because it is an indispensable habitat of man. Land resources are a component of nature, its development and characteristics depend on geological features, relief, climate, vegetation, etc., at the same time, Land resources are a general subject of labor, a means of production and a means of labor.

Land performs different functions in different sectors of the economy. In industry, transport and construction, it works as an area (territory) for production and organization of human life, and in agriculture and forest-industrial complex it works as a labor oriented object. At the same time, land is a means of labor: with its help, a person grows plants necessary for life and activity.

Methods

The main indicators of the general assessment of land include: productivity expressed by the amount of gross product for 1 hectare of land; cost recovery (product cost per soum). Specific assessment is designed to identify differences in land productivity in terms of the efficiency of growing individual crops. Land productivity is expressed in centners per hectare with the yield of planted crops. Each indicator has two numerical characteristics: in terms of value (in cadastral prices, in soums) and abstract or relative (in points). The value of all products is calculated at the lowest, but cost-based uniform prices in the conditions of socially necessary production.

There are other approaches to the assessment of natural resources, for example, natural (or natural resource) potential [7], the economic value of land resources is expressed in money and is very important in the context of a market economy.

Results and Discussion

As a means of production in agriculture and forestry, land has certain characteristics that distinguish it from other means of production, namely: it is not a product of labor, but a product of the development of nature itself. In addition, a number of specific features of land resources as a means of production can be noted.

1. Permanence of the place of activity or non-change of place in space. In other words, fertile soil can be used only in places created by nature. This affects the deployment and development of productive forces, primarily agricultural and forestry production.

2. The use of land resources is closely related to other natural factors (light, air, water, heat) necessary for the adequate development of plants.

3. Naturally, due to the characteristic of rhythmicity (Periodicality), dependence on time, in most cases, the use of other means of production corresponds to the working period, that is, the labor process.

4. In the production process (agriculture and forestry), not the resources themselves, but only plant products obtained with their help, are taken from nature, because the main characteristic of the land is its fertility.

As a source of productivity, the land is a unique interdependence of biological, agrotechnical, organizational, economic and economic factors, which are contradictory in terms of their impact on the yield. The impact of each of them is manifested in the complex, therefore, for the rational use of land resources as a means of production, it is necessary to determine and take into account each of these factors in the territorial, regional department. In addition to the above characteristics of the land, the study of the interrelationship and change of these factors "from place to place" is included in the tasks of social-economic geography, a large branch of geography.

It has been more than fifty years since N.N. Baransky expressed his views on the need for a comprehensive, regional approach to the study of natural conditions and resources [5]. However, these, like others, the recommendations of scientists are not taken into account immediately, but 25-50 years after they were made. As E. B. Alaev noted, the condition of the natural environment is taken into account only when life itself forces it to reach a critical level [4]. Thus, as a result of the standard approach to the use and study of land resources, the condition of the land has deteriorated dramatically, and no soil protection and soil improvement measures can produce the expected results, and the degradation of land resources has become a threatening global trend. And only after that, applied science experts recognized the need to study them regionally and comprehensively. In the 80s, V.A. Kovda wrote about the need to use complex ecological zoning methods, taking into account neotectonics, geomorphology, hydrology and geochemistry, in the study of land resources. In 1990, the Ukrainian economist V.P. Tsemko noted that in the management of soil processes. In any case, soil fertility should not be a stamp, a standard.

In modern scientific and special literature, the term "land" is widely used, but it does not have a single interpretation. In our opinion, the point of view of scientists who believe that it is necessary to understand the genetically independent parts of the upper, most active part of the earth, where the development and characteristics of the earth are closely and organically connected with all the components of nature, is more accurate. This interpretation of this term allows to distinguish it from the concept of "land resources".

The definition of land resources is given in several works [12], but the meaning given to it by scientists is not always clear. Based on the analysis of a number of definitions, we can conclude that the term "land resources" is mainly applied to territories. It is used as the main means of production in the agricultural and forest industry complex. Accordingly, land resources may include landscapes used for agricultural or forestry crops.

Land resources are the part of the land stock that is used or can be used to grow plants necessary for society. Land areas used as a territorial basis for the life of human society, as well as lands that are currently unused due to their unfavorable quality and natural conditions or economic reasons, belong to promising land resources.

Land resources work and develop according to the laws of landscape complexes and are an integral part of them. Therefore, it is necessary to study all the components of the landscape in order to fully describe them. The number of indicators describing these components varies

depending on regional and regional natural conditions. However, indicators such as terrain, mother nature, heat and water regime, soils, flora and fauna should be everywhere.

The economic and social geography of the study of land resources leads in two directions: 1) their impact on the development and settlement of the economy and population, 2) the impact on the state of land resources of society. Within the initial economic geography, geographic resource science was formed, its task is to determine the role of natural resources and conditions in the structure and specialization of the economy, the rate of its development and efficiency. Here, the main attention was paid to the comprehensive accounting, classification and evaluation of the efficiency of use.

With the increase in the scale of economic influence on nature, negative ecological changes have appeared in nature. The study of the state of nature, the interaction of society and nature began to deal with another direction - geoecology.

Analysis of land use efficiency should begin with the development of a scientifically based land classification. Given their multifunctional use, it is inevitable to refer to different criteria in the classification, that is, there may be different classifications. Thus, if we talk about general natural classifications, then land resources belong to the soil class, and the genetic characteristics of soils are based on it. In addition, the production characteristics of lands formed under the influence of geomorphological, lithological and hydrogeological factors are determined. However, there is a one-sided view in understanding the nature of natural classifications. Since we are talking about land classification and not soils, a broader landscape-geographical approach to land classification where the most important genetic characteristics of land types is appropriate. The criteria for distinguishing land types are relief shape, parent rocks, drainage intensity, moisture level. In my opinion, in the present case, the term typology, which means the grouping of objects according to qualitative characteristics, is more acceptable. Land typology is carried out within the relevant landscape zone, region, natural complexes. The taxonomy of typological units depends on the scope of research. For example, it is desirable to distinguish natural boundaries when studying agricultural lands.

Economic assessment of land - determining the relative profitability of land, which is the main means of production in agriculture, under certain natural and climatic conditions. Economic land evaluation scores indicate how much higher or lower quality one piece of land is than another piece of land. The economic evaluation of land includes the following activities: preparatory work, data collection, processing and analysis; land assessment planning by districts; grouping of soil according to agronomic production; calculation of the average yield and the amount of expenses (on the basis of a unit of area); creation of an assessment scale and calculation of land assessment indicators; carrying out economic assessment of land in land holdings; review, approval, preparation and submission of assessment documents [9].

The Land Fund of the Republic of Uzbekistan is divided into the following categories according to the main purpose of use: 1. Land intended for agriculture; 2. Lands of settlements; 3. Land intended for industry, transport, communication, defense and other purposes; 4. Land intended for nature protection, health improvement, recreation; 5. Lands of historical and cultural importance; 6. Forest fund lands; 7. Water fund lands; 8. Reserve lands [1].

Distribution of the land fund of the Republic of Uzbekistan by categories

(in thousand hectares)

№	Categories of land fund	Total land area		Including irrigated land	
		Total	In interest	Total	In interest
1	Agricultural lands	24057,1	53,59	4214,3	9,39
2	Lands of settlements	223,5	0,50	51,8	0,12
3	Land intended for industry, transport, communications, defense and other purposes	876,3	1,95	12,6	0,03

Continuation

№	Categories of land fund	Total land area		Including irrigated land	
		Total	In interest	Total	In interest
4	Land intended for nature protection, health and recreation purposes	728,4	1,62	0,6	0,001
5	Lands of historical and cultural importance	14,7	0,03		
6	Forest fund lands	12021,4	26,78	45,4	0,10
7	Water fund lands	827	1,84	4,7	0,01
8	Reserve lands	6144	13,69	2,3	0,005

In the intersectoral distribution of land, priority is given to enterprises and producers that fully use their bio-climatic potential and productivity. Such a sector is primarily agricultural, so the laws provide for the allocation of fertile land primarily for agricultural purposes. Land is the main means of production in this industry, and the technologies used are characterized by high demand for it. The land fund is divided into certain types of land (arable land, hayfields, pastures, forests, swamps, etc.) [8].

The classification developed by A.N. Rakitnikov by the type of land use and the geographical classification of farming forms is widely used. This classification is based on two criteria: first, the purpose of use, that is, the composition of the plant and livestock sectors planted on the land; secondly, the impact of the applied methods on the environment, that is, technical-ameliorative and agrotechnical methods. As a result of a large-scale study of land use, a separate classification of arable land, natural fodder land, and others was developed.

The classification of lands according to their suitability for agricultural production has been developed. This is necessary to provide complete information about the quality of the land. Systematization of lands with different natural characteristics is carried out on the basis of the objective internal connection of individual components and the general laws of the land. A unified land classification system has been developed, which provides for the separation of seven categories and 137 classes. There is a classification of natural resources based on their exhaustible and renewable properties. The land resources in it belong to the class of soil, which is considered exhaustible and can be restored if used wisely. To analyze the efficiency of land resource use, natural and economic (depending on the type of use) classifications are used at the same time, because all the values included in the efficiency indicators depend on the natural characteristics of the land and the method of their use. It should be noted here that the widely used Agro-production soil types, that is, production and genetic classification are too complicated, do not allow to take into account the economic indicators recorded by district statistics. Therefore, in this work, a practical land typology was implemented, which simultaneously provides an opportunity to study the landscape features of the land and the existing methods of their use. At the same time. As mentioned above, a regional approach is necessary, according to which specific, leading factors describing the quality of land resources should be determined for each of the types of land allocated. For this, it is necessary to follow the principle of dividing the territory from top to bottom. This principle was used in natural and agricultural zoning.

In the 80s of the last century, a number of methodologies were created for the use of the results of soil inspection and economic evaluation of land in solving a number of national economic issues related to land use. In particular, A.A.Mints on the scientific solution of issues such as analyzing the production activity of agricultural enterprises and the level of land use, developing the productivity of agricultural crops, stratifying the purchase prices of agricultural products, substantiating inter-farm and internal land formation on the basis of land assessment materials and O.K. Zamkov, I.V. Degtyarev, T.P. Magazinshikov, S.A. Tkachuk, V.A. Rudi,

A.A. Abduganiev, R.A. Safagariev, A.R. Bobojonov conducted their own research developed a number of methodologies for the regions visited. However, as a result of the existence of a single administration of the land by the state, the fact that the main indicators in the planning of productivity, setting the sales prices of products were lowered from above in the form of a directive, and the main indicators of the economic activity of agricultural enterprises were not objective, the above methods were not used in practice in this period [13].

In fact, the assessment of lands, as well as their classification, is an artificial concept that includes several private calculations. The first direction of private assessment can be called a qualitative assessment of natural conditions and resources, because one of the unique characteristics of land resources is their natural condition, primarily in relation to the climatic characteristics of this area. First of all, it is the ratio and reserve of heat and moisture. Depending on the macrogeomorphological characteristics that determine the nature of zoning, the ratio of heat and moisture, landscape classes and natural-agricultural districts are distinguished, which differ in climatic potential or bioclimatic productivity. Land typology is a necessary condition for their qualitative assessment. Since the typology takes into account the main quality characteristics that determine the production capacity, based on it, an approximate classification of land types is made for the development of irrigated agriculture. The second direction is economic assessment of lands. There are two main types of economic evaluation: firstly, determining the absolute value of land resources and secondly, determining the comparative value. Based on the purpose of our research, let's stop to reveal the nature of comparative assessment of land resources. And first of all, we emphasize that A.A. Rakitnikov formed a very important point of view from a methodological point of view. He indicated the need to include data on land productivity and production costs in comparative economic description. With this approach, the content of the economic assessment of land takes into account the impact of natural territorial differences in the natural characteristics of land on social labor productivity, and the criterion of assessment is the economic efficiency of land use. According to the generally accepted methodology, the economic assessment is carried out in general and private directions [11].

In the experiment, the calculated and accepted land evaluation index for irrigated arable land in general and for individual crops is used with some modifications. Since the land assessment was carried out in farm and cluster areas, cluster and farm data were obtained to determine land use efficiency. However, this technique has certain disadvantages. Thus, the economic efficiency of irrigated arable land is determined based on short-term indicators, the calculations do not take into account land loss and other environmental consequences of large-scale irrigation.

There are some evaluation experiments showing the effectiveness of irrigated arable land [10]. For example, with their help, it has been proven that the real costs for 1 hectare of irrigated arable land, taking into account the funds used for the development of hydromelioration, water and electricity, are 8-10% higher than official data. The actual productivity of irrigated arable land is 14-15% lower than official data, taking into account the allocation of land for water management facilities and losses from salinity and soil leaching. These calculations were made mainly for Ukrainian conditions. Taking into account that in the conditions of the Fergana Valley, the price of water and the consumption of electricity (in the case of machine irrigation) are 2-3 times higher than in Ukraine, the irrigated area (especially the foothills and mountain ranges) will undoubtedly suffer. Similar results were obtained in the evaluation of the efficiency of chemicalization in agriculture.

Currently, among scientists, there is a prevailing opinion that determining the efficiency of land use only by economic indicators does not correspond to modern reality: it is necessary to take into account environmental and social efficiency along with them. Here it should be noted that for many years they have been everywhere striving only for economic efficiency, that is, to obtain maximum output with minimum costs. With this approach, as a rule, there was an increase in the load on land resources, which worsened the quality of the land. It led to the emergence of degradation processes.

In this regard, attempts to propose a methodology for determining the efficiency of land use from an ecological point of view are important. For this purpose, we studied the changes in the soil-ecological condition of the land in two periods. According to the I.I. Karmanov method, the soil-ecological assessment of irrigated lands was carried out based on farm and cluster data. Based on it, it is possible to determine the change in the quality of land under the influence of intensive use (in our case, irrigated land). Although the assessment is called soil-ecological, it also takes into account other components of the landscape that characterize the quality of the land. By comparing the evaluation results (soil-ecological indices), it is possible to determine positive or negative shifts in each land type. Thus, it will be possible to determine the ecological efficiency of agricultural intensification.

Economically more efficient and even ecologically harmless use of land resources does not always mean that such use is socially justifiable. If, despite the high level of agricultural intensification, the lack of production in the region remains, then such a feature of the use of land resources cannot be considered as efficiency.

Conclusion

To determine the efficiency of the use of land resources, it is important to study the historical experience of agriculture. The appropriateness of the historical approach in the science of geography N.N. Baransky: "only a historical approach to science can show the ways of its development, identify the mistakes that should be avoided, and on the other hand, get acquainted with the existing achievements and save the work of discovering America a second time" [6]. In addition, it is important to study the land use experience of neighboring countries (Kazakhstan, Kyrgyzstan) with similar natural conditions. Thus, the social efficiency of land use is an important part of the comprehensive assessment of land resources.

Based on a detailed analysis of the socio-ecological and economic efficiency of land use, it is possible to determine the acceptability of the limited parameters of intensification and the appropriate structure of cultivated areas for each type of land and for any region.

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