

# Directions of Economic and Economic Efficiency of Use of Agricultural Land

Drebot Oksana  
Saharnacka Lyudmyla  
Vysochanska Maria

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# Directions of Economic and Economic Efficiency of Use of Agricultural Land

Drebot Oksana\*

Saharnacka Lyudmyla\*\*

Vysochanska Maria\*\*\*

The article analyzes the coefficient of ecological stability of agricultural lands of Ukraine and the example of the Rivne region. Graphic depicts economic indicators of the efficiency of agricultural land use. The factors of balanced use of agricultural lands are proposed and systematized.

**Key Words:** agricultural land, natural resources, balanced land use, economic mechanism.

**Formulation of the problem.** Agriculture is the industry that has the greatest environmental impact, attracting natural resources to economic activity. However, land resources, as a medium for growing crops, experience the greatest impacts.

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\* *doctor of economics, professor,  
corresponding member of NAAS  
Institute of Agroecology and Environmental Management of NAAS  
Kyiv*

\*\* *candidate of economic sciences  
Uzhhorod state university  
Uzhhorod*

\*\*\* *candidate of economic sciences  
Institute of Agroecology and Environmental Management of NAAS  
Kyiv*

The main task of agricultural production is the production of food. To this end, the industry fully utilizes the natural resources at their disposal and, above all, the land. In order to increase the productivity of agricultural crops, farms conduct a range of agronomic measures and thus bring about some changes in the quality indicators of agricultural land. Agricultural land forms the potential of the agro-industrial complex of the region, therefore, there is a need to study the areas of balanced use of agricultural land, as well as to identify the factors of the negative impact of human activity on the territory, taking into account the conditions for the establishment of a market economy system. [1].

**The purpose of the research** is to develop promising directions for using the ecological and economic efficiency of the agricultural land management mechanism.

**Presentation of the main material.** In the second half of the twentieth century, the general anthropogenic pressure on the state of agroecosystems of Ukraine increased significantly. Intensive land plowing, their exhaustion, excessive use of chemical fertilizers and plant protection, the development of water and wind erosion, scientifically unjustified introduction of land reclamation led to the agro-sphere of the state in most regions to degradation. An important role in all of this was played by a low ecological culture. That is why the socio-environmental factors play an extremely important role in the ecologically safe development of agriculture, and their research, which has previously been neglected, is important and relevant to date. [2]

Rationality of nature management is characterized by the structure of the use of territory, the quality of the ecological potential of land. Influence on the structure of the land and the level of ecological stability of the territory are estimated by the indicator of the ecological stability of the territory [3, c.22].

Ensuring balanced use of agricultural land requires the consideration of the environmental factor. What are the following benchmarks: clear definition of priorities

for balanced use of agricultural land; optimal technogenic load on land resources, application of rational tillage technologies; formation of a land use culture that would provide for a conscious, lean attitude to agricultural lands, their rational use and reproduction; creation of a reliable monitoring system.

To assess the impact of the qualitative composition of land on the ecological stability of the territory calculated by the coefficient of ecological stability of the territory (K), depending on [4].

$$K_{eKCT} = \frac{\sum K_i \times P_i}{\sum P_i} \quad (1)$$

where  $K_i$  - is the coefficient of ecological stability of the terrain of the  $i$ -th species;

$P_i$  - the area of the land of the  $i$ -th species.

The ecological dimension is manifested in specific indicators that characterize the ecological situation in the field of land use. These include the balance of nutrients in the soil, the balance of humus, the content of pesticides and heavy metals in the soil, erosion and soil deflation.

It is proved that the increase of agricultural development and land cultivation substantially decreases ecological stability of ecosystems (Table 3)

The ecological state of land use within the regions of Ukraine, on the basis of calculations of the coefficient of ecological stability on average 0.45, characterizes it as unstably stable. According to similar calculations, the level of ecological stability of Rivne region at the level of 0.43 is determined, which also testifies to the unstable stability of the region.

In our opinion, the level of ecological stability should be one of the levers of land policy, since land use allows the protection of the environment and agroecosystems, as increasing the areas of land stability in the general structure, in

**Table 1 Normative value of the coefficient of ecological stability for different types of land**

Types of land	The coefficient of ecological stability of the territory (K1)	The coefficient of environmental impact of the land on the surrounding land
1	2	3
Arable	0,14	0,83
Shaggy	0,62	1,71
Pastures	0,68	1,71
Built-up area and roads	0,00	1,27
Vineyards	0,29	1,47
Forest bands	0,38	2,29
Orchards, shrubs	0,43	1,47
The cities	0,50	1,59
Forests of natural origin	1,00	2,29

\*Source: [5]

**Table 2 Scale of gradation and magnitude of the coefficient of ecological stability of the land**

Ecological stability of the territory	The magnitude of the ecological stability of the territory
Unstable	< 0,3
Unstable-stable	0,34-0,50
Medium-stable	0,51-0,66
Stable	> 0,67

\*Source: [5]

turn, increases the efficiency of agricultural production.

It should be noted that the substantiation of the ecological and economic organization allows obtaining a certain amount of economic profit with minimal anthropogenic loading on agricultural land.

Rivne Oblast took the research, as we can see that balanced development of the

region can not be realized without taking into account modern social and environmental factors. But avoiding all environmental problems is possible only by raising the level of ecological culture and environmental education, as they play an important role in the balanced development of society. (tab. 3).

**Table 3 Characteristics of the ecological state of agricultural lands in Rivne region (2016)**

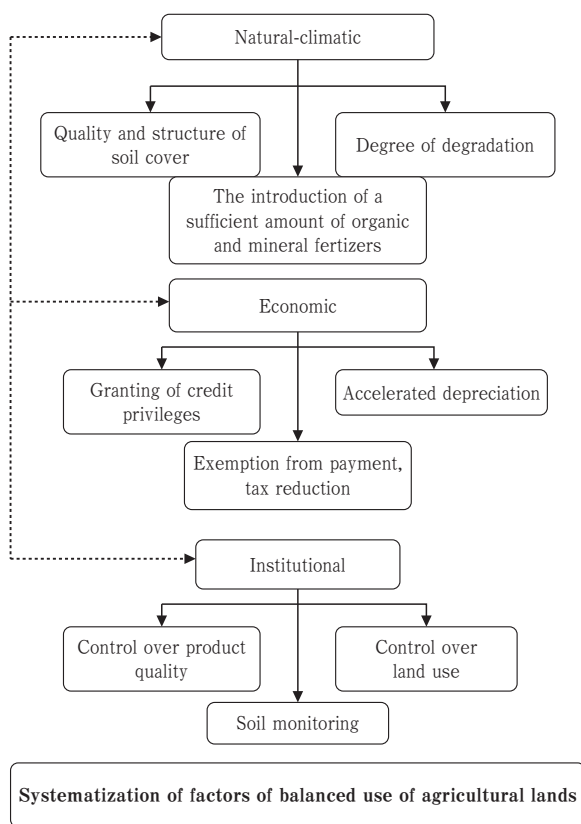
Areas	The coefficient of ecological stability of agricultural lands	Ecological stability
Berezovsky	0,14	Unstable stable
Volodymyretsky	0,34	Moderately stable
Goshchansky	0,17	Unstable stable
Demidovsky	0,15	Unstable stable
Dubensky	0,25	Unstable stable
Dubrovitsky	0,30	Unstable stable
Zarichnensky	0,20	Unstable stable
Zdolbunivsky	0,20	Unstable stable
Koretsky	0,20	Unstable stable
Kostopilsky	0,24	Unstable stable
Mlynivsky	0,15	Unstable stable
Ostrogsky	0,20	Unstable stable
Radyvylivsky	0,15	Unstable stable
Rivne	0,18	Unstable stable
Rokytnivsky	0,35	Moderately stable
Sarnensky	0,28	Unstable stable

\* Source: author's calculations

Comparative analysis of indicators of ecological integrity of ecosystems with the main characteristics of functioning of agriculture, such as: ecological stability factor, volume of gross output per unit area (ths. UAH / 100 ha), volume of direct foreign investments per unit area (USD / 100 ha).), the share of fertilized area, %. The

calculations use data from the State Committee for Land Resources in the Rivne Oblast and the Main Department of Statistics in the Rivne Oblast.

Among the large number of factors, four main factors in the formation of balanced use of agricultural land are as follows: natural climatic, environmental, institutional, and economic. It should be noted that economic factors include indicators of the level of use of land resources. In turn, each subgroup corresponds to a certain list of indicators of the land plot. (Fig. 1)



**Fig. 1. Systematization of factors of balanced use of agricultural lands.**

\* Source: *author's development*

Ensuring the ecological and economic efficiency of using agricultural lands requires reducing the impact of economic factors and finding their optimal relationship with natural. This requires strengthening control over the use of land by purpose and level of agricultural machinery, as well as providing state support to economic actors in conducting cultural, technical and reclamation works through sustainable financing. It should be noted that from the natural and economic factors important for ensuring the ecological and economic efficiency of using agricultural lands is a social factor, since the landowner is interested in the efficiency of using agricultural land from an ecologically-economic point of view. The implementation of this factor is due to improved living conditions of the population, legislative and regulatory support of landowners and land users, and the guarantee of ownership of land.

It should be noted that in order to preserve the ecological balance for the use of agricultural land it is necessary:

- apply ecologically safe agrotechnics;
- apply the latest agro technology to cultivate land;
- improve the microelemental composition of soils.

Consequently, there is an urgent need for the balanced use of agricultural land for optimal correlation of ecological, economic and social factors of social development, taking into account the properties of land resources, their values and peculiarities of use in a certain territory.

Therefore, the main directions of development of the agrosphere should be:

- the priority of environmental criteria over economic in the practice of agrarian management;
- integration of ecological and economic approaches to the development and placement of agrarian production;
- development and application of ecological and economic indicators for estimating



the use of agricultural land;

a rational and mutually agreed combination of methods of sectoral and territorial management of land use;

transferring the center of gravity and responsibility for environmental safety of land use to subjects of entrepreneurial activity in the agrarian sector.

**Conclusions.** Summarizing the above, it should be noted that the deterioration of the quality state of soil is due to anthropogenic pressure both on nature in general, and on land resources in particular. Cumberless agrotechnical measures can result not only in the reduction of crop yields, but also in the loss of the uppermost fertile layer of soil due to erosion processes. Therefore, given the introduction of factors of balanced use of agricultural land, there are reasons to expect not only to increase the yield of cultivated crops, but also to improve the quality of soil cover. An essential prerequisite for the achievement of balanced land use is to determine the readiness of agriculture to shift to the ecological basis of production.

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