

DEVELOPMENT OF ECOLOGICAL AND ECONOMIC MEASURES FOR CREATING OF THE SUSTAINABLE LAND USE

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The article deals with ecological and economic measures for creating of the sustainable land use, it's current state and problems as well as areas of improvement.

These measures directed to ensure balanced of needs of the population and economic sectors by land resources, rational use and protection of lands, preservation of landscape and biological diversity, creation of environmentally safe living conditions of the population and economic activity and protection of lands from depletion, degradation and pollution.

Key words: *sustainable land use, lands of nature conservation and natural reserve purpose, ecological network, agrolandscape.*

Formulation of the problem.

Human activities and related factors led to loss and considerable fragmentation of natural areas. Landscape complex of most part of the territory of Ukraine can be called natural – conditionally: almost on 60% of the area formed changed anthropogenically-natural landscapes. Nominally unchanged remained only landscape complexes – forest(16 %) and reserve fund (3,7 %). The rest make up the urban areas (to 7 %) with almost radically changed natural complexes, and also squally complexes (4 %) and others (swamps, ravines, floodplain, sands, broken lands). If in the mountain systems of the Ukrainian Carpathians and Crimea, in forests of the Ukraine has remained fairly rich diversity, then over-exploita-

tion of steppe lands (plough up of lands in the steppe zone exceeds 80%, the average for Ukraine 54,6 %) has led to almost complete destruction of natural areas there. This poses a threat to the loss of ecological stability of territory. In Ukraine, almost 70 % of territory occupied by agricultural lands, including tillage – almost 54,6 %, whereas still by researches of Dokuchaieva were established, that proportion of tillage should not exceed 35-40 %. These indicators are among the highest in the world, and therefore logical to assume, that agriculture in our country has a particularly significant impact on biological diversity [1].

Agricultural impact on biodiversity manifested in destruction of natural vegetation during plowing up of new territories, soil degradation, drainage

of wetlands, deforestation for creating of the fields, environmental pollution by pesticides and fertilizers. Agriculture and biodiversity are closely linked. Without services which providing by biodiversity to agriculture, many of it's branches would lose their productivity.

Analysis of recent scientific researches and publications.

In Ukraine, the study of this problem involved a significant number of scientists. First of all this research of scholars such as: L.Ia. Novakovskiy, D.S. Dobriak, I.A. Rozumnyi, A.H. Tykhonov, A.M. Tretiak, A.Ia. Sokhnych, O.P. Kanash, A.D. Yurchenko, V.O. Leonets, S.O. Osypchuk and others. However, a number of issues still remain insufficiently explained and needs further processing.

The purpose of the article. The essence of agricultural land use, it's problems and directions of improvement. Development of ecological and economic measures for creation of the sustainable land use.

Statement of main material.

Despite the fact that the environmental component of the agricultural policy in Ukraine not so clearly expressed as in agricultural policy of the European Union and many other countries, Ukrainian government also made some steps to solve environmental problems, that arising as a result of agricultural activities. One such step is the development of «Concepts of balanced (sustainable) development of agro-ecosystems in Ukraine on period till 2025», which was approved in 2003. Main directions of activity in sphere of creating of conditions for sustainable development of

agro-ecosystems in Ukraine includes: gradual establishment of ecological balance ratio of lands in zonal systems of land use, by which is supported the homeostasis of the biosphere; reduction of area of arable lands to 35-40 % of territory of the country by removing from tillage slopes precipitous over 3°, lands of water protection zones, degraded, low productivity and technologically contaminated agricultural lands; increasing of the environmental and stabilizing lands; the creation of new areas and expanding of existing areas and objects of natural reserve fund within the limits of agricultural lands; creating the conditions for ensuring the continuity of natural areas of ecological niches within the limits of agricultural lands; develop an ecological network as part of European and formation of it's constituent parts; ensuring wide implementation of new ecologically balanced technologies in agriculture and supporting of development of the biological agriculture; extension of the order and the introduction of economic incentives of landowners and land users concerning of conducting of ecologically balanced agricultural activities; development of indicators of biodiversity of the plant world in connection with the conducting of agricultural activities; development of biodiversity indicators of wildlife in connection with the conducting of agricultural activity.

These directions, which are considered through the implementation of complex of organizational, legal, ecological and economic and other measures, will allow to suspend the processes of soil degradation, minimize of erosion processes, create a stable system increasing of resource potential of lands and improve the economic efficiency of their use [5].

Table 1. Scheme of the main measures for the implementation of ecological and economic conception of farming

№ in order	Name of activities	Purpose	Structure of measures	The expected effect
1.	The transition to farming systems of ecological and economic direction	Providing of harmonic combination of agricultural production. Forestry and water industry with nature. Implementation of economically justified farming systems.	<ul style="list-style-type: none"> - development of landscape systems of agriculture; - combination of extensive and intensive crop technologies; - remove from active cultivation low fertile, degraded and land-reclamation unequipped land in order to use to improve their fertility of environmental factors; - bringing of structure of sown areas, grasslands, pastures and deposit in accordance with economic, ecological requirements and social conditions; - introduction of appropriate new farming systems, branches and technologies of livestock raising. 	Providing of rational use of land resources, remunerative farming, obtaining of environmentally safe products of nutrition and improving of public health.
2.	Revision of systems of land management and land use	Optimization of agrolandscapes	<ul style="list-style-type: none"> - Evaluation of natural and economic characteristics of lands; - bringing of land management projects in line with the mixed economy in the countryside; - allocation of lands for intensive, extensive, landscaped and biological farming systems, conservation, reserve, environmental protection technologies. 	Creating a balanced nature, that meets the interests of the economy, human health and the social progress
3.	Improvement of crop rotation	A more complete use of biological reproduction of soil fertility	<ul style="list-style-type: none"> - Extension of interim crops; - increasing of unit weight in cultivated of areas perennial grasses, particularly of lupine, soybean and other grain and legume crops; - introduction of flexible and short rotation for small commercial farms. 	Increase of content of biological nitrogen in the soil and organic matter, reducing of the cost of feed in 1,3-1,5 times, the almost complete exclusion of pesticides and reducing in 1,5-2 times of doses of mineral fertilizers.
4.	Support and increasing of soil fertility	Creation of optimal conditions for processing of legume crops and effective use of mineral fertilizers. Increasing the return from their reducing of mobility in soil of chemical toxicants	<ul style="list-style-type: none"> - gypsuming of soils; - introduction of a sufficient amount of organic fertilizers; - introduction of local way of application of mineral fertilizers; - widespread adoption of green manures; - restoration of agrochemical service 	Activation of biological processes, increasing the number of digestible elements of nutrition, improvement of soil structure, and also increased productivity of agriculture is not less than 1.5 times

5.	Integrated protection of plants from weeds, pests and diseases	Reducing of crop losses from harmful organisms	<ul style="list-style-type: none"> - Preferential use of agro-technical measures: correct cultivation of soil, compliance of crop rotation, introduction of interim crops, timely mowing of grass; - strict adherence to technologies of application of plant protection products; - prevention of entry of weeds on field 	Increasing of the crop yields of agricultural cultures on 10-12%
6.	The development of physical methods in farming	Reducing of application of agrochemicals, increasing of plant resistance to adverse conditions, introduction of new highly productive cultures of application	<ul style="list-style-type: none"> - preplant treatment of seeds by plasma of inert gases, EMF UHF and other electromagnetic fields; - electro cultivation with the purpose of deoxidation, release of phosphates and other items; - creation of biologically active potential difference in the root zone by the way of localization of reducing of doses of mineral fertilizers 	Increasing of the crop yields of agricultural cultures in 1,2-1,7 times, reducing the incidence of plants on 40% and more, increasing holding in soil it digestible elements, increasing of plant resistance to droughts, waterlogging and soil density. Reducing of doses of mineral fertilizers, at least on a third, and also the possibility of introducing new crops
7.	Rational use of polluted by harmful chemicals lands.	Obtaining of environmentally safe products on slightly polluted lands.	<ul style="list-style-type: none"> - Selection of agricultural crops; – use of organic substances, zeolites and other adsorbents; - priority conduct on polluted lands of agroecological monitoring; - expansion of clean technologies; - the application of special crop rotation, cheap methods of soil cultivation and land improvement techniques. 	Obtaining of environmentally friendly food products in area of concentration of industrial factories. Preservation and improvement of soil fertility.
8.	Promoting of ecological and economic concepts of farming, training of personnel.	Bringing the essence and significance of activities to all employees of AIC.	Speeches and interviews to specialists and managers; making recommendations.	Increasing the level of economic and ecological knowledge among employees of AIC.

In The Land Code of Ukraine [3] land declared as a national treasure and provides the ensure of the rational use and protection of lands. Land Code from among other categories of land alone identifies land of nature conservation and natural reserve designation, which includes natural areas and objects, artificially created objects, and also lands of other nature conservation importance, which include land plots of wetlands, which is not attributed to lands of water fund and lands of forestry purpose and land plots, within which are natural objects, which have a special scientific value.

One of the most important steps in the conservation of diversity in Ukraine was the beginning of the creation of the ecological network. Ecological network is a system of protected territories, ecological corridors, which allowing to wild species of animals and birds move between the protected cores, buffer zones and other spatial elements, which which form a net of which form a net of favorable for wild species of habitats [4].

Along with the reserves and other ecologically valuable natural objects with the strict limitation of human activity, the law provides for the inclusion in the ecological network such objects of agricultural landscapes, as fields shelter belts and other protective plantings, lands of water fund, wetlands, water protection zones, steppe vegetation areas, stone placers, sands, salt marshes and partly agricultural lands of extensive using – pastures, hayfields, etc.. [2].

Transformation of land relations and land use systems during the years of land reform has led to the largest decline of agricultural production. Decreased areas of grain and forage crops (especially perennial grasses). All this of course could not affect the quality

state of biodiversity, especially in agricultural enterprises and farms, land use of which stands out the lack of crop rotation, providing preference to growing profitable crops (corn to the grain, winter wheat, soy, rape, sunflower) without taking into account of soil ecology. In addition, reducing of application of organic fertilizers leads to reduced of soil fertility and depletion of microflora. So as a result – unstable land use and considerable human pressure on agricultural landscapes, as well as reducing biocenotical and other environmental measures concerning the organization of ecologically land use.

Providing of environmental and economic security of agricultural land use is determined by such indicators of ecological compatibility as: number of land resources that are using and their ratio; efficiency (intensity) of using of land resources; level of fertilizer application, herbicides or waste disposal; the amount of emissions or violations, which influenced the environment; the number of outstanding of land protection and land management measures; quantity of gaseous harmful substances that released into the environment; investment in the environmental protection; the number and value of environmental penal sanctions; sum of payments for wastewater discharges; other costs which connected with environmental using.

Ecological and landscape approach involves establishing of the optimum ratio of area of arable lands, pastures, hayings, preserves, forest plantations, settlements and other anthropogenic environments stabilizing components, which contribute to self-regulation of agricultural landscapes. The optimal ratio of these lands is the better, how it is closer to the natural (natural) landscape. It is known that the stabilizing

function of the landscape is enhanced by the farming system and its main link – crop rotations, which are being developed on the terrain in land management projects. For the majority of agricultural lands, which are owned by citizens and legal entities, environmental protection restrictions regarding their use can be established only through the implementation of land management projects.

To the ecological and economic conception of referring such issues: improvement of land management and land use, crop rotation system; processing of soil, application of fertilizers and other parts of farming systems taking into account the of organizational and economic and social conditions, that changing and widespread use of physical factors of increase yields.

We have concrete measures, needed for practical implementation of environmental and economic conception of agriculture in the current circumstances. Look. Table 1.

Conclusion.

Agricultural and anthropogenic influence is one of the most dangerous. Rational use of land resources in the steppe landscapes and the creation of sustainable land use is not possible without complex of measures for creating ecological and economic conception of farming. We need ecological imperative in land use – changing of the system of values, which guiding in land legislation, economy and everyday life. Measures that being considered in the article should be integral part of the activities to ensure of ecological balance, social stability, national security, and will contribute to the promotion of Ukraine into the European community as a state That fulfills its international legal obligations

in the field of environmental protection.

Formation of economically efficient and socially and environmentally balanced system of land use and nature management in Ukraine is a dynamic process Which should be regulated in the public interests. On the optimization of land use and nature management should be directed political, organizational and legal, social and economic and ecological management government actions. Thus the priority importance attaches to the public interests in achieving of high economic efficiency of land use on condition of environmental sustainability of natural resources. Thus, the modern transformation of land use in any areas of social development should obtain environmental vector.

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РОЗРОБКА ЕКОЛОГО-ЕКОНОМІЧНИХ
ЗАХОДІВ ЩОДО ФОРМУВАННЯ СТАЛОГО
ЗЕМЛЕКОРИСТУВАННЯ

Висвітлено еколого-економічні заходи щодо формування сталого землекористування, його сучасний стан і проблеми, а також напрями вдосконалення. Ці заходи направлені на збалансоване забезпечення потреб населення і галузей економіки земельними ресурсами, раціональне використання та охорону земель, збереження ландшафтного та біологічного різноманіття, створення екологічно безпечних умов проживання населення й господарської діяльності та захист земель від виснаження, деградації і забруднення.

Ключові слова: стале землекористування, землі природоохоронного та при-

родно-заповідного призначення, екологічна мережа, агроландшафт.

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РАЗРАБОТКА ЭКОЛОГО-ЭКОНОМИ-
ЧЕСКИХ МЕРОПРИЯТИЙ ПО ФОРМИРОВА-
НИЮ УСТОЙЧИВОГО ЗЕМЛЕПОЛЬЗОВА-
НИЯ

Освещены эколого-экономические мероприятия по формированию устойчивого землепользования, его современное состояние и проблемы, а также направления совершенствования. Эти меры направлены на сбалансированное обеспечение потребностей населения и отраслей экономики земельными ресурсами, рациональное использование и охрану земель, сохранения ландшафтного и биологического разнообразия, создание экологически безопасных условий проживания населения и хозяйственной деятельности и защиту земель от истощения, деградации и загрязнения.

Ключевые слова: устойчивое землепользование, земли природоохранного и природно-заповедного назначения, экологическая сеть, агроландшафт.