



STATE CONTROL OF ENVIRONMENTALLY SAFE LAND USE IN UKRAINE

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Abstract: State control over the environmentally safe use of land in Ukraine for a long time was carried out by methods inherited from the USSR, where the idea of obtaining maximum return at minimum cost prevailed. It is shown how harmful this approach is for the environment. Peculiarities of land use in the first years of independence – the period of a deep economic crisis are considered. The dynamics of changes in the purpose of Ukraine's soils in the last decade has been traced, it is emphasized that the changes are due to the reduction of agricultural lands. The powers of public administration and local self-government bodies in the field of soil use supervision are analyzed. It is shown that the standards for calculating the damage caused to the land are outdated and should be changed. Insufficient efficiency of work of advisory services is proved. It is noted that it is necessary to strengthen state control over land use, including concerning plant protection products and mineral fertilizers.

Keywords: agricultural land, fertility, protection, damage, Ukraine

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Introduction

In the USSR, very little attention was paid to environmental land use. The main goal was to get the highest possible yields; to achieve it, excessive amounts of plant protection products and mineral fertilizers were introduced into the land, with the main argument being the lack of food for the population. Even not very honest Soviet statistics show a decrease in crop capacity (in 1914 grain was harvested 8.5 c/ha, in 1938 – 8.3 c/ha (Prokopovich 1952, p. 37) and a decrease in sown area per person. After leaving the Soviet Union, Ukraine inherited depleted soils. Land fertility was ruthlessly exploited. The command-and-control system had a very negative effect on agriculture: the collective farms had to grow plants that the Communist Party leaders thought should have been grown, not those that had higher yields according to favorable soils and climatic conditions. Ukraine's chosen course of European integration, among other things, involves management in accordance with the norms tested and adopted in the EU, especially in the environmental component of land use.

Literature review

In the XIX century and early XX century, many scientists have studied the problems of land conservation, but they mostly concerned agricultural use and fertility,

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among them are works devoted to the study of chernozems N. Borisyak (Borisyak 1852), I. Levakovsky (Levakovsky 1871), V. Dokuchaev (Dokuchaev 1884), L. Buber (Buber 1910), G. Makhov (Makhov 1930) and others.

Modern Ukrainian scientists have not left the land issue unattended:

- many important aspects of soil science have been considered by V. Kanivets (Kanivets 2017), M. Kit (Kit 2008), S. Pozniak (Pozniak 2010);
- P. Sabluk (Sabluk 2006), O. Gutorov (Gutorov 2013) studied the development of land relations in Ukraine;
- the foundations of land management are laid in the works of A. Tretyak (Tretyak 2009), V. Shiyanyan, V. Gorkavy (Shiyanyan, Gorkavy 2000);
- rational and ecological land use was studied by M. Khvesyuk, V. Golyan (Khvesyuk, Golyan 2006), M. Stupen, S. Rogach, I. Riy (Stupen, Rogach, Riy 2015), V. Kryvov (Kryvov 2008), I. Voloshyn, Yu. Chikailo (Voloshyn, Chikailo 2011), I. Bystryakov, O. Novotorov, T. Nikolaenko, O. Kucher, V. Budziak (Bystryakov et al. 2002) and others.

The purpose of this article is to study the issue of state control over environmentally safe land use in Ukraine.

Methodology and theoretical basis

Today, the system of ensuring the ecological use of soils in Ukraine is in the process of formation. The complexity of the current situation is exacerbated by frequent changes in current legislation, as well as the legislative vacuum on certain issues. The purpose of this article is to study state control over environmentally safe land use in Ukraine.

The choice of research methods is determined by the purpose and features of the object of study. To achieve the purpose of the article, a set of modern general scientific methods and approaches was used. To obtain accurate and interconnected results of the study, a comparative-historical method was used, which made it possible to synchronize the most important events in the history of ecological land use in Ukraine the formation of the institution of state control of this process is considered in historical retrospect.

The critical-dialectical approach makes it possible to identify contradictions between the approaches to understanding ecological land use in Ukraine, in particular, to make a comparison between the declared and implemented intentions, as well as to compare the features of solving this problem in Ukraine and the EU.

The speed of changes in land use legislation dictates the need to study what changes are being made, how much these changes improve the protection of Ukraine's soils. In particular, it is necessary to compare all editions of the "Land Code of Ukraine". One of the main aspects is the legal framework, its effectiveness, compliance with modern realities and world trends.

The empirical basis of the study consisted of statistical materials of Eurostat, statistical collections of the State Statistics Committee of Ukraine, as well as factual material obtained personally by the author as a result of processing the sources collected by her.

Results and discussion

The course of Soviet agriculture for a steady increase in production was retained even after the establishment of certain stability with food security (mid 1950s). At some point, the chemicals ceased to be effective, but they continued to be introduced into the soil. The need to constantly demonstrate an increase in yields began to be solved with the help of "pripiska" – a deliberate distortion of reporting indicators in the direction of increase (industrial production, mining, agriculture, etc.). Based on the fact that criminal liability had been established for this since 1961, the "pripiskas" were widespread. In addition, following the instructions of the USSR leaders, the official media consistently reported much lower rates of harmful effects on the environment than it had. Even more, the authorities tried to hide catastrophes, such as the explosion at the Chernobyl nuclear power plant. The information about the explosion was published three weeks later and only under the pressure from the Western media, which the Soviet newspapers, at the behest of the authorities, initially accused of lying and exaggerating the danger. That is, it can be argued that the real state of the environment was in fact unknown or classified.

With the acquisition of independence (1991) in Ukraine began the process of restructuring all relations formed by the socialist economy into market relations. The initial period was marked by the existence of specific political and economic peculiarities typical of Ukraine. They were most noticeable in the nature of production, which became mainly raw materials, with a sharp decline in industry.

Index of Ukraine regions by type of goods production structure (determined by dividing the share of agriculture in the gross value added of the region by the share of industry) in the period up to 2000 characterized the production of the regions of our state as predominantly agricultural. For some time there was a popular division, which determined that the value of the index lower than one means the industrial-agrarian region, and more than one – the agro-industrial (Balabanov, Nagimaya, Nyzhnyk (eds.) 2003, p. 29). For the typology, the period 1996-2000 was considered – that is the time of economic crisis, when industrial production was mostly in decline or stagnant and therefore for the following periods these criteria for division (index values up to 1 – industrial-agrarian area, and more than 1 – agrarian-industrial) cannot be applied, because currently in none of the Ukrainian regions the production structure index does not reach one (Kulich 2013, p. 185). The period up to 1996 should not be taken into account, because then the old production ties inherited from the USSR were still working.

After 1991, land issues in Ukraine were still regulated by the provisions of the Land Code of the Ukrainian SSR of December 18, 1990. This legal document became the basis for the Land Code of Ukraine adopted on March 13, 1992 (hereinafter – the Code).

In both Codes (of 1990 and 1992), the promotion of ecologically clean environment and improvement of natural landscapes was the competence of a village, settlement, city, district, city district subordination, and regional Soviets of People's Deputies. Other articles that were related to environmental land use were also identical.

The current Code of 2001 substantially adjusted the main aspects of land protection, in particular, established (Land Code of Ukraine 2002):

- ban on certain activities;
- prohibition to change the purpose of the land, landscape;
- conditions of construction, repair or maintenance of the road, road section;
- conditions of observance of nature protection requirements or performance of certain works;
- conditions to grant the right to hunt, catch fish, harvest wild plants on their land at the prescribed time and in a prescribed manner;
- obligation to maintain and preserve forest plantations to protect fields.

The Land Code of Ukraine (1992) divided lands into 7 categories, and the one adopted in 2001 (Article 19) defines the division of lands into 9 categories (Land Code of Ukraine 2002):

- a) agricultural land;
- b) land for housing and public buildings;
- c) lands of nature reserves and other nature protection purposes;
- d) health-improving lands;
- e) recreational lands;
- f) lands of historical and cultural purpose;
- g) forestry lands;
- h) water fund lands;
- i) land for industry, transport, communications, energy, defense and other purposes.

The difference between categories in the two Codes was in a broader interpretation. But the issues of land management in the new Code (2002) are considered in much more detail, considerable attention is paid to land protection. The version of 2002 is not final. In October 2020, in connection with the adoption of the Law of Ukraine "On Standardization", it is planned to amend the Land Code. However, these changes concern only certain formulations and do not concern the issue of the ecological status of lands.

Law of Ukraine "On land protection" in addition to legal liability, provides economic incentives in the field of land protection, in particular, using for this purpose state and local budget funds, as well as providing tax and credit benefits to persons carrying out land protection measures, melioration, reclamation, conservation, etc. (Law of Ukraine of June 19, 2003).

Over the last 10 years, there have been changes in the distribution of Ukrainian lands by purpose (see *Table 1*).

Table 1 shows that over the last 10 years the area of wetlands has increased by 110 thousand hectares, the area of buildings has significantly expanded – by 1098.7 thousand hectares, 83 hectares of forests have been planted. The question of whether such reduction was justified requires a separate in-depth study and remains open.

According to Article 6 of the Law of Ukraine "On land management", the basic principle of land use is "ensuring the priority of agricultural land tenure and land use" (Law of Ukraine of May 22, 2003, No. 858-IV). Countries around the world are making great efforts to avoid the withdrawal of agricultural land from use and for

this purpose they even create artificial land areas. For example, Japan, which has today built five islands with a total area of 18.7 square kilometers and moved into the ocean large structures that would take up a lot of space on land, including Kansai, Chubu, Kitakyushu and Umihotaru&Aqualine (international airport, is a hybrid tunnel with a bridge 9,6 km long).

Table 1. Lands of Ukraine in 2009-2018

	2009		2014		2018	
	Area, thousand ha	%	Area, thousand ha	%	Area, thousand ha	%
Total land	60354.8	100.0	60354.9	100.0	60354.9	100.0
Agricultural land	42813.7	70.9	42744.5	70.8	41489.3	68.7
Forests and other wooded areas	10591.9	17.6	10624.4	17.6	10674.9	17.7
Built-up land	2499.1	4.2	2542.6	4.2	3597.8	6.0
Land under water	2423.2	4.0	2422.9	4.0	2425.0	4.0
Open wetlands	979.4	1.6	981.6	1.6	1089.4	1.8
Other lands	1047.5	1.7	1038.9	1.8	1038.5	1.8

Source: Calculated from data (Statistical Yearbook of Ukraine for 2009, p. 515; Statistical Yearbook of Ukraine for 2013, p. 478; Statistical Yearbook of Ukraine for 2018, p. 174)

Ecologically safe land use is a large-scale task based on the balance of several basic conditions, each of which partially satisfies the purpose of rational land use:

- profitability;
- stability and existence of prospects;
- preservation of the environment;
- compliance with current legislation.

In recent decades, people's consciousness has undergone a significant transformation and more and more people in Ukraine understand the importance of ecology. However, if the first and second conditions are followed very carefully by business structures, then the other two are sometimes misunderstood. Control over compliance with the conditions of "environmental protection" and "compliance with the law" belongs to the competence of the state control over the use and protection of land of all categories and forms of ownership.

According to the current legislation, a central executive body has been established, which ensures the implementation of state policy in the field of supervision (control) in the agro-industrial complex (Law of Ukraine of June 19, 2003). It is the State Service of Ukraine for Geodesy, Cartography and Cadastre (hereinafter – the State Geocadastre) and its territorial branches (Resolution of the Cabinet of Minis-

ters of Ukraine of January 14, 2015). The competence of the State Geocadastre includes activities to verify compliance with regulations relating to land use and land monitoring (Resolution of the Cabinet of Ministers of Ukraine of August 20, 1993).

As of the beginning of 2020, monitoring of soil pollution in Ukraine is carried out by several different bodies. Thus, the State Hydrometeorological Service controls the content of pesticides in agricultural lands. The Ministry of Agrarian Policy of Ukraine also controls the content of pesticides and additionally conducts radiological, agrochemical, toxicological tests for heavy metals. At the same time, the Ministry of Emergencies of Ukraine inspects the lands of settlements for heavy metals. These measurements are carried out once every 5 years, except for the cities of Kostiantynivka and Mariupol, where the ecological condition requires inspection every 12 months. In addition, the State Ecological Inspectorate of Ukraine inspects industrial sites for 27 parameters.

Types of land and soil pollution are determined by the "Methodology for determining the amount of damage caused by pollution and littering of land resources due to violations of environmental legislation". They are as follows (in the order of the Ministry of Environmental Protection and Nuclear Safety of Ukraine):

- accumulation in soils due to anthropogenic impact of pesticides and agrochemicals, heavy metals, radionuclides and other substances, the content of which exceeds the natural background, which leads to quantitative or qualitative changes in soils;
- accumulation in soils of substances that adversely affect their fertility and other useful properties;
- the presence of foreign objects and materials on the territory of land plots.

The cost of compensation for land pollution is determined by formula (1):

$$DPL = CEPL \times NMV \times ACL \times CCL \times HFP \times CEEV \quad (1)$$

DPL – the amount of damage from land pollution, UAH;

CEPL – specific costs for the elimination of the consequences of pollution of land, the value of which is equal to 0.5;

NMV – normative monetary valuation of the land plot that has been polluted (clogging), UAH / sq. M;

ACL – area of contaminated land, sq m;

CCL – coefficient of land contamination, which characterizes the amount of pollutant in the volume of contaminated land depending on the depth of infiltration;

HFP – hazard factor of the pollutant;

CEEV – coefficient of the ecological and economic value of lands.

The amount of compensation due to clogging is determined by formula (2):

$$DPL = CEPL \times CF \times NMV \times ACL \times CCL \times HFP \times CEEV \quad (2)$$

DPL – the amount of damage from land pollution, UAH;

CEPL – specific costs for the elimination of the consequences of pollution of land, the value of which is equal to 0.5;

CF – conversion factor, which when littering the land with household, industrial and other waste is equal to 10, and hazardous (toxic) waste - 100.

NMV – normative monetary valuation of the land plot that has been polluted (clogging), UAH / sq. M;

ACL – area of contaminated land, sq m;

CCL – coefficient of land contamination, which characterizes the amount of pollutant in the volume of contaminated land depending on the depth of infiltration;

HFP – hazard factor of the pollutant;

CEEV – coefficient of the ecological and economic value of lands.

The calculation of compensation for clogging and pollution, as well as their various combinations, is carried out using different coefficients approved by the relevant regulations.

Another aspect of land damage is poor or no land reclamation (see *Figure 1*). For the first time, the solution to this problem was enshrined in law by the Resolution of the Council of Ministers of the Ukrainian SSR "On land reclamation, preservation and rational use of fertile soil during the development of mineral deposits and peat, exploration, construction and other works" of July 14, 1976, No. 327 (duplicated a similar resolution of the Council of Ministers of the USSR), which formally operated until November 23, 2016.

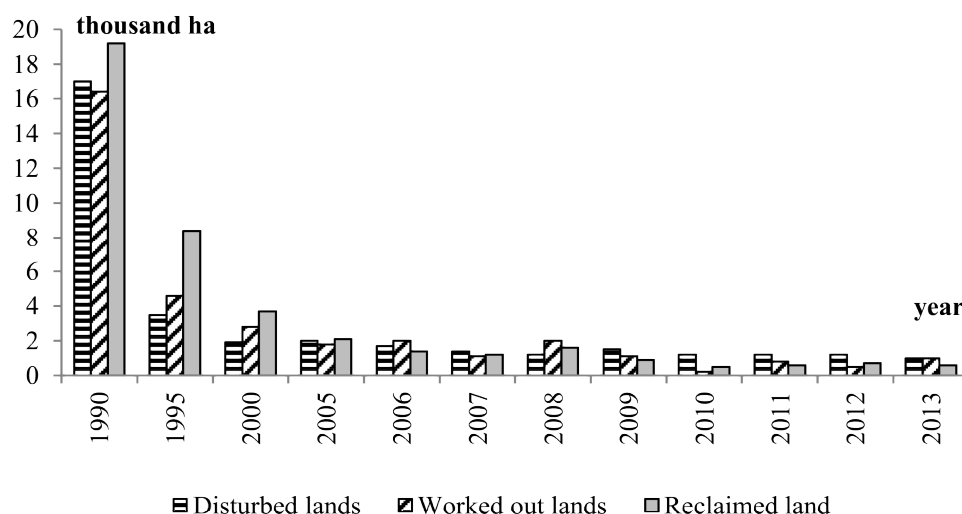


Figure 1. Violation and reclamation of lands in Ukraine in 1990-2013, thousand hectares

Source: Author's elaboration according to the data (Information from the website of State Statistics Service of Ukraine as of July 1, 2020)

Issues of reclamation are considered in detail in the Law of Ukraine "On Land Protection". The amount of damage caused by failure to rehabilitate disturbed lands is determined by formula (3) (Resolution of the Cabinet of Ministers of Ukraine of December 17, 2008):

$$DL = EC \times \frac{T}{12} \times \frac{DR}{100} \quad (3)$$

DL – the amount of damage to land;

EC – estimated cost of a complex of works on reclamation of disturbed lands in accordance with the working project on reclamation of disturbed lands, UAH;

T – the period for which the execution of the works provided by the specified project is delayed, UAH;

DR – the discount rate of the National Bank, set on the date of determination of losses, %.

It can be seen that according to formula (3) the calculation of losses due to lack of reclamation assumes the existence of the project, which is not always true.

Unfortunately, the state of fertility of agricultural soils is currently poorly controlled. One of the reasons for this situation is the unregulated land market, which has given rise to the widespread practice of short-term leases (up to seven years). Lacking confidence in future legislative changes, landlords are reluctant to enter into long-term contracts, and tenants try to reap full benefits of the site without investing in restoring its fertility. Oilseeds are sown en masse, most of the crop is exported: rapeseed, sunflower, soybeans. The sown area under these plants has increased several times in recent years. That is, it is profitable for entrepreneurs to grow plants that deplete the soil as much as possible, while reducing the production of potatoes, berries, perennials, grapes, sugar beets and such a traditional culture for Ukrainians as buckwheat.

Virtually all oilseeds exported from Ukraine are used for the production of biodiesel, which is very popular today in developed countries. To grow a stock of potatoes sufficient for one year for twenty-eight people or vegetables for eighteen people, the same area of soil is needed as for growing rapeseed to produce biofuel needed for one refueling all-wheel-drive vehicle (indicators of average plant yield in Ukraine were used for calculation). In fact, there is a lack of control over the condition of soils against the desire to obtain maximum profits, which encourages farmers to grow only those products that can be most profitably sold.

It is necessary to mention one aspect that significantly affected the ecological and economic condition of soils. As mentioned above, the economic crisis of the first years of independence did not spare enterprises producing chemical fertilizers, weed control and plant protection products that were closed or idle. In agriculture, chemicals were used that were manufactured earlier and stored in warehouses. On the one hand, it was good for the land, because in Soviet times the land received so much mineral fertilizer that it was no longer a matter of restoring soil fertility, but of poisoning it with an excessive amount of chemicals. Later, the import of chemical fertilizers and plant protection products from other countries began. In the absence of competition in this market, businessmen imported to Ukraine mostly cheap substances, of dubious quality, unknown composition and with unpredictable effects on the environment and man. As of the beginning of 2020, the production of mineral fertilizers in Ukraine has resumed, and the uncontrollability of their amount introduced into the soil is again beginning to cause concern (see *Figure 2*).

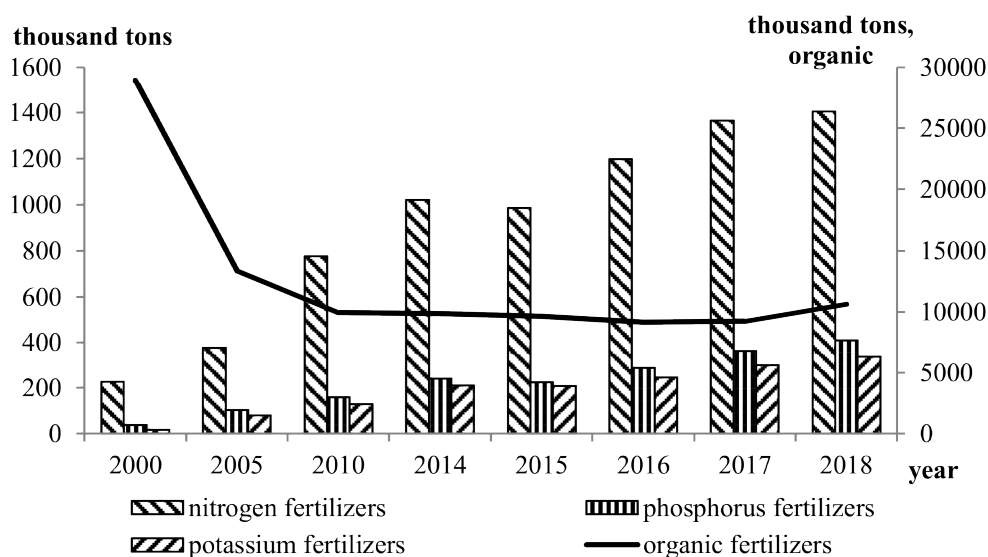


Figure 2. Application of soil fertilizers by Ukrainian agricultural enterprises in 2000-2018, in thousand tons

Source: Own calculation based on official statistics (State Statistics Service of Ukraine)

The diagram in *Figure 1* shows that the volume of organic fertilizers tends to decrease, and mineral, on the contrary, to increase. In fact, there is a risk that chemicals from the soil will enter consumers' bodies through food of both animal and plant origin. The difficult economic situation of the first years of Ukraine's independence was marked by the following features: until the supply of foreign fertilizers and the resumption of fertilizer production by Ukrainian enterprises, the lack of fertilizers led to the fact that mineral fertilizers began to be used more rationally; farmers applied more organic fertilizers to the soil; and agricultural producers began to independently decide which crops to grow.

And here there was an unpredictable problem: in the absence of effective advisory services (those that functioned at the regional departments of agriculture used the old methods of command-administrative system and tried not so much to advise as to manage), market chaos began. For example, in year N there was a poor harvest of cabbage and its price increased 10 times compared to the previous year, so farmers massively plant fields of cabbage in year N1, and for other crops much smaller plots of land were allocated. This means that with a high degree of probability it could be predicted that due to market imbalances, in year N1, agricultural crops, which received the least attention will become significantly more expensive. This was observed repeatedly with cabbage, carrots, onions, potatoes, etc. Farmers, with rare exceptions, do not follow crop rotations and do not practice rational treatment of the soil.

Conclusions

Given the great centralization inherited from the Soviet system in the form of an irreversible bureaucratic machine, the powers of local authorities to promote friendly clean environment and improve natural landscapes, enshrined in the land codes of 1990 and 1992, were quite conditional and limited, for the most part, to the implementation of the above-mentioned plans and reporting on them. The main reason for this situation was state ownership of all means, which made it absurd to compensate for material damage: in fact, the authorities had to recognize that the penalty is imposed for following their instructions.

It should also be taken into account that the main provisions in the field of ecological land use of the Land Code of Ukraine were transferred without changes from the 1990 Code and were partially corrected only in the 2002 Code. At the same time, the current Land Code needs to be further improved to bring it closer to European standards. The existing legal framework in the field of compensation for damage due to pollution / littering / non-reclamation of land is outdated and requires immediate improvement, especially given the formation of the land market, because today the calculations are based on the methods of 2007 and 2008.

In order to preserve the national wealth of Ukraine – fertile soils, it would be appropriate to use the experience of countries in the EU, where more encouragement and incentives are used to prevent land degradation, rather than punitive methods. To this end, farmers receive compensation for lost profits. Unfortunately, in today's difficult economic and political situation, the introduction of such incentives in Ukraine is unlikely, but in the future it will be the only effective tool for the protection of agricultural soils.

An important step towards improving the economic and environmental condition of the Ukrainian lands will be to improve the work of advisory services, which today are more focused on large enterprises. To this end, it is advisable to monitor market trends so that demand can be forecast and respond quickly without exposing the land to undue stress.

The individual attitude of agricultural producers is of great importance for maintaining the fertility and ecological condition of Ukrainian soils, for this it is necessary to carry out outreach work at all levels from small farms to large agricultural holdings.

State policy in the field of environmental land use requires substantial improvement. As a result of the lack of proper state control over crop rotations and the amount of plant protection products and mineral fertilizers, farmers damage not only the strategic resource – soil, but also undermine the food security of the population forced to buy plant products at higher prices and consume food that does not meet European quality standards.

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PAŃSTWOWA KONTROLA EKOLOGICZNEGO UŻYTKOWANIA GRUNTÓW NA UKRAINIE

Streszczenie: Państwowa kontrola nad bezpiecznym dla środowiska użytkowaniem gruntów na Ukrainie przez długi czas prowadzona była metodami odziedziczonymi po ZSRR, gdzie dominowała idea uzyskania maksymalnego zwrotu przy minimalnych kosztach. W artykule pokazano, jak szkodliwe jest to podejście dla środowiska. Rozpatrzono specyfikę użytkowania gruntów w pierwszych latach niepodległości – okres głębokiego kryzysu gospodarczego. Prześledzono dynamikę zmiany przeznaczenia gleb Ukrainy w ostatniej dekadzie, akcentując, że przekształcenia odbywają się kosztem zmniejszenia gruntów rolnych. Dokonano analizy uprawnień administracji publicznej i organów samorządu lokalnego w zakresie nadzoru nad użytkowaniem gleby. Pokazano, że standardy obliczania szkód wyrządzonych gruntom są nieaktualne i należy je zmienić. Udowodniono niewystarczającą wydajność pracy usług doradczych. Wskazano na konieczność wzmocnienia kontroli państwa nad użytkowaniem gruntów, w tym dotyczącej środków ochrony roślin i nawozów mineralnych.

Słowa kluczowe: grunty rolne, żyzność, ochrona, zniszczenia, Ukraina