UDC 332.3 http://dx.doi.org/10.31548/zemleustriy2023.01.09

# TO THE ISSUE OF DEVELOPMENT OF WORKING LAND MANAGEMENT PROJECTS TO IMPROVE UNPRODUCTIVE LANDS

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***Abstract.*** *-methodical approaches to the development of working land management projects to improve the condition of unproductive lands are proposed.*

*The state policy of land protection envisages the principle of rational nature management on all categories of land, in the event of land disturbance, it envisages their restoration (earthing, reclamation). However, only a small part of the fertile topsoil is used to improve agricultural land.*

*Excavation is a complex of removal, transportation, and application of a fertile layer of soil and potentially fertile rocks on unproductive lands and disturbed lands for the purpose of their improvement. Landfilling in rural areas, by its very nature, is a nature protection measure that is performed in a complex of land management works, which have an investment character and are aimed at preserving the natural environment and increasing the productivity of agricultural land. In market conditions, the concept of "earthing" has been expanded and includes the removal of fertile soil and potentially fertile rocks during the construction of reservoirs, development of quarries, construction work with the excavation of fertile soil and their application not only to unproductive lands in agricultural enterprises, but also in organization of green industrial zones (for greening the territory of the object), liquidation of the consequences of industrial accidents.*

*In these cases, soils with a certain fertility potential are a commodity that has a market demand and a certain value. The economic effect of measures in the working project of land management must be calculated using the discount method, which takes into account both the outflow of money (investments) and the inflow that occurs due to the increase in land productivity.*

***Key words:*** *grounding, working project of land management, disturbed lands, soil protection, fertile soil layer, low-productivity lands, land management documentation, land management, management, land use*

## *Actuality.*

In the system of national land reP-reservation and use of the fertile soil layer in case of soil cover disturbance is an important economic and ecological, sectoral and economic problem. Any type of disturbance of the soil cover must be preceded by the removal of the fertile layer of soil, its storage and use on unproductive lands or other purposes. The purpose of earthworks is to create a highly productive arable horizon at the earthworks site, improve the massif change and prepare the site for biological land development. The main task of reclamation of unproductive lands is to establish the correct technology for removing and transporting the fertile soil layer, which does not contradict the principles of nature protection.

Low-productivity lands are lands characterized by low natural soil fertility, poor soil profile, erosion, salinity, salinity, gravel, stony, high acidity or alkalinity, as well as depletion of organic elements. In addition to the improvement of unproductive land in rural areas, land clearing is carried out in the territory of cities in the green zone, as well as when eliminating the consequences of land pollution (accidents at industrial enterprises, clutter, pollution of urban land). Earthing for agriculture is carried out with the aim of preserving the fertile soil layer in the places of its excavation and applying reduced fertility to the land.

Earthing should be carried out taking into account: assessment of the suitability of the removed soil layer for use in places of reduced fertility (chemical composition of soils, cadastral assessment score); determination of the location and productivity of areas of reduced fertility, taking into account transport accessibility to the construction site; careful preparation of the site surface; preliminary implementation of cultural and meliorative works and primary soil treatment; classification of low-productivity lands for earthworks; compliance with earthing requirements; determination of the need to carry out the biological stage of land reclamation (agro-remedial, anti-erosion and meliorative works) on the site. Earthing on the territory of cities is carried out with the aim of: improving soil fertility in the green zone of cities, which performs sanitary and hygienic, recreational and protective functions (protection from dust, gases, smoke); reduction of negative impact on the environment, elimination of polluted, cluttered urban land in industrial zones of the city; improvement of ecology and creation of favorable conditions for recreation of residents.

## *Analysis of the latest scientific research and publications*

Such scientists as O.P. dealt with issues related to the improvement of the condition of agricultural lands and unproductive lands by applying a fertile layer of soil. A. Kanash, V. Kryvov, A. Martyn, S. Osypchuk, S. Pogurelskyi, M. Stetsyuk, etc. At the same time, the issue of improving the condition of agricultural lands and low-productivity lands through earthing is relatively little studied by modern science.

## *Materials and methods of scientific research.*

During the study on the development ofThe following generally accepted methods of scientific research were used during the research on the development of working land management projects to improve the condition of unproductive lands: the theoretical method, the monographic method, the comparative method, and the generalization method.

***The purpose of the article*** is to highlight a methodical approach to the development of working land management projects to improve the condition of unproductive lands.

## *The results.*

The purpose of the working project of land management on improving the condition of agricultural lands is to improve the condition of unproductive lands by: applying a fertile layer of soil; earthing, splitting of arable land; deep loosening of flooded soils; application of microbiological preparations, plant growth regulators, microfertilizers, peat and peat composts, sapropel, lake and river silt; conducting chemical land reclamation (liming, plastering) and other measures to preserve and increase soil fertility; grubbing up of decommissioned perennial plantations.

Landfilling (improving the condition of unproductive lands) is carried out in order to increase the fertility of the soils of unproductive lands and has a number of specific features:

- a fertile layer of soil is applied, as a rule, to unproductive lands with the aim of their further use under arable land and perennial plantations; when selecting earthworks, the possibility of their involvement in more productive lands is taken into account, and options in which this transformation is not possible are excluded;
- grounding is carried out most often in such cases, in connection with the allocation of land for non-agricultural needs, there is a need and opportunity to use the fertile soil layer of the allocated land plot;
- the effect of earthing can be achieved by developing appropriate crop rotations, observing the necessary level of agrotechnics for growing crops in relation to a high level of mechanization of agricultural work, chemical treatment and the use of new varieties of high-yielding crops;
- grounding can be carried out in separate phases, designed to be carried out over the course of one year;
- earthing is recommended to be carried out mainly in the dry summer-autumn period in order to avoid a sharp decrease in the quality of the performed works and an increase in the cost of earthing activities;
- the object of grounding is unproductive land on which the application of a fertile layer of soil will significantly improve soil fertility.

The object of this study was land ownership (land plots No. 1 and No. 2),

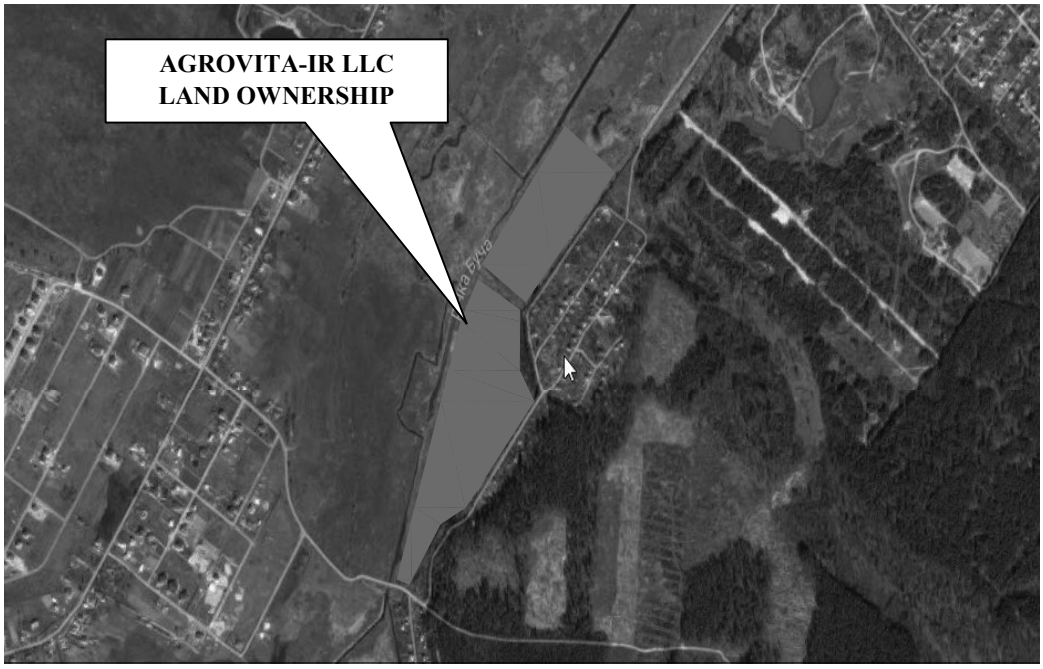


**Fig. 1. Location of land ownership of AGROVITA-IR LLC**

owned by AGROVITA-IR LLC, located within the Kyiv region (Fig. 1).

The investigated land plots with a total area of 15.2544 hectares (land plot No. 1 – area of 8.3317 hectares; land plot No. 2 – area of 6.9227 hectares). The land is hay fields.

Land plot No. 1 has the shape of an irregular triangle in the plan. The purpose (use) of the land plot is for another agricultural purpose. Height differences within the plot of land are on average 2-3 m, sometimes more. The general slope of the surface to the north and northeast. The territory of the land plot is well drained, along its perimeter in the northern, eastern and southern parts there is a drainage canal (it does not function according to its intended purpose). In the western part, the territory of the plot of land is drained by the river Bucha.

Land plot No. 2 in the southwest is adjacent to land plot No. 1 and has a shape close to a rectangle with the dimensions of the sides, the larger one is about 510 m, the smaller one is about 130 m. The purpose (use) of the land plot is for other agricultural purposes. Differences in height within the plot of land are on average 1-1.5 m, sometimes more. The general slope of the surface to the northeast. The territory of the land plot is well drained, along its perimeter in the eastern and southern parts there is a drainage canal (it does not function according to its intended purpose). In the western part, the territory of the plot of land is drained by the river Bucha.

In terms of landscape, the study area is a lowland swamp. Forestless sedge, sedge-sphagnum and dried grass-sedge groups prevail here. On the periphery of the marsh massifs, on the drier, higher terrain, real meadows are formed from the eastern sedge, reed foxtail, and sedge. Edible thistle, sea trident, sour sorrel, sorrel sedum, meadow cornflower are quite often found in the composition of forbs. In some places, there are willow and vine bushes (curtains) and single trees (Fig. 2).

Quarries were formed in the central part of the land plots as a result of non-industrial peat mining in the middle of

**Fig. 2. General appearance of the studied land ownership**

the last century. The latter are residual ditches of an irregular shape (mostly elongated) filled with water. During the spring snowmelt, low-lying parts of the land are flooded and waterlogged. At the same time, the amplitude of water fluctuations can reach 1.0-1.5 m (Fig. 3).

The soil cover of the land tenure is represented by organic soils of different depths of the peat layer. The following agro-production groups of soils were found here: peat-swamp undrained soils (code of agro-group of soils 145); shallow undrained peatlands (soil agrogroup code 145); medium-deep and deep, highly decomposed peatlands (soil agrogroup code 152). The soils are littered with medium-grained bluish silty sands of alluvial origin.

The main project decisions on the de-

**Fig. 3. Flooding of low-lying parts of land tenure with meltwater**

**1.Total volumes of movement of earth masses on land plots No. 1 and No. 2**

| Number of land plots | Area of land plots, $m^2$ | The average depth of movement of earth masses, m | Movement volumes land masses, $m^3$ |
|---|---|---|---|
| 1 | 83317 | 0,2-0,4 | 16377 |
| 2 | 69227 | 0,2-0,5 | 17508 |
| **Total** | **152544** | **0,2-0,5** | **33885** |

termination of measures regarding land reclamation of unproductive lands are determined by the following provisions and are reduced to the following:

- the mentioned lands have undergone changes in the structure of the relief, the ecological condition of soils and parent rocks, and in the hydrological regime as a result of mining operations, including spontaneous extraction of peat, as well as fires, and therefore require earthing;

- grounding is performed in two stages;

- the first stage includes the levelling of the given surface with soil, from the elevated forms of the relief of the given land plots and filling with it the recesses, de-

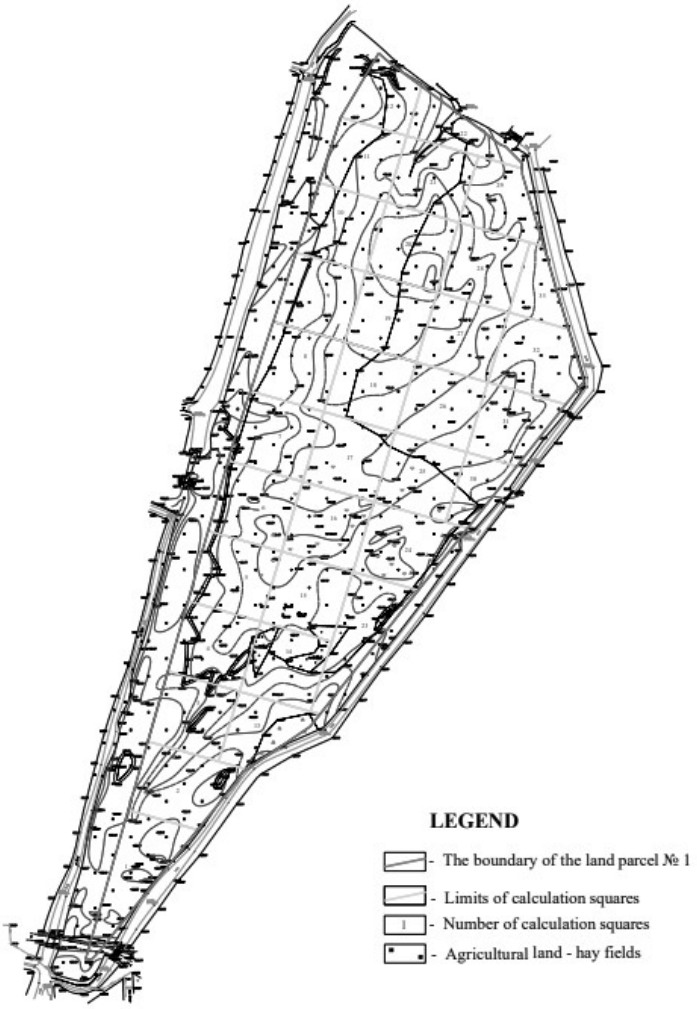


**Fig. 4. Plan of land masses by calculation squares (plot №. 1)**


**Fig. 5. Plan of land masses by calculated squares (plot №. 2)**

pressions, ditches, etc., surface planning;

- the second stage includes the preparation of the given surface for the intended use of the land, in particular deep plowing of the land, cultivation with harrowing and sowing of perennial grasses.

Taking into account the territorial location of disturbed land plots, natural and other conditions, it is planned to improve them with further agricultural use.

The first stage includes the complete backfilling of the remaining peat works and the surrounding area with local soil. A flat surface with a gentle profile and a one-sided slope from 1 to 3° is formed, the relief of which allows excess water to drain away.

To calculate the volumes of earthworks, a plan of earth masses by calculation squares has been developed. In the peripheral parts of the land plots, the calculation squares are slightly distorted (elongated and irregularly shaped), which is due to the shape of the land plots in the plan. The dimensions of the sides of the calculation squares are on average 50-60 m (Fig. 4, 5). The depth of movement of earth masses, depending on the difference in relief, is on average 0.2-0.5 m. The total volumes of movement of earth masses are given in the table. 1.

After filling in the negative relief forms, planning of the entire territory is carried out.

The second stage is the final stage of land improvement and includes deep plowing of agricultural land, cultivation with harrowing and sowing of perennial grasses on the entire area of land ownership.

When sowing perennial grasses, the correct selection of individual leguminous and cereal grasses for mixtures is of great importance, because their yield largely depends on it. Grass mixtures must be selected so that a closed grass stand and strong turf, resistant to washing away and grazing by cattle, are quickly created. It is most appropriate to sow leguminous and cereal grass mixtures. The following grass mixture is recommended for sowing on the surface: tall ryegrass and sainfoin.

## *Conclusions and perspectives.*

The development of working land management projects for the improvement of unproductive lands is extremely important for the development of land relations. Soiling of unproductive lands should be carried out at optimal humidity - the humidity of the crumbling of the fertile soil layer that is being applied. At the time of land reclamation works, areas of unproductive lands are transferred to a state of land reclamation preparation. The technology of applying a fertile layer of soil should provide for the minimum passage of transport and planning vehicles, which compact the soil and thus have a negative effect on their physical properties and worsen the conditions for the growth and development of plants.

After earthing, unproductive lands can be used in the same way as lands with zonal soils. The use of plots of land after earthworks in crop rotation should start with steam in order to achieve a more favourable soil density, fight against weeds, and improve the conditions of moisture accumulation

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***ДО ПИТАННЯ ПРО РОЗРОБЛЕННЯ РОБОЧИХ ПРОЕКТІВ ЗЕМЛЕУСТРОЮ ЩОДО ПОЛІПШЕННЯ СТАНУ МАЛОПРОДУКТИВНИХ УГІДЬ***

*LAND MANAGEMENT, CADASTRE AND LAND MONITORING 1'23: 95-103.*
*http://dx.doi.org/10.31548/zemleustriy2023.01.09*

***Анотація.*** *Запропоновано науково-методичні підходи до розроблення робочих проектів землеустрою щодо поліпшення стану малопродуктивних угідь.*

*Державною політикою охорони земель передбачається принцип раціонального природокористування на землях усіх категорій, у разі їх порушення земель передбачає їх відновлення (землювання, рекультивацію). Однак лише незначна частина родючого шару ґрунтів використовується для покращення сільськогосподарських угідь.*

*Землювання – комплекс робіт зі зняття, транспортування, нанесення родючого шару ґрунту та потенційно родючих порід на малопродуктивні угіддя та порушені землі з метою їх поліпшення. Землювання у сільській місцевості, за своєю суттю, є природоохоронним заходом, що виконується у комплексі землевпорядних робіт, що мають інвестиційний характер та спрямовані на збереження природного середовища, підвищення продуктивності сільськогосподарських угідь. У ринкових умовах поняття «землювання» розширено і передбачає зняття родючого шару ґрунту та потенційно родючих порід при будівництві водосховищ, розробці кар'єрів, проведенні будівельних робіт з виїмкою родючого шару ґрунтів та нанесення їх не тільки на малопродуктивні угіддя в сільськогосподарських підприємствах, але й при організації зелених зон промисловості (для озеленення території об'єкта), ліквідації наслідків промислових аварій.*

*У цих випадках ґрунти з певним потенціалом родючості є товаром, що має ринковий попит та певну вартість. Економічний ефект від заходів у робочому проекті землеустрою необхідно розраховувати дисконтним методом, що враховує як відтік грошей (інвестиції), так і приплив, що виникає завдяки підвищенню продуктивності земель.*

***Ключові слова:*** *землювання, робочий проект землеустрою, порушені землі, охорона ґрунтів, родючий шар ґрунту, малопродуктивні угіддя, документація із землеустрою, землеустрій, управління, землекористування.*

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