CHANGES IN HEAVY METAL MOBILITY IN GRAY MEADOW SOILS

ИЗМЕНЕНИЯ ПОДВИЖНОСТИ ТЯЖЕЛЫХ МЕТАЛЛОВ В СЕРЫХ ЛУГОВЫХ ПОЧВАХ

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Abstract: The study of heavy metals has been developing in several directions in recent years. Traditionally, the forms of heavy metals in soils were analyzed indirectly, by chemical analysis and subsequent use of thermodynamic calculation methods.

Аннотация: В последние годы изучение тяжелых металлов развивается в нескольких направлениях. Традиционно формы содержания тяжелых металлов в почвах анализировались косвенно, с помощью химического анализа и последующего использования методов термодинамических расчетов.

The danger of new types of soil pollution with heavy metals is growing. Let us highlight some of them. First of all, this is pollution with heavy metals

that enter the soil with spilled oil and salt solutions and in oil production areas. This pollution is given much attention in our book. Soil pollution with heavy metals that enter from waste dumps in mines is increasing and also the extensive direction is expressed in the expansion of the set of analyzed heavy metals. Moreover, this expansion occurs at the expense of poorly studied rare elements with a large atomic mass. So far, an imbalance is visible in the volume of information obtained by soil scientists for the main and rare heavy metals. If the number of articles and books devoted to the main heavy metals (Cu, Zn, Ni, Cr etc.) is measured in many hundreds, then there is much less data on the content of rare heavy metals, excluding the well-studied lead, mercury and uranium. In particular, the content of lanthanides in soils, which have a stimulating effect on plants, has been completely insufficiently studied.

It is known that as a result of soil erosion due to irrigation erosion on slopes with a slope of more than 50, up to 100-150 tons per hectare or more, or even up to 500 tons of soil, can be washed away. Together with this soil, 500-800 kg of humus, 100-120 kg of nitrogen, 75-100 kg of phosphorus and even more nutrients can be lost per hectare per year. It should be noted that erosion processes have a negative impact on the soil ecosystem, negatively affecting the amount of solar energy used in biomass and reducing it. As a result of erosion processes, 30-50 percent or more of solar energy is lost, absorbed by phytomass, humus and soil microorganisms, while the intensity of biological and soil processes occurring in the soil is mainly associated with solar energy reserves and changes in the appearance of scattered light can be imagined. the scale of damage caused by erosion to the ecosystem. In our country, every year the prevention and control of soil erosion, increasing the productivity of soils eroded by water and wind is recognized as an event of national importance. Laws have been adopted to protect soil from water and wind erosion. The law defines organizational, agrotechnical, forest reclamation, hydrotechnical and other

measures for the protection of soils from water and wind erosion. To protect the soil from erosion, it is necessary to carry out agro-complex measures:

* when farming in mountainous areas, level the land in the form of terraces (supachs), plant fruit trees and vineyards around the fields;

* proper organization of transverse plowing and irrigation work on steeply sloping lands;

* landscaping the edges of ravines, preventing the expansion of erosion of ravines, preventing the flow of water from irrigated fields into ravines, building various barriers and water collectors;

* to combat wind erosion, the most basic and necessary measures are the planting of shrubs, saxovulia on sandy soils and the installation of hedges. As well as planting various grasses, rational use of pastures, creating various fences, as well as creating a thin top layer of sand using chemicals with adhesive properties (oil waste, nerosin, K-4 polymers, SKS-65 LATEX);

* in order to prevent irrigation erosion, taking into account the physical and chemical properties of the soil and the slope of the site, using the experience of advanced irrigators, it is extremely important to plan the amount of water supplied to wells for proper irrigation of crops, as well as freezing and diversion of water on lands prone to erosion.

To prevent the compaction of the subsoil layer of irrigated soils, it is necessary to widely introduce the technology of sowing and minimum tillage. Experience has shown that soil density per cubic centimeter during the growing season is 1.20-1.35 g/cm^3 and is maintained in an optimal state.

The correct and rational use of any means of production largely depends on how deeply and comprehensively its important features are studied. As a result of active human impact on the soil, changes in its properties, increase or decrease in productivity, salinization, erosion, dehumification, rational use of rainfed lands in agriculture and their protection require more attention than

before. It is necessary to use the land wisely, increase the fertility of the soil, know its quality, economic value and protection, plant various plants on a scientific basis according to the state of the soil, apply environmentally "clean" methods of tillage. , and carry out fertilization at a high level. Increasing the productivity and productive capacity of the soil should largely depend on the careful and economical handling of it, a complex aimed at improving it.

Heavy metals occupy one of the leading places among environmental pollutants. Many representatives of this group of substances, such as lead, copper, zinc, cadmium, even in very small quantities, can cause immunological, oncological and other types of diseases. As a result of studies conducted by scientists from different countries, it has been proven that about 70 percent of heavy metals enter the human body with food.

Soil contamination with heavy metals is associated with their widespread use in industrial production. Due to the imperfection of purification systems, heavy metals enter the environment, including the soil, polluting and poisoning it. Soil is the main environment in which heavy metals accumulate. Heavy metals enter the soil both with atmospheric air and with water. It is a secondary source of pollution of the upper atmosphere of the oceans. Heavy metals can be absorbed through the soil and ingested.

When determining and assessing the composition of soils in the Sh. Rashidovsky district by ingredients in July 2020, 9 samples were taken from the sampling point with soil layers of 0-30 cm, 30-50 cm and 50-70 cm.

The pH of the soil composition pH was determined in the field. For the analysis of water samples, atomic absorption, gas chromatographic, photometric, photocolorimetric, gravimetric, spectrophotometric, titrimetric and other physicochemical methods were used. The mineralization of water was determined by the gravimetric method. The determination method is based on the gravimetric determination of dissolved substances, which is determined by

filtering the sample to a constant weight, evaporating the residue and drying at 150°C for weakly mineral waters (105-110°C) and highly mineralized waters.

Thus, the analysis of soil contamination with heavy metals at the landfill in Sh. Rashidovsky district shows that most of the pollutants were found in soil samples. Analysis of soil pollution with heavy metals in the region shows that the content of chromium, manganese, cobalt, nickel, copper, silver, zinc and other elements slightly exceeds the maximum allowable concentrations for soils. The concentration of all other heavy metals does not exceed the MPC, which confirms the conclusions made in the review part of the work about the low information content of heavy metals in environmental monitoring.

LITERATURE

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