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## **Study of the Stability of Dominant Species of Vegetation in the Conditions of Coal Mine Dumps**

Self-growth of dumps after technical reclamation is considered to be an important part of the natural environment restoration, where various plant species can provide a high reclamation potential. The purpose of this work is to study the stability of the prevailing forms of wild plants *Bromopsis inermis* and *Lathyrus tuberosus* which often grow on the reclaimed coal dumps in the conditions of Western Donbass and the impact of increased concentrations of heavy metals and other toxic elements on them, with the overall aim to study the prospects of using these plants for phytomining techniques.

The investigations under this project were conducted at the sites of reclamation of the Pavlograd experimental station for the restoration of disturbed lands in Western Donbass. The basis of the plots was formed by a thick layer of empty rock (8-10 m), on the top of which soil substrates of various thickness were placed. In our explorations we studied areas of reclamation with chernozem, covering the rock, of various thicknesses: 30 cm (variant 1), 50 cm (variant 2) and 70 cm (variant 3).

For the chemical analysis, soil samples were taken from the depth of 0-20 cm as well as from two prevailing plant species: cereal – *Bromopsis inermis* (grows on all areas) and legumes – *Lathyrus tuberosus* (found only in the third area with the thickest layer of chernozem). The plant and soil samples were treated and prepared in accordance with the standard methods for ICP-MS analysis.

It is established that the ratio of the transfer factor in the tissues of *Bromopsis inermis* over *Lathyrus tuberosus* exceeds by 2-3 times for 26 metals out of 37. The sequence of some excesses is presented in the following descending order: Mn > Cd > Cr > Co > U > As > V > Pb (6.13-1.07 times). For arsenic, the ratio is 1.96 times. Moreover, if compare *Lathyrus tuberosus* with *Bromopsis inermis*, the latter accumulates in itself: Mn in 6.9 times and Cd – in 7.7 times more than *Lathyrus tuberosus*. As for *Lathyrus tuberosus*, it accumulates Mg, Cu, Zn and Mo up to 2 times more.

The carried out analysis of concentrations of rare elements showed the ability of *Bromopsis inermis* to accumulate more Ge - by 20 times unlike *Lathyrus tuberosus* which accumulates more Rh (1.04 times).

The conducted analysis showed high reclamation potential of the plant species under the study. The distribution of wild-growing forms is significantly influenced by the qualitative and quantitative composition of the mineral nutrition of the plants. Besides, *Bromopsis inermis* and *Lathyrus tuberosus* have the potential to be used for phytomining technology developments in order to obtain the particular rare elements.