PHASE DYNAMICS OF PHYTOCOENOSIS ON THE DAMPED WASTE HEAPS OF NOVOVOLYN MINING AREA

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Nineteen non-recultivated waste heaps are found on the territory of the Novovolyn mining area (Lviv-Volyn coal basin), three of which are damping. The total area of disturbed lands is 116.7 hectares. An important role for optimization of disturbed objects is played by natural colonization by vegetation, since it indicates the state of the rocks the waste heaps are made of. Studying of phytocoenoses, which are formed during self-establishment, gives an opportunity to estimate the formed groups, considering their place and role in the vegetation cover of the region and predict their further development. On the waste heaps, where combustion is stopped, the phytomelioration process develops in two ways: a) the formation of phytocenoses cultures with the part of wood species (*Robinia pseudoacacia*, weeping birch, goat willow, Tartarian dogwood); b) natural colonization by zonal and synanthropic vegetation.

On the damped waste heaps there are three phases of vegetation cover formation: pioneer phase → simple phytocenosis → complex phytocoenosis. The analysis of the species composition at different stages of the vegetation colonization of the damped waste heaps has made it possible to reveal the following pattern: at the first phase of vegetation colonization the diversity of species is very low and, as a rule, these are ruderal species. At later phases, the number of species increases and the weeds content decreases. Certain species form aggregations (cluster of individuals) resulting in group arrangement of individuals in the population. In the pioneer phase vegetation colonization of damped waste heaps by aggregation is presented by *Plantago lanceolata*; in simple phytocoenosis – *Artemisia absinthium, Plantago lanceolata, Trifolium campestre*; in complex phytocoenosis – *Artemisia vulgaris, Arctium lappa, Trifolium pratense, Calamagrostis epigeios, Daucus carota*. Uniform distribution is inherent to phytocoenoses on recultivated waste heaps, particularly with *Robinia pseudoacacia.* Random distribution is inherent to a significant number of populations, in particular – *Tussilago farfara, Chamomilla suaveolens, Taraxacum officinale*.

As a result of the phytomelioration efficiency analysis of the waste heaps vegetation it was determined that low-growing vegetation prevails on the damped waste heaps, as shown by the low coefficient of phytomelioration efficiency K_{FM} = 3.45. On the recultivated waste heaps, the phytomelioration efficiency coefficient (K_{FM} = 6.2) is more closely related to the pine-oak complexed subor (K_{FM} = 9.4), which indicates the dominance of high woody vegetation.

As a result of the calculations of the diversity index on the test areas it can be assumed that the species diversity index of the damped waste heaps is not high (by Whittaker – 3.23, by Simpson – 4.78, by Shannon – 0.67). The uniform distribution, calculated on the basis of the Simpson's and Shannon's methods, has a high index of 0.95–0.99, which indicates the suitability of the waste heaps for natural vegetation colonization and the regular distribution of vegetation on the waste heaps.

On the damped waste heaps with high content of heavy metals in rock refuse, a layer of soil mixtures must be applied before the afforestation. The most effective within the Small Polissya are carbonate loams. During vegetative reclamation of damped waste heaps areas, it is necessary to prepare the soil for planting. Gardening should be carried out on sites that are located on small plate-shaped tops and slopes of waste heaps.

Key words: Vegetative Reclamation, Damped Waste Heap, Phytocoenosis, Phase Dynamics