

BETULA PENDULA ON THE IRON ORE DUMPS OF THE KRYVYI RIH

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Ukraine is one of the richest countries in mineral deposits of the world: in its territory, which occupies only 0.4% of the world's land, 5% of the world's mineral resources are concentrated, 20 thousand deposits with 97 kinds of mineral resources were discovered, more than 9 thousands of which are open and estimated. Huge areas of disturbed lands and dumps of mining rocks and obsolete mining technologies have significantly worsened peculiar landscapes. The Krivorozhsky iron ore basin is the main raw material base of mining metallurgy in Ukraine, which provides about 40 % of foreign currencies to the state. In the location of mining and concentrating mills (mines) of Kryvyi Rih – North, Southern, Inguletsky and Central only 3700 hectares of useful area are occupied by external dumps of quarries and another one 1,000 hectares of adjoining territory are disturbed.

To improve the environment intensive planting of iron ore dumps in Kryvorizhyya at the 2 part of the XX century was used. For more than half of a century, more than 100 species of woody plants and shrubs have been used for remediation, in the vast majority of introductions. For the last 20 years, the activity of greening the industrialized areas has significantly decreased due to the emergence of economic problems. From the planted plants at the time, the most stable and viable species were preserved in the dumps to our time. A special place among them is *Betula pendula* Roth, which has proven itself as a stable species in the conditions of technogenic landscapes.

The aim of the work is to study the morphometric parameters of *Betula pendula*, the ability to self-grow dumps and the possibility to form populations on the dumps of Kryvyi Rih.

The main research was made on the four dumps of Kryvorizhyya. Vital state (VS) of trees was estimated on a 5-point scale V.A. Alekseev, height, diameter of a trunk area and volume of crown were measured according to the standard method. In each population, the number of self-seeding was counted, age and height were determined. Statistical processing was carried out in the MC Excel 2007 program.

As a result of the research, it was discovered that in the dumps trees grow individually, groups or rows, as well as stands of different size and density (from 1 to 51 individuals per 100 m²) that arose as a result of a natural colonization. The population area reached from 0.08 to 2.79 hectares, depending on their location. The indicators of vital state varied from 86.5 to 100% and belonged to the category of "healthy". Age of plants ranged from 14 to 18 years, although some trees (maternal) reached 27 years. The mean height of *Betula pendula* varied from 4.5 ± 0.17 to 8.57 ± 0.54 m. The diameter of the tree trunk varied from 3.9 ± 0.45 to 8.74 ± 1.8 cm at the level of 1.3 m. The area and crown volume of the different trees populations fluctuated within 5.54 ± 0.7 – 13.92 ± 2.67 m² and 34.69 ± 7.99 – 113.42 ± 22.3 m³, respectively. Most of the young, fast-growing trees, have already reached the generative age. This is confirmed by the presence of self-seeding in each population. In small isolated sections of iron-ore dumps, the Kryvorizhyya trees of *Betula pendula* provide permanent coverage of the free area around themselves within a radius of 1-15 m of viable seeds. Reproduction occurs annually. The largest percentage of self-seeding was occupied by annual plants (10.4 % – 46.2 %), the height of which were in the range from 7.1 ± 0.2 to 10 ± 0.9 cm. The number of growth decreased with increasing age of plants. Obviously, not all individuals of the first year survive in such conditions; a certain part dies because of competition, or due to the influence of physico-chemical characteristics of the substrate.

Thus, *Betula pendula* is actively colonization on the technogenically disturbed landscapes of Kryvyi Rih and is capable of self-healing, so it can be considered perspective for the landscaping of technogenic landscapes without use of expensive remediation methods.

Key words: Kryvyi Rih, Dumps, *Betula pendula*, Self Seeding