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ASSESSMENT OF THE PHYTOREMEDIATION POTENTIAL OF AQUATIC PLANTS OF THE BELGOROD REGION FOR WASTEWATER TREATMENT

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ABSTRACT

The problem of wastewater treatment used by mining processing enterprises is currently extremely relevant in the field of nature management and natural restoration. Among the well-known, the described purifying methods are: mechanical, physico-chemical, and chemical technologies. The analysis of aquatic plants was carried out on the basis of the testing laboratory for agrochemical maintenance of agricultural production of the Federal State Budgetary Institution. The plants for the model experiment were taken from three different growing places. *Typha laxmannii* Lepech. and *Phragmites australis* (Cav.) Trin. ex Steud. were selected on the territory of the upper artificial pond of the "Belgorod State University Botanical Garden"; young plants that had not entered the budding phase were taken for the experiment. *Hydrocharis morsus-ranae* L. was gathered from the right bank in Vezelka River. Plants *Lemna minor* L., *Elodea canadensis* Michx. and *Potamogeton perfoliatus* L. were selected in ponds near the village of Nelidovka, Belgorod region. After the plants were delivered to the model site, they were all washed with running water in order to remove possible contamination from the surface of the leaves and stems. Each species of the selected plants was divided into 2 groups of the same phytomass to obtain statistically reliable results. The plants were placed in plastic containers with a volume of 200 liters filled with $\frac{3}{4}$ of the waste water from the iron ore enterprise. The most environmentally effective and efficient approach to be considered can be based on a complex of water purification methods using phytoremediant plants. In the course of the present study, it was found the most and the less preferred species for wastewater treatment. In the course of the present study, it was found that the most preferred plant populations for wastewater treatment are plants from anthropogenically transformed zones that already have a certain reserve for the accumulation of pollutants. The least resistant to pollutants was *Potamogeton perfoliatus* L., which began to develop necrotic processes by the 52nd day of the experiment that led to complete death. The species *Phragmites australis* (Cav.) Trin. ex Steud and *Typha laxmannii* Lepech. were the least susceptible to the accumulation of the studied pollutants, although the latter started accumulating copper actively by the 38th week.

Key words: Ecology; physico-chemical; phytoremediant; treatment; wastewater; plants.