



## Biological re-cultivation of industrial technological waste banks after steel production

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The problem of re-cultivation of disturbed lands, after the creation of waste banks, is very important and of great scientific interest. The studies on the effectiveness of biological re-cultivation are focused mainly on activities and techniques for the acceleration of soil formation processes as. The relationship between substrate and plants is also studied, in order to create modern biotechnologies and contributes to the remediation of the re-cultivated lands within the territorial system.

In this work we have studied three parts of an industrial waste bank named "The 7th of September" located in the green system of Sofia - Pernik agglomeration in Bulgaria. It consists of technological wastes produced by the steel industry. It's area of 20 dca is of special local importance. The aim of this study was to propose an appropriate technology for the biological re-cultivation, which could take place after all production activities had ceased. To achieve this aim a detailed study on the characteristics of climatic elements was carried out focusing on precipitation – limiting factor for future afforestation of waste banks. Analyses on hydro-physical and chemical parameters of substrates were undertaken in order to elaborate recommendations for their improvement and utility in biological re-cultivation. Here we present the characteristics of the vegetation which existed before the production activities and the approaches for choice of tree species in afforestation with different schemes and methods applied.

On the basis of this study we were able to establish that the hydrological properties of substrates are quite similar to those of natural soils in the region. The variations obtained for some soil substrate layers were not significant. In relation to this we also outlined the quantity of organic matter and nutrient elements in waste banks as determining parameters for further biological re-cultivation. The studied site is located in the lower forest zone of the country, where the main limiting factor for plants is water content. Consequently, the nutrient elements are available for the tree species only in combination with an optimal water regime.