



PRELIMINARY INVESTIGATION AIMED TO ECOLOGICAL RECLAIMING BY PHYTOREMEDIATION OF A LARGE FLOTATION TAILING DUMP IN BAIJA MARE MINING AREA

Vasile Oros*, Mirela Coman, Monica Marian, Leonard G. Mihaly, Anca Mihaly

North University of Baia Mare – Romania

Abstract

The flotation tailing pond Bozinta is located at 5 Km West from Baia Mare town. It is closed and is preparing for ecological reclaiming. Preliminary investigations have been made on the meteorological and climatologic indicators of the site. The temperature, air relative humidity, the wind speed, the rain values and the soil temperature have been measured during the vegetation period of 2008 year. The air temperature on the tailing pond is always $1\div 2$ °C higher than the values registered on Sasar riverside located quite near the Southern side of the dump. Very high temperatures and drought have been registered during the months of June and August. The temperature values are higher than the multiannual average values.

Experiments regarding the installment of different sapling species were conducted during the vegetation season of 2008, in order to determine an effective and reliable method for the phytoremediation of Bozinta tailing pond. 300 saplings of different sizes and ages were used, of the following species: common oak, birch tree, poplar and willow. The saplings were planted in March, directly in the waste soil, with no nutritive add-on or no vegetal soil added.

The following results were determined during the first year of vegetation: dead saplings: 36% for common oak, 30% for poplar, 22% for birch tree, and 5% for willow. The percentage of dead saplings is lower than the abovementioned values right after planting the saplings, but part of the green saplings (right after they were planted) died during the summer, due to the lack of water.

Microbiological investigations made on the tailing pond material indicate that the material is rather poor in heterotrophic bacteria, but the fungi and the actinomycetes are well represented. This last result shows the possibility that the roots of the plants could form mycorrhizae, that are not negatively affected by the conditions in the soil.

Key words: climatologic indicators, flotation tailing pond, microorganisms, phytoremediation, wood sapling

* Author to whom all correspondence should be addressed: e-mail: orosv@ubm.ro