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Forestry and Environment



University of Novi Sad

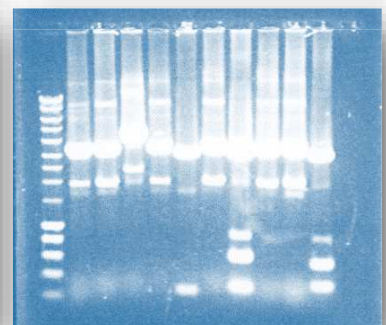
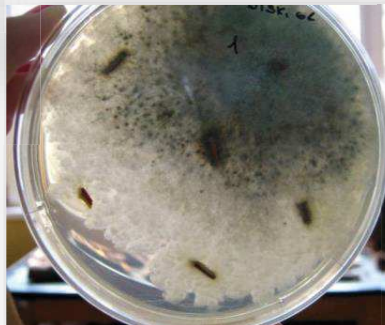
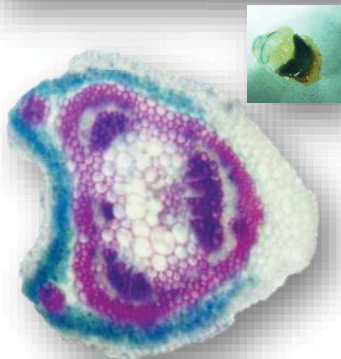


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The 15th INTERNATIONAL PHYTOTECHNOLOGY CONFERENCE



Book of abstracts

Venue: University of Novi Sad, Central Building

Date: 1-5 October 2018

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BOOK OF ABSTRACTS

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Plant diversity and availability of metals in the ultramafic complexes of de Barro Alto, Go Brazil: tools for the recovery of areas under Ni mining and for phytoremediation of metals

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Abstract:

The ultramafic massifs have been studied in the world for their floristic, edaphic and physiological specificities. The soils of these formations are characterized by excessive levels of metals (Ni, Cr, Mn, Co), high Mg / Ca ratio and low nutrient levels (N, P, K, Ca). The native vegetation is well adapted to these edaphic environments, some species are able to hyperaccumulate metals in tissues and others restrict the absorption and excessive translocation of those elements to the aboveground tissues where they could cause some physiological damage. Native and environment tolerant species, whether accumulate metals or not, can be used in plant restoration and stabilization of areas degraded by Ni extraction, where the remaining surfaces (mine spoil heaps, for example) still contain residues of metals at levels higher than those observed in non ultramafic soils. The hyperaccumulators species can be used in the phytoextraction processes of this metal. The flora of the ultramafic massifs of Goiás, Brazil, is poorly known and threatened by the mining activity in the region. The objectives of this study were to: a) identify native species or ecotypes in ultramafic soils, by their nutritional aspects and accumulation of metals, which can be indicated for revegetation of areas altered by Ni mining activity; b) to develop methodologies for the asexual propagation of some hyperaccumulator species for planting in the degraded areas; c) and to evaluate the effect of the soil fertilization on three Ni-hyperaccumulators species seedlings growth, aiming its use in the phytoremediation processes of this metal. The undergoing botanical survey of the native vegetation, now, recorded the occurrence of more than 200 plant species, distributed in about 60 botanic families. More than 20 species accumulates > 1,000 mg Ni Kg⁻¹ of dry weight, and were observed in 15 families. Seedlings of Ni-hyperaccumulator species were produced and planted in ultramafic soil, under two levels of soil fertilization: with or without fertiliser application. The climatic conditions and soil characteristics strongly affected the seedlings growth, but not their survival as it was > 80 % in all plots. The rate of plants growth was almost zero during the dry season (April-October), and regrew fast when the wet season started; plants growing on fertilised plots produced more than the double of biomass of those grown in natural soil, and their elemental composition and Ni phytoextraction ability enriched, as well.

Key words: genetic resources of Brazil; Hyperaccumulator species; permanent plant cover of soils (PPC); phytoremediation of contaminated soils