Simarouba glauca CAPACITY IN ASSISTED PHYTOSTABILIZATION ON POLLUTED SOILS WITH TRACE ELEMENTS.

Ramírez Briones Ernesto[1], González Terreros Elizabeth[2], Trujillo Tapia Ma Nieves[1] y Ramírez Fuentes Eustacio[1]; [1]Universidad del Mar, Biotecnología Ambiental, Instituto de Ecología, Puerto Ángel, San Pedro Pochutla, C.P. 70902; [2] Universidad de la Sierra Juárez, Instituto de Estudios Ambientales, Ixtlán de Juárez, Oaxaca. ernestor.briones@gmail.com

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Introduction. The increase in the levels of trace elements in soil caused by the mining is a problem that brings along a high impact on animals, plants and human health. For control and rehabilitation has been used the phytoremediation, which recently combines the use of organic amendments and woody species, better acquaintance as: assisted phytoestabilization[1].
The target of the work was to evaluate *Simarouba glauca* capacity for tolerate and stabilize Ni, Zn, Pb, Cu, Cd and As; along with an addition of biosolid compost amendment, in soils affected by mining activity.

Methods. The soil samples were carried out on the mining Natividad zone, Ixtlán de Juárez, Oaxaca (México). The greenhouse experiment was made in a completely randomized block designed with 6 treatments, using 33 experimental units of 1.2 kg and were transplanted 30 plants of *Simarouba glauca* with 5 months on soils with addition of amendment (5, 10 and 15 %), without amendment and on a control soil. The samplings were carried out at the baseline to 30, 60 and 90 days of the experiment. In soil were quantified pseudo-total (acid digestion 3050B EPA) and bioavailable ($CaCl_2$ 0.01 M) trace elements through of inductively coupled plasma optical emission spectrometry. In the plant was measured: chlorophyll by destructive test with C_3H_6O, catalase[2] and guaiacol peroxidase[3] activity, trace elements content by wet oxidation with concentrated HNO_3, besides dry weight and height.

Results. In Natividad soil were found phytotoxic concentrations[4] of Zn (150 - 312 mg Kg-1) and Pb (90-558 mg Kg-1), and a decreasing in soluble concentrations of Zn, Pb, Cu and As. *Simarouba glauca* showed significant differences ($p \leq 0.05$) in the absorption of trace elements in presence of amendment, with concentrations inside of normal range for Zn, Cu, Ni and Cd, not this way for the Pb that was even 10 fold major that range without coming to phytotoxic levels[5] (30-300 mg Kg-1). The highest concentrations of trace elements were in root same, the activities of catalase and guaiacol peroxidase, demonstrating antioxidant system activity. Not significant differences ($p \leq 0.05$) were found between the control and the treatments with presence of trace elements for content of chlorophyll, height and dry weight of plants. Also was calculated the translocation factor of Baker and Brook (1989) being observed a good capacity in *Simarouba glauca* (Table 1). The amendment addition meant increases ($p \leq 0.05$) in dry weight and height.

Table 1. Translocation factor in different treatments (T1, T2, T3 y T4). Mean values of 3 replicates ± standard deviation.

	T1	T2	T3	T4
Ni	1.160 ± 0.017	1.300 ± 0.0	1.609 ± 0.020	1.690 ± 0.041
Zn	1.082 ± 0.007	1.295 ± 0.007	1.148 ± 0.10	1.891 ± 0.098
Pb	0.471± 0.001	0.754 ± 0.006	1.043 ± 0.012	1.079 ± 0.101
Cu	0.627 ± 0.008	0.709 ± 0.004	1.062 ± 0.0	0.000
Cd	1.111 ± 0.0	1.167 ± 0.0	1.333 ± 0.0	1.750 ± 0.0
As	0.000	0.000	0.366 ± 0.067	0.000

T1=whitout amendment, T2=5%, T3=10% T4= 15% respectively amendment.

Conclusions. *Simarouba glauca* is a capable specie of tolerate phytotoxic concentrations[4] of Zn (312 mg Kg^{-1}) and Pb (558 mg Kg^{-1}), also stabilizing Pb and Cd under studied conditions of assisted phytostabilization.

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