

Quantitative and qualitative basement of microbial presence during phytoremediation of heavy metal polluted soil using *Chromolaena odorata*

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Abstract. The presence and impact of bulk and rhizosphere microorganisms in contaminated soils can be huge, given that they have the ability to increase plants tolerance against abiotic stress, and also enhance plant growth, while supporting hastened remediation of disturbed soils. The present study quantitatively and qualitatively assessed presence of cultural fungi and bacteria during phytoremediation of heavy metal polluted soils using *Chromolaena odorata*. Stem cuttings of *C. odorata* were planted in soils polluted with Pb, Mn, Zn, Cd, and Cu at once (1ESC), thrice (3ESC) and five (5ESC) times their respective ecological screening concentrations (ESC). ESC of Pb, Mn and Zn is 50 mg/kg, Cd is 4 mg/kg, and Cu is 100 mg/kg. After 6 months, results showed that more than 10 species of bacteria and fungi were identified in the study, with *P. aeruginosa* and *Bacillus subtilis* being the most occurring bacteria while, *Penicillium* sp. and *Aspergillus niger* the most occurring fungi in both bulk and rhizospheric soils. The presence of known plant growth promoting rhizobacteria in plants rhizosphere including *Azotobacter* sp., *Bacillus subtilis*, *B. pumilus*, *Clostridium* sp., *P. aeruginosa*, and *Klebsiella* sp. was also reported.

Keywords: *Chromolaena odorata*; heavy metal; phytoremediation; pollution; microbes.

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