

Assessment of heavy metal uptake and translocation by *Pluchea indica* L. from sawdust sludge contaminated soil.

ABSTRACT

Chemical pollution in the soil and water bodies has become a major source of concern and has posed a serious health problem in many countries. An experiment was conducted in sawdust contaminated soils at glasshouse to determine the growth response, metal tolerance and phytoremediation potential of *Pluchea indica*. *P. indica* seedlings were planted in the following growth media: T 0 (Control, 100% soil), T 1 (80% soil + 20% sawdust sludge), T 2 (60% soil + 40% sawdust sludge), T 3 (40% soil + 60% sawdust sludge), T 4 (20% soil + 80% sawdust sludge) and T 5 (100% sawdust sludge). The best growth performance in terms of height, basal diameter and number of leaves was found in 40% sawdust in combination with 60% soil. This combination also produced highest biomass. The maximum reduction of copper and zinc was found in 80% sawdust contaminated media, iron and aluminium in the control while lead was in T5 (100% sawdust). Cu, Fe and Al were highly concentrated in the roots, Pb both in stems and roots while Zn was concentrated both in roots and leaves. *P. indica* was found to have a high potential to accumulate high amounts of Cu, Fe, Al, Pb and Zn in the roots, leaves and stems. Control to medium contaminated soil showed maximum translocation factor. The species was able to tolerate and accumulate high concentrations of heavy metals. Being a non-food plant *P. indica* can be an ideal option to be grown for phytoremediation in multi-metal contaminated sites. A field experiment also needs to be conducted to confirm the results of this glasshouse study.

Keyword: Heavy metal accumulation; Phytoremediation; *Pluchea indica*; Sawdust contaminated soil; Translocation.