

The potential of *Amaranthus hybridus* for phytoremediation of heavy metals

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Green Spinach has formed a major component of human diet for much of recorded history. It has been observed though that some common vegetable plants are capable of absorbing and retaining heavy metals when grown on contaminated soils. This study examined the ability of Green Spinach to absorb and accumulate cadmium (Cd), lead (Pb) and zinc (Zn) when grown near dumpsites of varying pH levels. Mobility indices were calculated for the assessment of mobility or translocation of these heavy metals from soil to various plant parts (roots, stems and leaves) through different levels. The results show that all the metals were highly mobile from soil to leaves through roots and stems in the order: Level 1 (Soil – Roots) > Level 3 (Stems – Leaves) > Level 2 (Roots – Stems). It was further observed that the average accumulation factors of heavy metals in Green Spinach were in the order: Cd>Pb>Zn, and that the accumulation factors vary inversely with pH of soil. This is an indication of the effect of pH on cation exchange capacity (CEC) of the soil. At lower pH values, the metal ions show greater cation exchange capacity and become more available in the aqueous medium thereby making the metal to be more bioavailable to the plants. Finally, it was observed that the accumulation factors (AF) for heavy metals in Green Spinach are greater than 1 in most cases indicating its potential as hyperaccumulator especially in soils with low pH values.