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Comparative analysis of maize cob-derived biochar on selected vegetables raised on dumpsite soil

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Indiscriminate dumping of waste is one of the major sources of pollution to the environment. Clean up of these wastes has led to appearance of dumpsites which has been used as farmlands. This study was carried out to assess the mobility potential of the Heavy Metals (HM) in selected vegetables with biochar application as composite component of dumpsite soil using Atomic Absorption Spectrophotometer (AAS). Biochar was prepared by slow pyrolysis of Maize cobs. Maize cob biochar (MB) increased the growth yields of *S. lycopersicon* from 47% - 53% and *Abelmoschus esculentum* from 36.4% - 63.6%. There was significant reduction ($p \leq 0.05$) in the HMs concentration from (2.78-2.36, 25.0-16.8, 11.5-7.28, 1002-418.7, 24.22-19.29, 178.8-178.30mg/kg) for Cd, Pb, Ni, Fe, Cu and Zn respectively. There was % reduction in all the heavy metals concentration from 33.1%-17.1%, 29.5% - 26.5% and 31.7%- 24.4mg/kg of the soil amended with the MB where *Abelmoschus esculentum* and *S. lycopersicon* were planted. *Abelmoschus esculentum* accumulated Ni, Cu, and Zn but not Cd, Pb and Fe, while *S. lycopersicon* did not accumulate all the investigated HMs. This study shows that indiscriminate dumping of waste contributed to HMs contamination of dumpsite soil and crops raised on them. It is recommended that maize cob biochar can be used as an effective method to reduce the HMs load in soil and crops grown on them to avert the health hazards that may result in humans and animals that consume the vegetables and weeds.

Key words -Heavy metals, biomass, Maize cob, Biochar, mobility potential

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