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METAL UPTAKE IN WATER SPINACH GROWN ON CONTAMINATED SOIL AMENDED WITH CHICKEN MANURE AND COCONUT TREE SAWDUST

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Abstract

A pot experiment was conducted to evaluate the growth and metal accumulation in water spinach (*Ipomoea aquatica*) established on a 30-year old active firing range soil amended with chicken manure (CM) and coconut tree sawdust (CTS) at application rates of 0%, 1% and 3% (w/w). Both amendments increased biomass yield and reduced plant metal uptake. The bioconcentration factor (BCF) and transportation factor (TF) values of the metals were in the order of Zn > Cu > Pb. The ammonium acetate extractable metals in soil decreased significantly ($p < 0.05$) following CM and CTS treatments. It was estimated that the off-take value of Zn could be reduced from 10.01 kg/ha (zero treatment) to 6.60 kg/ha (CM 3% w/w) and 3.17 kg/ha (CTS 3% w/w). No toxicity symptoms were observed in water spinach over the pot experiment. Therefore, chicken manure and coconut tree sawdust are two promising agents for immobilizing heavy metals in contaminated land.

Key words: chicken manure, coconut tree sawdust, contaminated soil, heavy metals, soil stabilization, water spinach

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