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Ecosystem Restoration: Remediation of Crude Oil-Polluted Soil by Leuceana leucocephala (Lam.) de Wit

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Abstract : The study was carried out under a controlled environment with the aim of examining remediation of crude oil polluted soil. The germination rate, heights and girths, number of leaves and nodulation was determined following standard procedures. Some physicochemical (organic matter, pH, nitrogen, phosphorous, potassium, calcium, magnesium and sodium) characteristics of soil used were determined using standard protocols. Results showed that at varying concentration of crude oil i.e 0 ml, 25 ml, 50 ml, 75 ml and 100 ml, Leuceana leucocephala had germination rate of 92%, 90%, 84%, 62% and 56% respectively, mean height of 73.70cm, 58.30cm, 49.50cm, 46.45cm and 41.80cm respectively after 16 weeks after planting (WAP), mean girth of 0.54mm, 0.34mm, 0.33mm, 0.21mm and 0.19mm respectively at 16 WAP, number of nodules 18, 10, 10, 6 and 2 respectively and number of leaves 24.00, 16.00, 13.00, 10.00 and 6.00 respectively. The organic matter, pH, nitrogen, phosphorous, potassium, calcium, magnesium, and sodium decreased with the increase in the concentration of crude oil. Furthermore, as the concentration of crude oil increased the germination rate, height, girth, and number of leaves and nodules decreased, suggesting the effect of crude oil on Leuceana leucocephala. The plant withstands the varying concentration of the crude oil means that it could be used for the remediation of crude oil contaminated soil in the Niger Delta region of Nigeria.

Keywords : ecosystem conservation, Leuceana leucocephala, phytoremediation, soil pollution
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