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## Management of Petroleum Impacted Soil with Phytoremediation and Soil Amendments in Ekpan Delta State, Nigeria

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### ABSTRACT

The study is aimed at evaluating the effectiveness of phytoremediation in the management of oil impacted soil in Ekpan communities of Delta state, Nigeria. To do this, the study adopted an experimental research design that involve the use of phytoremediation (carpet grass *Axonopus compressus*) and nutsedge *Cyperus rotundus*) in the management of petroleum impacted soil site in Ekpan, This experiment spans for three months periods (one planting season). It involves the treatment of the oil impacted site with different plant species and soil amendments. Laboratory analysis of the soil samples was conducted to determine the effect of phytoremediation and soil amendments on hydrocarbon loss in oil impacted sites. The study revealed that the combined effect of *Axonopus sp.*, *Cyperus sp.* and oil amendments accounted for 59% reduction in hydrocarbon. However *Axonopus sp.* and *Cyperus sp.* accounted for 47% and 48% reduction in hydrocarbon respectively. This shows that though, both plant species can be used successfully as a phytoremediation technique for the reclamation of oil impacted soils, but *Axonopus sp.* and *Cyperus sp.* was the most effective when applied with soil amendment (organic and inorganic manure). It is therefore recommended that indigenous plant species (particularly *Axonopus sp.* and *Cyperus sp.*) should be used together with soil amendments in phytoremediation rather than the traditional bioremediation involving the use of microorganism. Oil companies operating in the Niger Delta region of Nigeria are encouraged not only to carry out physical clean-up of oil spills but should also carry out bioremediation to restore the environment back to its natural or near natural state. The methodology adopted in this study could be followed by oil companies to manage oil impacted soils in the Niger-Delta environment in Nigeria and indeed everywhere in the world.

### KEYWORDS

Phytoremediation; Oil Impacted; Soil; Amendments; Ekpan

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