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Community Integrated Joint soil recovery: interdependence of soil and agricultural practice in a three ? year phytoremediation in situ study

AUTHORS

Eucharía NWAICHI / UNIVERSITY OF PORT HARCOURT, DEPARTMENT OF BIOCHEMISTRY, FACULTY OF SCIENCE, UNIVERSITY OF PORT HARCOURT, P.M.B.5323 RIVERS STATE, UNIVERSITY OF PORT HARCOURT, PORT HARCOURT

Gilbert ATTUAH / UNIVERSITY OF PORT HARCOURT, DEPARTMENT OF BIOCHEMISTRY, FACULTY OF, SCIENCE, OFRIMA HALL, ABUJA CAMPUS, UNIPOINT, PORT HARCOURT

Paul NWOHA / UNIVERSITY OF PORT HARCOURT, PMB 5323, PORT HARCOURT

Iwo GODKNOWS / UNIVERSITY OF PORT HARCOURT, PMB 5323, PORT HARCOURT

PURPOSE OF THE ABSTRACT

A three ? year phytoremediation was carried out on a fresh crude oil spill site in a Niger Delta community to access further clean ? up potentials of *Hevea brasiliensis*. Soil from a nearby community with no history of oil pollution was adopted for control. An inclusive design incorporating community policing and supply of plants and consumables, was activated. Applied diagnostic ratios identified mixed petrogenic and pyrogenic sources as the main contributors of PAHs. Up to 90.8% sequestration was obtained for carcinogenic PAHs especially Benz (a) pyrene in a three ? phase manner. A community level approach for assessing patterns of sole carbon source utilization by mixed microbial samples was employed to differentiate spatial and temporal changes in the soil microbial communities. Soil conditioner markedly decreased the lag times and showed mixed effects for colour development rates, maximum absorbance and the overall community pattern. Organic amendment rendered most studied-contaminants unavailable for uptake in preference to inorganic fertilizer. Generally, phytoremediation improved significantly the microbial community activity and thus would promote ecosystem restoration compared to most patronised techniques. Long ? term supplementation with required nutrients, would present many ecological benefits. Moreso, informed and supportive host-community could deliver cheaper and more sustainable technologies and improve social life.

FIGURES

FIGURE 1

FIGURE 2

KEYWORDS

Sustainability | Community development | Collaboration | Environmental clean-up

BIBLIOGRAPHY