

BZH 024

RELATIVE BIOREMEDIATION OF DIESEL CONTAMINATED SOIL AMENDED WITH ORGANIC WASTES IN CLAY AND PLASTIC POTS

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ABSTRACT

The rate of bioremediation of diesel contaminated soil amended with organic wastes (cow dung and poultry droppings) in clay and plastic pots were studied at interval of 21 days for a total period of 84 days. Two hundred grams (200g) of soil were weighed into each of the clay and plastic pots polluted with 10% (w/w) diesel oil and left undisturbed for 48 hours in an open field. After 48 hours, each of these pots was mixed with 10% (w/w) of cow dung (CD) and poultry droppings (PD) singly and in combination. Parameters studied were soil pH, moisture content, nitrate, phosphate, total organic carbon, total petroleum hydrocarbon, total heterotrophic and hydrocarbon utilizing bacterial counts using standard methods. The results obtained showed that the hydrocarbon utilizing bacterial counts in clay pots ranged between 12.0×10^6 and 83.0×10^6 cfu/g as compared to plastic pots (4.0×10^6 and 24.0×10^6 cfu/g) while the total petroleum hydrocarbon degradation recorded was 94% in clay pots compared to 89% recorded for the plastic pots. Statistical analysis indicated that the results obtained were significantly ($P < 0.05$) different for the clay and plastic pots. Therefore, plastic pots being made up of hydrocarbon affected the rates of biodegradation of the diesel oil. However, organic wastes enhanced the bioremediation processes.

Keywords: Bioremediation, degradation, hydrocarbon, organic wastes.

BZH 025

ISOLATION OF CELLULOLYTIC BACTERIA FROM SOIL FOR BIODEGRADATION OF CORN HUSK

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ABSTRACT

The isolation and identification of cellulolytic bacteria from soil for biodegradation of cornhusk was examined in this study. Cornhusk and soil samples were obtained from a dump site in Minna Nigeria. Six fold serial dilution was carried out on the soil and plated on (Carboxymethylcellulose) CMC media using pour-plate method and was incubated at 37°C for 48 hours. The isolate with highest hydrolytic zone was selected and identified using standard methods. The 20 g of cornhusk (pH 6.0) was weighed into 15 flasks and 60 ml of water was added and sterilized at 121°C for 15 minutes. Degradation potential of the isolate was investigated on the cornhusk using percentage cellulose content determination. The effect of temperature (4°C, 28°C and 40°C) on the degradation of the cornhusk was determined for 28 days. The organism with the highest degradation potential was identified as *Bacillus* sp. The highest percentage degradation (80%) was observed at 40°C after 28 days followed by 28°C (38%) and the least (30%) was observed at 4°C. The control had percentage degradation of 2%, 5% and 8% at 4°C, 28°C, and 40°C respectively. The isolated *Bacillus* sp. has demonstrated the ability to degrade cellulose.

Keywords: Biodegradation, Carboxymethylcellulose (CMC), Cornhusk, Hydrolytic zone, *Bacillus* sp.

BZH 026

EVALUATION OF GENETIC DIVERSITY OF SELECTED CASTOR OIL (*Ricinus communis* L.) ACCESSIONS USING RAPD MOLECULAR MARKERS

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ABSTRACT

In order to assess the genetic diversity among selected Castor oil (*Ricinus communis* L.) grown in Nigeria, twelve accessions Viz: Acc 006, Acc 012, Acc 016, Acc 019, Acc 026, Acc 027, Acc 038, Acc 040, Acc 042, Acc 043, Acc 045 and Acc 048 were collected from the NCRI Badeggi. These were grown and the level of genetic diversity among the genotypes were assessed using molecular tools. The Deoxyribonucleic acid (DNA) was extracted and purified from leaves of the plants using fermentas kit while the Random Amplified Polymorphic DNA- Polymerase Chain Reaction (RAPD-PCR) technique was used to detect the variations in DNA profile. Out of the thirteen RAPDs primers that were used, 10 polymorphic primers revealed 100% polymorphism among the castor genotypes. The results showed that percentage polymorphism ranges from 76.92% to