

EVALUATION OF SOME ORGANIC AMENDMENTS FOR BIOREMEDIATION OF SPENT OIL-CONTAMINATED SOIL USING SOYBEAN (*GLYCINE MAX. L*) AS A TEST CROP

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ABSTRACT

This study evaluated the usefulness of cow dung, poultry manure and pig waste in remediating oil-polluted soils using soybean as bioindicator. The soils were contaminated with 5000 mg kg⁻¹, 25000 mg kg⁻¹ and 50000 mg kg⁻¹ oil and amended with 10t ha⁻¹ cow dung, poultry manure and pig waste. Results showed that total hydrocarbon was reduced with addition of cow dung, poultry manure and pig waste. Soybean response showed that there were increases in percentage germination, leaf area, height, nodule formation and pods/plant with organic wastes treatment in the first year; whereas, dry matter and grain yields increased in soil amended with only organic wastes while oil led to reduction following lower a repeat application of spent oil in the second year, growth in the second and third years was lower than in the first year with no grain yields in oil-polluted plots. However, grain yields were obtained in the plots in the 4th year indicating improvement in soil recovery after the third year. The overall performance of the organic waste followed poultry manure > pig waste > cow dung. The result of this study suggests that poultry manure was better in ameliorating the adverse effect of waste oil.

Keywords: Bioremediation; waste-lubricating oil; animal droppings; soybean; A Ifisol.

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