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Effect of Palm Oil Mill Effluent on Microbial Composition in Soil Samples in Isiala Mbano Lga

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Abstract : Background: Palm oil mill effluent is the voluminous liquid waste that comes from the sterilization and clarification sections of the oil palm milling process. The raw effluent contains 90-95% water and includes residual oil, soil particles, and suspended solids. Palm oil mill effluent is a highly polluting material and much research has been dedicated to means of alleviating its threat to the environment. Objectives: 1. To compare Physico-chemical and microbiological analysis of soil samples from POME and non-POME sites. 2. To make recommendations on how best to handle POME in the study area. Methods: Quadrant approach was adopted for sampling POME (A) and Non POME (B) locations. Qualities were determined using standard analytical procedures. Conclusions: Results of the analysis were obtained in the following range; pH (3.940 –7.435), dissolved oxygen (DO) (1.582–6.234mg/l), biological oxygen demand (BOD) (50–5463mg/l etc. For the various locations, the population of total heterotrophic bacteria (THB) ranged from 1.36x106–2.42x106 cfu/ml, the total heterotrophic fungi (THF) ranged from 1.22–3.05 x 104 cfu/ml. The frequency of occurrence revealed the microbial isolates Pseudomonas sp., Bacillus sp., Staphylococcus, as the most frequently occurring isolates. Analysis of variance showed that there were significant differences ($P<0.05$) in microbial populations among locations. The discharge of industrial effluents into the soil in Nigeria invariably results in the presence of high concentrations of pollutant in the soil environment.

Keywords : effluents, mirobial composition, soil samples, isiala mbano
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