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Full Length Research Paper

Studies of physiochemical and microbial properties of soils from rainforest and plantation in Ondo state, Nigeria

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Abstract

Microbial population, and biomass as well as hydrolytic enzymes of soil that are responsible for biodegradation of various structural complexes of plant litters and dead organic compounds from Ondo State Aforestation project at Lisagbede (Oluwa forest reserve) were studied. Soil fungi and bacteria were isolated and identified from two sources namely *Gmelina aborea* plantation (planted for over 15 years) and an adjacent natural forest at different depth levels (0 - 10, 10 - 20 and 20 - 30 cm) by weighing 1.0 g of soil into 9.0 ml of sterilized water, shaken and diluted 1 in 1000, 0.5 ml each of this was poured onto separate sterilized Petri dish and overlaid with potato dextrose agar and nutrient agar, allowed to incubate at 27 and 32°C for five and one day respectively. The results of the study revealed that all the parameters showed slight increase in natural forest soil as compared to the *G. aborea* plantation soil. Substantive differences were obtained in soil microbial biomass for each sampling depth in the natural forest compared to the *G. aborea* plantation. While there were no much differences in the soil physicochemical properties of the forest and plantation. Bacteria and fungi isolates of the two locations and their enzymes activities were similar. Two fungi *Aspegillus niger* and *Penicillium italicum* isolated from the two locations produced hydrolytic enzyme activities of cellulase, α -amylase, β - amylase and protease which are degrading enzymes

Key words: Natural forest, *Gmelina aborea* plantation, physicochemical parameters, enzyme activities, soil microbial biomass.

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