

NUTRIENT RELEASING CAPACITY OF ORGANIC MANURES AND ITS INFLUENCE ON MICROBIAL POPULATION DYNAMICS

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A pot experiment was conducted to determine nutrients (N, P and K) releasing capacity of locally available organic manures (*Gliricidia* compost, *Salvinia* compost, *Eichornia* compost, mix compost, broiler litter compost, cow dung and poultry litter) and their influence on soil microbial population dynamics. In each treatment 100 g of organic manure was mixed with 2 kg of soil and subjected to an incubation period of 15 weeks with moist conditions. During the incubation period soil samples were taken in three week interval, from 0-5 cm depth for analysis. Carbon dioxide evolution was regularly monitored using the alkali absorption method to determine soil microbial activity. Untreated Red Yellow Podzolic soil was used as a control.

There was significant difference ($P < 0.05$) among all treatments for nutrient releasing capacity of $\text{NH}_4^+\text{-N}$, $\text{NO}_3^-\text{-N}$, P, K, and microbial biomass gas exchanges. Poultry litter treatment was having the highest nutrients ($\text{NH}_4^+\text{-N}$, $\text{NO}_3^-\text{-N}$, P, and K) releasing capacity and influenced on soil microbial population dynamics relative to other treatments. Nutrient levels of 20-30 ppm $\text{NH}_4^+\text{-N}$, 55-63 ppm $\text{NO}_3^-\text{-N}$, 103-183 ppm P and 1230-1445 ppm K from the poultry litter treated soil and 3-5 ppm $\text{NH}_4^+\text{-N}$, 20-23 ppm $\text{NO}_3^-\text{-N}$, 6-7 ppm P and 75-80 ppm K from the control were observed during the incubation period. The highest change of pH and EC values were observed with poultry litter treatment. Initial soil pH was 5.68 and it became 7.19 after the incubation period. Therefore, Poultry litter can be suggested to use as a soil amendment to control soil acidity and increase water availability

Key words: Organic manures, Compost, Microbial biomass gas, Nutrients.