Effects of bio-waste compost on dynamics of acid soils property in the humid tropic

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The present research work aims to ensure the higher agricultural productivity in intensive culture. For this purpose, research method has been carried out for the sustainable management of marginal sandy soils (Kalahari type) of agriculture in Kinshasa (Democratic Republic of Congo). Hence, valorization of organic resources which are locally available in the municipal solid wastes as fertilizer (compost) is one of the routes to make these soils productive for agriculture. An experiment in completely random block was mounted on these three sites (Mont Amba, Kimwenza and Balume), with two strong agricultural activities. The diagnosed agropedological soil showed that these soils are sandy, rubics arenoferralsols (dystrics); have excellent physical conditions (drainage, air circulation and penetration of roots), are provided colloids with variable loads, have an acid reaction, and are low in organic matter and mineral nutrients. After four growing seasons, the reaction of amendments applied at different doses (20, 40 and 60 t/ha) increased not only the physicochemical parameters (pH, TOC, CEE, bases saturation and reduce the aluminium saturation by 90%) but also the microbial parameters (microbial biomass, basal and induce respiration, enzymatic activities of the urease and phosphononoesterase acid). An increase of soybean, sorrel and peanuts production yield was observed at different doses for the applied compost. Low doses (≤ 20 t/ha) have proven effective and is recommended for the annual and regular crop for this soil. Phosphorus was found to be the single most important factor limiting, and increased production could be envisaged on the ground synergistically, using small doses of compost and mineral fertilizer.

Biography

Mulaji Crispin Kyela working as Associated Professor, Science Faculty, Department of Chemistry, University of Kinshasa, Kinshasa, Democratic Republic of Congo. His Professional interests include Analytical chemistry and Environmental Engineering, Waste management and processing, Management of the agricultural grounds (fertilization) and remediation of the polluted sites.

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