

Bio-Processing the Crop Residues with Different Amendments for Producing High Quality Compost

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Abstract: Bio processing of different plant residues (cotton stalks, rice straw, bagasse and their mixture with various amendments (farmyard manure, rock phosphate, feldspar, bentonite, vinasse, urea and elemental sulfur), and some inoculants for preparing four miscellaneous compost heaps, then its left to bioprocess for four months. The evaluation of physic- chemical, biological and some maturity indices of composted materials were practiced during the composting process.

Obtained results revealed that bulk density, water holding capacity and nutrients content (total and available forms of N, P, and K) were greatly increased with progressing the composting process, while the values of pH and EC were fluctuated among the different heaps and different stages of composting process. Moreover, the organic carbon and organic matter was declined with progressing the composting time for all investigated heaps. At maturity stage, which expressed by some indices namely dehydrogenase activity, C/N ratio, E4/E6, NH₄/ NO₃ ratio, germination index (GI) and humification indices, all refers to that all investigated heaps reached to reasonable degree of maturity, particularly the GI and humification rate (HR), where the values of GI exceeded 60% for cress and barley seeds, while its values of HR reached up to 15% for all investigated heaps.

Keywords: Crop Residues, Bio-Processing, High Quality Compost.