

Comparative Analysis of Pit Composting and Vermicomposting in a Tropical Environment

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Abstract : Biodegradable solid waste disposal and management has been a major problem in Nigeria and indiscriminate dumping of this waste either into watercourses or drains has led to environmental hazards affecting public health. The study investigated the nutrients level of pit composting and vermicomposting. Wooden bins 60 cm \times 30 cm \times 30 cm³ in size were constructed and bedding materials (sawdust, egg shell, paper and grasses) and red worms (*Eisenia fetida*) introduced to facilitate the free movement and protection of the worms against harsh weather. A pit of 100 cm \times 100 cm \times 100 cm³ was dug and worms were introduced into the pit, which was turned every two weeks. Food waste was fed to the red worms in the bin and pit, respectively. The composts were harvested after 100 days and analysed. The analyses gave: nitrogen has average value 0.87 % and 1.29 %; phosphorus 0.66 % and 1.78 %; potassium 4.35 % and 6.27 % for the pit and vermicomposting, respectively. Higher nutrient status of vermicomposting over pit composting may be attributed to the secretions in the intestinal tracts of worms which are more readily available for plant growth. However, iron and aluminium were more in the pit compost than the vermin compost and this may be attributed to the iron and aluminium already present in the soil before the composting took place. Other nutrients in ppm concentrations were aluminium 4,999.50 and 3,989.33; iron 2,131.83 and 633.40 for the pit and vermicomposting, respectively. These nutrients are only needed by plants in small quantities. Hence, vermicomposting has the higher concentration of essential nutrients necessary for healthy plant growth.

Keywords : food wastes, pit composting, plant nutrient status, tropical environment, vermicomposting

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