African Journal of Agricultural Research

African Journal of Agricultural Research Vol. 3 (3), pp. 186-194, March, 2008
Available online at http://www.academicjournals.org/AJAR
ISSN 1991-637X © 2008 Academic Journals

Full Length Research Paper

Earthworm abundance related to soil physicochemical and microbial properties in Accra, Ghana

Nana-Osei K. Mainoo, Joann K. Whalen and Suzelle Barrington

Faculty of Agricultural and Environmental Sciences, Macdonald Campus of McGill University, 21 111 Lakeshore, Ste Anne de Bellevue, Québec, H9X 3V9, Canada.

*Corresponding author. E-mail: Suzelle.barrington@mcgill.ca. Tel. 514-398-7776. Fax: 514-398-8387.

Accepted 29 February, 2008

Abstract

The introduction of vermicomposting as a cost effective method of managing organic waste in Ghana depends on the suitability of local earthworms. At nine locations across Accra, the capital of Ghana, the soil-litter layer was sampled to evaluate the occurrence and abundance of surface dwelling earthworms (0 - 10 cm depth) and to investigate the relationship between earthworm abundance and soil properties (physicochemical and microbial). *Eudrilus eugeniae* (Kinberg), a rapidly growing large worm (adults reach 14 cm long), was the only earthworm collected from seven of the nine locations. Small unpigmented holonephric worms were collected at the other two locations. Earthworm densities ranged between 35 and 2175 individuals m^{-2}. Significant ($P< 0.05$) negative correlations existed between earthworm abundance and organic C and exchangeable Na. All locations tested positive for the microbial indicators; Total coliforms, *Escherichia coli*, *Staphylococcus,* Yeast and Moulds and *Aspergillus*. There was a significant ($P< 0.01$) positive correlation between earthworm abundance and all the bacterial indicators tested. Earthworm abundance was also weakly correlated ($P < 0.1$) with the yeast and mould loads.

Key words: *Eudrlius eugeniae*, earthworms, soil-litter layer, soil physicochemical and microbial properties, urban peri-urban Accra, West-Africa.