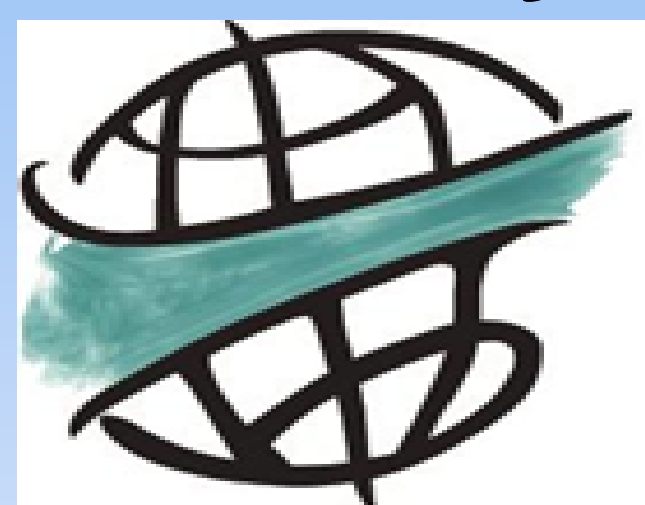


Quality and Fertility Assessments of Municipal Solid Waste Compost Produced from Cleaner Development Mechanism



Compost Projects: A Case Study from Uganda

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Background

- Municipal Solid Waste (MSW) management is a serious environmental and health concern in urban areas.
- Caused by rapid urbanization, high urban population growth rate with costly waste management services.
- Composting of the organic component reduces volumes and generates a stable soil conditioner
- Lack of information on the quality and its fertilizing potential hinders its use and adoption by farmers.
- Need to understand the fertilizing potential and the quality to ensure its usability and marketability

Objectives

Examine the fertilizing and quality indices of the MSW compost produced at the Cleaner Development Mechanism (CDM) plants in Uganda

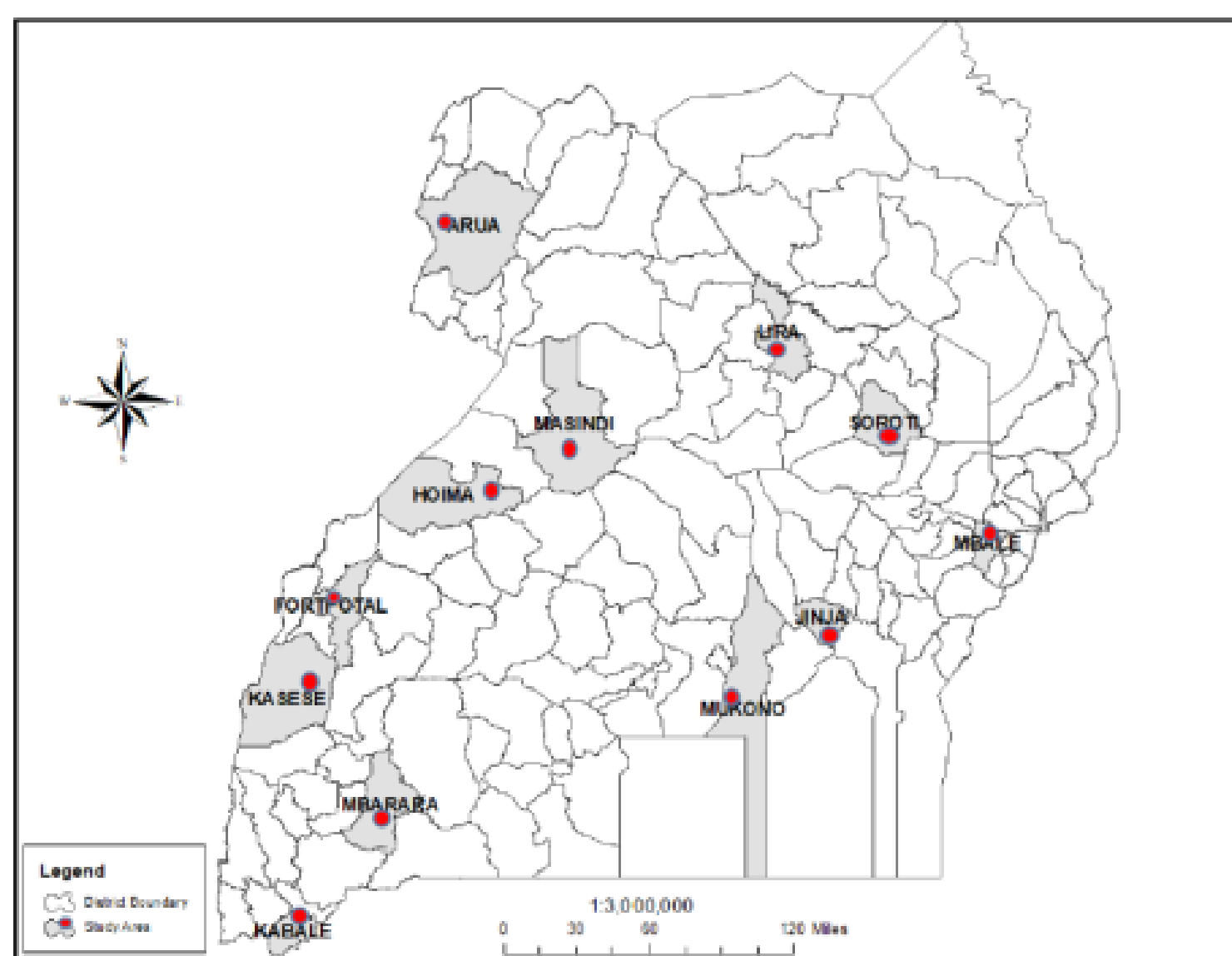


Figure 1: Location of sampling sites

Methods

- Samples of MSWC were obtained from 12 CDM plants
- Analysed for pH, EC, N, P, K, OC, CN, Ca, Mg, B, Cu, Fe, Zn, Pb, Cd, Cr, Mn.
- Indices for Compost Quality:

$$\text{CLEAN INDEX (CI)} = \frac{\sum_{j=1}^J S_j w_j}{\sum_{j=1}^J w_j}$$

$$\text{FERTILITY INDEX (FI)} = \frac{\sum_{i=1}^i S_i w_i}{\sum_{i=1}^i w_i}$$

Statistical analysis

Differences in the Physico-chemical parameters tested with PERMANOVA in Primer-E version



Results

- pH, Pb N, K, P, Mn, Cd, Ca, Mg, Cu, Fe, Cr, Zn, OC, and CN levels differed significantly between locations.
- Fertility Indices (FI) ranged from 1.9 to 2.9 while Clean Indices (CI) ranged from 3.8 to 4.9.
- MSW composts generated at CDM facilities have low fertilizing capacity and poor quality
- Class RU-1, which does not meet criteria.

Main conclusions

- MSWC cannot be utilized as fertilizers
- Can only be used as soil conditioners
- Urban authorities must ensure waste separation at the source and compost enrichment to improve quality and fertilizing capacity,
- Information will help CDM management optimize the compost processing operations and make their compost marketable and acceptable to farmers.
- Need for research to examine the maturity and stability of MSWC and therefore develop relevant indices
- Need to repeat this work in the wet season using the same methodology and compare results