Production and Application of Organic Waste Compost for Urban Agriculture in Emerging Cities

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Abstract : Composting is one of the conventional techniques adopted for organic waste management, but the practice is very limited in emerging cities despite the most of the waste generated is organic. This paper aims to examine the viability of composting for organic waste management in the emerging city of Addis Ababa, Ethiopia, by addressing the composting practice, quality of compost, and application of compost in urban agriculture. The study collects data using compost laboratory testing and urban farm households' survey and uses descriptive analysis on the state of compost production and application, physicochemical analysis of the compost samples, and regression analysis on the urban farmer's willingness to pay for compost. The findings of the study indicated that there is composting practice at a small scale, most of the producers use unsorted feedstock materials, aerobic composting is dominantly used, and the maturation period ranged from four to ten weeks. The carbon content of the compost ranges from 30.8 to 277.1 due to the type of feedstock applied, and this surpasses the ideal proportions for C:N ratio. The total nitrogen, pH, organic matter, and moisture content are relatively optimal. The levels of heavy metals measured for Mn, Cu, Pb, Cd and Cr⁶⁺ in the compost samples are also insignificant. In the urban agriculture sector, chemical fertilizer is the dominant type of soil input in crop productions but vegetable producers use a combination of both fertilizer and other organic inputs, including compost. The willingness to pay for compost depends on income, household size, gender, type of soil inputs, monitoring soil fertility, the main product of the farm, farming method and farm ownership. Finally, this study recommends the need for collaboration among stakeholders' along the value chain of waste, awareness creation on the benefits of composting and addressing challenges faced by both compost producers and users. Keywords : composting, emerging city, organic waste management, urban agriculture

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