

BIOCONVERSION OF MUNICIPAL SOLID WASTE FOR IMPROVED STABILITY AND BIOEFFICACY

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Executive Summary

Management of Municipal Solid Waste (MSW) is and will be one of the major challenges in Bangladesh. Various studies reveal about 90% of MSW is disposed in open dumps and landfills, creating problems to public health and environment. Bioconversion of MSW perhaps an effective alternative to avoid pollutions. Therefore, the objectives of this study were i) to find out effective recycling method of MSW composting ii) to evaluate the effect of Grass Clippings (GC) on the maturity and quality of MSW compost. Experiment was conducted during October 2017 to February 2018 at Agroforestry Field Laboratory, SAU, Dhaka-1207. Twenty kg of MSW along with 20 kg of CD and GC were mixed together according to treatments and amended with water to obtain a moisture content of about 60% (w/w) for 12 weeks. At the beginning, the bulk density of the MSW substrate was $0.23\text{--}28\text{ g cm}^{-3}$. At day 60, the highest bulk density was found in treatment B (20 kg MSW plus 5 kg CD plus 15 kg GC) with the value of 0.48 g cm^{-3} . At day 15, the highest temperature in treatment B was 72°C . At day 45, the highest GI was found in treatment B (83.86%) whereas it was the lowest in treatment E (58.3%). The highest reduction in C/N ratio was found in treatment B (16.9). All the macronutrients increased during bioconversion of MSW receiving treatment B showed higher trend of mineralization for all assessed macronutrients. Thus, the treatment B consisting 5 kg CD plus 15 kg GC was found to be efficient in converting 20 kg MSW into mature compost within 30 days and suggesting an attempt to improve the quality and stability of MSW compost should essentially focus on the early phase of composting process.

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