

A Comparative Analysis of Commercial Household Composters

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Extended Abstract

Introduction

Widespread use of domestic composters may significantly reduce, and at lesser cost, quantities of organic matter delivered to landfill sites and, therefore, of organic leachate.

Methods

We compared 3 commercially available composters throughout the biodegradation process by measuring temperature, pH, humidity, and physicochemical analyses for total organic carbon, total nitrogen, and the carbon/nitrogen ratio (C/N). For every sample, we enumerated counts of total bacteria, fecal coliforms, and total coliforms. All analyses were performed according to standard procedures. We used a mixture of common organic matter from the kitchen (egg shells, a variety of peels, plant leaves, etc...) and garden (vegetables, leaves from the previous Fall), and repeated the mixture every Monday of the month of May to simulate weekly add-ons. From the 4th week onwards, after the last add-on, we measured the temperature weekly for 13 weeks. At the 4th and 13th week, we performed the above-mentioned analyses on samples from the mixture, in triplicate.

Results

We observed a substantial decrease in the volume of the mixture, which stabilized at approximately 30% of the initial volume by the 11th week for all composters. At 13 weeks, the mixture appeared consistent with normal compost. Total organic carbon decreased significantly and the C/N ratio decreased from 30 to 20 for all composters. pH increased from 6 to above 8. However, the temperature did not increase beyond 20-25°C, depending on the model, which does not permit hygienisation of the final product. This was confirmed by the total and fecal coliform counts.

Conclusion

The failure to hygienise the final product from commercially available composters may limit the widespread adoption of composting. We believe it is important to consider modifying current commercially available composters.