Review on the Current Composting Practices and the Potential of Improvement using Two-Stage Composting

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Abstract

Composting is one of the applicable technologies to recycle organic waste into a value-added product. It allows the transformation and stabilisation of the organic waste into biofertiliser that can be applied to land and crops safely. The composting systems come in different modes but the three commonly used are windrow, aerated static pile and in-vessel composting. The three practices vary in cost, manpower, energy, greenhouse gases emission and composting time. It is well-known that among the three, windrow is the least expensive but most time consuming where in-vessel offers short composting period but at the high expense of energy and cost. Composting is conventionally carried out by either one of the methods. A new strategy, namely the two-stage composting system, is getting popular. It involves the switching of the composting system at different stages of the composting process. Study on the effectiveness and efficiency of two-stage composting systems in terms of cost, time, compost quality and greenhouse gases (GHG) emission are still limited as it is still fairly new. This paper aims to review the existing papers on two-stage composting to provide a better insight on the feasibility and applicability of this strategy as compared to the conventional process flow. This paper also highlights some of the recent achievements in improving the efficacy of the composting system in terms of time and GHG emission.