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Assessment of the quality of composts in selected commercial compost facilities in Sri Lanka

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Organic food production is one of the fast-growing sectors in Sri Lanka with an understanding of health and environmental impacts caused by the use of chemical fertilizers. Hence, there is a high demand for compost by organic agriculture and it is widely used in home gardening as a substitute for chemical fertilizers. The compost produced by using different raw materials are available in markets at present in Sri Lanka. Even though the quality of the compost has to be in accordance with the Sri Lanka standard specification (SLS 1246:2003) for compost from municipal solid waste and agricultural waste, enough studies have not been carried out on the assessment of compost quality. Therefore, the objectives of this study were to assess the quality of compost collected from the commercial compost producing sites and to investigate the time period that can maintain the SLS standards specifications in compost once it is packed. The compost bags of 1 kg were collected within a day from 4 sites (namely A, B, C and D) in Colombo and Gampaha Districts, which have been packed on the same day and stored in the laboratory till analysis. The composts collected have been made from MSW (sites A, B and C) and garden waste (D). The compost quality parameters were measured in monthly intervals for a period of 6 months with three replicates. Data analysis was done by One-way ANOVA. Data analysis revealed that organic matter content and total carbon content in compost of A were lower than the standard limits during the study period. According to the results, the color of the compost in all composting plants was brownish black and complied with the SLS 1246:2003 standards. The compost did not emit irritable odors in any of the compost samples. Phosphorous content of compost from A and C was lower than the standard limit (0.5%) and Potassium content were lower than the standard minimum limit (1%) in C and D. Nitrogen content in compost from all the sites was lower than the standard minimum limit (1%). Composts from A, B, C and D indicated moderate phytotoxicity according to the germination index % values of 74, 67, 74 and 76, respectively which may be associated with the immaturity of the composts. Sand content was higher than the standard limit (10%) in compost plant D. It was found that most of the composting facilities could maintain the Phosphorous and Potassium within the SLS standard limits. However, Nitrogen content in compost from all the sites were lower than the standard limits and it was decreasing with time during the study period. The results showed that the compost produced in selected sites does not meet the standard specifications given by the Sri Lanka Standards (SLS 1246:2003) and therefore, quality control and continuous monitoring are essential to maintain the quality of compost available in the market. The quality control of compost has to be started from the selection of raw materials up to the detection of maturity of compost in order to produce a good quality product.

Keywords: C:N ratio, Garden waste, Municipal solid waste, Phytotoxicity, SLS standard