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A PRELIMINARY INVESTIGATION ON THE QUALITY OF MUNICIPAL COMPOST PRODUCED IN KANDY, KURUNEGALA AND MAWANELLA

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Municipal compost is a product derived from municipal solid waste. Local government authorities in Sri Lanka produce municipal compost as a part of their solid waste management program. The compost product is then marketed without a proper label that includes necessary information for the consumers on the packaging. Municipal solid waste is highly susceptible to contamination because of the non-segregation of waste. Thus, the safety and effectiveness of municipal compost is decidedly questionable. Five compost samples per composting facility were obtained from three separate municipal composting facilities located in Kandy, Kurunegala and Mawanella according to simple random sampling. The samples were air-dried and analysed for soluble nutrients extracted using a 0.01 mol dm^{-3} $CaCl_2$ solution. The orthophosphate molybdenum blue method was used to determine soluble phosphate, the cadmium reduction method was used to determine soluble nitrate, and AAS was used for the soluble magnesium ion detection. A 2 mol dm-3 KCl solution was used as the extractant, followed by the Indophenol blue method to measure soluble ammonium ions. Compost samples digested in aqua regia were analysed for the presence of heavy metals. Heavy metals, lead, chromium, and cadmium were measured using AAS. Although most measurements were within tolerable limits, the results indicate nitrate levels of more than ten times the expected value of 500 mg kg^{-1} and cadmium content exceeding the 10 mg kg^{-1} limit. Further, it was observed in all the compost samples that there was a significant presence of plastics along with other impurities. Non-segregation of waste material was observed in all three composting facilities. For future studies, sample count should be increased to minimise the variance. Further, incorporating a broader set of test parameters on par with international standards and microplastic analysis can better understand the municipal compost produced in Sri Lanka.

Keywords: Heavy metals, Microplastics, Municipal compost, Municipal solid waste