

## **Assessment of Compost Quality Produced with Municipal Solid Waste and Dewatered Fecal Sludge: A Case Study**

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Application of Municipal Solid Waste (MSW) and Dewatered Fecal Sludge (DFS) compost for agriculture is promoted in many countries as a waste management strategy. The quality of any compost type and its suitability for agricultural application is mainly determined by its physical and chemical properties and the absence of risk factors such as heavy metals and pathogens. In this study, MSW and DFS compost samples collected from the Kuliyaipitiya Municipal Council of the North Western Province of Sri Lanka were subjected to quality testing using standard methods. The results were compared with the standards specified under SLS 1635: 2019 for MSW compost and with the reported information for the other locally available organic manure types. The acidic pH of DFS compost reported in this study indicates the risk of its direct use as a soil amendment while the MSW compost showed a satisfactory pH, suitable for soil application. The macro nutrient contents (Phosphorus, Potassium, and Magnesium) of both compost types were very low except for Nitrogen and Calcium. Micro nutrient levels in both compost types were satisfactory where DFS compost was rich in Iron, Zinc and Copper indicating its potential to be used as a micro nutrient source with further development. High sand percentage in MSW compost and the presence of weed seeds in DFS compost reduces the overall quality of both compost types. The organic carbon (OC) content in MSW compost was at a satisfactory level but the DFS compost had a low OC content. Pathogens were not detected in both compost types. MSW compost showed lower levels of heavy metals than the permissible standard limit defined for MSW compost. However, DFS compost showed higher level of Mercury than the permissible standard limit for MSW compost which highlights the risk of its use as an agricultural soil amendment. In contrast, with its satisfactory OC content and the pH and the absence of pathogens and viable seeds, MSW compost has the potential to be used as a soil conditioner for soil quality improvement, but not as a nutrient source, as it has a low macro nutrient content.

**Keywords:** Dewatered Fecal Sludge Compost; Heavy metal content; Municipal Solid Waste Compost; Macro and micro nutrient contents