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Analysis of Physical Composition and Nutrient Content of Decomposed Municipal Solid Waste in Fonko Town of Analemo District, Southern Ethiopia

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Abstract**:** The aim of the present study was to determine the physical composition and status of major nutrient content in the solid waste for waste management practices. Ten randomly collected municipal solid waste samples (10 kilograms) were mixed together and to get a composite sample and then it was spread on a polythene sheet and sorted into different categories for the analysis of physical components in the municipal solid waste. For physic -chemical, major nutrient content, and heavy metal analysis, one kilogram of randomly collected decomposed solid waste was collected from a bottom layer in the dumping site. The physical composition in the solid waste revealed the presence of food, ash, yard, paper, plastic, glasses, and metal waste. Among the identified physical composition of municipal solid waste showed the highest proposition of food waste (43.07%) followed by ash content (16.9%) and paper waste (15.5%). Therefore, the municipal solid waste contains more percentage of bio-degradable waste (85.71%). The electrical conductivity (EC) was 1.58 ds/m, pH is 6.23, and moisture content was 46.44% inthe municipal solid waste. The major nutrient content analysis revealed the presence of a sufficient quantity of organic carbon, total nitrogen, phosphorus, and potassium in the municipal solid waste. The heavy metal in the study area indicated the presence of copper, zinc, iron, manganese, lead, chromium, and nickel. Among the selected heavy metals iron showed the highest quantity in the study area next to zinc and copper. The analysis of physico-chemical and major nutrient content in the municipal solid waste indicates that favorable conditions as well as good source of nutrients for which can be used as organic fertilizer or soil alteration to the composting process.

Keywords**:** Physical composition, Nutrient content, Municipal solid waste, Fonko town