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Chemical Analysis of Organic Fertilizers

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Abstract

Organic fertilizers are materials with natural origin that is added to soil in order to supply essential nutrients to plants. Organic farming has become a popular trend in Sri Lanka. The idea of establishing quality standards to assist improvement of organic fertilizer products in terms of nutrition levels has been slowly evolving for the last few years. But even now quality of municipal solid waste (MSW) based and commercial fertilizers are not examined closely for their quality. This study was conducted using 9 organic fertilizer samples to obtain a chemical evaluation on different types of commercial organic fertilizers and municipal solid waste (MSW) based organic fertilizers. Average total P_2O_5 content and average total N content of each sample was determined by molybdovanadophosphate colorimetric method and kjeldahl method respectively. Average total K_2O was determined using standard methods. Each digestion took 6 hours for completion. Samples were triplicated in P_2O_5 determination while samples were duplicated for other analysis. According to SLS 1246: 2003, standards for total N, P_2O_5 , and K_2O are 1.0, 0.5, and 1.0 respectively. Total average P_2O_5 values of samples were in the range of 0.5-4.0 in terms of average w/w percentage. Most average P_2O_5 levels were below 1. Average total N content of samples were above the standard requirement. Most average K_2O values were below 1 lying in the range of 0.3-2. All the samples satisfied the requirements of the Sri Lankan standards for compost (SLS 1246: 2003) in terms of total P_2O_5 for total N; however, K content of some samples were below the SLS requirement. It should be noted that for most of the samples, SLS standard for P_2O_5 was satisfied only at the lower end. Therefore, the analyzed organic fertilizers may not be a good source of K and P. Since organic fertilizers are heterogenic, it is required to analyze more replicate to obtain accurate data. It is recommended to analyze more replicate to obtain more accurate N, P and K composition data to reach a solid conclusion about their quality.

Keywords: Organic fertilizers, NPK content