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COMPOST QUALITY ANALYSIS AND EVALUATION OF LOW COST AMENDMENTS TO PRODUCE NUTRIENT-RICH FERTILISER-GRADE COMPOST AS AN ALTERNATIVE TO SYNTHETIC FERTILISERS

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ABSTRACT

Compost contains important plant nutrients in small quantities but compost can be enriched with other additives to obtain a higher nutrient content. This study analysed the properties of composts produced in Iceland and investigated simple low cost approaches to produce nutrient-rich fertiliser-grade compost by addition of chicken manure and fish meal to compost. Compost from two sources, (1) a spent mushroom compost from the Flúðasveppir mushroom factory and (2) compost from the Gámaþjónustan municipal and garden solid waste compost producer were tested. Both compost sources had a pH around 8 and carbon content around 22%. The compost differed, however, in total nitrogen content, 1.7 and 2.1%, C:N-ratio, 13:1 and 11:1, and electrical conductivity, 3.1 and 1.7 mS for Flúðasveppir and Gámaþjónustan, respectively. The fish meal and chicken manure chosen for the study contained 11.6 and 3.9%N, and had a pH of 6.1 and 5.4, and electrical conductivity of 7.0 and 4.1 mS, respectively. Analysis of ion mobilization over a period of 32 hours in wet compost samples and their mixtures with 10% or 25% fish meal or chicken manure showed a rise in electrical conductivity and a slight increase in pH over time. Furthermore, the compost from Flúðasveppir released high amounts of sulphate ions, whereas compost mixtures with fish meal released a high amount of chlorine ions. Based on nitrogen values, fish meal was found to be suitable for compost enrichment as a low cost organic additive, and this study recommended a mixing rate of 10% fish meal.

Keywords: compost; compost quality; compost enrichment; fertiliser