

PRODUCTION OF QUALITY COMPOST USING LOCALLY AVAILABLE RESOURCES

K. Kajeevan*, T. Daniel and N. Gnanavelrajah

*Department of Agricultural Chemistry, Faculty of Agriculture, University of Jaffna, Sri Lanka***Abstract**

Compost is a high-demand organic fertilizer in agriculture. Though farmers are willing to use compost, the availability of quality compost is a question. It is one of the reasons for higher inorganic fertilizer usage by farmers. Therefore, it is essential to focus on large-scale production of low-cost eco-friendly quality organic fertilizers. In this background, a study was aimed to produce good quality compost by using locally available resources such as cowdung (CD), goat manure (GM), poultry manure (PM), paddy straw (PS), yard waste (YW), banana residues (BR), palmyrah leaf (PL), *Gliricidia sepium* (GS) and a locally made solution (panchagavya (PA)). Treatments were prepared according to the C, N content of raw materials which were adjusted to an initial C/N ratio of about 40:1. The compost treatments were carried out in a Complete Randomized Design (CRD) with six treatments namely T1 - CD+ GS+ PL+ BR+ PS, T2 - CD+ GS+ PL+ BR+ PS + 20% PA, T3 - CD+ PM+ PL+ BR+ PS, T4 - CD+ PM+ PL+ BR+ PS + 20% PA, T5 - CD+ GM+ PL+ BR+ PS+YW, T6 - CD+ GM+ PL+ BR+ PS+ YW + 20% PA. The treatments were composted in bed for two months period. After two months, the physical and chemical properties of compost were analysed. The data were statistically analysed using Analysis of Variance and treatment means were compared using Duncan's multiple range test. Results showed that physical properties such as sand content, decomposition rate in terms of particle size, moisture content, were in-between 5.61% (T3) to 2.86% (T4), 91.87% (T5) to 94.64% (T2), and 14.88% (T2) to 19.37% (T1) respectively. Blackish brown colour and odourless quality were observed in all compost treatments. Chemical properties such as pH, C, N, C: N ratio, P₂O₅ and K₂O were in-between 7.54 (T2) to 8.07 (T3), 27.97% (T2) to 31.44% (T6), 1.84% (T6) to 2.5% (T1), 11.6% (T1) to 17.13% (T6), 0.55% (T1) to 1.29% (T4) and 4.19% (T2) to 8.59% (T4) respectively. Results revealed that compost produced in all treatments complied with SLS standards (1246:2003) in all chemical and physical quality aspects. This finding indicates that all compost treatments have potential nature of quality compost and farmers can use any of the compost treatments out of six to produce quality compost depending on the availability of raw materials in the farm.

Keywords: Organic nutrient source, panchagavya, plant residues, quality compost, waste management