

PRODUCTION OF QUALITY COMPOST USING UNDERUTILIZED RESIDUES AND WASTES WITH *Spirulina* AND PANCHAGAVYA

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The research study was aimed to produce good quality compost by using yard waste (YW), fruit waste (FW), cow dung (CD), Palmyrah leaf (PL), Coconut leaf (CL), Banana pseudostem (BP), Azolla (AZ) and *Spirulina* (SP). In addition, locally made solution (panchagavya - PC) was also assessed for its potential to improve composting process. An experiment was conducted in completely randomized design with six different treatments with degrees of freedom 11. Treatments were prepared according to the C, N content of raw materials which were adjusted to initial C/N ratio of about 40:1. Treatments were, T₁ - 25% BP + 25% PL + 25% CL + 24% AZ + 1 % SP + 5% PC, T₂ - 25% BP + 25% PL + 25% CL + 24% AZ + 1% SP, T₃ - 12.5% BP + 12.5% CL + 12% AZ + 0.5% SP + 50% CD + 5% PC + 12.5% PL, T₄ - 12.5% BP + 12.5% PL + 12.5% CL + 12% AZ + 0.5% SP + 50% CD, T₅ - 30% FW + 30% YW + 40% CD + 5% PC, T₆ - 30% FW + 30% YW + 40% CD. The physical and chemical properties of compost were analysed. Physical properties such as sand content, decomposition rate in terms of particle size, moisture content, were between 4.18% (T₁) to 15.64% (T₅), 66.13% (T₂) to 91.41% (T₅), 30.08% (T₃) to 35.50% (T₄) respectively. Blackish brown colour or Dark brown colour and odourless quality were observed in all compost treatments. Chemical properties such as pH, C, N, C: N ratio, P, K were between 7.13%(T₃) to 8.07%(T₆), 31.60% (T₆) to 49.48% (T₁), 1.49% (T₆) to 1.98% (T₃), 18.76% (T₅) to 25.84 % (T₄), 1.01% (T₄) to 1.88% (T₂), 1.10% (T₆) to 4.25% 38(T₁) respectively. The results showed that panchagavya treatments significantly increased decomposition rate than those of without panchagavya treatments. All compost treatments complied with SLS (1246:2003) in all aspects, except sand content and decomposition rate. All SLS requirements were complied in T₃ compost and T₄ compost. Thus, it can be concluded that the 5% of panchagavya solution can be used to improve the decomposition rate. It also revealed that, quality compost can be produced by mixing *Spirulina* and Azolla with locally available resources.

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