

ENHANCING COMPOST QUALITY WITH MICROBIAL AMELIORATORS

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Incorporating microbial ameliorators (MAs) presents a viable approach to improving compost quality. This study aimed to enhance compost quality with MAs. The experiment was conducted at the Faculty of Agriculture farm at Rajarata University of Sri Lanka. An abundantly available MA was selected and incorporated into the compost prepared according to standard procedures (SP). Two treatments were tested, T1-compost SP (control) and T2-compost SP + MA. The treatments were arranged in a complete randomized design, and data were analysed using a *t*-test with *R* software. The chemical properties, such as pH, electrical conductivity (EC), total nitrogen (N), phosphorus (P), potassium (K), and organic carbon, were determined at 10-day intervals for two months. The pile temperature was recorded daily. The C:N ratio was calculated, and sand content (SC) and moisture content (MC) were analysed only at the end of the production process. All the measured parameters were compared with the Sri Lanka standards (SLS) for composts. The percentages of MA added compost has been identified as 1.69 ± 0.18 , 1.11 ± 0.06 and 1.68 ± 0.11 for N, P, and K, respectively compared to the standards (N-1%, P-0.5% and K-1%) and the control. The EC of the MA added compost was 3.47 dS m^{-1} (SLS: max 4.0 dS m^{-1}), and the pH was recorded as 7.16 (SLS: 6.5–8.5). The C:N ratio of MA-added compost was 17 (SLS: 10–25). The SC and MC were 19% and 28.5%, respectively. Pile temperature fluctuated between 30–37°C throughout the production process. Overall, the compost enriched with MA was identified as a rich source of nutrients compared to the existing compost. Further, all the parameters were in agreement with SLS maturity indices. Therefore, compost with added MA can be introduced as an effective organic fertilizer compared to traditional composting. However, confirmation of these findings in field condition is necessary, following additional future studies.

Keywords: Compost, C:N ratio, Microbial ameliorators, Sri Lankan standards for compost