

Effect of Microbial Ameliorators on Quality Enhancement of Compost

**G.P.G.S.M. Guruge, *U.K.A. Indumini, J.P.H.U. Jayaneththi and
M.D.P. Nayanarangani**

Department of Agriculture Engineering and Soil Science, Faculty of Agriculture,
Rajarata University of Sri Lanka

*aroshaudawatta@gmail.com

The application of microbial ameliorators (MA) is a promising method to improve compost quality. Hence, this study was conducted at the Faculty of Agriculture, Rajarata University of Sri Lanka, to investigate the effect of incorporating MA into compost production. A commercially available MA was added to the compost prepared following the standard procedures (SP). Two treatments were tested: T1-compost SP (control) and T2-compost SP + MA with three replicates for each. The experiment was conducted in a Complete Randomized Design and data were analyzed by t-test using R software. The experiment involved measuring various chemical properties, including pH, electrical conductivity (EC), total nitrogen (TN), total phosphorus (TP), total potassium (TK) and organic carbon (OC) over two months at 10-day intervals. The temperature of the compost piles was recorded daily. Moisture content (MC), and C:N ratio were assessed at the end and all measured parameters were compared against Sri Lanka Standards (SLS) for compost. The results revealed that the MA-added compost exhibited higher nutrient levels with TN ($1.69\% \pm 0.18$), TP ($1.11\% \pm 0.06$) and TK ($1.68\% \pm 0.11$) with exceeding SLS for compost (SLS: TN-1%, TP-0.5% and TK-1%). The EC of the MA-added compost was 3.47 dSm^{-1} (SLS: max 4.0 dSm^{-1}) and pH remained within the acceptable range at 7.16 (SLS: 6.5-8.5). The C:N ratio of MA-added compost was 17 (SLS: 10-25) and MC was 46% (SLS: 40-60%). Throughout the compost production, pile temperature fluctuated between 30-37 °C. Overall, MA-enriched compost proved to be a greater plant nutrient source compared to conventional compost, achieving SLS maturity indices and proving its potential as an effective organic fertilizer. However, further research is recommended to validate these findings.

Keywords: Compost, Chemical properties, Microbial ameliorators, Sri Lankan standards