

USE OF EFFECTIVE MICRO-ORGANISMS IN ACCELERATING THE COMPOSTING PROCESSES

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Effective microorganisms (EM), which is a live formulation of beneficial microorganisms was introduced to Sri Lanka by a non-governmental organization few years ago. According to the manufacturer it is a mixed culture of beneficial micro-organisms including photosynthetic and lactic acid bacteria, yeast, actinomycetes and fermenting fungi. This had been used in many countries to enhance decomposition of organic materials, for waste degradation, as an ordure controller, for control of pollution in prawn farms and as a pesticide. It is claimed that EM could be applied as an inoculant to enhance the composting processes where better quality compost could be obtained in a shorter time than the conventional method. Therefore, the objective of this study was to evaluate the effectiveness of EM on compost making processes in comparison with standard methods used in the wet zone of Sri Lanka.

The experiment was conducted under green house conditions where farmyard manure and Gliricidia were used as organic materials for compost making. These materials were arranged as layers and EM, urea, and inoculant from a decomposed compost pile were added in between the layers as treatments. Nothing was added to the control treatment. EM was added at a rate of 10 ml/kg as recommended by the manufacturer and urea was added at a rate of 3.5 g/kg of fresh material in the second and third treatments respectively. In the fourth treatment, mature compost was added at a rate of 50 g/kg. The moisture content was maintained around 75% in dry weight basis. The pH, organic Carbon and total Nitrogen was determined at 2, 4, 6, 8, 10 and 12 weeks after composting in all treatments. The particle size distribution was also analyzed using a nest of sieves after the 12 week period.

The results showed that the pH was about 9 at the beginning and reduced to 7 after the 12-week period. The reduction of pH was not significantly different up to 8 weeks. At 12th week the urea added treatment showed the lowest pH value. The C:N ratio, which was about 30 at 2 weeks, reduced to a range of 12-14 after 12 weeks in all treatments, where the urea added treatment showed a significantly low C:N ratio. After 10 weeks the C:N ratio of all treatments reduced to an accepted level of mature compost, which did not show a significant difference with control. The mean particle diameter of compost did not show any difference after the 12 week period. The results clearly showed that adding EM did not significantly accelerated the composting process. Addition of urea at a rate of 3.5 g/kg made the final quality of compost better.

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