

## ABSTRACT

The amount of unmanaged municipal solid waste with high organic materials causes various environmental and social problems. Composting is a good organic waste management option. In this study the EM4 and Takakura culture which aid the microorganism in the composting process were investigated. The organic material was mixed with fermenting bed material in a ratio of 1:1 of rice husk and rice bran. The fermenting bed was then mixed with Takakura and EM4 and the effect was studied in composting process using 20 % and 40% fermenting bed material.

The quality of the final compost shows that Takakura was outperforming EM4 in having C:N ratio of around 20:1. The final moisture content was near optimum (~50%) for both Takakura and EM4. The bulk density of the final compost was below the optimum level for all the experiment. However, the Takakura 40% were the closest to the ideal bulk density with 0.358 g/ml. The carbon content of both Takakura and EM4 samples near the optimum (10.9%) with the Takakura 40% having the highest content of 13.9%. The nitrogen content of the final compost was also close to optimum (0.640%) for both Takakura and EM4 samples and the highest nitrogen content were observed to be for Takakura 40% with 0.700%. The phosphorus content in all experiments were the ideal (0.080%), except EM4 20% (0.310%), and Takakura 40% (0.520%), which exceed optimum concentration needed in a good quality compost. The potassium content in all sample surpass the ideal which is 0.16%, but the EM4 20% were shown to have highest concentrated potassium with 0.680%.

In conclusion of the study, it is shown that the both compost qualities are more or less equal. Both contain specific microorganisms that aid the process of composting. Since the Takakura bioactivator is more or less same to EM bioactivator in term of the composting process and the composting quality, it could be more beneficial from economical point of view for practitioner and farmers.

Keyword: Bio-activator, C:N ratio, Composting, EM, Municipal Solid Waste, Organic Waste, Takakura.