

# **VERMICOMPOSTING OF MUNICIPAL SOLID WASTE**

By

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## DECLARATION BY THE CANDIDATE

I **Nur Hafizah Binti Bakar, 2007149129** confirm that the work is my own and that appropriate credit has been given where reference has been made to the work of others.

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## ABSTRACT

The increase in human population and urbanization has led to increasing volume of wastes. The scarcity of land in Malaysia and the increase in population raised some concerns on the management of MSW. The attempts to reduce wastes through recycling of inorganic wastes have not been effective. Therefore, studies should be made on possibility of reducing organic wastes through composting. This study on vermicomposting of MSW focused more on characterizing MSW used for vermicomposting, determining the degradation rate of wastes through vermicomposting, determining the efficiency of direct vermicomposting and pre-composting followed by vermicomposting using different waste composition and monitoring the temperature profile during vermicomposting process. Four experiments were conducted in this study. The experiments were conducted based on direct vermicomposting and pre-composting followed by vermicomposting, and different waste composition. Samples of MSW were obtained from the wet market at Section 6, Shah Alam, while green wastes were collected around UiTM Shah Alam campus. Wooden bin of size 800 mm x 320 mm x 270 mm with two plots were used as composting bin. *L.Rubellus* was selected as the candidate species for vermicomposting. The duration of the experiment was 42 days (6 weeks) for all samples. Over 7 days collected wastes, the data shows that the wet market produced high amount of organic wastes. Graph of degradation rate of wastes and composting efficiency are plotted. It was found that samples of waste without protein has higher capacity degradation rate of approximately 0.036 kg/day and the composting efficiency is approximately 60%. The waste composition of GV 1 and GV 2 have provided good environment and suitable temperature for the earthworms. As conclusion, vermicomposting of municipal solid waste is beneficial because it can help reduce amount of waste disposed off at landfill.

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