

THE IMPLEMENTATION OF GARBAGE ENZYME SYSTEM ON
ORGANIC WASTE IN MELAKA

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DECLARATION

“I hereby declare that the work in this report is my own expect for quotations and summaries which have been duly acknowledged.”

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DEDICATION

To my beloved parents and siblings, thank you for raising me and support me until now. A Special thanks to my supervisor, panels, seniors and my friends for helping me throughout the project towards accomplishing my thesis.

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ABSTRACT

As the world develops, there is an increase in population and economic growth has led to an escalation of the volume of waste generated. The most significant cause of the greenhouse gas emission is due to the improper waste management in worldwide. Garbage Enzyme (GE) is one of an organic waste management system which refers to a fermentation product of kitchen waste, water and brown sugar. The Garbage Enzyme (GE) produced ozone, which helps to diminish the amount of carbon dioxide in the atmosphere and as outcome reduce global warming. The main purpose of this study is to implement the Garbage Enzyme (GE) on the organic waste in Melaka. Since, Melaka has Go Green vision, aim by the year 2020; Garbage enzyme (GE) is one of the waste management systems which reduce pollution in Melaka. A total of 100 questionnaires was distributed and were coded and analyze. Statistical techniques such as descriptive analysis, reliability, and validity were used in this study.

Keyword: Garbage Enzymes (GE), Implementation, Melaka.

ABSTRAK

Dunia semakin bermaju, terdapat peningkatan pada populasi penduduk dan ekonomi telah membawa kesan kepada peningkatan jumlah sisa yang dihasilkan. Punca besar daripada pelepasan gas rumah hijau adalah disebabkan oleh pengurusan sisa yang tidak sistematik di seluruh dunia. Garbage Enzyme (GE) adalah salah satu sistem pengurusan sisa organik yang merujuk kepada produk penapaian sisa dapur, air dan gula merah. Garbage Enzyme (GE) menghasilkan ozon yang akan membantu mengurangkan jumlah karbon dioksida pada atmosfera dan mengurangkan pemanasan global. Tujuan utama kajian ini adalah untuk melaksanakan Garbage Enzyme (GE) pada sisa organik di Melaka. Melaka mempunyai matlamat Bandar Hijau menjelang tahun 2020; Garbage Enzyme (GE) adalah salah satu sistem pengurusan sisa yang mengurangkan pencemaran di Melaka. Sebanyak 100 soal selidik telah diedarkan dan telah dikodkan dan menganalisis. Teknik statistik seperti analisis penerangan, kebolehpercayaan, dan sah digunakan dalam kajian ini.

Kata Kunci: Garbage Enzyme (GE), Pelaksanaan, Melaka.

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LIST OF ABBREVIATIONS

CO ²	=	Carbon Dioxide
EPA	=	Environmental Protection Agency
GCAP	=	Green City Action Plan
GDP	=	Gross Domestic Product
GE	=	Garbage Enzyme
GGE	=	Green Gas Emission
GHG	=	Green House Gas
ICLEI	=	International Council for Local Environmental Initiatives.
IMT-GT	=	Indonesia, Malaysia, Thailand- Growth Triangle
ISWM	=	Integrated Solid Waste Management
KAP	=	Knowledge, Attitude and Practice
MGTC	=	Melaka Green Technology Corporation
OECD	=	Organization for Economic Co-operation & Development
PHTJ	=	Perbadanan Hang Tuah Jabatan
PTHM	=	Perbadanan Teknologi Hijau Melaka
SPSS	=	Statistical Package for Social Sciences
UK	=	United Kingdom
UTC	=	Urban Transformation Centre

LIST OF SYMBOLS

%	=	Percent
<	=	Greater-than
>	=	Less-than
=	=	Equals

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CHAPTER 1

INTRODUCTION

1.1 Introduction

In Asian countries, Malaysia is one of the countries need to pay an immediate attention on the waste management in order to secure the Mother Nature. According to The Sun (2014) there are 8000 tonnes of waste produced in Malaysia over 8 million kilograms food waste which it can feed six million people. Based on the percentage of composition among the solid waste, food waste has highest which is 45% and the cost of managing it had reached RM1.6 billion last year.

An increase in population and economic growth has led to an escalation of the volume of waste generated. By the year 2020, it believes that the total waste rise to 30,000 tonnes, since an average of 23,000 tonnes of waste is generated per day in Malaysia, where those accumulated wastes were ended in the landfill, Yuek, Leong and Manaf (2013). The most significant cause of the greenhouse gas emission (GGE) is due to the improper waste management in worldwide. Consequently, it increases the global temperatures and drastic climate change.

Malaysia has been made up of 13 states, in the Southern region of Peninsular Malaysia a little state known as Melaka. As we know, Melaka is one of the popular tourism spots in Malaysia. In 2010, Melaka government has been launched a vision to

become a Green City State. Since, it has been launched Melaka was taking much accomplishment in order to achieve the Vision by 2020. According to Bernama (2015) Melaka launch its new vision towards “Green City” by the year of 2010. The Melaka government’s ultimate aim is to achieve at 40 percent of the Malaysian’s “carbon intensity per gross domestic product” by the year 2020.

On the other hand, disposal of waste in landfills is the main problem in Melaka, since it has only 2 operational landfills (Mentari Alam Eko, 2013). The statistic shows that the people of Melaka produce between 1,300 tonnes and 1,400 tonnes of waste daily which end up to RM70, 000 for disposing the waste (Bernama, 2010).

The focus of this research is about the implementation of the garbage enzyme system of organic waste in Melaka. Since, Melaka is sincere in green practices to succeed the “Go Green” vision by 2020, garbage enzyme system will reduce generating of organic waste which end up in landfills and generate methane which have potential for greenhouse gas. Moreover, a garbage enzyme also helps to reduce organic waste. Hence, it will help to sort out the landfill problem in the future by implementing garbage enzyme system on the organic waste in Melaka.

Garbage Enzyme (GE) refers to a fermentation product of kitchen waste, water and brown sugar. According to catalysis, the amount of carbon dioxide in the atmosphere can diminish and sequentially reduces the global warming by using Garbage Enzyme (GE) since ozone is produced. This enzyme can be produced easily with the organic waste from our kitchen. Therefore, this research is carried out to study the implementation of the garbage enzyme system on organic food waste by identifying the awareness of waste management on organic waste among Melaka residence and analysis the acceptance of Melaka residence on implementing garbage enzymes on the organic waste in Melaka.

1.2 Problem Statement

The current situation in Malaysia is waste generation is increasing and most of the waste is organic waste. The main cause of these problems comes from organic waste. Malaysia Municipal stated that solid waste has the largest percent of food waste that makes abundances of problem in disposal method. A landfill is the major method of disposal that used in Malaysia. However, Malaysia still cannot bear on the landfill problem which occurs past decades. Melaka is one of the state that is facing landfill disposal currently in Malaysia.

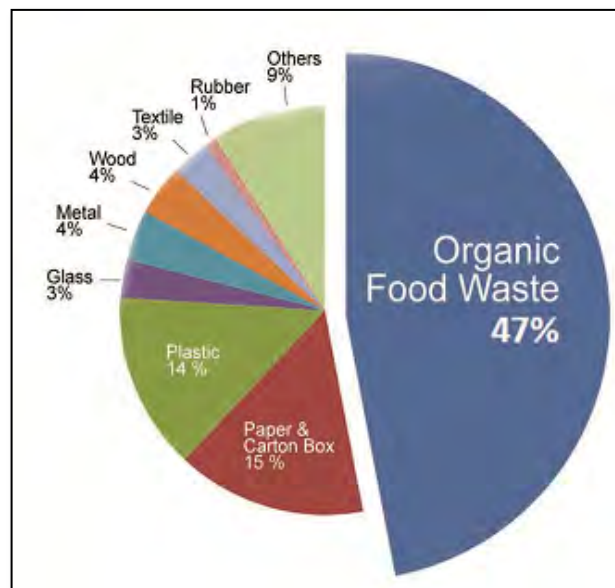


Figure 1.1: Percentage of Waste (%) in Peninsular Malaysia 2012

(Source: 2012 Mentari Alam Eko)

Melaka has become as Green State in Malaysia due to the tourism attention. Therefore, the Government has officially launched Melaka Green Technology Corporation (MGTC) on 8 November 2013 in order to set up a beneficial program that focus on Go Green Practices in Melaka. However, Melaka state is unable to manage the

landfills of disposal. According to The Star (2014) due to a lot of garbage every day, the Krubong landfill at Melaka is unable to bear.

Considering the issues, the percentage of organic waste in Malaysia has increased and the poor management of landfills in Melaka will causes greenhouse gas emission. Therefore, this research looks into the implementation of the garbage enzyme system for organic waste in Melaka by identifying the Melaka residence awareness and the acceptance of the garbage enzyme system. Since, garbage enzymes produce ozone, which reduces the amount of carbon dioxide in the atmosphere which diminishes the Greenhouse Gas emission (GGE).

As a conclusion, the implementation of the garbage enzyme system in Melaka is an essential to reach out the aim of Green State in Melaka. Since, the use of garbage enzymes is not convinced among everyone, thus this research focus on whether the public are aware of organic waste management and ready to accept the implementation of the garbage enzyme system on the organic waste in Melaka.

1.3 Research Objective

The aim of this research is to explore the possibility to implement garbage enzyme system on the organic waste in Melaka in order to manage the landfills and achieve Go Green vision for waste disposal in Melaka in order to provide a quality environment from pollution since Melaka is Green State and Tourism Spot.

- a) To identify the awareness of waste management on organic waste among the Melaka residence.
- b) To analyze the acceptance of implementing of garbage enzymes on the organic waste in Melaka among Melaka residence.

1.4 Research Question

Based on research objectives, the research questions are as follows;

- a) Is the Melaka residence is aware of waste management on organic waste in Melaka?
- b) Is the Melaka residence will accepting the implementation of the garbage enzyme system on the organic waste in Melaka?

1.5 Scope of Study and Limitation

The focus of this research is the implementation of the garbage enzyme system for organic food waste in Melaka. Based on the problem statement, this research is carried out in order to Melaka achieving the vision “Green City, State” by 2020 by solving the landfill problem. Hence, this research emphasis on the study of identifying Melaka residence awareness towards waste management in organic waste and analyze whether Melaka residence will accept the implementation of garbage enzymes in Melaka.

In order to obtain more specific research objectives and to clarify the theoretical contribution of this research, a literature review is presented in the next chapter with an introduction of implementation of the garbage enzyme system on the organic waste in Melaka. Following in the literature review, there is information on waste generation, waste generation problem, effect of organic waste into the landfills, garbage enzymes, benefits of garbage enzymes, system implementation and KAP method have been explained in order to get a better understanding of the research.

Next, the theoretical framework is presented together with the objectives of this research followed by the hypotheses. Then research methodology will discuss on how the research will be carried out. Data collection for this research was carried out in

Melaka. Last but not least, the discussion of this research is carried out and followed by main conclusion and recommendation.

Besides that, there are some limitations to carry out this research. The ability of respondent to interpret the questionnaire is one of the limitations. Since, the questions is distribute to the Melaka residence, the knowledge towards Garbage Enzyme may be the limitation to understand and interpret the question. Besides that, respondent knowledge of Garbage Enzymes is another limitation. There is a high percentage of chances where respondent are not aware of this Garbage Enzymes System. Next, the willingness of the respondent to ask the questionnaire sincerely. Moreover, there are lack resource regarding the garbage enzyme system. Finally, the time and cost limitation to carry out this research.

1.6 Significance of Study

This research is beneficial for the Melaka State to accomplish the Vision Green City, State by 2020 by creating a better environment, health and safety of Melaka State. The landfill problem in Melaka is the reference of the research which has led to a suggestion of the implementation of the garbage enzyme system in Melaka. To analysis how the Garbage enzymes on organic waste is one of the vital perspective for Melaka.

This research provides a data related to the awareness of waste management on organic waste among the Melaka residence. This research helps to identify whether the residence is aware of the waste management on organic waste. Besides that, to analysis how far the Melaka residence ready to accept the implementation of garbage enzymes on organic waste.

In addition, the implementation of garbage enzymes can be proceeding if there is the practice of separation of garbage in the household. So, this research will find out