



**UNIVERSITI TEKNOLOGI MARA
CAWANGAN TERENGGANU**

MEC299

**DESIGN AND FABRICATION OF MINI
COMPOST BIN FOR CAFETERIA IN UITM
BUKIT BESI**

MUHAMMAD AQIL IMRAN BIN MOHD

RIZAL

2020626326

SUPERVISOR:

SITI NUR AMALINA BINTI AZNAM

ABSTRACT

In this modernization world, food waste had been major problem to the world. Compost bin is one of the methods that can be implemented to manage food waste in large or small scale. There are several aspects that must be consider, that is shape, air flow, and fertilizer container but large aspect is heat that determine the cycle of whole process whether it take time or not. The estimated time is in six to eight week and depends on the weather, if it is raining it take longer than estimate time. Temperature that required between 13 °C to 69 °C, large temperature that pass the range is not required. Composting happen when we create an environment (moisture and temperature) to it.

SEM MARCH AUGUST 2022

Table of Contents

ABSTRACT.....	5
1.0 Introduction.....	7
1.1 Background of Study	7
1.2 Problem statement.....	8
1.3 Objective	9
1.4 Scope of work.....	9
1.5 Expected Result.....	9
2.0 Literature Review.....	10
2.1-Introduction.....	10
2.2-Type of Compost Method	10
2.3-Anearobic.....	11
2.3.1-Anaerobic Digestion	12
2.3.1 Methane Gas	13
2.3.2 Carbon Dioxide	13
2.4.-Aerobic.....	14
2.4.1-Aerobic Process	14
2.4.1.1 Heating stage.....	16
2.4.1.2 High Temperature Stage	16
2.4.1.3 Compost Maturation	19
2.5-Outcome of Compost	19
2.5.1-Fertilizer.....	19
2.6-General Properties of Fertilizer	20
2.6.1-pH	20

2.6.2-Chemical Composition	21
2.7-What Must be Compost	22
2.8-Tatistical Analysis.....	23
2.8.1-Temperature.....	24
2.8.2-Time Taken.....	24
2.8.3-Moisture.....	25
2.8.4-Weather.....	26
3.0 Methodology	27
3.1 Flowchart.....	27
3.2 Preliminary Results	27
3.2 Design.....	28
3.3 Gantt chart.....	30
References.....	32

1.0 Introduction

1.1 Background of Study

A compost bin is one of the alternative ways to manage food wasting. We also get other good products from the compost bin that as fertilizer and methane gas. From this method, we can create a system that will bring benefits back to us besides just throwing waste food and not knowing where it ends. We can control and speed up the time taken for food waste to be fully composted by using advanced technology that had been developed years to year. To make it clearer let's look

at the example, in this modern era compost bins had been compacted to make them smaller and easy to bring anywhere. This happens with the help of electricity that generates more heat its fastener the compost processes.

In my research, I personally like to figure out if a compost bin can be installed on the UITM campus. There are a few things that I know, compost bins had been categorized into a few methods. First is aerobic, simply defined as a plastic bag filled and left in the sun. The second is anaerobic, where it requires a container to fill in and no effort of care at all. Lastly, vermicomposting uses worms to break down the material. Therefore, this research had been done on the UITM campus in Bukit Besi, Malaysia located in Dungun, Terengganu.

1.2 Problem Statement

food waste is one of the factors that has long been a problem globally. This is due to a lack of food waste management. Local Government Minister Datuk Seri Reezal Merican Naina Merican stated that Malaysians produce 38,000 tonnes of solid waste every day. Of that total, about 17,000 tonnes is food waste, of which an estimated 4,046 tonnes, or 24%, is avoidable food waste. Malaysia's population is quickly growing, with a projected population of 32.8 million by 2021, resulting in massive amounts of solid waste, expected to be 38,427 metric tonnes per day (1.17 kg/capita/day) in 2021. 82.5 percent of it is disposed of in landfills. MSW collection would reach 14 million metric tonnes per year by 2022, enough to fill the Petronas Twin Towers every seven days. As a result, there is an urgent need to respond to these increasing concerns and create additional facilities, as Malaysia's rate has exceeded the estimated rate of 30,000 metric tonnes per day in 2020 in a study conducted by the Japan International Cooperation Agency