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**REPORT**

**ECO-FRIENDLY FERTILIZER: A  
COMPOSTING SOLUTION USING  
ARDUINO FOR FOOD WASTE  
REDUCTION**

**MOHAMMAD IKHMAL HAIKAL  
BIN MD YATIM  
(2021860432)**

## **ABSTRACT**

Waste is a significant threat to our environment also to the human health, it influenced by many issues such management practices and large amount of food waste. As for the issue, a project named “Eco-Friendly Fertilizer: A Composting Solution Using Arduino for Food Waste Reduction” is introduced. The development of the project is a combination of the hardware and Internet of Things (IoT). The aims of this project are to build a composting system where the food waste is being converted to organic fertilizer for environmental eco-friendly system. The project is developed using an Arduino as a microcontroller, sensor like temperature sensor, pH sensor and moisture sensor. These sensor works as input of the project. While LCD and LED work as output. Besides, the Blynk software are integrated to the hardware as an IoT for monitoring and controlling purposes. Each of the input and output will be combined to get on complete system. Through this combination of components, the project expected to produce high- quality of organic compost that used for fertilizer while reducing the amount of food waste.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 Research Background

As the human population is growing constantly, it is crucial to study on eco-friendly practices to help communities to grow without harming the world. So, these studies are about combining the traditional method of composting with a smart technology known as Arduino to reduce the amount of food thrown away as well as produce fertilizer that's good for the environment. The problems that happened in Malaysia were damaging soil health because too much food was wasted as well as hazardous fertilizer being used by many farmers that may harm the soil and environment [1]. The purpose of the research is to fix these problems by composting waste with Arduino to make the process of recycling food waste even better. The goal is to create a fertilizer that can make a good impact on the environment by reusing food waste. A microcontroller was implemented in the composting process to make sure it was working the best it could. This way, the eco-friendly project is hoped to not just help improve the soil but also help cut down the amount of food wasted.

As we know, composting is a highly flexible activity that can be carried out anywhere. Many people can do composting, but usually in a traditional way. This project, however, differs by incorporating electrical components such as sensors. The composting process can be significantly improved with the involvement of electrical systems compared to traditional composting. One of the reasons is the way we monitor the compost. Traditional composting requires manual monitoring, where caretakers need to check and assess the compost periodically. In contrast, using this project allows continuous monitoring, enabling automatic and real-time data collection. Another reason is the uncertainty of traditional composting. The quality of traditional composting is challenging to predict without continuous monitoring, and the parameters measured can vary greatly. In contrast, this project's sensor monitoring allows