

**UNIVERSITI TEKNOLOGI MARA**

**DESIGN AND FABRICATION OF  
AGRICULTURE SPRAYER**

**ARIF HAKIMI BIN ZAINAL ZULFIKAR**

Dissertation submitted in partial fulfillment  
of the requirements for the degree of  
**Diploma**  
**(Mechanical Engineering)**

**College of Engineering**

**Feb 2023**

## **ABSTRACT**

First of all, the objective of this product is to fertilize the plants and kill weeds at that farm. This project is suitable to be used by farmer in small farm or big farm. The design and fabrication of this product have some improvement that will ease their jobs to fertilize the plants and poison weeds. This product will increase rate of spraying the plants because the project design to have more nozzles compare to common sprayer that only has one nozzle. At this point, the project will spray large areas and faster that make this product work more efficient.

## **ACKNOWLEDGEMENT**

Firstly, I wish to thank God for giving me the opportunity to embark on my diploma and for completing this long and challenging journey successfully. My gratitude and thanks go to my supervisor, Sir Muhammad Faris Syafiq Bin Khalid

Finally, this dissertation is dedicated to my father and mother for the vision and determination to educate me. This piece of victory is dedicated to both of you. Alhamdulillah.

# TABLE OF CONTENTS

	<b>Page</b>
<b>CONFIRMATION BY SUPERVISOR</b>	<b>2</b>
<b>AUTHOR'S DECLARATION</b>	<b>3</b>
<b>ABSTRACT</b>	<b>4</b>
<b>ACKNOWLEDGEMENT</b>	<b>5</b>
<b>TABLE OF CONTENTS</b>	<b>6</b>
<b>LIST OF TABLES</b>	<b>8</b>
<b>LIST OF FIGURES</b>	<b>9</b>
<b>LIST OF ABBREVIATIONS</b>	<b>10</b>
<b>CHAPTER ONE : INTRODUCTION</b>	<b>11</b>
1.1 Background of Study	11
1.2 Problem Statement	11
1.3 Objectives	11
1.4 Scope of Study	12
1.5 Significance of Study	12
<b>CHAPTER TWO : LITERATURE REVIEW</b>	<b>14</b>
2.1 Benchmarking/Comparison with Available Products	14
2.2 Related Manufacturing Process	16
2.3 Sustainability/Ergonomic Related Items	16
2.4 Patent and Intellectual Properties	16
2.5 Summary of Literature	18
<b>CHAPTER THREE : METHODOLOGY</b>	<b>19</b>
3.1 Overall Process Flow	19

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of Study

Agriculture is one of important industry and there were a lot of job opportunities in Malaysia. Department of Statistics Malaysia state the contribution of the agriculture sector to Malaysia's GDP in 2020 is 7.4 per cent. This project aims to help farmers improve technic in agriculture. This project also is an innovation from other sprayer that commonly used in agriculture industry. The project designed to be compatible with farmer and easy to use it. It also suitable for farmer that has small farm or average farm. Next, farmer will spray more quickly and need less time to complete their work.

### 1.2 Problem Statement

Farmer must use a lot of time and energy to spray their plants. The spray that commonly used has one nozzle which make farmer can spray for small area. This will take long time to complete spraying all plants in farm area. Farmer also need more energy for spray because they need to carry sprayer tank that fill with fertilizer at the back. This will slow their work and not efficient.

### 1.3 Objectives

The main objectives of this project are:

- a) To design an agriculture sprayer that can spray more area for fertilization and pesticides in agriculture.
- b) To fabricate an agriculture sprayer that suitable in all farm size and more efficient.