

UNIVERSITI TEKNOLOGI MARA

**DESIGN, ANALYSIS AND
FABRICATION OF MINI SOIL
SEPARATOR MACHINE FOR HOME
GARDENER**

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ABSTRACT

This project focuses on the design and development of an innovative soil separator for small gardeners. Soil with a lot of impurities will make it difficult for plants to grow well. The soil separator plays an important role in separating the impurities such as stone, dried leaves and root. Current soil separators often suffer from inefficiencies, inconvenience, and high energy consumption. These problems will affect the soil and make gardeners' work time to be much longer, necessitating the need for advanced solutions. The purpose for this project is to minimize all the problems and develop an advanced soil separator to overcome the limitation of current models. This machine combining motor and mechanical screening to make a better soil separator than the current product. This will hugely help to separate the impurities more easily and conveniently. By applying sensors in this soil separator, real-time monitoring and control of the soil separator will be corporate. Successful implementation of the soil separator is expected to achieve environmental sustainability and improving resources efficiency.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Soil is a main part in supporting plant growth by providing nutrients, water, and physical support for roots. Soil has a composition such as mineral particles, organic matter, water, and air so that it is very essential for food production. It also provides the foundation for agriculture. That is the reason why it is widely used in the agriculture industry. Gardening has become a trend nowadays. Most of the people who love the nature view will do the decoration for their house with nature concept. It may be fun and relaxing for people who enjoy gardening. But the problem comes when the flower that they plant is dead and leaves impurities such as stone and roots. Separating the impurities from the soil manually will use a lot of energy and will be a waste of time. Even though buying new soil can be one of the solutions, it will cost a lot of money and become waste. Based on the case, soil separator machine should be used. The soil separator machine can easily separate the impurities from the soil, but it has disadvantages. The machine at the market is expensive and the size is huge. It is not convenient especially for homeowners to use it due to the small space at their house. The technology these days is getting advanced and could make a product become cheaper by using different materials for the product. The consider making a product that is suitable for all types of people is a must. By combining all the problems, an upgraded product can be developed and enhanced. The aim of this product is to develop a soil separator machine that is smaller in size and cheaper. So, the owner can buy it and can easily place the machine anywhere in their house. The machine also has a feature that can be run automatically and for the results, the owner can save a lot of energy and save much time.