



CHILI SEED SEPERATOR

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SESI JUN 2017

DECLARATION FINAL REPORT SUBMISSION

DECLARATION FROM STUDENTS (GROUP LEADER)

PLEASES TICK (/)



We have made all the necessary amendments based on comments and suggestions given by the supervisor and panel.



Format for report writing is in accordance with the coordinator format and style.



We have obtained approval of the report from the supervisor.



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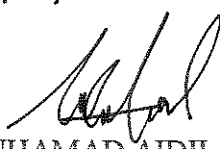

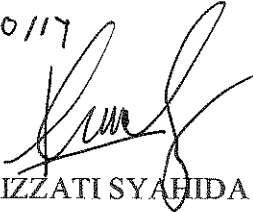
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APPRECIATION

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STUDENTS DECLARATION

"We admit that this project is the result of our own work except citations of which we have outlined each of the sources"

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ABSTRACT

This report presents a system for separating chili seeds from "mesocarp" with using a chili seed separator. The seed separator focuses on separating chili seeds in less time compare to manual method. The designed based on the up-to-date manual blender concept but it is fabricated into a chili seed separator pattern on the processed blade. The testing on the product was conduct based on the machine capabilities to separate the chili seeds and the production time compare to manual method. The result show four blades can separate the seeds from the chili more efficiently. From the testing and analysis, the product can reduce time as much 58 percent for the process of separating the chili seeds compare to manual method. The machine able to separate the chili seeds from the "mesocarp" where the collected seeds can reach up 80 to percent of the whole chili seeds. Therefore, the product is best suited for entrepreneurs and small traders which related to food industries.

ABSTRAK

Laporan ini membentangkan satu sistem untuk memisahkan biji cabai dari "mesocarp" dengan menggunakan pemisah benih cabai. Pemisah benih cabai memberi tumpuan kepada memisahkan biji cabai dalam masa kurang berbanding dengan kaedah manual. Reka bentuk ini berdasarkan konsep pengisar manual terkini tetapi ia direka bentuk dalam pola pemisahan benih cabai pada pisau yang diproses. Ujian pada produk itu dijalankan berdasarkan keupayaan mesin untuk memisahkan biji cabai dan masa pengeluaran dibandingkan dengan kaedah manual. Hasilnya menunjukkan empat bilah boleh memisahkan biji dari cili dengan lebih cekap. Dari ujian dan analisis, produk dapat mengurangkan masa sebanyak 58 peratus untuk proses memisahkan biji cabai berbanding dengan kaedah manual. Mesin itu dapat memisahkan biji cabai dari "mesocarp" di mana biji-biji yang dikumpul dapat mencapai hingga 80 peratus dari seluruh biji cabai. Oleh itu, produk ini paling sesuai untuk usahawan dan pedagang kecil yang berkaitan dengan industri makanan.

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CHAPTER 1

INTRODUCTION

1.0 Introduction

Nowadays, dried chilies become one of important ingredients especially in Asian dishes. Hot and spicy meals provided by dried chilies always make some people to feel spicy-but-delicious and therefore they become more desirable to be tasted. However, many problems or bad effects of the dried chilies especially concerning with its effects for human health. Consuming foods that contains chilies seeds for a certain period may cause appendicitis.

Appendicitis disease is generally caused by bacterial infection, but there are several possible factors originators who until now could not clearly know. Chilies seeds cannot be digested in human feces and therefore they are slipped into a channel as salty things, nor hardening feces (constipation) in a very long time there may be the seeds stuck into channel appendices which eventually became the media germs / bacteria nest and breed as the infection that causes inflammation of the appendix . Moreover, cooking with chilies seeds makes the dishes become yellowish and therefore reduces appetite.

As far as this issue is concerned, the chilies seeds need to be removed as much as possible before cooking. However, preparing unseeded chilies manually requires tedious steps and time-consuming in industries. For housewives, dried chilies are used in a small quantities normally ranges 40 grams per serving and therefore to undergo such tedious manual process of cutting, boiling, squeezing and blending which take more than 15 minutes is unreasonable if looking at the simple meals to be served daily. In addition, manual process using bare hands and this process leads to another uncomfortable situation where operators feel hot of the chilies on their hands due to direct contact with the dried chilies which are being processed.

1.1 Problem Background

While many kind of chili grinding machine were in market, most of it doesn't separate between the seed chili and the mesocarp when the chilies are blended. So, this is a problem to the currently restaurant workers and housewives because they need to cut chilies by manually using scissors and remove the seeds using sieves.

By using this way, it may take a lot of work processing and the time will be delay. Another problem is the output of the chili seed are decrease if they using the manual way. Sometimes, they will be rushing to use the chili and they do not care about cleanliness and health.

So, with the creation of this chili seed separator, it aims to accelerate the work of isolation the chili seeds for entrepreneurs and housewives.

1.2 Objective

The objective of this project is to fabricate the chili seed separator machine. This will be completed the following objectives:

- To reduce time during seeds separation process.
- More seeds separated from the chili's compare to manual method.

1.3 Scope of Project

The scope of this project is to build a chili grinding machine which separate the seed from the mesocarp. It is suitable for small and medium industry, catering service, hotels, Small and Medium Enterprises (SME) to facilitate isolation of chili seed for their cooking. It only can grind two different chili which are dried chili and red chili.

- a) Suitable for owner restaurant, catering services, hotels, Small and Medium Enterprises (SME).
- b) Types of chili that require this product
 - i. Dried chili
 - ii. Red chili

1.4 Expected Result

With the existence of this project, it can help users save their time in cooking. Therefore, it is a new design seed separator that can be marketing and people can buy this machine because of its reasonable price and greatly facilitating the work in food making. At the same time, experienced parties in the field of creation of new materials also need to make other improvements to produce a chili seed separator that has a better function.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

In this chapter, we have made some research on and about all aspects of our project for the production of the seed separator. Found that there are several aspects that need to be addressed so that the products are high quality.

The investigation are more on the concept of the fabrication between blade grinder and DC power supply. The process of separate the seed will be short than usual. The chili will put in the small holes at the top and the blade grinder will blend the chili. At the same time, the switch of button blower will be "ON" and can blow the seed to fell down. So, we can look the output of the seed are many than usual.

As such, some investigation was done to understand the concept and new ideas can be used to succeed for this project.

2.1 Study on Existing Projects

There are several methods been used to separate chili seed, where some of it use manually and some use machines. In terms of manual operation, it may to take long time to separate the chili seeds. However, by using the machine it more easily and fast. It also can get more quantity of the “mesocarp”. This is an example by manual and using the machine:

i. Manual Method



Figure 2.1: Manual operation of chili seed separation

The step to separate as shown in figure 2.1.1, the chili seed of the mesocarp using manual way are; first we need to cut the side of the chili so that the seeds in the chilli can be removed. After that, separate the chili seed from the mesocarp. Sometimes, its hard to separate ,so that we need to puff and tap it. Then, cut the chili part by part for it easily to grind. After done all the step, the the chili can grind well. It is already proven, by using this manual method requires a long time to isolate chili seeds from mesocarp before the chili can be blending/grinding up.

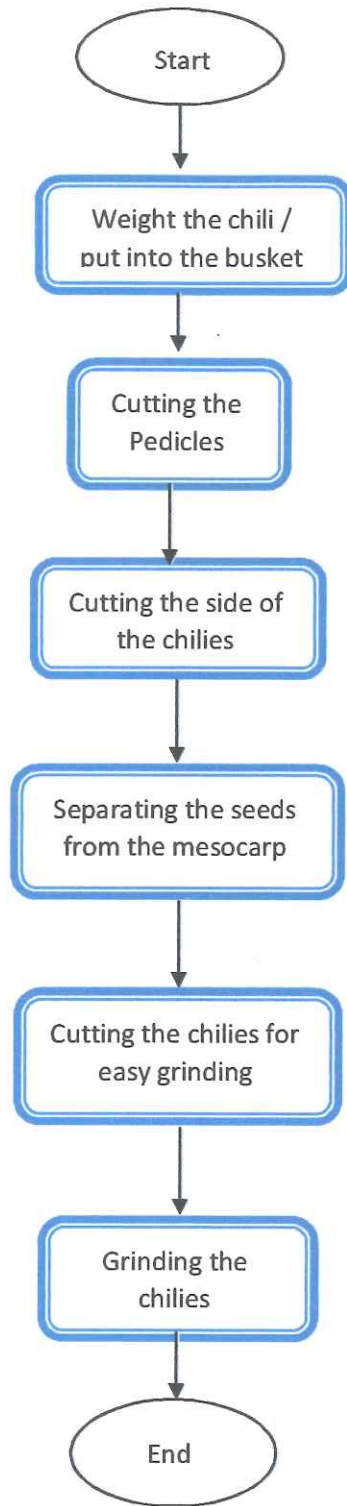


Figure 2.1.1: Flowchart of process separate chili using manual method

ii. By machine



Figure 2.2: Seed separator machine (Res: alibaba.com)

(Machine A)

This chili seeds remover installed with blades and sieve inside, the blades will cut the chili into sections first, then separate the 'mesocarp' and seeds, the chili seeds will fall to the bottom by the vibrating sieve. And the chili seed will be sent by the belt conveyor to the next processing part. The chili seeds come out from this machine can be packaged directly.

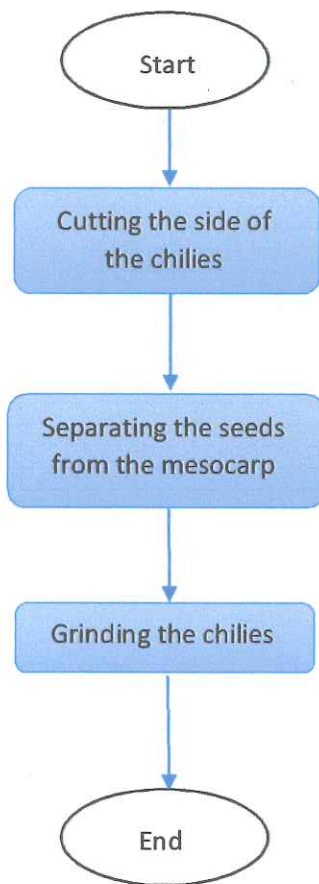


Figure 2.2.1: Flowchart of process separate chili using machine



Zhengzhou Jiaying Machinery Equipment Co.,Ltd



Figure 2.3: Dry Pepper Seed Separating Machine (Res: vet-research.net)

(Machine B)

Examples of machines used in large industries to separate dried chilli beans



Figure 2.2.4 : Seed separator machine at the big industries (Res: cnprocess.com)

Zhengzhou Yingwang Machinery Co., Ltd

wechat/ whatsapp/ mob: 0086-18137122335 Email: kingmachinery@163.com

Chili seed removing machine



Figure 2.2.5: High quality dry pepper seed separating machine (Res: alibaba.com)

2.2 Materials

Commonly, to fabricate machine for food purpose needs material which is save when it is contact with the food being process.

2.3 Component

Generally, it can be classified into several parts which are:

1. Structure
2. Casing
3. Hooper
4. Blade
5. Tray
6. Netting

Table: Analysis of materials used by previous grinding machine

Component	Machine A	Machine B
Structure	Stainless Steel 304	Stainless Steel
Hopper	Stainless steel (Shaped like a funnel and narrower)	Stainless steel (Float and bigger)
Blade	Stainless steel (Blade shaped like a fan)	Stainless steel (Blade shaped like a fan)
Tray	Stainless steel (Thin, wide and square-shaped)	Not using the tray but placed the retainer under the mesocarp output funnel
Netting	Plastic PVC (Using the tray as a mesocarp buffer)	Mesocarp direct out through the funnel

CHAPTER 3

METHODOLOGY

3.0 Introduction

For this chapter of methodology, it is largely focused on the manufacturing process of the project.

The methodology for this project covers on the framework, conceptual design, project schedule, material and components selection, fabrication process functional flow chart and expectation total cost.

In general, Chili Seed Separator Project involves many mechanical process machine such as grinding, welding, plastic fabrication and another else. Other than that, the measurement process also involves in incomes and completeness this project. All of this process have continuity and connection between each other. Then we were working system involve the design, installation and modification and testing.

3.1 Framework of the Study (Using Flow Chart)

Based on figure 3.1 , this flow chart is began by making the design of the product that will be done. The design done must be cover all aspects including safety, wiring and so on.

After that, we are going to doing the material selection. The material selected is covers aspects such as food grade for the skeleton create. The blade of this machine were chosen for existing grinding machine that have two blade and it have been weld to combine for four blades.

After completing all of the above steps, we continue to perform experiments on these machines and take the data to be analyzed. The experimental process was carried out using several grams of chili beans.

From experiments conducted on this machine indicate the objective of this chili seed removed from mesocarp has been achieved.

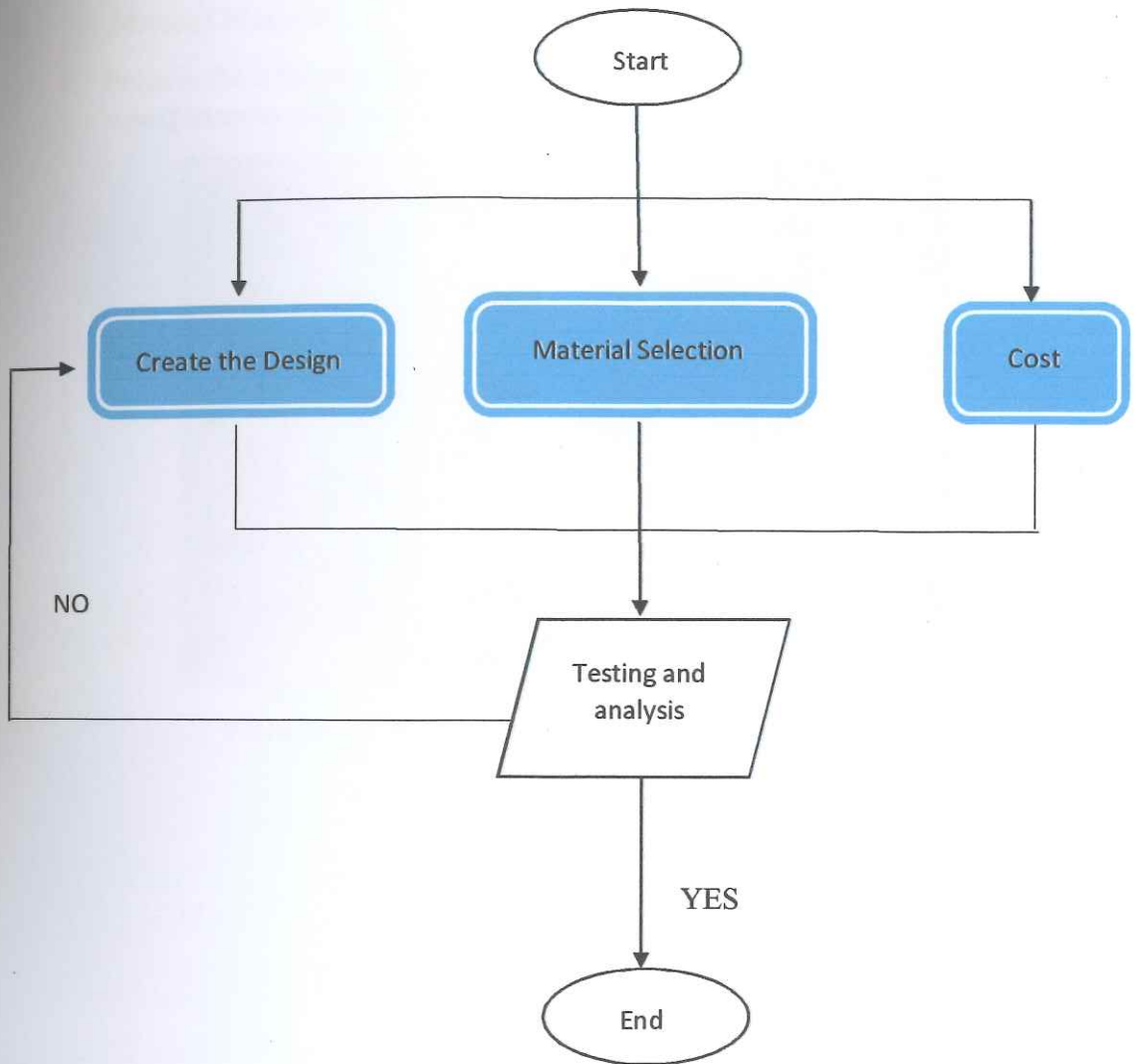


Figure 3.1: The flow chart of project

i Manual Method

1. Prepare the following ingredients: dried chilies, scissors, bowl for dried chilies, newspapers to make as a base.



Figure 3.1.1: Prepare all the items that we need to use