



Coriander Splitting Machine

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ABSTRACT

The coriander seed used in agricultural purpose. We also, seen the splitting of coriander's hand splitting process having large human efforts and time consuming process. But some time coriander seeds are crushing and this crushing seeds are not used in agriculture. Due to this coriander seeds are not effectively used in agriculture therefore in this project, we have tried to overcome the disadvantages of previous one. Now a day, every instrument was developed and modified according to need and so that in development takes place to fulfill the need of production.

Key Words: Coriander, Coriander production, coriander splitting etc.

I. INTRODUCTION

Coriander (*Coriandrum sativum*) generally called as "Dhania" belongs to the A piaceas family. It is mainly grown in Rajasthan, Gujarat, Madhya Pradesh, Tamilnadu and Uttar Pradesh. It is used as a condiment for its medicinal properties. The green leaves of coriander are also used for culinary purposes. Coriander crop requires a cool climate during the growth stage and warm dry climate at maturity. It can be cultivated in most types of soils, but well-drained loamy soil suits the crop well. Cold climate and high altitudes may lead to superior quality seed and higher essential oil content.

Coriander is native to regions spanning from southern Europe and North Africa to southwestern Asia. It is a soft plant growing to 50 cm (20 in) height. The leaves are variable in shape, broadly lobed at the base of the plant, and slender and feathery higher on the flowering stems. The flowers are borne in small umbels, white or very pale pink, asymmetrical, with the petals pointing away from the center of the umbel longer (5–6 mm) than those pointing toward it (only 1–3 mm). The fruit is a globular, dry schizocarp 3–5 mm (0.12–0.20 in) in diameter. Although sometimes eaten alone, the seeds often are used as a spice or an added ingredient in other foods.



Fig, 1 Coriander

II. PROBLEM DEFINITION

Based on the survey considering all the problems faced by manually crushing of coriander seeds for the cultivation purpose, we decided to manufacture a machine having problem statement as follows:

"Design and development of Coriander Splitter" This project is agriculture based and is meant for small scalesplitting of coriander seeds for easy and quick cultivation for farmers. Also this kind of machine is not available in the market so it is better to use this machine to increase productivity and to reduce wastage. So this coriander splitter machine will have low cost and compact in size.

III. Visit Report

Visit to farmer (survey of manual coriander splitter.)

Name- Balasaheb Radhakrushna Tarvade

Tal- Shirampur

Dist- A.nagar

Q 1.-What is your cultivation area for coriander?

Ans-Acre.

Q 2.-How do you plant corianders?

Ans-By traditional method using hands.

Step1-Land preparation.

Step2-Ploughing.

Step3-Seed plantation.

Step4-Irrigation.



Step5-Harvesting.

Q3.-How do you split the corianders? Do you use any machine or instrument?

Ans.-Split is done by hand. No machine is used.

Q 4.-At what rate do you split the coriander?

Ans.-2.5to3kg/hr.

Q 5.-What is the drawback of splitting corianders with hands?

Ans.-Pain in hands and wrist stone or tough surface is used which leads injury to fingers. Back ache due to sitting in an uncomfortable posture for hours. It is a time consuming process. Continuous work leads mental fatigue and boredom. And chance of crushing the seed is more and wastage of seed.

Q 6.-What are planning to manufacture of low cost power operated coriander splitter? **Ans.**- We will look forward to use this machine. It will reduce our effort and increase comfort and the rate of splitting the coriander is increase so we are looking forward to it.

IV. Proposed Approach and Method Implementation

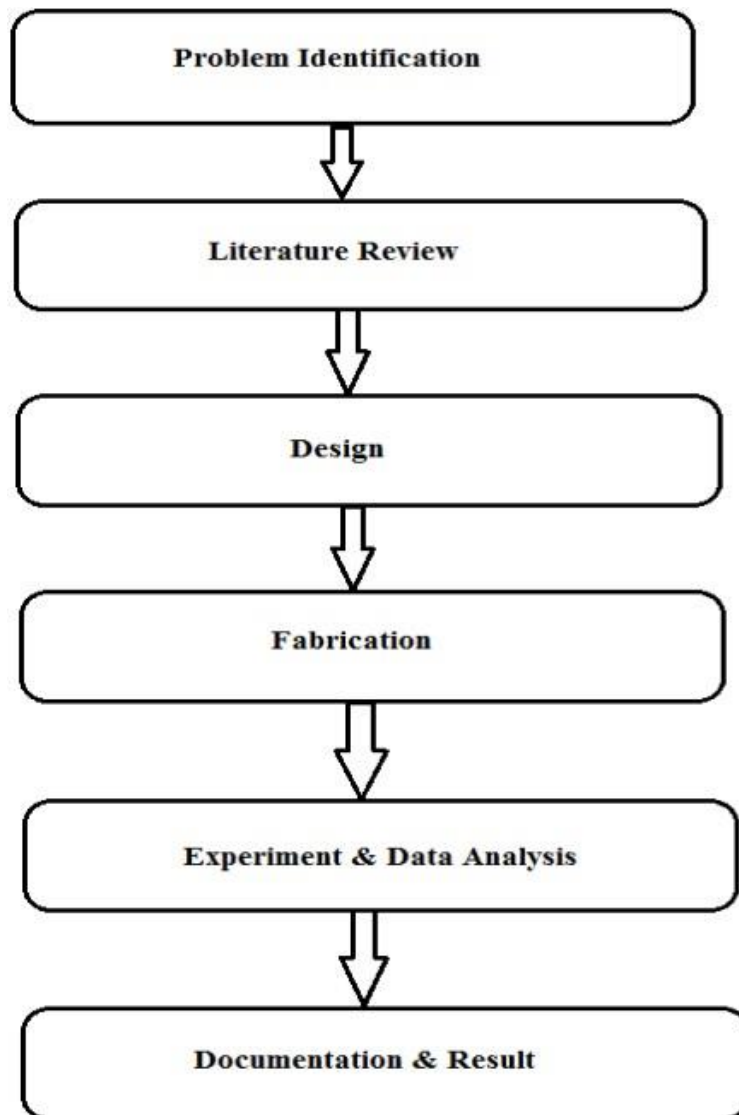
Methodology deals with design &fabricated all of component which is to be usedin the machine with required modification. Firstly synthesis the all the problem whichare consult with project. After that design complete atomize machine, then regardingdevelopment done on coriander seeds splitter machine.

Parameters will be selectedaccording to objectives.2D & 3D diagrams of components and assembled machine andline diagrams with labeling. The various instruments used for fabrication of machine. Asseen on other projects like groundnut shelling machine, Jatropha splitter machine it isbased on manually operated (paddle operated). Existing project will be modified bymaking motorized (semi-atomize) for coriander seeds. Another problem is that using

present method to split coriander seeds, they got split into more than two halves which isundesirable. This problem will be removing by using rubber covered rollers to splitcoriander seeds. By making motorization (semi-atomizing) productivity improve withminimizing time consuming and damages of coriander seeds, capacity also improve. Theapproach will be synthesis, design, development & testing of the machine.

Bykeepingthe point in our mind, we think that we should make such a machine, whose productioncapacity is more & machine gets operated on 1 H.P. electric motor instead of manualwork.

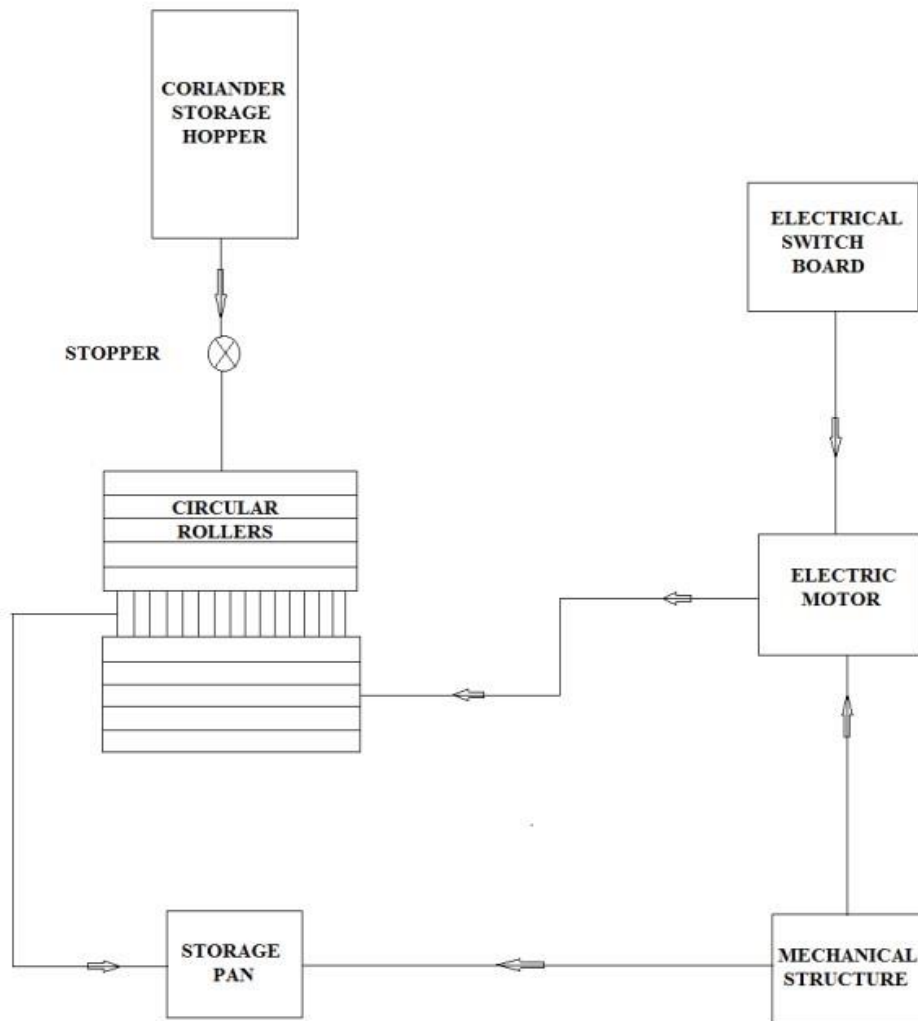
V. FLOW CHART OF METHOD IMPLEMENTATION



VI. WORKING PRINCIPLE

Coriander splitter works on the various physical & mechanical properties of the coriander seeds. The seeds of coriander are required to be splitted into two halves before sowing for good seed germination and also processing it as mouth fresheners. Traditionally the seeds are splitted manually and this operation involves drudgery and more time besides post-harvest losses in terms of seed damage. The mechanized operation is therefore essential. A machine split coriander are designed and developed by us. The machine is powered by 20 kg-cm torque dc motor with capacity 20-25 kg/hr. The machine is equipped with two rollers of 163mm diameter and 482mm long. The differential speed is provided into two rollers so that coriander would break into two halves. Machine is able to split the coriander at moisture content up to 14.2%.

VII. BLOCK DIAGRAM



FIGURES

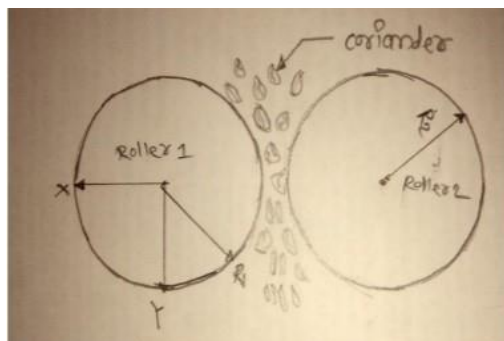


Fig. 2 Side-view of roller 1 and 2 of the configuration with a Coriander

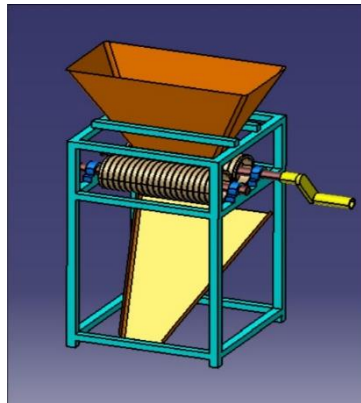


Fig.3 3D view of Coriander Splitting machine

VIII. OBSERVATIONS

To crush 1kg of coriander seeds following times are observed,

Sr.No.	Manual output	Machine output
1.	30-35minutes	5-6minutes

Table -1: By Electrical Operated

Speed (RPM)	Quantity (gm)
100	360
200	720
300	1080

Table- 2: By Hand Operated

Time (Min.)	Rpm	Quantity (gm)
1	50	250
10	50	2500
60	50	15000



IX. CONCLUSION

1. Proper evaluation of the design will be performed and created something even better instead of simply manually operated operations.
2. Finally we conclude that atomize machine is better option to use farmer instead of manually operated.
3. While designing this machine farmer and other customers are also considered.
4. Purpose of fabrication of the Splitter was to determine the suitability of machine for farmer's use.
5. Therefore on the completion of this project, we conclude that the "Advanced Coriander Splitter Machine" will save the tremendous time, energy manpower and save financial input of the project, reducing the cost and time considerably which is the backbone of the present world economy.

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