

Design and Analysis of Almond De-husking and De-shelling Machine

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Abstract:

The problem that plague Indian agriculture at present are the capital and labour, especially in the rural areas. Problems related to irrigation, market and transport facility add significant cost to farmers' operations. Since long time, Indian farmers have been facing a number of socioeconomic problems, such as harassment by moneylenders, inability to repay debts following crop loss, inability to get medical treatment for the family, etc. The problem is compounded by lack of positive and cooperative support from banks especially in the face of inclement weather and market fluctuations.

There is no commercially available machines for De-husking manually operated have yet been developed that can reliably remove husk and selling with embedded shell after harvest remove hull promptly from the nut in the home orchard. Hull remove best done by hand for the Indian occurring almond. Other machine available only for the foreign seed almond in mass production level which is highly cost which is not suitable for the batch production as a side business for the former which is full-fill the defined requirement of basic condition.

There for my approaches to develop low cost portable alternative for almond seed processing for raw almond extraction process which is suitable for the low income former to maintain its live hood with the help of such side business. Side business play a important role if which is on the agriculture if failure in the farm which give economic support to the farmer

Keywords — Design tool, piston (punch) base, guide and its analysis

I. INTRODUCTION

There is need for a method to developed sustainable model for agricultural growth should be coupled with food processing industries to bring prosperity to the former.

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To design a hand operated manual machine for de-husking and de-shelling of almonds

The primary objectives of this study can be summarized as follows:

- [1] Simple design and light duty construction provide year of trouble free operation.
- [2] Easy cleaning and maintenance feature reduce cost.
- [3] Find out most convenient method for small scale almond processing plant.
- [4] To develop a general design procedure with minimum cost.

- [5] Physical contaminants (foreign material) to the best of their ability.
- [6] Implementation of industry specific Good Manufacturing Practices.
- [7] Easily one man operated machine

II. LITERATURE SURVEY

2.1 Scenario of almond production-

Below are some of the commercial varieties of Almond cultivated in India. Non Pareil, California paper Shell, Merced, IXL, Shalimar, Makhdoom, Waris, Pranyaj, Other high yielding cultivars are Ne Plus Ultra , Primorskij, Peerless, Carmel, Thompson, Price, Butte, Monterey, Ruby, Fritz, Sonora, Padre and Le Grand.
Yield of Almond Crop:- Almond Average yields UP TO 1 to 2 tones /ha.

Table no 2.1- Indian almond supply scenario

In tonnes

Period (April to March)	Indian domestic demand	Export demand	Total demand	Indian production	Gap in supply to be met by import
2011-2012	18543	4000	22543	20000	2543
2012-2013	18164	3800	21964	20500	1464
2013-2014	19432	3380	22812	21000	1812
2014-2015	18130	4900	23030	22000	1030

2.1 Current Methods: In production point of view almond processing machine available which is only suitable for the foreign almond which cost is not affordable to the small land holder about 60000-100000 rs in market.

For that De-husking is done automatically after harvesting and allow to keep 6-7 day in sunlight. Then no need the DE-husking.

Now most of the almond Indian seed which is own advantages in ayurvedas so it grate demand in it which is processing by manual basis there no commercially available machines have yet been developed that can reliably remove kernels with embedded shell and waste of almond at domestic level because of lack of machine.

According to survey demand is high on that and other consideration we decide to this project.



Fig no 2.1 De-husking and De-selling by manually

III. PROBLEM FORMULATION

A professional ‘almond sorting, grading and processing’ company manually sorts the almonds, grades different types, De-shelling, and does quality control of end-product in a factory in the outskirts of city. The end-product will be packaged in basic bags with a label ‘Made in Name’ and transported to nearby market, to a buyer/trader of other fruit/nut products, or via to normal export-markets directly. An alternative way to organize the work process will involve the farmers, (farmers’ wives) to do de-shelling by hand, and/or first sorting and grading. Company buys product at higher price, for final check, quality control, packaging in factory, and organize transportation to markets. The factory set ting creates potential for expansion in low-value almond processing. Cost of the these type of machine is to more, it is not possible in small scale, due to this wastes of almond is taken place at ground level like 3-4 almond tree in home to overcome such type of problem we would now developed a small scale machine at ground level and provide small business avoid the wastes of it.

There for we now design following part we listed as follows-

- Base(frame)
- Tool
- Guide
- Lever
- Piston (punch)
- Pulley

Software Tools-

AUTO CAD which is used to draw the details drawing of the project design and analysis soft.

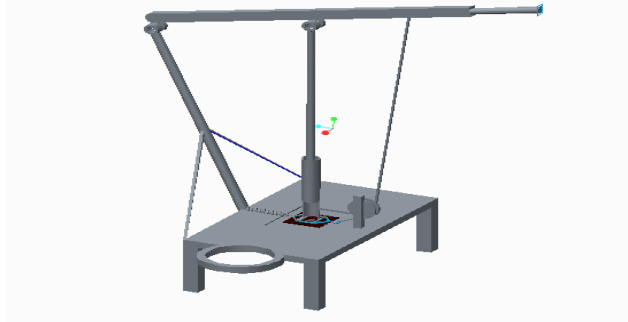


Fig no.3.1 Assembly of design machine

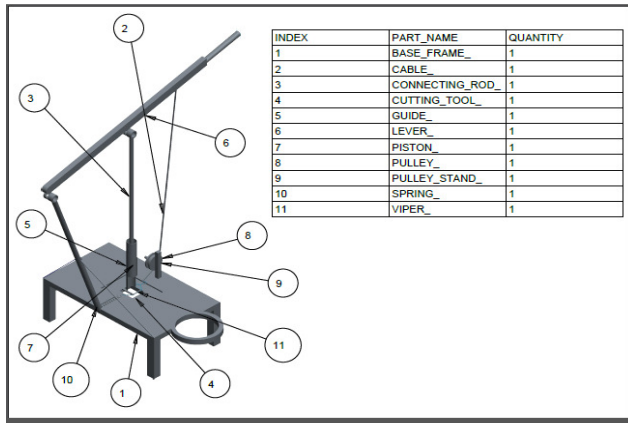


Fig no. 3.2 Design with all components.

IV. OBJECTIVE & CONCLUSION

In this chapter we study all the research paper related with De-husking and De-shelling machine design, feasibility and standard to be referred during designing and test.

According to this paper we design a new machine to help the former to help in a economic point of view in any situation

The main objective of “Design, Development & analysis of De-husking and De-selling” is -

- To help the all former to help in economic point of view.
- Easily one man operated machine.
- Fully manual operated.

- With low fabrication cost.

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