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Pedal Operated Areca Nut Peeling & Crops Dehusking Mechanism

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Abstract—*Agriculture is the one of the basic source to the formers. However the dehusking crop is done manually by using sharp edges. By this method the production rate is low and the consumption of time is more. So it is necessary to develop an agricultural machine to increase the production rate and to decrease the time consumption. There are many number of crops are available in India like Areca, soya, green gram, tur, moong. Currently few machines are available for dehusking the crops. But machines which are available in market are not affordable by normal people due to their high cost and high maintenance. In order to overcome these problems this project is proposed, in this device the pedal operated mechanism is incorporated. In this Potential energy of human is converted to kinetic energy and utilized the same. The machine assembly consist of pedaling mechanism hence it is affordable to everyone. The dehusking is made by the rotating of the driving shaft which consists of sharp edges on its periphery. The pedal is operated by manually which rotates the driving shaft with the help of chain sprocket and gear drive. This mechanism can be used to accommodate different size of various crops are cultivated anywhere in the world. This work mainly concentrating on peeling of areca nut.*

Keywords— *Pedal operated mechanism, Areca nut dehusking.*

I. INTRODUCTION

Farmers are the backbone of the country, out of 1.2 billion total population, the farmers in India is 600 million i.e. 50% of total population [4]. In order to enhance their crop production it is necessary to implement the new technologies and new concepts to be applied. The main crop of the country is areca, soya, moong, tur, green gram etc. Farmer cultivates the crops and they investing more than 20% of their profit for the dehusking. The manual dehusking process shown in fig. 1 by this method the production rate is very low and labour cost is more. Farmers are struggling on manual method of dehusk, so in order to overcome the problem this project had initiated.

Fig. 1. Manual dehusking.

Objectives: Objective of the project is to develop a mechanism for dehusking of crop like areca nut, moong, tur, soya etc. These problems can be overcome by developing a machine which can efficiently and economically dehusk the crops. The machine should be able to accommodate various crops and it must also be easy to operate, eliminating the need of skilled labour.

II. DEVELOPMENT OF MECHANISM

The mechanism consists of rotating shafts with blade, rough surface hollow tube, bearing, hopper and frame.

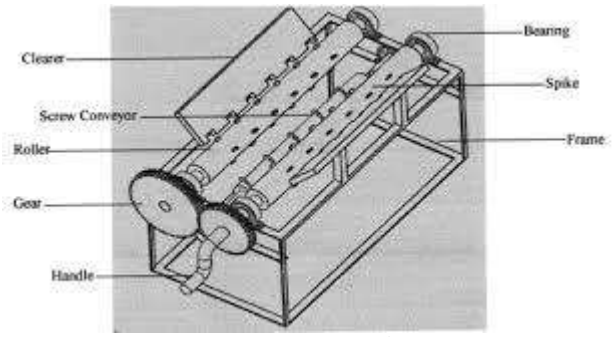

Fig. 2. Schematic representation of proposed work.

III. CONSTRUCTION OF WORKING MODEL

The blade is an important part of this mechanism with sharp edges to cut the crops. The material used is mild steel for withstanding different load condition. The blades are placed on the periphery of the 2 rotor shaft at an angle of 45^0.

Specifications of blade:
Width: 30mm
Length: 320mm

Specifications of blade:
Width: 30mm
Length: 320mm
Thick: 3mm
Material: Mild steel

Fig. 3. Pedal operated crop dehusking mechanism.

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The mechanism consist of two rotating shaft with blade, another additional supporting shaft is maintained. The principle is simple i.e. potential energy of human is converted into kinetic energy of the rotating shaft, the pedalling mechanism has a one sprocket with chain connected to the driving shaft consist of spur gear which rotates the driven shaft and supporting shaft. When the crop undergoes the rotating elements it gets crushed up and segregated seeds and shells and collected at bottom. Fig. 3 shows the pedal operated areca nut and crops dehusking mechanism

Following types of crops can be dehusked by using this proposed method;

- Areca nut
- Soya bean
- Green gram
- Whte gram
- Tur
- Moong

IV. Future Scope

The mechanism can be converted to machine in future by providing motor in order to enhance the production rate and minimize the labour cost.

V. Conclusion

The Agriculture is in developing stage, but in the equipments condition Indian Agriculture is far behind so this project may little helpful to the farmers. Different type of crops can be cultivated from this proposed work, this is affordable to everyone and even this mechanism helps youngsters to keep their body very healthy, it works without electrical and even it is maintenance free.

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