# Review of Paddy Cleaner Machine for Rice Husk

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***Abstract*: The traditional rice miller costing too high so that the small scale farmers cannot afford it. Resulting in fabrication of paddy cleaner for rice husk. It is almost half of price of the rice miller available in the market and it is easy to afford by the small scale farmers. It produces 95 percentage of the clean paddy or dehusked paddy and only 5 percent of the foreign particles including sand particles, straws, and stones. Operation involves feeding the paddy into the hopper, crushed in between two rotating drums powered by electric motor. Finally, the clean paddy gets separated by forced air circulation of blower.**

***Index Terms*: Dehusked paddy, foreign particles, efficient, Blower, Drum, Hopper.**

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## I. INTRODUCTION

Agriculture is one of the most important pillar of the indian economy. The future of human is fully depends on the agriculture. Now the major challenge is to accelerate the growth of agriculture. India is the second highest producer of rice after china. The rice consumption is increasing day by day. If country's agricultural sector is good enough to produce more or equal to the demand then there is no need to import from other countries and selling at higher cost. In contrast to this if we create surplus then exporting option resulting into the picture.

In India West Bengal is the highest producer of rice nearly equal to 15.75 million tonnes over 5.46 million hectare cultivable area. Uttar Pradesh, Punjab, Tamil Nadu, Andhra Pradesh, Bihar are also ranked in rice production after West Bengal. There are various types of rice cultivated in India- Ponni rice (Tamilnadu), Sona masoori (Andhra Pradesh), AmbeMohr (Maharashtra), Wada kolam (Gujarat), Gobhind bhog (Bengal), Matta (Kerala).

The Paddy cleaner machine is designed to to remove the foreign elements such e.g. sand, dust, small stones etc. This machine provides an alternative to farmers instead of traditional winnowing technique and rice mill. By the use of Paddy cleaner,farmer can avoid the extra charge of rice mill and minimize the efforts required for winnowing.

## II. LITERATURE RIVIEW

There are various paddy cleaning machines currently available in markethere are various paddy cleaning machines currently available in market but these machines are not portable, bulky and ofcource of higher cost and takes much space. Also, the existing machines are designed for greater capacity and hence are expensive. Moreover, the machine can do the work as equal to twenty workers. After analyzing most of the papers it is noted that the shaft diameter ranges from 20 mm to 30 mm and motor capacity 0.25 HP to 1.5 HP depending upon the capacity and application. The machine can dehusked the paddy upto 2-3 ton/hour, the weight is upto 120 kg. Some researcher employ vibratory sieve mechanism, blower or fan to get clean paddy, some of them used two or three pulley for transmitting motor power to shaft, someone applied rubber or other materials cladding over rotating drums to avoid the extra crushing force on paddy.

## III. TYPES OF PADDY CLEANER

A. According to Dehusked Mechanism(Drum)
   M.S. Drum without Rubber Cladding
   M.S. Drum with Rubber Cladding

B. According to separation mechanism
   Vibratory mechanism
   Blower mechanism

C. According to pulley used
   Single pulley
   Double pulley

D. According to capacity
   1-2 tonne/hour
   Upto 1 tonne/hour

## IV. COMPONENTS USED

-Frame
-Electric Motor
- Drum
-V belt
-Pulley
-Hopper
-Fan/Blower

Frame:

The frame is nothing but the base which is used for supporting the weight of the whole assembly and takes all kind of load. The material used for the frame is Mild Steel square bar. The height of the frame is 0.7 meter.

Fig. 1

Electric Motor:

It is used to rotate the drum with the help of V-belt and pulley arrangement.
Output = 230 volt
Current = 3.5 amps
Power = 20 watt/0.25 HP

Fig. 2

Drum:

There are two drum made up of mild steel with rubber cladding rotates in opposite direction. Paddy gets crushed in between rotating drum.
Outer Dia, Do = 150 mm
Inner Dia, Di = 138 mm
Length, L= 100 mm

Fig.3

V- Belt:

Here, the distance is small, hence v- belt is used. The Belt is used to transmit rotary motion of motor shaft to the drum shaft. The material for belt is rubber or polymer for better strength and reinforcement.

Fig.4

Pulley:

Pulley is used to transmit the torque of motor to the drum. V-belt in mounted on it for this purpose. There are two pulley, one is readily mounted on motor shaft and another is mounted on shaft of drum. Now the role of v- belt comes into action.

Fig.5

Hopper:

Hopper is the storage unit for paddy before getting crushed. It is square tapered part made up of steel, in addition to this adjusting mechanism at the bottom to control the flow of paddy into the crushing unit i.e. rotating drum.

Height = 300mm

Fig.6

Fan/Blower:

Traditional winnowing technique is replaced by the fan or blower. Fan separates dehusked paddy into clean paddy and foreign particles by the forced air circulation. The velocity of fan is equal to 2.621 m/s required to separates clean paddy and unwanted items.

Fig.7

## V. FUTURE SCOPE:

The paddy cleaner can be used to clean other grains by adjusting suitable distance between the rotating drum as per the grain size.
By updating motor capacity and drum diameter we can use it for higher capacity.
Also, paddy cleaner can be run on solar power.

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## VII. CONCLUSION:

By taking problems into consideration of the existing paddy cleaner, we need to design a paddy cleaner which should not take lot of space i.e. compact, portable and versatile, inexpensive so that small scale farmer can afford it and capable of dehusk 95% of clean paddy.

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