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Enhancement of Orientation of Corn Shelling Machine

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Abstract - Shelling is one of the most responsible and post-harvest operations of the plant. Production of various types of grain, peeled from the bark and traditionally. It is a traditional show of corn and the most time-consuming activities included hard work, grain loss and felling, chipping through a bite, using sticks, and using animals to step on multiple locations. Modern corn huskers tend to be large and heavy, high energy, which require high scaling capabilities. Additional expenses, the purchase of huskers, this is a high level of agriculture, small farmers-owners. Therefore, the aim of this study is to design, construct, and evaluate the performance of a small corn husker engine management system. It was built with both local, affordable materials and its cost is very low and affordable. The main components of the machine are: hood, scale block (musician, drum and concave), outer cover, shaft, frame and exhaust port. The location of these elements in relation to the belt and pulley. Engine capacity of 2 HP. provides drive through pipeline connections with the drive pulley show in between.

Existing methods in the case of maize, de-zoom, the agro-industrial complex consists of crushing grain manually or using machines to the proper extent, and not one of them is effective, so as not to invest money in the development of the economy, public relations. Therefore, there is a need for an innovative idea for a product that is feasible, safe, cost-effective and efficient for the Indian farmer.

Keywords: Agriculture, Corns Production, Shelling Machine, Efficiency etc

I. INTRODUCTION

In India, Corn is one of the most important crop and it's source of a large number of industrial products besides. It's also use as a human food and animal feed. Every part of Corn has economic cost of grain, leaves, main crop stalk, tassel and cob can all be used to as food and non-food products. After harvesting with Sheller and plucking of cob by hand, de-husking of cob is done to remove its outer sheath and further grain is obtained by shelling the cob, i.e. Beating the de-husked cobs with stick or with finger or sickle, etc. To overcome this problem of removing its outer shelling and de-husking the cobs this machine was developed. The machine basically compromises of separate shelling chamber, collecting plate, and motor (1HP). The arrangement of their parts is connect by belt and pulley mechanism. Most of the farmers shell corn by mainly three methods namely shelling cob grain by hand, hand operate corn Sheller and beating by stick method were carried for removing corn from the cob. For removal of corn shells and to de-seeding of the corns with minimum damage to the corns Maize is the most important cereal grain in the world, after wheat and rice, providing nutrients for humans and animals and serving as a basic raw material for the production of starch, oil protein, alcoholic beverages, food and more recently, fuel. This study provides alternative options that meet the sheller needs of such rural farmers. The design of this maize sheller aids its possible construction from locally available materials to shell maize and separate the cob from the grains and its cost is projected to be low and affordable with high shelling efficiency and acceptable grain damage. Thus, the sheller can solve the problem that rural farmers facing to shell maize for household consumption. Based on the performance evaluation results, the sheller could be efficiently, effectively and economically used by the majority of Indian small holder farmers.

II. PROBLEM IDENTIFICATION

Current corn huskers are usually large and heavy. The solution to this problem in the direction of a certain amount of work has been done significant work, with the help of various means. But the high cost of cars and engines, combined with weight, affects its adoption. In addition, the undulating terrain in some parts of India, as well as the small and fragmented nature of land ownership by farmers in this area, plays a major role in limiting the use of the technology. Therefore, finding an acceptable, cheap and effective means of removing kernels from cobs is an important last step for small and even medium-sized farmers in the country to use, maybe in the family.

III. AIM

The main aim of the study is to enhancement of orientation of existing corn shelling machine.

IV. OBJECTIVES

- A. To study of existing machine.
- B. To Design, development and Enhancement of existing machine.
- C. To design the components of proposed machine by CAD drawing.
- D. To Fabricate Proposed machine.
- E. To perform test and experimentation.

V. PROJECT DESIGN

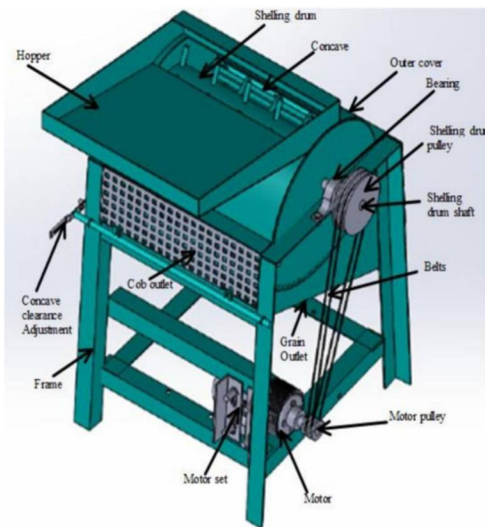


Fig.1. Design of proposed corn shelling machine

VI. WORKING

The machine was designed and constructed to remove maize from its cob; this is achieved by the rotary motion of the shelling drum. A 2 hp electric motor provides drive through belt connections to drive the pulley on shelling drum. The maize cobs were introduced to the machine through the hopper and passed through the restricted concave clearance between the shelling units.

The spikes teeth feed the maize through the shelling unit and at the same time shell the maize by rolling, impact and crushing action against the concave and each other. Because the spikes are arranged in a zig-zag form, the whole maize moves along the length of the sheller in the forward direction until they reach the cob exit spout. Under the shelling drum there is the perforated concave which allows the grains to drop easily out of the shelling unit. The outlet is designed to collect grains from all sides of the concave into a receiver.

VII.FABRICATION COMPONENTS

The proposed corn sheller fabrications were based on dimension obtained from the design using software. The machine consist,

- Frame,
- Drum with spike,
- Shaft,
- Semi-circular grill,
- Outer cover,
- Hopper,
- Outlet,
- Belt,
- Pulley
- Motor.

VIII. ADVANTEGES

- A. Corn Husker is an easy-to-use tool that allows you to peel corn several times faster than manually.
- B. The device has the added advantage of being long-lasting, portable and transparent to users.
- C. Corn peeling can be done for a fraction of the cost of mid-market options.
- D. You can easily move it around more convenient to use.
- E. Low level of core corruption.
- F. The delicatessen machine requires a small amount of space.

IX. APPLICATION

Corn husks secrete corn from the cobs at an amazing rate, and the seeds can remain intact, which is widely used for animal husbandry and agriculture, as well as for everyday use by humans.

- A. Used in agriculture.
- B. The use of starch industry.
- C. The device can be very useful for small farmers and local purposes

X. RESULTS

The results on the technical features of corn (maize), design and construction of various components of the corn cleaner, testing and evaluation, experience of the corn cleaner are presented and analyzed.

A. *Total Mass & Cost of all Components Parts of the Maize Sheller Proposed:*

Sr. No.	Components	Quantity	Total Weight (Kg)	Cost
1	Frame	1	7.4	592
2	Shelling Drum	1	4	320
3	Spikes	1	1.1	100
4	Semi-circular grill	1	5.3	430
5	Outer cover	1	2	70
6	Hopper	1	12.4	2000
7	Outlet	1	2.4	300
8	Shaft	1	3.8	400
9	Bearing	4	3.3	800
10	Stand	1	1.5	150
11	Pulley	2	2.4	400
12	Bolt and nuts	16	1.32	500
13	Other small parts			500
14	Motor	1		5000
15	Machining			2000
Total	-		54 kg	15000

The total weight and cost of an extension aging machine against tropical maize plants were calculated and compared with existing machines, the cost and weight of available machines (32,000 pcs and 85 kg) and the value and importance of improving the machine (15,000 pcs and 54 kg).

B. *Effect on Efficiency of Enhanced Corn Shelling Machine:*

- Forces required to shell corn-735.15 W power (s shock line)
- Power is provided from the firing drum
- Improved aging machine against tropical corn plants-865 W, power.

Based on the above analysis, it shows that improvements in maize (aging machine vs tropical maize plants increase efficiency compared to existing maize (aging machine vs tropical maize plants. The total cost required for the products is also reduced, the total weight of the machine is also reduced and very expensive, easy to use and make its compact design. As can be seen from the above data, we can say that this project is being done to "Improve the direction of the aging machine against tropical maize plants", but as you would expect .

XI. CONCLUSION

The sheller is simple, not bulky and its capital investment is small compared to existing power scaling methods. A sheller can significantly help reduce the human labor that a fire needs, at a reasonable price, and also reduce the number, time of use, to increase the experience of working in small household purposes, and lower energy costs. This will help improve the processing and production of maize in India, because the sheller is convenient to keep easy and convenient to use, in addition, it was built and local material that the parts are easy/easily accessible to repair and / or replace parts if they are broken. There is no doubt that the husker helps to reduce the long-term problems of corn cleaning and, in particular, small farmers.

XII. FUTURE SCOPE

The performance evaluations made indicated that the sheller proposed can be used successfully for small and medium scale farmers. Nonetheless, the following issue must be addressed to make the sheller popular, adaptable and usable among the farmers.

- A. There is need to create awareness among the farming communities on adoption of developed low cost power operated sheller for shelling of maize cobs and to change the traditional method of shelling maize.
- B. The constructed maize sheller proposed can be modified for multi crop thresher by altering shelling drum and concave clearance.
- C. Incorporation of cleaning and separation device for the removal of unwanted material which is more efficient and less cost than manual cleaning.
- D. There is a need for development of low cost power operated high efficiency maize sheller for small and marginal farmers therefore; this study can be used as a reference for future work.

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