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# A Review on Groundnut POD Separator

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**ABSTRACT:** Groundnut is one of the major oil seed crops in India. India's annual production of groundnuts was 9.35 million tonnes in 2020. It is widely grown in the tropics and subtropics, being important to both small and large commercial producers. It is cultivated in Andhra Pradesh, Gujarat, Tamil Nadu, Karnataka, and Maharashtra. The major problem in groundnut production is the lack of processing machinery available to farmers. In the traditional method of farming, pods of the groundnut were separated manually. It is a time-consuming process which ultimately increases the cost of manual labor. To reduce human work, we designed a groundnut pod separator. It will be very useful for farmers as it is a dual operation in pod separation.

**KEYWORDS:** farmers, Groundnut Pod, Traditional Method, Pod Separator.

## I. INTRODUCTION

Groundnut (*Arachis hypogaea* L.), also called Peanut, is a legume of the pea family, grown for its edible seeds. Groundnut is extremely important as per se because of the oil seed crop, it contains 48-50% oil and 26-28% protein, and should be an upscale source of dietary fiber, minerals, and vitamins. Developing countries constitute 97% of the worldwide area and 94% of the worldwide production of this crop. The assembly of groundnut is concentrated in Asia and Africa. Among the many fast-growing cash crops, groundnut is typically wanted by small farmers. But the main hardship in growing this crop is harvesting. It is a laborious and time-consuming process. The fields have to be made wet the previous day with scant irrigation, so as that the soil becomes loose and thus the plants in conjunction with the pods are often pulled out easily from the soil. In groundnut crop, the separation of pods from the plant is an important process in post-harvest handling. The traditional manner of stripping groundnut pods was done manually by using fingers and the nuts which can then be used for oil expelling purposes. It was a very time-consuming process.

## II. LITERATURE SURVEY

V. K. Tewari et al [1] in 2013 said that, the groundnut stripper using response surface methodology of the groundnut produced in India is usually stripped manually or by wire loop pedal thresher, both of which involve much time and labor. Traditionally, the vines with pods may be lifted out from the soil and dried in the field and the pod ends of the plants may be knocked against a cross bar to separate the pods. In such operation, 10 to 16% pods get damaged. In some parts of the country, simple comb-type hand-operated arrangements are also available for groundnut stripping.

Dr. S. Alagesan [2] et al in 2014 said that, the machine is electrically operated with a 0.5 Hp motor. The advantage of the machine is it saves 60% of labor & reduces the cost of cultivation. Stripping efficiency of the machine was tested on various farmer fields. 99% of the harvested pods were clean, no broken pods observed at the time of stripping. It reduces the cost of stripping operation from Rs 2,400-3,000/acre.

J.S. Ghatge [3] et al in 2014 said that, the operators were given the information and practice of the machine for 10 min and the machine was operated for 15 min to strip the pod. The five trials of the machine were taken on the groundnut pod. The weight of detached pods collected within the tray and from the collection unit, undetached pods, damaged pods, completely stripped pods were taken after each trial. The result showed that the machine was safe and straightforward to work with a mean stripping rate with 3 persons was 25 kg per hour and stripping efficiency was 98%. The average stripping rate per person of groundnut pod stripping machine was 5.84% which was higher than when operated with 3 operators and a couple of 48 times more than traditional hand stripping. This may be due to the reason that the free space available while working with 3 operators was comparatively less to offer full output by the operators.



Pratima G. Mungase [4] et al in 2016, said that the manually operated peanut Sheller by using screw conveyor is straightforward to use hence does not require any skilled person. It is operated by pedaling action hence ensures comfort as compared to hand operated machines. It is also provided with a separate outlet. This is the scope of improvement in this model is the inclusion of separation mechanism using either a fan or a sieve. Fan can be operated by utilizing solar power. Speed can be increased by using a gear pair.

Ashok. S. Andhale [5] et al in 2017 said that, that project mainly consists of robotic arm and spiked rotating drum. Robotic arm will pluck out the groundnut crop and feed it on the spiked rotating drum. Spikes on rotating drum will separate the pods from ground crop. There are big Groundnut Harvesters available in market, but farmers having small farm area can't afford that harvesters. Our machine is small, lightweight, and low in cost. Farmers having small farm area can afford and use our machine.

Pratik M. Patila [6] et al in 2017 said that, by utilizing electrical motor, the pivoting minute exchanged with the help of belt to the rotor head and fan shaft. The progression pulley is maintained on the electrical motor shaft. At the purpose when rotor turning the groundnut falls within the container and afterward groundnut squeezed between the rotor and flame broil. Around then groundnut seed and case isolated. The groundnut case and groundnut seeds fall within the plate. due to high fan speed the high speed of air is formed by utilizing this high speed air the sunshine weight unit is tossed out from the machine and therefore the groundnut seed falls within the plate due to this weight. We gather these seeds within the pot of pack.

Amol Junnarkar [7] et al in 2018 said that, this work presents the design of an electrically powered peanut plucking machine. The machine was fabricated using materials that were sourced locally. It can be used for both domestic and industrial purposes. The advantage to be derived from the use of this machine far out weights its shortcomings. The test result showed that the machine can separate a total of 400kg of groundnut in an hour. It was also observed that groundnut with one seed per pod and those with two small seeds in their pods were the ones that came out unplucked or partially plucked.

G. Karthik [8] et al in 2018 said that, this project is especially to get rid of the barriers while removing the bottom nut. Rotational mechanism utilized in this project. The rotor with the assistance of the hollow shaft of diameter 4cm & length 48cm this rotor helps to interrupt the groundnut pod. This work presents the planning of an electrically powered groundnut pods stripper and shelling machine. The advantage to be derived from the utilization of this machine far outweighs its shortcomings. it had been also observed that groundnut with one seed per pod and those with two small seeds in their pods were those that came out unshelled or partially shelled.

Saumya Shukla [9] et al in 2018 said that, the performance of a tractor mounted groundnut pod collector is useful to dig the groundnut pods and separate them from soil and can be collected in bags. It was observed that a labour was required to collect the pods from machine after each strip. During the sector trial, the time required for mechanical pod collecting per unit area of the crop was observed and therefore the time required per hectare decided. In addition to that, the labour time required to collect the mechanically collected pods per unit area was also considered. It was found that total time required and cost of operation were 28.96 man-h/ha and Rs. 3633.05/- per ha for the mechanical pod collecting method, respectively.

Suyash B. Kamble [10] et al in 2018 said that, this is the low cost automation was to overcome problems with the current manual traditional method. This type of machine it is helpful to farmer those having small amount of land to separate the groundnut pod from plant with less effort as well as by just changing the blade the same machine can be used for sugarcane cutting.

Harshal D. Farkade [11] et al in 2018 said that, their attempt was to develop a ground nut combine harvester. The pods are placed and collected by collection chamber. Elevator and conveyor are used for feeding the threshing cylinder. Chaff particles are blown from threshing operation from the removed pods.

R. Bhalavignesh [12] et al in 2019 said that, this machine is electrically powered by a 0.5HP motor. The electrical motor rotates in counter-clockwise direction and the power supply given was direct supply. The motor have a driving pulley which is connected to the driven pulley (larger pulley) through v-belt. When the motor rotates the driven pulley also rotates which is connected with the shaft. When the shaft rotates the groundnut was placed in the machine which the



groundnut and blade was been separated by theblade.

M. D. Amrutiya [13] et al in 2019 said that, a groundnut thresher which is spike tooth type threshing cylinder type was taken for the study. In fact, it is a modification of the drummy type. It is provided with an aspirator blower at the main grain outlet for final cleaning. Sieve assembly is additionally provided beneath the concave, driven by a crankshaft pulley, which gets its power from the cylinder shaft [27-29]. The working principle of a Spike tooth type in threshing cylinder drum.

A. Mani [14] et al in 2020 said that, it is a semi atomizing machine. Working on 1HP motor. It is a low weight machine; it can be moved easily to farms. It is a combination of stripper and shelling of groundnut. It reduces the human effort and decrease the labour cost, satisfies the farmers to earn profit.

Dr. R. K. Pohane [15] et al in 2020, said that, the machine available at low cost and it is very helpful for the farmer to earn more profit by shelling shelled nuts. By using this machine production cost and shelling time reduces only one labor is necessary for machine operation. The machine is helpful for both small and big farmers.

N. Prabhakaran [16] et al in 2020, said that, the cost of this groundnut thruster is very low. This invested money can be taken away by the farmers, this machine can reduce the labor crisis, the labor cost is very much reduced, only one worker is used for operation, the time consumption is low when compared with the manual threshing method.

### III. CONCLUSION

The groundnut pod separating machine is helpful to farmers for separating the groundnut pods from the plant with less effort. The pods are to be separated from the plant for further processing. The removed pods are collected and the groundnut plants after pods removal are dried and used as groundnut hay for cattle. it consumes less time.

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