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# Black Pepper Harvester

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**ABSTARCT:**Harvesting of crop is one of the important agricultural operations which demand considerable amount of labour. In our state (Kerala) one of the most important crops is black pepper (kurumullaku). The availability and cost of labour during harvesting season are the serious problem. The shortage of labour during harvesting season causes great losses to the farmers. It is therefore, essential to adopt the mechanical methods so that the timeliness in harvesting operation could be ensured. The use of mechanical harvesting device has been increased in the recent years, but the costs for using them are high. Till date a simple and economical solution to this issue is not found. In our project we are trying to develop a simple, cost-effective solution to this problem.

**KEYWORDS:** Threshing, Collection unit.

## I. INTRODUCTION

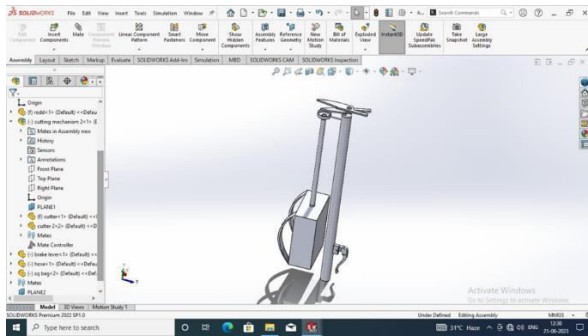
Generally black pepper harvesting is done by humans by either climbing up the trees or by using ladders and the collecting method is fairly primitive where the pepper is plucked by hand and collected into pails. This method is dangerous and causes accidents. This method also takes time and the labour cost is high and availability of such skilled workers are low. In this project we are trying to develop a simple and cost-effective method for harvesting of black pepper. The design will be in such a way that climbing process can be avoided and the collecting process made simple and easy. In this mechanical device the black pepper can also be separated from stem which reduces the steps in process of harvesting thus producing more profit to farmers.

## II. METHODOLOGY

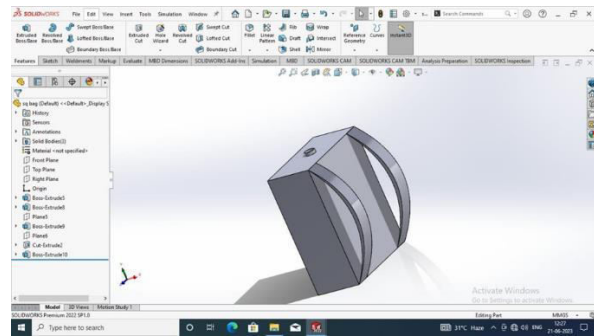
The black pepper harvester is used to harvest pepper berries from black pepper plant. The harvesting process is done in such a manner that the center of the cutting tool is aligned with the pepper stalk and on pulling the lever attached on the support rod the pepper stalk is cut and the pepper berries fall through the collection hose into the collection unit. The collection unit consists of a threshing mechanism, the pepper berries including the stalk as a whole, falls into the threshing mechanism from the collection hose. The pepper gets separated from the stalk in the thresher and gets collected in the collection unit. The threshing mechanism is fixed inside the collection unit which acts as a backpack. The threshing mechanism is battery operated and can be controlled using a switch.

## III. EXPERIMENTAL RESULTS

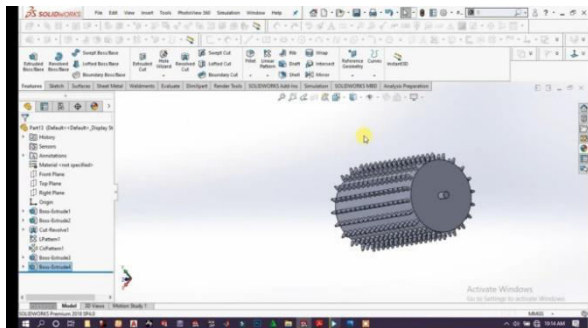
The collection bag, support rod, thresher was designed in SOLIDWORKS 19.0. After a lot of research and great effort we fabricated light weight black pepper harvester machine by using polycarbonate sheet.



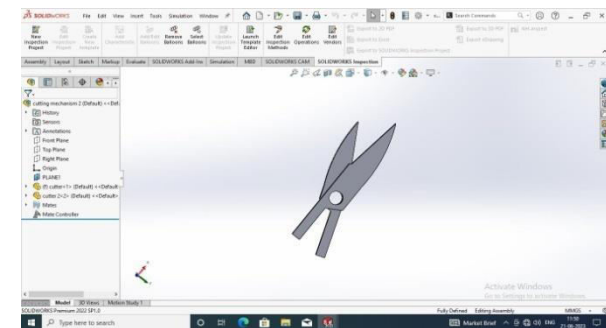
(a)



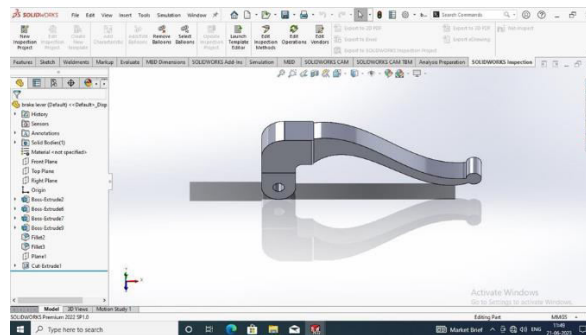
(b)



(b)



(d)



(e)

(a) Design Of Black Pepper Harvester (b) Design Of Collection Unit (c) Design Of Threshing Mechanism (d) Design Of Cutting Tool  
(e) Design Of Lever On Support Rod.



(f)



(g)

(f),(g) Finished Model Of Collection Unit Using Polycarbonate

In ordinary harvesting method a person should climb up the tree to pluck the pepper. By using black pepper harvesting equipment pepper at heights can be easily plucked from the ground. Due to the built-in threshing mechanism the an extra step in the process of pepper harvesting can be reduced.

#### IV. CONCLUSION

Generally black pepper harvesting is done by humans by either climbing up the trees or by using ladders and the collecting method is fairly primitive where the pepper is plucked by hand and collected into pails. This method is dangerous and causes accidents. This method also takes time and the labour cost is high and availability of such skilled workers are low. So, one of the best ways to collect and threshing black pepper is by the black pepper harvesting machine it is an easy method to collect and thresh pepper. There is no need to climb trees. The design is in such a way that climbing process can be avoided and the collecting process made simple and easy. In this mechanical device the black pepper can also be separated from stalk which reduces the steps in process of harvesting thus producing more profit to farmers.

#### REFERENCES

- [1] WasimSavalgi, S.A. Tahasildar, Prasad Malladi, SumanthGuada, AravindMuddebihal September 2021 “Design and Fabrication of Pepper Thresher Machine”
- [2] P HeartwinAmalaDhas, V S Korikanthimath 2003 “Processing and Quality of Black Pepper”
- [3] Fatimah AL-Shamrani, Nermin Abdel Baset. January 2023. “The Physical Ergonomics Body Posture in Wearing Bags”
- [4]K.R. Sachinjith, B.S. Pradheep, K. Ulaganathan. 29 November 2022. “Design and Analysis of Portable Pedal Operated Pepper Thresher”
- [5] TanwirAlam, Akhter Husain Ansari. May 2017 “Review on Aluminium and its Alloys For Automotive Application”
- [6] Risfaheri, Hidayat. “Design of The Hand Powered Thresher for Black Pepper processing”.
- [7]Carroll, W.F, R.W. Johnson, S.S. Moore. R.A. Paradis September 2016 “Poly (Vinyl Chloride)”.



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