

Potato Sowing Machine

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Abstract— The main purpose of the potato sowing machine is to sow potato seeds into the soil with less human efforts. It takes comparatively less time to sow the seed than the traditional method. As in traditional method the potatoes are sown in the soil one by one in a particular distance. But it requires more human efforts, more man power and also increases the costing of the plantation. By considering the difficulties and limitation of traditional method we have introduced a potato sowing machine which will benefit the farmers by reducing the cost and efforts.

Keywords: Potato Sowing Machine

I. INTRODUCTION

In India more than sixty per cent of people are dependent on agriculture fields and state government for development of sectors. Potato seed being vital input to agriculture, endless efforts are being made to assure availability of quality food grains to farmers in order to sustain the agricultural development and best vegetables to consumer end. In this situation the demand of quality potatoes are very high. Our project has been formulated with the objective to produce quality potato, with minimum cost. In the present situation the demand of quality potatoes are very high and our proposed potato planting machine will be more helpful to farmers. The manual method of potato cultivation is too lengthy and time consuming process.

A. Problem statement:

In the conventional method of potato cultivation requires more number of labours which results in higher labour cost. Also it requires more time for sowing hence process becomes time consuming. So we are introducing our project to overcome the problem which arises in the conventional method.

B. Objectives

- 1) Reduce labour work
- 2) High productive seed plantation
- 3) Low plantation cost
- 4) Less time is required
- 5) Higher profitability
- 6) Reduces dependency

C. Scope

After using this machine it will help farmer for easy and simple plantation of potato. Also the process of plantation by using our machine will become less hectic and will reduce dependency of farmer on increasing and decreasing supply of labour. Also the process will be economical.

II. CONVENTIONAL CULTIVATION

Next procedure is to cultivation of land or preparation of land for plantation which is common both for manual procedure and potato planting machine. Then the next procedure is

placement of seed potato into the cultivated land that too in a particular row prepared, to a certain depth. This procedure needs more labor and it is time consuming too. In this procedure they have to place the potato nearly to a distance of 20 -25cm, i.e. distance between each seed should be nearly 20 -25cm. Row to row distance should be equal to 60cm.

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Firstly, we store some potatoes in pan and will put some potatoes in the hopper for initial sowing. Now potatoes will pass through guiding tube to the disc and will stop near the disc. When we will move the machine the slot maker will make slot in the soil and the motion of the wheels is transmitted to the disc hence the disc will rotate. When the disc will rotate the potatoes stopped near the disc will pass from the holes made on the disc one by one. After passing the disc it will pass through the guiding tube and drop in the guiding hopper. And the potato will be dropped in the slot made in soil in the predefined distance. The soil arranger attached at the end of machine will fill the slot and arrange the soil again.



III. CONSTRUCTION

It consists of various stationary and moving components. It has following components:

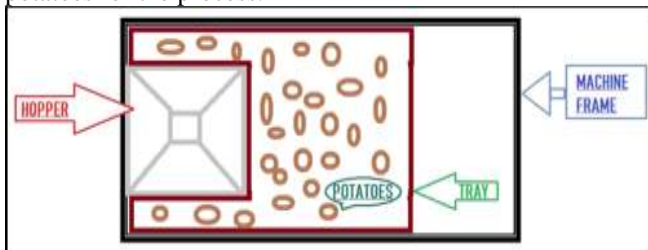
A. Hopper:-

Storage hopper is used to store the potatoes and the guiding hopper guides the potatoes before going into the slot soil.



B. Tray:-

We are attaching tray at the top of the machine for storing the potatoes for the process.



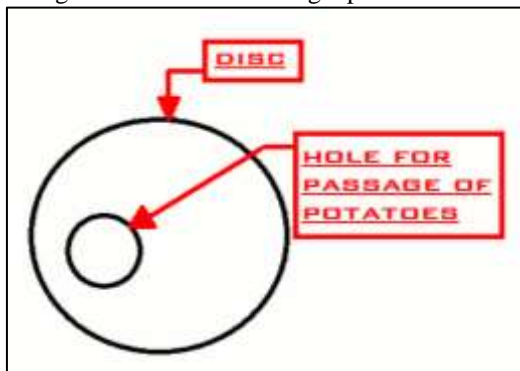
C. Guiding tubes:-

Guiding tubes carry the potatoes from the storage hopper to the guiding hopper.



D. Disc for passage of potatoes:-

Disc having will allow to entre single potato at a time.



E. Slot Maker:-

It will make slot for sowing potato and it is equipped with an elevating screw for the vertical movement to adjust the vertical depth of slot.

F. Soil Arranger:-

It will fill slot made by slot maker which was made for sowing potatoes and will arrange the soil as it was early.

G. Bearing and Pedestal Bearing:-

Bearing will allow the smooth motion for the wheels.

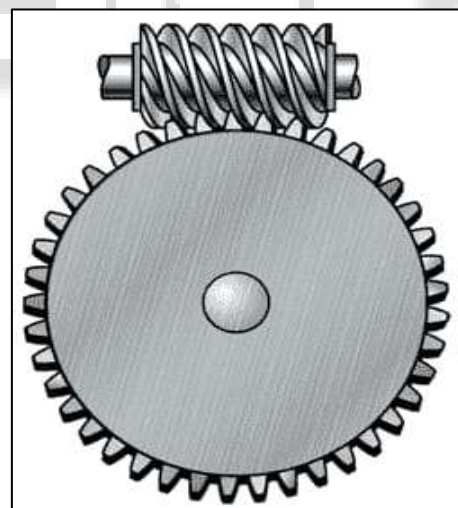


H. Wheels:-

Will help in moment and migration of machine.



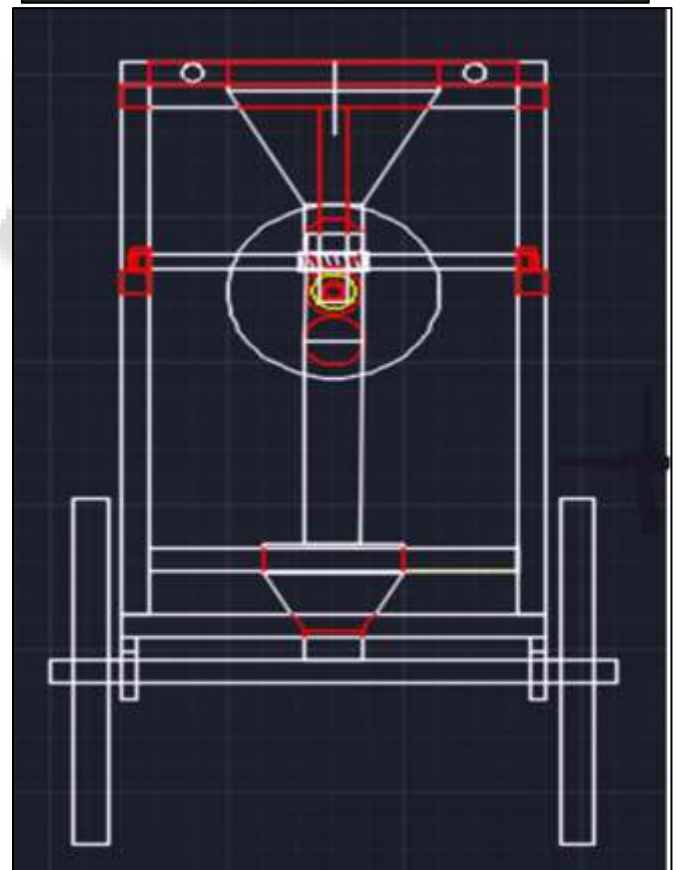
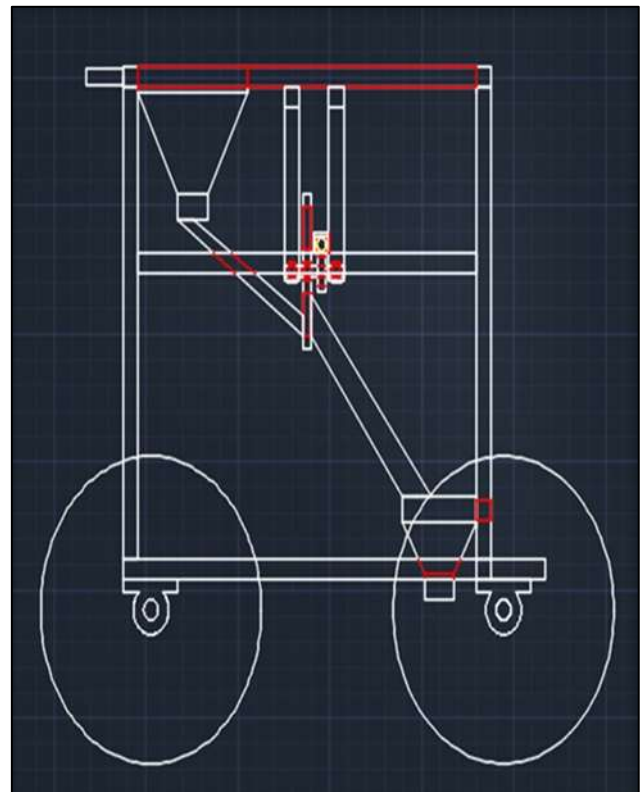
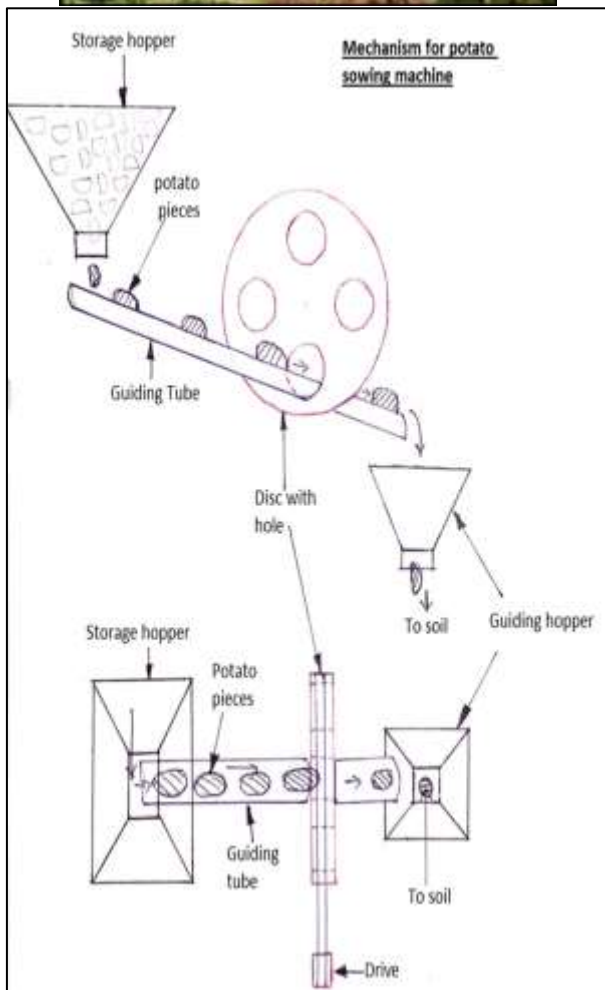
I. Worm and Worm Gear



IV. WORKING

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V. ADVANTAGES

- It will require less time as compared to our traditional method.
- It will require less human effort.

- A single farmer can do the sowing. No need of co-workers.
- As it will not require any co-worker farmer will save the money which is spend on the workers.
- Machine is cost efficient which is suitable for farmers.

VI. FUTURE IMPROVEMENT

- In addition to it we can add fertilizer sprayer.
- We can also plant other seeds like turmeric, ginger, etc.

REFERENCE

- [1] <https://www.sciencedirect.com/science/article/pii/S1877705817351202>
- [2] <https://www.google.com/search?q=research+paper+on+potato+sowing+machine&oq=research+paper+on+potato+sowing+machine&aqs=chrome..69i57j33i160.24315j0j4&client=ms-android-vivo&sourceid=chrome-mobile&ie=UTF-8>

Research Papers

- [3] International Research Journal of Engineering and Technology (IRJET)
- [4] DESIGN AND FABRICATION OF POTATO PLANTING MACHINE Wakchaure Prashant, Aher Shiram, Raut Vikas, Datir Swapnil, Bhakare Onkar, Parasur Atish.
- [5] International Journal of Creative Research Thoughts (IJCRT)
- [6] POTATO PLANTING MACHINE: FEASIBLE SOLUTION OF FARMING Satyendra Pratap Singh, Navneet Dubey, Sudhir Mishra, Rishikesh Singh Mechanical Engineering Department

Books

- [7] Khurmi R. S, Gupta J. K, A textbook of machine design, first edition, S. Chand publication, 1979
- [8] Thomas Bevan, the theory of machine, third edition, CBS Publication, 2005