



FABRICATION OF MANUALLY OPERATED SEED DRILL FOR ARACHIS HYPOGAEAE AND ZEA MAYS

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ABSTRACT:

Oil seeds plays vital role in furthering sustainable agriculture as they are the major source of nutrients. Groundnut is a major oil seed crop grown in the areas receiving 50-120cm of well distributed rainfall. So pulses and cereals have been a choice for the farmers for cultivation due to soil management techniques. The farming sector in India primarily of small scale farmers, the inability of small farmers to purchase and adopt improved technology of reduces the yield of production. The main objective of sowing operation is to place seed at proper position as well as reduce the cost of labors. Thus this paper, design and develop a manually operated seed drill for groundnut and maize which is suitable for marginal land holdings and plant the seed at specific distance with specific quantity and reduce the drudgery involved in manual planting method and increases the efficiency and also reduce the cost of sowing the seed by using the machine. The seed counting machine is used to count the seed and the revolution of the seed drill. The field trials reveal that the seed drill was performed well and found suitable for the small and marginal farmers.

Keywords: Groundnut, Maize, seed counting device, marginal farmers

1. INTRODUCTION

Agriculture has a long history in India, dating back to the Indian Valley Civilization and even earlier in some parts of southern India. India ranks second worldwide in farm outputs. Agriculture has been the backbone of the Indian economy. After long years, agricultural practices have been carried out by small holders cultivating between 2 to 3 hectare by using human labour and traditional tools such as wooden plough, yoke, leveler, spade and so on.

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Modern agricultural techniques and equipments are not used by small land holders because these equipments are too expensive and difficult to acquire. By adopting modern and scientific farming technology equipments, we can get maximum yield and good quality crops which can save a farmer from going bankrupt but majority of farmers still uses primitive method of farming techniques due to lack of knowledge and lack of investment for utilizing modern equipment. So this manual operated seed drill for groundnut and maize is easy to access for the small farmers, because there is no need to invest lot of money and also easy to operate by even a single man.

2. METHODOLOGY

The main concept of this project is to reduce the cost to sow and desired seed distance without damaging the seeds and also easy to operate.

3. METHODS OF DOING THIS PROJECT

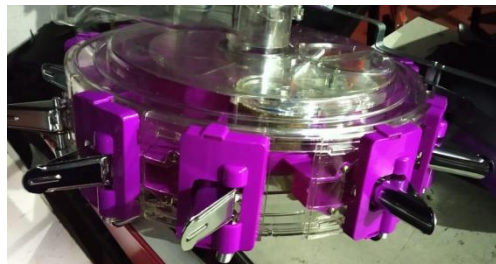
1. The first step is found the problems faced by the farmers.
2. The second step is to analyzing the problem statement and their solution of the statement.
3. The third step is to design the manually operated seed drill for groundnut and maize.
4. The fourth step is to layout of the equipment can be setout.
5. The fifth step is to start the experimental work at the lowest price.
6. The sixth step is to fabricate the seed counting device.
7. The seventh step is to testing the prototype of the manually operated seed drill for groundnut and maize.

4. EQUIPMENT LAYOUT

- Handle bar
- Stake Roller
- Seed Hopper
- Leveling plate
- Seed Cup
- Stud or Seed pusher
- Seed Brush
- Nozzle Teeth
- Glass Plate
- Plastic Frame



- Seed counting device
- Cotter Pin
- Steel springs, Screws, Nuts and Bolts.

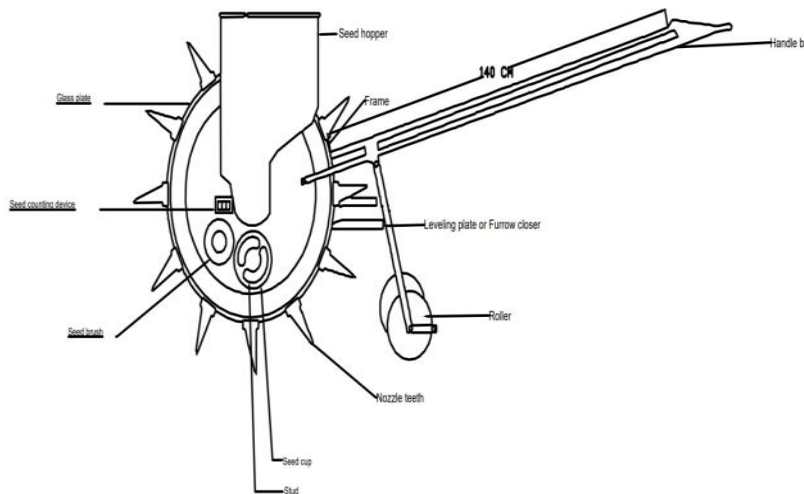


5. EXPERIMENTAL WORK

In this design we made various adjustments and simplified it from controlling and maintaining. The nozzle teeth is made up of stainless steel with an open-closed operation and it is used to plant the seed with an accurate depth even in the dry land. The nozzle teeth can be operated by using the gear roller. The gear roller can be rotated by pushing the machine and the nozzle pin can be attached inside the machine. The seed cup and seed dummies are made up of plastic and it can be attached at the bottom of the hopper. It is used to seedling the seed by using the nozzle. Stud or seed pusher is made up of plastic and it is mainly used to regulate the rotation of the seed in the seed cup. Seed Brush is placed near side of seed cup. Seed brush is used to orientation of the seed. The leveling plate is made up of steel and it is used to close the soil after plant the seed. The roller is used to level the soil after covering the soil by using leveling. The roller is attached at the backside of the seed driller. The extra glass plates were fitted instead of attachment of the nozzle teeth by using screws and the cotter pin are fitted. The equipments



consists of a seed box or hopper attached at the main frame of a handle bar. The seed cup can obtain the 2kg of seed for using at once.



The nozzle teeth can be arranged as manually as the choice of operator and the seed type were used to plant. There are 12 nozzle teeth can be attached in the roller and also can be attach various number of nozzles like 10,7,5,3 and also even one nozzle. Nozzle teeth has a sharp corner, so it is easy to seedling in a dry and also in wet soil. The seed counting device is used to count the seed and the rotation of the seed roller.





Because it is made up of stainless steel and it will not get damage and also not damaged the soil and the seed. The main technical specification of this machine is nozzle teeth and the glass plates because of the above benefits.

6. SPECIFICATION OF SEEDER

Table 1. Specification of seed drill

S.NO	SEED DRILL SPECIFICATION	PARAMETERS
1	Shape of the seed hopper	Rectangular shape
2	Capacity of seed hopper, kg	2
3	Type of seed metering mechanism	Self feed mechanism
4	Number of seed disc	1
5	Diameter of the seed disc, mm	85



6	Number of cells in the seed disc	14
7	Number of nozzle teeth	12(Groundnut) 6(Maize)
8	Number of seed counting device	1

ADVANTAGES:

- Uniformity of depth of placement of seed.
- It helps to increase the germination of seed.
- Due to this invention, the total work done by the farmers for sowing is decreases.
- Reduce in time and result in increasing the efficiency.

CONCLUSION:

Current method of sowing the groundnut and maize are required the high tech mechanization. The current method takes high investment and required the skill to operate the machine. But the manually operated seed drill machine is required low cost and does not require proper skill to operate the machine. The groundnut seed can be planted in 2 hours in an one hectare. This machine can be planted the seed from half feet to five feet. So by using this machine we can be able plant the seed at a desired distance. This machine helps to calculate the seed roller rotation and the seed count. The result of the seed rotation is 8 revolution per minute. The small farmers gets more benefits by using this machine.

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