

COTTON SEED SOWING MACHINE

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ABSTRACT

The sowing operation is to put the seed and fertilizer in rows at desired depth and seed to seed spacing, covert the seeds with soil and provide proper compaction over the seed. The recommended row to row spacing, seed rate, seed to seed spacing and depth of seed placement vary from crop to crop and for different agro-climatic conditions to achieve optimum yields. Meter seeds of different sizes and shapes. Place the seed in the acceptable pattern of distribution in the field .Place the seed accurately and uniformly at the desired depth in the soil. Cover the seed and compact soil around to enhance the germination emergence.

Traditional methods include broad casting manually, opening furrows by a country plough and dropping seeds by hand, known as 'Kera', and dropping seeds in the furrow through a bamboo/meta funnel attached to a country plough (Pora). For sowing in small areas dibbling i.e., making holes or slits by a stick or tool and dropping seeds by hand, is practiced. Muldrow traditional seeding devices with manual metering of seeds are quite popular with experienced farmers.

Driver gear, driven gear, sprocket pinion, chain, axle, shaft, shank, pedestal bearing, wheel, fasteners, nylon pipe, roller etc are the components used for manufacturing of model. After comparing the different method of seed sowing and limitations of the existing machine, it is concluded that the multi-purpose seed sowing machine can maintain row spacing and controls seed and fertilizer rate, control the seed and fertilizer depth and proper utilization of seeds and fertilizers can be done with less loss, Perform the various simultaneous operations and hence saves labor requirement, labor cost, labor time, total cost of saving and can be affordable for the farmers.

1. INTRODUCTION

The sowing operation is to put the seed and fertilizer in rows at desired depth and seed to seed spacing, covert the seeds with soil and provide proper compaction over the seed. The recommended row to row spacing, seed rate, seed to seed spacing and depth of seed placement vary from crop to crop and for different agro-climatic conditions to achieve optimum yields.

The major occupation of the Indian rural people is agriculture and both men and women are equally involved in the process. Agriculture has been the backbone of the Indian economy and it will continue to remain so for a long time. It has to support almost 17% of world population from 2.3% of world geographical area and 4.2% of world's water resources. The present cropping intensity of 137% has registered an increase of only 26% since 1950-51. The net shown area is 142 Mha. The basic objective of sowing operation is to put the seed and fertilizer in rows at desired depth and spacing, cover the seeds with soil and provide proper compaction over the seed.

In the farming process, often used conventional seeding operation takes more time and more labor. The seed feed rate is more but the time required for the total operation is more and the total cost is increased due to labor, hiring of equipment. The conventional seed sowing machine is less efficient, time consuming. Today's era is marching towards the rapid growth of all sectors including the agricultural sector. To meet the future food demands, the farmers have to implement the new techniques which will not affect the soil texture but will increase the overall crop production. Agriculture in India has a significant history. Today, India ranks second worldwide in farm output. Still, agriculture is demographically the broadest economic sector and plays a significant role in the overall socio-economic fabric of India. This paper deals with the various sowing methods used in India for seed sowing and fertilizer placement.

The recommended row to row spacing, seed rate, seed to seed spacing and depth of seed placement vary from crop to crop and for different agricultural and climatic conditions to achieve optimum yields and an efficient sowing machine should attempt to fulfill these requirements. In addition, saving in cost of operation time, labor and energy are other advantages to be derived from use of improved machinery for such operations.

A traditional method of seed sowing has many disadvantages. This paper is about the different types of methods of seed sowing and fertilizer placement in the soil and developing multifunctional seed sowing machine which can perform simultaneous operations.

The Green Revolution succeeded in India in raising the farmer's income and yield of major crops because of introduction of high yielding varieties and wide use of synthetic fertilizers and pesticides. Though, this reflects the potential of our agriculture, it is not clear how long it will meet the growing needs of feed our growing population. The problem would be difficult to tackle if we continue to depend only on traditional farming. In the post green revolution period, agriculture production once again has become stagnant and is not able to keep pace with the burgeoning population. The agricultural technology available in 1940's could not have met the demand of the food for today's world population in spite of the revolution. As the country undertakes initiatives now to advance from the status of food security through newer and emerging technologies, the farmer in the field is poised to reap quantum agricultural grains through advanced farming. To meet the forthcoming our agricultural productivity like other countries of the world. 'Cotton' the white gold is one of the most important commercial; crops playing a key role in the economic, which has been a matter of concern and a national challenge]

2. LITERATURE SURVEY

Traditional methods include broad casting manually, opening furrows by a country plough and dropping seeds by hand, known as 'Kera', and dropping seeds in the furrow through a bamboo/meta funnel attached to a country plough (Pora). For sowing in small areas dibbling i.e., making holes or slits by a stick or tool and dropping seeds by hand, is practiced. Muldrow traditional seeding devices with manual metering of seeds are quite popular with experienced farmers. Traditional sowing methods have following limitations;

- In manual seeding, it is not possible to achieve uniformity in distribution of seeds.
- farmer may sow at desired seed rate but inter-row and intra-row distribution of seeds
- likely to be uneven resulting in bunching and gaps in field,
- Poor control over depth of seed placement.
- It is necessary to sow at high seed rates and bring the plant population to desired level by thinning
- Labor requirement is high because two persons are! required for dropping seed and
- Fertilizer.
- The effect of inaccuracies in seed placement on plant stand is greater in case of crops
- Sown under dry farming conditions.

Joseph M. Rickey : . The machine substantially as described, having a centrifugal distributing-head, and arms in said head staggered in respect to each other so as not to sow on the same lines at the same time, and set at an inclination to lines radiating from the axis of the head.

F.W.Gerard : A seed-sowing machine as claimed in claim 1, further comprising a downwardly projecting tooth on the gauge plate at the rear end of the charging zone, adapted to prevent the escape of seeds in a rearward direction.

J.S.Green : A seed-sowing machine as claimed in claim 1, the lower edge of the front wall of the hopper being positioned some distance to the rear of the point of liberation of the seeds

3. PROBLEM STATEMENT

In day today life, in agriculture field there is very much shortage of farm labor. Now, farm machinery are involved and spread out over entire zone but they have certain geometrical, economical, flexibility limitation that is in the small, undeveloped, rural and small area application limitations exist. So need of multipurpose agricultural equipment take place.

The aim of seed sowing machine is to reduce the physical efforts of Farmer required for various agricultural operations such as dribbling The Cotton bushes, soya bin bushes, solver vulgarism etc. There are some of the equipment's for sowing the cotton seeds are available in Indian agricultural markets, we studied them well whatever the mechanisms are used. Then we moved towards what actually needed for country farmers who takes the production of cotton, thought accordingly with their needs and developed our equipment.

4. OBJECTIVE

The sowing operation is to put the seed and fertilizer in rows at desired depth and seed to seed spacing, cover the seeds with soil and provide proper compaction over the seed. The recommended row to row spacing, seed rate, seed to seed spacing and depth of seed placement vary from crop to crop and for different agro-climatic conditions to achieve optimum yields.

The recommended row to row spacing, seed rate, seed to seed spacing and depth of seed placement vary from crop to crop and for different agricultural and climatic conditions to achieve optimum yields and an efficient sowing machine should attempt to fulfill these requirements[5]

- To develop an equipment which reduces physical efforts of farmer, human being
 - To develop equipment which reduces time of farmer or human being
 - To develop equipment which increase area cover of farm.
 - To maintain row spacing and controls seed and fertilizer rate.
 - To Control the seed and fertilizer depth and proper utilization of seeds and fertilizers can be done with less loss.
- To Perform the various simultaneous operations and hence saves labor requirement, labor cost, labor time, total cost of saving and can be affordable for the farmers.

5. METHODOLOGY

5.1 Concept Of Project

The sowing operation is to put the seed and fertilizer in rows at desired depth and seed to seed spacing, cover the seeds with soil and provide proper compaction over the seed.

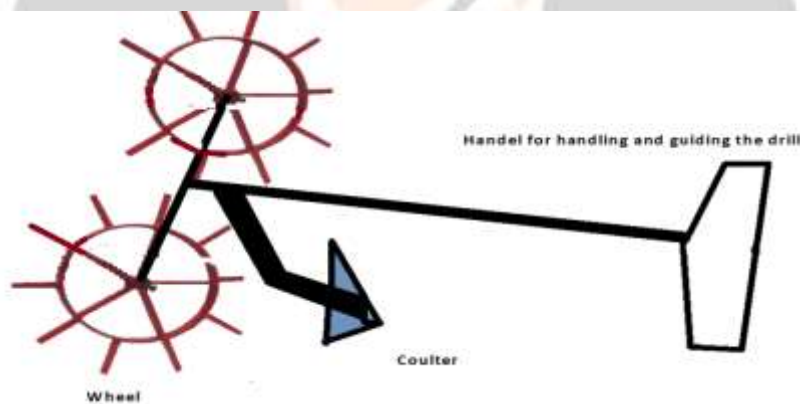


Fig:-5.1 Simple Modale

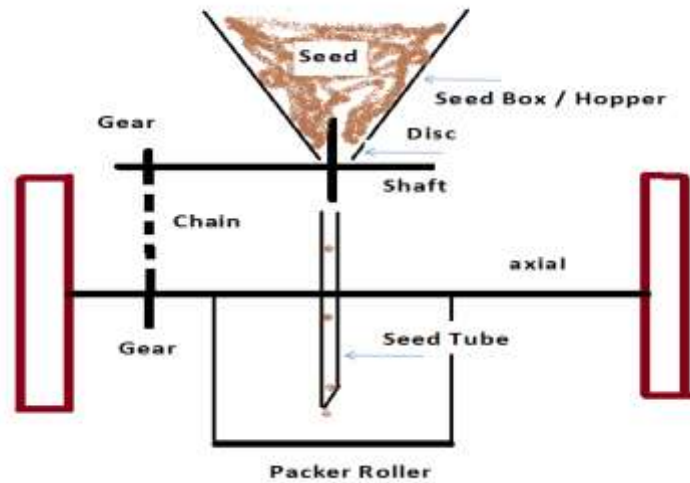


Fig:-5.2 Driver Gear

5.2 Component Detail

1. Driver Gear
2. Driven gear / SPROCKET PINION
3. Chain
4. Axle
5. Shaft
6. Shank
7. Pedestal bearing
8. Wheel
9. Fasteners
10. Nylon pipe
11. Roller
12. MS angel
13. MS square pipe
14. MS stripes

6.RESULT

6.1 Animal Operated Cotton Sowing

Sr. No	Dimension	Numbers of Row	Seed Sowing In Row (Feet)	Time (Hour)	Area Covered (Hector)
1	63.5	1	2 X 2	1	0.025
2	127	2	2 X 2	1	0.5
3	254	4	2 X 2	1	1

4	381	6	2 X 2	1	1.5
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6.2 Manual Operated Cotton Sowing

Sr. No	Dimension	Numbers of Row	Seed Sowing In Row (Feet)	Time (Hour)	Area Covered (Hector)
1	63.5	1	2 X 2	1	0.095
2	127	2	2 X 2	1	0.19
3	254	4	2 X 2	1	0.38
4	381	6	2 X 2	1	0.57

6.3 Tractor Operated Cotton Sowing

Sr. No	Dimension	Numbers of Row	Seed Sowing In Row (Feet)	Time (Hour)	Area Covered (Hector)
1	63.5	11	2 X 2	1	1
2	127	2	2 X 2	1	1.5
3	254	4	2 X 2	1	2
4	381	6	2 X 2	1	2.5

7.CONCLUSION

Current methods of sowing of cotton seed, cultivation of crops and some traditional existing equipment's. We also successfully implemented some new technology aspects. Overall the project was very enriching in terms of technical fabrication and design process along with mechanical knowledge .The knowledge gained while solving and understanding the complexities of our project would help us in our professional life. At the start of this project, we did not know much about how to build a seed sowing machine. Our first priority was to research over the methods of sowing the cotton-seeds and to study on existing equipment's for sowing process, and then we moved to make sketches of a frame ,jumbler wheels, front wheels, seed container, seed metering device, other required equipment's and their assembly. Once we got in our group, we noticed how different our design were and we started picking which design we would like to go with .Once we had our design picked out, we were ready to go through and make all decisions that were necessary to finish and complete our project successfully. After comparing the different method of seed sowing and limitations of the existing machine, it is concluded that the multi-purpose seed sowing machine can

1. Maintain row spacing and controls seed and fertilizer rate.

2. Control the seed and fertilizer depth and proper utilization of seeds and fertilizers can be done with less loss.
3. Perform the various simultaneous operations and hence saves labor requirement, labor cost, labor time, total cost of saving and can be affordable for the farmers.

Finally, we are so happy to introducing such type of machine which reduces the human efforts and very much useful for farmers.

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