Seed Sowing Machine

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***Abstract*- The basic objective of showing 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 comparison between the traditional sowing method and the new proposed machine which can perform a number of simultaneous operations and has a number of advantages. As day by day the labor availability becomes the great concern for the farmers and labor cost is more, this machine reduces the efforts and total cost of sowing the seeds and fertilizer placement.**

I. INTRODUCTION

Seed sowing machine is a device which helps in the sowing of seeds in the desired position hence assisting the farmers in saving time and money. The basic objective of sowing operation is to put the seed and seed in rows at desired depth and seed to seed spacing, cover the seeds with soil and provide proper compaction over the seed. The paper discusses different aspects of seed sowing machine which will be helpful for the agriculture industry to move towards mechanization. The agricultural industry has always been the backbone of India's sustained growth. As the population of India continues to grow, the demand for produce grows as well. Hence, there is a greater need for Multiple cropping on the farms and this, in turn, requires efficient and high-capacity machines. Mechanization of the Agricultural industry in India is still in a stage of infancy due to the lack of knowledge and the unavailability of advanced tools and machinery. In traditional methods seed sowing is done by broadcasting manually, opening furrows by a plough and dropping seeds by hand. The agricultural has always been the backbone of India's sustained growth. As the population of India continues to grow, the demand for produce grows as well. Hence, there is a greater need for multiple cropping in the farms and this, in turn, requires efficient and time-saving machines. The paper discusses different types of seed sowing machine which will be helpful for the agriculture industry to move towards mechanization.

Traditional Sowing Methods: Traditional methods include broadcasting manually, opening furrows by a country plough and dropping seeds by hand and dropping seeds in the furrow through a bamboo/metal funnel attached to a country plough. For sowing in small areas dibbling i.e., making holes or slits by a stick or tool and dropping seeds by hand, is practiced. Multi row traditional seeding devices with manual metering of seeds are quite popular with experienced farmers. In manual seeding, it is not possible to achieve uniformity in distribution of seeds. A farmer may sow at desired seed rate but inter-row and intra-row distribution of seeds are likely to be uneven resulting in bunching and gaps in the field.

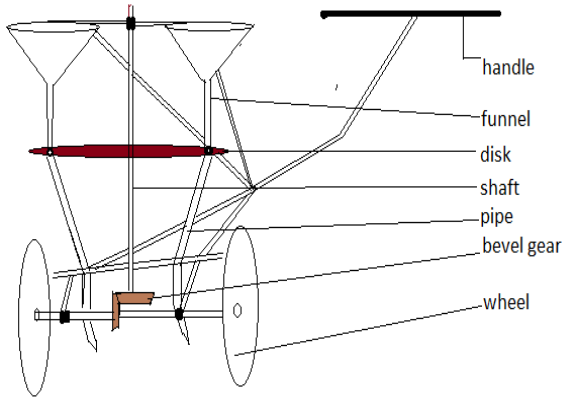
Traditional sowing methods have following limitations:

- In manual seeding, it is not possible to achieve uniformity in distribution of seeds.
- A farmer may sow at desired seed rate but inter-row and intra-row distribution of seeds are likely to be uneven resulting in bunching and gaps in field Poor control over depth of seed placement. Labor requirement is high because two persons are required for dropping seed and seed. The effect of inaccuracies in seed placement on plant stand is greater in the case of crops India is set to be an agricultural based country approximately 75% of the population of India is dependent on farming directly or indirectly. Our farmers are using the same methods and equipment for the ages. E.g. seed sowing, spraying, weeding etc. There is a need for the development of effective spraying and weeding machine for increasing the productivity. Most of the

developing countries of Asia have the problem of high population and low level of land productivity as compared to the developed nations. One of the main reasons for It is now realized the world over that in order to meet the food requirements of the growing population and rapid industrialization, modernization of agriculture is inescapable. It is said that on many farms, production suffers because of improper seedbed preparation and delayed sowing, harvesting, and threshing. Mechanization enables the conservation of inputs through precision in metering ensuring better distribution, reducing quantity needed for better response and prevention of losses or wastage of inputs applied.

WORKING

When a worker pull wheel rotate. Bevel gear is attached to the wheel shaft, Bevel gears transmit power between two intersecting shafts at any angle or between non- intersecting shafts. They are classified as straight and spiral tooth bevel and hypoid gears. When intersecting shafts are connected by gears, the pitch cones (analogous to the pitch cylinders of spur and helical gears) are tangent along an element, with their apexes at the intersection of the shafts where two bevel gears are in mesh. The size and shape of the teeth are defined at the large end, where they intersect the back cones. Pitch cone and back cone elements are perpendicular to each other.



As the motion is transmitted by the gear to the shaft and disk is mounted on the shaft, the disk consist of number of holes, the number of the holes are depends on requirement. Two funnel are used in which seeds can feel, when the end of funnel become coaxial with hole on the disk the seeds from funnel fall down and insert in pipe and from pipe to soil.

Also when the end of funnel becomes on plane portion the seeds from the funnel will not come out. In this way the seeds can sow at the required distance.

ADVANTAGES

1. To manufacture seed sowing machine which can be operated by the single operator.
2. To set fertilizer with sowed seed.
3. To level the ground in small extent.
4. To enable the machine for the sowing of several of seed like maize, wheat etc.
5. To maintain the same distance between two seeds at the time of sowing process.

SCOPE

Seed sowing machine is a device which helps in the sowing of seeds in the desired position hence assisting the farmers in saving time and money. So considering these points related to spraying and seed sowing an attempt is made to design and fabricate such equipment which will able to perform both the operations more efficiently and also will result in low cost. Decrease the operational cost by using new mechanism.

- Work reliably under different working conditions.
- Decrease the cost of the machine.
- Decrease labor cost by advancing the spraying method.
- The machine can be operated in the small farming land (1 acre).
- Making such a machine which can be able to perform both the operation.

METHODOLOGYS

Seed sowing an attempt is made to design and fabricate such equipment which will able to perform the operations more efficiently and also will result in low. Now the project mainly concentrates on designing a suitable operating system. To maintain simplicity and economy in the design the locally fabricated unit has been used. Our project achieves higher safety, reduces human effort, increases the efficiency, reduces the workload, reduces the fatigue of workers and reduces maintenance cost .In our country farming is done by the traditional way,

besides that there is the large development of industrial and service sector as compared to that of agriculture. The spraying is traditionally done by labor carrying backpack type which requires more human effort.

SPECIFICATION

The help of Bulls which becomes costly for farmers having small farming land. So to overcome these above two problems, we tried to eliminate these problems and designed the equipment which will be beneficial to the farmer for the spraying and weeding operations. When the equipment is pushed forward by using handles, the front wheel rotates and the gear is mounted on the axle of the wheel is start to rotate and its rotation is then transferred to the pinion through the chain drive. The rotary motion of the pinion is converted into the reciprocating motion by the single slider crank mechanism, due to this arrangement the connecting rod moves upward and downward which then reciprocate the piston of the single acting reciprocating pump mounted at the top of the storage tank. During the upward motion of the connecting rod the pesticide is drawn into the pump and during the downward motion of connecting rod the pesticide is forced to the delivery valve, the delivery is connected to the pipe carrying the number of nozzles. Improved seed-cum-seed drills are provided with seed and seed boxes, metering mechanism, furrow openers, covering devices, frame, ground drive system and controls for variation of seed and seed rates.

DESIGN DATA:
Velocity ratio =2
NO. of teeth on pinion = 25
NO. of teeth on gear = 50
Diameter of wheel = 300mm
Circumference of wheel = 3.1415*300 = 942.4

FORMULA:

$$\text{Distance for seed drop} = \frac{\text{Circumference of wheel}}{\text{No. of holes} * \text{velocity ratio}}$$

Therefore the distance between two seeds after drop = 235 mm

Material of gear and pinion as cast iron, high grade.

CONCLUSION

Innovative Seed sowing equipments has remarkable influence in agriculture. By using innovative seed sowing equipments we can save more time required for seeding process. And also it reduces lot of laborer cost. It is very helpful for small scale formers.

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