Solar Seed Sowing Machine

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Abstract— The current review provides momentary information about the various types of modernizations done in seed sowing machine available for plantation. The seed sowing machine is a key element of agriculture field. The concert of seed sowing device has an extraordinary impact on the cost and yield of agriculture products. Currently there are many methods to notice the performance of seed-sowing expedient. Nowadays, different types of seed drill are being developed. Compared with the existing seed drill, this paper presents the need for a seed drill more suitable to Indian analyze the different limits that can be change for improving the performance of sowing machine, decrease the effort, time and cost necessity.

Key words: Seed sowing machine, seed metering device, Performance detection, Seed spacing

I. INTRODUCTION

Agriculture has been the strength of the Indian economy and it will continue to remain so for a long time. It has to backing almost 17 percent of world population from 2.3 percent of world geographical area and 4.2 percent of world's water resources. The present harvesting intensity of 137 percent has recorded a rise of only 26 percent since 1950-51. The net sown area is 142 Mha. The basic objective of sowing operation is to put the seed and dung in rows at chosen depth and spacing, shelter the seeds with soil and provide proper compaction over the seed. The suggested row to row space, seed rate, seed to seed space and depth of seed position deviate from crop to crop and for different agricultural and climatic conditions to achieve finest yields and an efficient sowing machine should try to fulfill these necessities. In addition, exchangeable in cost of operation time, employment and energy are other advantages to be derived from use of better machinery for such operations. An outdated method of seed sowing has many drawbacks. This paper is about the dissimilar types of methods of seed propagating and fertilizer location in the soil and developing a multifunctional seed sowing machine which can perform simultaneous operations.

Seed sowing machine is a device which supports in the sowing of seeds in a wanted location hence support the farmers in saving time and money. The straightforward objective of sowing operation is to put the seed and fertilizer in rows at wanted depth and seed to seed space, shelter the seeds with soil and deliver suitable compaction over the seed. The paper deliberates different aspects of seed sowing machine which will be supportive for the agriculture industry to move towards automation. The agricultural industry has always been the backbone of India's continue development. As the population of India continues to raise, the ultimatum for produce grows as well. Hence, there is a greater need for numerous cropping on the farms and this in turn requires effective and high-capacity machines. Automation of the Agricultural industry in India is still in a phase of beginning due to the absence of knowledge and the attain ability of progressive tools and machinery. In outdated methods seed sowing is done by propagation manually, opening troughs by a cultivate and dipping seeds by hand.

This project is about moving a solar sheet along with the direction of sunlight; it uses a stepper motor to control the location of the solar plate, which obtains its data from a microcontroller. The mechanical solar tracking system is design in order to improve the efficiency of total solar energy output. Light dependent resistor (LDR) is used for each degree of freedom. LDRs are basically photocells that are delicate to light. Several applications of solar energy fluctuating from simple solar water heating to compound mega watt power generation systems are under wide spread study. The function of the solar collector is to collect the radiation incident from the sun. To get maximum energy from the Sun, solar panel need to revolve according to movement of the Sun with the help of LDR.

II. TRADITIONAL SOWING METHODS

Outdated methods include distribution manually, opening troughs by a country furrow and dropping seeds hand, known as ' Kera', and dropping seeds in the furrow through a bamboo/mental funnel attached to a country plough(Pora). For sowing in minor areas dibbling i.e., making holes or splits by a stick or tool and dropping seeds by hand, is practiced. Multi row outdated seeding device with physical metering of seeds are quite popular with experienced farmers.

Outdated sowing methods have following drawbacks;

1) In manual seeding, it is not possible to Attain regularity in distribution of seeds. A farmer may sow at wanted seed rate but inter- row and intra – row spreading of seeds is likely to be uneven resulting in gathering and gaps in field.
2) Poor control over depth of seed location.
3) It is essential to sow at high seed rates and bring the plant population to wanted level by thinning.
4) Labour necessity is high because two persons are essential for dropping seed and fertilizer.
5) The effect of falseness in seed placement on plant stand is better in case of crops sown under dry farming conditions.

During kharif sowing, location of seeds at irregular depth may result in poor growth because succeeding rains bring additional soil shelter over the seed and affect plant.

III. WORKING MODEL

This solar powered seed sowing machine principally works on vertical-discontinous work principle Which refers to the vertical movement which can be followed by a separate body in an agricultural filed and implements its irregular

action in relation to the horizontal line of work. As per name indicate this machine is used for sowing seed. Which includes:-

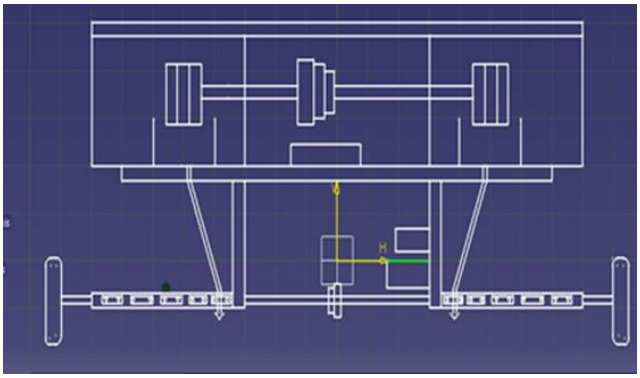

Fig. 1: Solar seed sowing machine

- Drill the ground
- Sow seed inside the drilled hole
- Shelter that hole with the help of adjuster.

firstly a hole is drilled with the help of a 4 inch land-living drill bit having shaft diameter of 7 mm and Diameter of edges - 25 mm With a Depth of cut of - 76.2mm This is run with the assistance of motor of 300 RPM and 12 kg-cm torque. This is connected to 12 V and 7 A DC battery. This is straight connected to the solar panel through which it gets charged. This motor is controlled by a 8 bit microcontroller .with help of which it can be start and stop .and we can also governor the clockwise and anticlockwise motion of motor. For dipping seed we are using a hopper which is riding behind motor show in figure above and a lever preparation is provided on handle when this lever is pressed seed will be released mechanically from hopper travel into a pipe attached to it and dropped in hole. An adaptable Iron plate is formfitting in rare side of machine which will gather soil and cover the land with is drilled. In this way seed sowing is done with this machine.

IV. FUNCTIONS OF SEED SOWING MACHINE AND PLANTERS

Better-quality seed-cum-fertilizer drills are provided with seed and fertilizer boxes, metering instrument, furrow openers, covering devices, frame, ground drive system and controls for variation of seed and fertilizer rate estimates that depending upon climatic and conditions, seeds are sown on well-prepared and smoothed fields, on ridges, in furrows or on beds. To achieve the best performance from a seed drill or planter, the important factors are to be improved by proper design and selection of the mechanisms required on the machine to suit the needs of the crops. The seed drill or planter can play an important role in operating the physical environment. The metering system selected for the seed should no tharmthe seed while in operation .The functions of a well-designed seed drill or planter are as follows:

1) Meter seeds of dissimilar sizes and shapes;
2) Place the seed in the suitable pattern of spreading in the field;
3) Place the seed exactly and homogeneously at the desired depth in the soil; and
4) Cover the seed and compacted the soil around it to improve development and emergence.

V. CALCULATION

Power=Force*Velocity
=200*r*
=200*0.254*2*11/60
=58.51watt
No of teeth on gear/pinion
=zg/cosg
=20/cos45
=29
Torque=P/60
=58.51*2**11/60
=50780 N-mm
=50.78 N-m
Energy storage capacity of battery=12V,7A
Solar Panel=12V,11A
Use DC motor forward reverses

VI. CONCLUSION

Control the seed depth and proper use of seeds can be done with fewer loss. Perform the several synchronized operations and hence saves labor requirement so as labor cost, labor time and also save lots of energy. Hence it is easily an_ordable by farmers. So we feel that this project helps somewhat good to this world and we would like to current it before this affluent world. Seed sowing devices plays a wide role in agriculture field. Image processing algorithm can be competently used in lab or field to sense the performance of seed sowing device. Besides the geometrical condition and soil condition other aspects such as seed depth, seed spacing

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