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DESIGN AND FABRICATION OF AUTOMATED SEED SOWING MACHINE

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Abstract: *This Sowing machine is be suitable for any type of farms, all types of corps, construction, is also should be reliable to any crops, this is often basic requirement of sowing machine. Thus we are designing sowing machine which is operated manually and automatically but reduces the efforts of farmers thus increasing the efficiency of plantingand also reduces the problem encountered in manual planting. For this machine we will plant different types of seeds. This also increases the planting efficiency and time. We are designing it with easily available components thus it's cheap and really usable for small all farmers. For effective handling of the machine by any farmer or by any untrained worker we simplified its simple design. Also its adjusting and maintenance method also simple. The paper discusses different Parts of seed sowing machine which will be helpful for all the agriculture industry to move towards automation.*

Keywords: *Container, Funnel, Wheels, Mounts, Supporting, Frame, Joints & Fixtures, Screws*

I. INTRODUCTION

- Sowing is the most important process in farming. It is a very Difficult and time consuming process that requires a lot of human and effort. Here we propose the design and fabrication of an automatic seed sowing machine that complete this task. The proposed machine uses one motor for running it in desired directions. We made a small bracket for pouring seeds. The robot consists of a funnel like in order to pour seeds into a lower container. There we use a shaft with gear like pots to pick up limited quantity of seeds and pour them on the ground in a steady manner in proper quantity. The front of the robot consists of a plate that drags on the soil to make a slot ahead of the machine before seeds are poured in it. The back portion of the robot consists of a tail like bent plates that are again used to pour soil on seeds sowed thus covering them with soil. Thus the machine is completely automated the seed sowing process using a smartly designed mechanical system.
- Today the environmental impact of agricultural production is very much in focus and the demands is increasing. In the present scenario most of the countries do not have sufficient man power in agricultural sector and it affects the growth of developing countries. Therefore farmers need to use upgraded technology for agriculture activity likedigging, seed sowing, fertilizing, spraying etc.. So it's a time to automate the sector to overcome this problem. In India there are 80% people dependent on agriculture. So we need to study on improving agricultural equipment's and machineries'. New idea of our project is to automate the process of digging and seed sowing crops such as corn, sunflower, groundnut and vegetables like beans, lady's finger, pumpkin and pulses like black gram, green gram etc. and to reduce the human effort. Since we have lack of man power in our country, it is very difficult to do digging and sowing operation on time, Automation saves a lot of manual work and speed up the cultivation activity. The energy required for this convectional machine is less compared with other machines like tractors or any agriculture instrument, also this energy is generated from the solar energy which is found free in nature. Pollution is also a big problem in developing countries which is eliminated by using solar plate

II. LITERATURE REVIEW

A field is firstly prepared with a plough in a series of linear cuts known as furrows. The field is then planted by throwing the seeds over the field. The result is a field planted roughly in rows but having a large number of plants in a same place. Many projects are undertaken to overcome the drawbacks of this manual broadcasting system. Drawbacks of these manual broadcasting system are no control in the depth of seed placement. No uniformly distribution of seed placement. Loss of seeds is takes place and Time required for sowing is more.
This research paper presents seed planter machine in this we present objectives of seed sowing machines design, and, some mechanisms. The essential objective of sowing operation is to place the seed in rows at desired depth and to seed the seeds at

desired spacing, cover the seeds with soil and supply proper cover over the seed. From this we all know that mechanical factors effect on seed germination like uniformity of depth of seed, linearity of distribution of seed along rows.

CONVENTIONAL SEED SOWING MACHINE

Another method of sowing the seeds is with a simple device consisting of bamboo tube. This bamboo tube is attached with a funnel and is attached to a plough. When the plough moves over the field, the tube are attached to plough which drops the seeds kept in the funnel at proper depth with proper spacing. The plough keeps making furrows on the soil through which the seeds are dropped. Drawbacksof this system are no proper plantation of seeds. Wastage of lot of seeds. No control inthe depth of seed.

SOLAR POWERED SEED SOWING MACHINE:

In this system the main objective of seed sowing operation is to place the seeds in rows at desired depth and spacing, and also cover the seeds with soil and provided proper soil layer over the seed. This system uses solar panel which is made up of photovoltaic cells, which turns sunlight into electricity. The main advantage of this project was this system is automatic low in cost.

III. WORKINGPRINCIPLE

- Firstly Power is supplied by the battery to the motor which is at front in the system. In the Lower side of seed storage tank we provided a time switch such a way that when seeds are put in a tank, by the weight of the tank time switch is get pressed and whole circuit get completed
- As soon as power button is turned on motor get rotated. Motor is connected to the front shaft by the chain drive by which shaft get rotated and on the same shaft wheels are attached. The storage tank is at back of chasses and made in such a way that it has slot in it in which a seed wheel is attached. On a wheel there are number of pots in which seeds are carried from tank to the funnel. The shaft of wheel is again connected to the front shaft with the chain drive in such a way that all system is run by a single motor

DESIGN & SELECTION OF COMPONENTS

Design: System design, Design of shaft, Design of wheel.

Components: Battery, DC Motor, Bearing

IV.CONSTRUCTION

The block diagram description of the prototype is shown in the belowfig

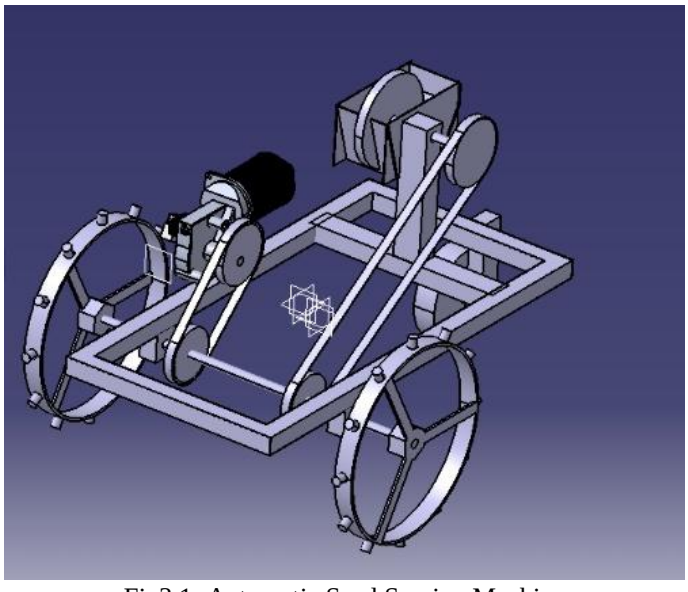

Fig3.1: Automatic Seed Sowing Machine

- In this machine a solar panel is used to capture solar energy and then it is converted into electrical energy which in turn is used to charge 12V battery, which gives the required power to start DC motor. This power is transmitted to the rear wheel by the chain drives. The solar energy stored in the battery is utilized to operate DC motor. A DC motor converts the electrical energy intorequired mechanical energy. By using the bevel gear and Chain drive with sprockets power is transferred to the wheels for their movement.
- This machine has very less cost. This planter is very simple to use hence, unskilled farmer is also able to handle this machine. We simple the design also made it less costly and affordable to every farmer. We made various adjustments and simplified it from using and maintains point of view. In this design we connected drive shaft to metering mechanism which eliminates the attachments such as pulleys and belts system.
- DC motor drives the shaft of motor which is coupled with battery bank. As motor starts it moves this robot as well as operates the metering mechanism. Seed storage tank is connected at the top of the machine near rear axle and wheels. The sensor is fitted to it which senses the level of seed in it and gives the alarm when the tank is empty. Front wheels serve the function of guiding the robot. As any obstacle comes in front of machine front wheels diverts the path of robot. For every rotation of the wheel according to the adjustment it allows the definite seed to fall into the funnel so that there is no wastage of the seeds also the sowing process does smoothly. When the robot reaches at other end and when it completes task it creates an alarm so that we can provide required facility

V.CONCLUSION

As we know that in our country about 80% of population lives in villages & their mainly income depend on the agricultural source. Hence my main aim of this project Solar operated automatic seed sowing machine is fulfill the tasks like digging, seed sowing, by using non-conventional energy sources like solar cell. Thus solar operated automatic seed sowing machine will help the farmers of those where fuel is not available easily. And also they can perform their regular cultivation activity as well as saves fuel up to larger extent. At the same time by using solar energy environment pollution also get reduced. Thus aiming to reduce the revenue of government & also reduce most demanded fossil fuel.

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