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REMOTE OPERATED SEED SOWING MACHINE

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Abstract

In the present scenario most of the countries do not have sufficient skilled man power in agricultural sector and that affects the growth of developing countries. In India there are 70% peoples dependent on agriculture. In traditional method some of the seeds were not properly penetrate into ground and seeds were spilled out. Therefore farmers have to use upgraded technology for cultivation activity like ploughing, drilling, seed sowing, fertilizing, etc. and these are very costly to buy and to hire. The main objective is to propose the combine the ploughing and sowing process in land and also semi-automation process in ploughing of agriculture land, sowing the ground at specific depth. By ploughing process the upper layer of soil will goes down and fresh soil will comes up, by sowing process the seed will dropped in proper depth. By this proposal effort of human is reduced, wastage of seeds avoided and increases the productivity and also yield more food particles.

Index Terms: Ploughing, Sowing, drive, toggle switch

1. INTRODUCTION

Rohan Marode has provides brief information about innovations done in seed sowing machine available for plantation. The seed sowing machines are the key component of agriculture field. These machines give influence on cost and yield of agriculture products. Presently there are many ways to find the performance of seed sowing device. [1]

Rohokale studied about food requirements of the growing population of our country and rapid industrialization, modernization of agriculture is inescapable. Mechanization enables 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. Through higher productivity and input conservation, mechanism reduces the unit cost of production.[2]

D.Ramesh and H.P.Girish Kumar presented review providing brief information about various types of innovations done in seed sowing equipment. The basic objective of sowing operation is to put the seed and seed in rows at desired depth

and seed spacing, covering the seeds with soil. The necessary 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. These devices play a important role in the agriculture field. [3]

B Shivprasad has presented a system in which a robotic machine, the different sensors are used to control different parameters of robot for sowing the seeds by using microcontroller. By using remote position of wheels is changed. When seed box gets empty, alarm will ring. Researcher has developed seed planter machine. It should be easy for simple farm, design and technology. The semi automatic operated planter is designed to improve planting efficiency and reduce errors involved in manual planting method. Planting of different seeds at desired distance between them and at specific depth. Also increased seed planting, seed fertilizer placement accuracy. The system can be very simple for unskilled farmers and easily handled. By the use of this machine, flexible distance and depth variation for different seed plantation is possible. [4]

D.B.Patel investigated the today's era is moving towards the rapid growth of all sectors including the agriculture sector. To

meet the future food demand, the farmers must have to implement the new techniques which will not affect the soil texture but it will increase overall food production. In this paper researcher described various sowing methods used in different countries for seed sowing. [5]

A Kannan studied different effects of farming mechanism on Indian economy. He found that production and productivity cannot be enhanced with primitive and traditional methods. Thus innovations are most necessary to improve productivity. [6]

2. CONSTRUCTION

The construction of remote operated seed sowing machine is shown in Fig -1



Fig-1: Actual Model of Remote Operated Seed Sowing Machine

Figure 1 consists of following components:-

- Frame
- Seed box/hopper
- Wheels
- Flattening plate
- Battery
- Chain and sprocket
- Motor
- Plougher arrangement
-

The function of each of the components can be discussed as follows:-

2.1 Frame

It is a skeleton of the machine and should be made rugged. It should be of high strength. Frame must be of cheap and sustain the vibration. Frame is used to mount the other parts of the machine by bolting arrangement or by welding it to it.

2.2 Seed Hopper

Seed hopper is a sheet metal part in a square and dome shaped connected to the seed pipe to pass the seeds. It is made up of steel sheet. It is used to carry the seed. In the bottom of the box seed sowing mechanism is attached. It is either arc welded or spot welded.

2.3 Wheels

Wheels are used to give motion to the system in the easier way. These are made up of rubber or either made of the metal with the gripping arrangement. Wheels are mounted on the axle and bearing to give a free motion. This wheel and axle is attached to the base of the system.

2.4 Flattening plate

Flattening plate is used to cover the seed with soil after inserting seed in the hole. It will be attached at the end of the mechanism. It will be always in contact with the soil.

2.5 Battery

Battery is a device which converts the chemical energy into electric energy. It is maintenance free battery. It has two terminal positive and negative terminals. Ampere-hour is a unit related to energy store capacity of the battery. Battery rating is selected as per the weight of the system.

2.6 Chain sprocket

It is one of the transmission devices. In this transmission no slip will occur. It is used for transmitting power in medium and long distance. In chain bush and pin are made by cold drawn or tuned and grounded. To withstand the wear resistance case hardening is done. The pin and bush are press fitted.

2.7 Plougher arrangement

Plougher arrangement is used to make a way for the seed in the soil. Generally plougher arm is in a arc shape. To vary the depth of the hole we will make the plougher arm adjustable. By adjusting the plougher arm we can get maximum hole depth.

2.8 Motor

Motor is used to rotate the assembly of the seed sowing with the help of chain and sprocket mechanism. By little arrangement we can use this motor for cutting the grass also.

3. WORKING

The working principle of this project is very simple. Seed stored in the hopper, with the help of the drive mechanism the wheels of the machine is rotated and the machine is moving forward. Another motor which is outside the hopper rotates the shafts which the impellers are mounted on that shaft continuously. The impellers are inserting the seed into the pipes which are connected to the plougher plate. The seed is inserted into the soil with the moving of the machine.

The various seeds are easily sowing with the help of this machine easily. The depth of the seed sowing can be arranged by manually. The control of the operation is in operators hand. The main advantage of this process is the loss of the seed during the sowing are avoided.

4. ADVANTAGES

- Improved efficiency in planting.
- Increased yielding and reliability in crop
- Increased speed of seed planting.
- Durable and cheap as low cost materials are used.
- Since seed can be poured at any required depth, the plant germination is improved.
- Dependency labor also decreased. Also it saves time of sowing.

5. FUTURE SCOPE

- This project can be used as a grass cutter, by replacing the augur tool by grass cutter. By this it is used as double purpose.
- By usage of servo motor or stepper motor the process can be automated so it will reduce the further effort of farmer.
- Usage of multi-hopper, seed sowing can be made automatic without human intervention.
- By adding the fertilizer spraying process complete feature will be incorporated.

6. CONCLUSION

Thus the design and fabrication of seed sowing machine, which reduce the man power, which is used for ploughing, dribbling, seed sowing. It also reduces the effort of farmer. This process the seed sowed in proper depth. It is cost competitive, Seed spillage is avoided. In this project both ploughing and dribbling process is done so the upper layer of soil will go down and fresh soil will come up. So the crop will yield more productivity.

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