Automatic Seed Sowing Machine

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Abstract - Agriculture plays an important role in the life of economy. It is the backbone of our economy system. In this project work we focused on seed sowing processes and tried to solve the problem. In seed sowing machine system we have used battery powered wheels and dc motor inbuilt in these wheels.In each complete rotation of rotating wheel there are seeds fall from this seed drum and the seed plantation process can take place smoothly as well as without wastage of seeds.

This machinehas very low cost. Also the unskilled farmer can easily operate automatic seed sowing system. The design and fabrication of a manually operated single-row Seed planter is cheap, easily affordable by the rural farmers. The single-row Seed planter is very simple to use, various adjustments are made with ease, and it is maintenance free.It ensures uniform and consistent seed distribution in each planted box, and comprising dispensing seeds continuously from a supply hopper in single height, side-by-side. Adjustable gates on the supply hopper and the second hopper control the discharge of seeds and covering material, respectively, to insure uniform and consistent discharge from the hoppers.

I. INTRODUCTION

The Automatic seed sowing machine are developed in order to be focused on seed sowing process. In this seed sowing process to avoid the drawbacks. The seed sowing machine is developed which has very less cost. Also the unskilled farmer can be easily operated automatic seed sowing system.

Researchers have presented a better speed of operation and good Seed Sowing capacity for new advanced agriculture process which includes robotic based cultivation. An agriculture robotic system is used. They has used DC motor which has four wheels. An agricultural farm is cultivated by the Plow machine, depending on the crop considering particular rows specific columns. Ultrasonic sensor detects the blocks in the path with measure the distance between both robot and block. Also senses turning position of our vehicle at end of the each column. The seed block can be detected and solved using water pressure. This machine can be controlled on remotely. A sensor guided robot rover for digging, precise seed positioning and sowing has been proposed to reduce the human effort.

II. TRADITIONAL SEED SOWING TECHNIQUES

III. METHODOLOGY

First step is to manually fill the hopper with seed and the fertilizer in container. Mechanism uses the manual push force for running. Rotary motion of wheels given to the sowing shaft by sprocket or belt drive. With measured distance interval, seed sowed in the soil vie pipe connecting seed hopper with the digger and then the seed is covered with the soil and provide compaction over seed.

IV. PROPOSED SYSTEM

The fig.1 shows that the blocks diagram of proposed system. In agricultural system the more facilities to provides the farmer and accurate work .This system has 4 wheel robot system.The seed sowing machine is developed which has very less cost. Also the unskilled farmer can be easily operated automatic seed sowing system. The design and fabrication of a manually operated single-row Seed planter that is cheap, easily affordable by the rural farmers. The single-row Seed planter is very simple to use the various adjustments are made with ease, and it is maintenance free. In seed sowing machine system they are used battery powered wheels and dc motor inbuilt in these wheels.

<u>Battery powered rotating wheels</u>

The rotating wheels are designed also it has fabricated rib parts so it helps to give grip during the seed planting, so that user can easily pull the whole assembly as per required direction. The both wheels are powered by battery and DC motor is inbuilt fitted in these wheels. The motor specifications are 1100watt, DC power, 12Vof which 3 battery of 4 volt each is used in series, 7amp current.

There are total of three DC motors used in machine, amongst them two are used for driving the wheel and the last one is used for rotating seed .

Fig.2 : Wheel

Seed Hopper or Seed storage Tank

This is one of the lightest and stationary component which is mounted on the main frame. There may be one or more hopper attached to the machine depending on the size of machine and the type of seed to be sown . Inside this drum we can pour the seed for planting / sowing operation. Bottom of this seed tank there is seed sowing disc arrangement. The material used is ALUMINIUM as it is lighter and machinable.

Fig. 3 : Seed hopper

Seed sowing disc and seed bucket

In each complete rotation of rotating wheel there is seeds falls from this seed drum and seed plantation process taken place smoothly and without wastage of seeds. These seed buckets are fitted on the seed sowing disc with the help of screws such that it lifts the seed at an angle of 40 degrees in each slot which then fall into the seed collector . The buckets are designed in such a way that they can select the size of bucket as per seed type, size and shape. Also these buckets fit on the seed sowing disc in such a way that the distance between two seed during the plantation we can adjust and set according to requirement.

Fig.4 : Rotating seed disc

Seed chamber, Plough and sand cover arrangement

In the drawing the seed chamber, Plough and sand cover arrangement is shown. The seed sowing disc is rotate in the seed chamber. The arrangement is done in such a way that seed is picked up from the seed chamber The seeds are falls in the seed chamber through seed storage tank and the seed buckets are collect the seeds from the chamber and it sows in the ground as required depth with the help of plough. The distance between two rows we can adjust with the help of ploughs. After seed fallen in the ground the sand cover will pull the sand on the seed.

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V. FACTORS AFFECTING SEED EMERGENCE

Mechanical factors, which affect seed germination and emergence are :

- ✓ Its depth should be uniform with regard to placement of seed
- ✓ It should be distributed uniformly along the rows.
- ✓ Its transverse displacement with regard to row also considered.
- ✓ Loose soil getting is also prevented.
- ✓ Soil is covered uniformly over the seed.
- ✓ Fertilizer is mixed with seed during placement in the furrow.

To achieve the best performance from a seed drill or planter, the above factors are to be optimized by proper design and selection of the components required on the machine to suit the needs of the crops. The seed drill or planter can play an important role in manipulating the physical environment.

VI. FUTURE SCOPE

The developed robotic vehicle can be a full-fledged example of agricultural automation. However since the field of agriculture in India is very fragmented, further improvements can be done in this projects to make it smarter and multipurpose. This vehicle can be added with alarm to ensure seed level in seed collector, solar power can be used efficiently as a renewable power source other sensors such as soil pH sensors , temperature and humidity sensors can also be used which are other factors in farming. The vehicle can be added with mechanism to remove the weeds, thus the single vehicle can be used for sowing as well as preparing the soil. Also addition of rainfall sensors can be used to detect and calculate the amount of irrigation to the crops in addition to the moisture sensor. Thus this platform which we have fabricated in our project can be used to expand the flexibility of the project by adding more application to the vehicle and also leaves the space for future research.

VII. ADVANTAGES OF MACHINE

Following are the advantages of manual seed planter machine are

- Improved efficiency in planting.
- Increased yielding and reliability in crop.
- Increased cropping frequency.
- Increased speed of seed planting.
- Seed planting accuracy.
- Durable and cheap as low cost materials are used.
- Less maintenance cost.
- Since seed can be poured at any required depth, the seed germination is improved.
- Labour cost is reduced to great extent in addition it saves time of sowing.
- Uniform placement of seeds in row with required distance.

VIII. CONCLUSION

In each complete rotation of rotating Wheel there is seed falls from this seed disc and seed plantation process takes place smoothly and without wastage of seeds. The sowing disc rotates in the seed chamber, the seeds are falls in the seed chamber through seed storage tank .The seed buckets collect the seeds from the chamber and it sows in the ground as required depth with the help of plough.

1. Maintain row spacing

2. Proper utilization of seeds can be done with less loss.

3. Perform the various simultaneous operations and hence saves

labour requirement, labour cost, labour time, total cost of

saving and can be affordable for the farmers.

4. Achieves automation in agricultural field.

IX. REFERENCES

(i) WIKIPEDIA

(ii) www.youtube.com