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K. E. Society’s

**Rajarambapu Institute of Technology, Rajaramnagar**

**(An Autonomous Institute)**

SYNOPSIS

Environmental Science Miniproject

|  |  |
| --- | --- |
| Program | : Computer Science Engineering 2020-21 |
| Course name & code | : Environment Science Lab() |
| Class | : S.Y. B. Tech ( Semester-IV) |
| Proposed Title | Automatic Seed Sowing Machine |

**Name of the students in project group:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr.**  **No.** | **Name** | **Roll no.** | **Mobile no.** | **Email ID** |
| 1 | Shreyash S. Patil | 2003013 | 9130553806 | [2003013@ritindia.edu](mailto:2003013@ritindia.edu) |
| 2 | Harsh S. Deshmukh | 2003019 | 9588693880 | [2003019@ritindia.edu](mailto:2003019@ritindia.edu) |
| 3 | Shreyash C. Salunkhe | 2003017 | 7620400302 | [2003017@ritindia.edu](mailto:2003017@ritindia.edu) |
| 4 | Shivam B. Jadhav | 2003008 | 7387130916 | [2003008@ritindia.edu](mailto:2003008@ritindia.edu) |
| 5 | Atharv S. kuchkar | 2003016 | 7387733979 | [2003016@ritindia.edu](mailto:2003016@ritindia.edu) |

**Project Guide**

**Prof. Arati R. Gavade**

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1. **INTRODUCTION**

In the current generation most of the countries do not have sufficient skilled manpower especially in agricultural sector and it affects the growth of developing countries. The main requirement of Automation is to reduce manpower in our country; the buzzword in all industrial firms generally involves electrical, electronic component as well as mechanical part. Automation saves a lot of tedious manual work and speeds up the production processes. So, it is a time to automate the sector to overcome this problem. In India there are 70% people dependent on agriculture. Seed has been an important agricultural commodity since the first crop plant was domesticated by pre-historic man. In this model seed sowing process is automated to reduce the human effort and increase the yield. The plantation of seeds is automatically done by using DC motor.

Cropping is important and tedious activity for any farmer, and for large scale this activity is so lengthy also it needs more workers. Thus, agriculture machines were developed to simplify the human efforts. In manual method of seed planting, we get results such as low seed placement, less spacing efficiencies and serious back ache for the farmer. This also limited the size of field that can be planted. Hence for achieving best performance from a seed planter, the above limits should be optimized. Thus, we need to make proper design of the agriculture machine and selection of the components is also required on the machine to suit the needs of crops. The agriculture is the backbone of India. And for sustainable growth of India development of agriculture plays vital role. The India has huge population and day by day it is growing thus demand of food is also increasing. In agriculture we saw various machines. Also, there traditional methods are there. Since long ago in India traditional method is used. Also, India has huge man power. This manual planting is popular in villages of India. But for large scale this method is very troublesome. The farmer must spend his more time in planting. But time available is less for him. Thus, it requires more man power to complete the task within stipulated time which is costlier. Also, more wastage happens during manual planting. Hence there is need of developing such a machine which will help the farmer to reduce his efforts while planting. This process of using machines is called as mechanization. Along with mechanization automation also helps to increase the efficiency of the process.

* PROBLEM STATEMENT:

1. In the present scenario rate of deforestation increases so there is need of planting tree in forest with less human efforts with less time and cost.
2. Labor supply is another issue of great concern.

* **OBJECTIVES:**

1. Automation in seed plantation in farms
2. Access of rower from all over the world
3. Large area of farm covered with efficient work.
4. Plantation of seed with proper environmen
5. **LITERATURE REVIEW**

|  |  |  |  |
| --- | --- | --- | --- |
| PAPER NAME & AUTHOR NAME | METHODS | FUTURE WORK | CONCLUSION |
| A high yield automatic tree planting machine(MCG)  ---------------------------  N. Olivier , L. cotten M. Berducat | An RTK GPS system helps the machine to plant with precision upto 5 cm, at rate of 1 tree per second. | The machine needs to be stabilized by adding wheels to wheels systems had been added to the GC planter To increase its stability. | We noticed that most difficult part was to be able to secure the mechanical parts in this CHAOTIC  Forestry environment. This security measure guarantees however efficiency of the planting machine |
| International Research Journal of Engineering and technology (IRJET)  ----------------------------  Thorat Swapnil -V, Madhu L. Kasturi, Patil Girish V, Patil Rajkumar | seed storage tank for storing seeds  seed sowing disc for sowing  and seed chamber | to improve more efficiency and accuracy in planting to decrease dependency on labor | This seed plantation machine has great potential for  increasing the productivity of the planting.By using this machine.  we can achieve flexibility of distance and control depth,  variation for different seeds.hence usable to all seeds. |
| International Journal of Computer science Trends and technology (IJCST)  ----------------------------  Abdulrahman, Mangesh Koli, Umesh Kori, Ahmadakbar | App and web designing | Node js SQL Apache database services | The fast webservice and attaching webservice with database and app development |
| Loic Cotton at SATT Grand Centre Irstea  ----------------------------  Istiven Appavoo, Anicet Marionneau, Michel Berducat, Benoit Merckx, NatachaOlivier | Operates through bluetooth, DC gear motor for digging, sliding pipe for throwing seeds | Efforts can be made to add a water feeding unit along with tree planting and seed sowing mechanism. Solar panels can also be  added to make it more effective. | As compared to manual operation it could result in less wastage. Also, energy required for this is less |
| Research and development in agriculture robotics  ----------------------------  Redmond Ramin Shamshiri, Cornelia Weltzien, Ibrahim A. Hameed, | Husky ugv for field scouting.  And 3D mapping  Kenova robotic arm for automatic bus trimming bush trimming and rose pruning. | To reduce the work of labors to use solar and other renewable energy for the project  For the case of robot harvesting improving sensing acting and efficiency | An agriculture robot must be economical viable which means it must sense fast calculate fast response fast and act fast to respond to the variability of environment |
| Fabrication and automation of seed sowing machine using iot  ----------------------------  Senthilnathan N, Shivangi Gupta, Keshav Pureha and Shreya Verma | The seed sowing vehicle is designed based on two criterion. One is to keep the design in such a way that the working is as simple as possible and the other is to maintain low weight of the frame and reducing the number of pulleys used.The optimum position of the components is decided through the help of the software model. | To increase battery capacity and to be able to work in rigid areas  To increase capacity of seed storage | The model fabrication and its automation have been done to overcome the difficulties of farmers by achieving regular distance between rows and consecutive seeds. |

1. **METHODOLOGY**

We built a structure of rower with 4X4 wheel Rower for better performance in forest and farming sites

To drop the seed in a specific interval of time attached to a hopper with a structure and moisture sensor is working for the scientific analysis of the soil to check whether the plantation environment is ready or not to drop the seeds by the rower.

The total combination of circuits is electronic with the help of a sufficient power supply and works on IOT based technology.

1. **Battery:**

The Battery is used to provide 12V power supply. It will be provided to Node Mcu and Arduino Uno

1. **Node-Mcu Esp8266:**

It is Microcontroller Unit. It is used to provide some important features of microcontrollers such as GPIO, PWM, ADC. So, it will be used to provide connectivity and app control to the rower with remote control feature.

1. **Seed hopper:**

Seed hopper is used to simply drop the seed. The tap will be controlled to ON and OFF by the app.

1. **12V motor:**

The wheels are attached to the motors after getting the signal from the node Mcu it will controlled by the app. When a rower turns in left the speed of left wheel is more than the right and the when it turn to the right the speed of left wheel is more.

1. **App:**

All over system is controlled through the app, moment of the rower such as Right, left, forward and back.

ON and OFF of hopper is also controlled by the app.

1. **Arduino Uno:**

Ardunio Uno is used to take the reading of moisture sensor.

1. **Servo Motor:**

Servo motor is used to controller position of Moisture sensor

1. **Moisture Sensor:**

It detect the moisture and Moisture detector send data to UNO.

* **BLOCK-DIAGRAM**

Timeline

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* **APPLICATION**

1. Farming The design of furrow openers of seed drills varies to suit the soil conditions of particular region. Most of the seed cum fertilizer drills are provided with pointed tool to form a narrow slit in the soil for seed deposition.
2. Gardening Seeds are broadcasted on the soil which results in the loss and damage of the seeds. As the cost of seeds is more and cannot be affordable for the farmers so there is the need for the proper placement of seeds in the soil.
3. Sport’s Stadium The fluted roller seed cup is having the arrangement of seed cut-off and controlling flap to control the number of seeds and fertilizers.
4. Agri Universities the Harrow is one of the important agricultural equipment which is used in the fields of agriculture for seed bed preparation and weed control. This is used before the seeds are sown in the field. This helps in the leveling of the soil and seeds can be sown in the prepare bed easily Polyhouse Seeds are broadcasted on the soil which results in the loss and damage of the seeds. As the cost of seeds is more and cannot be affordable for the farmers so there is the need for the proper placement of seeds in the soil.
5. **PLAN OF ACTION**

**Phase 1:**

Rower Structure and designing, the welding and cutting of structure is done with the help of a welding workshop on the date of 13/04/2022.

**Phase 2:**

Circuit Designing, App making/Web site, Arduino Programming, Circuit attaching to the structure this activity are done on 20/02/2022.

**Phase 3:**

Hopper designing, Hopper component applying, hopper attaching to structure these activities are done on date 04/05/2022

**Phase 4:**

Testing Overall component working, Aesthetics work, and final testing activities are done on 08/06/2022

1. **CONCLUSION & FUTURE SCOPE**

This seed plantation machine has great potential for increasing the productivity of the planting. Till now tractor was the main traction unit for nourishment in farming. With the adaptation of this seed planting machine its purpose will be done. Hence there is need to promote this technology and made available to even small-scale farmers with affordable prices. This machine can be made by raw materials also which saves the cost of whole project and is easily manufactured in available workshops. The only cost is of metering device and sensors. Hence by using this machine we can achieve flexibility of distance and control depth variation for different seeds, hence usable to all seeds.

* **FUTURE SCOPE:**

1) Introduction of Cutter in place of drill can be used as grass cutter equipment.

2) Using remote control machine can be made automatic.

3) Addition of multi-hopper can be attached side by side for sowing of large farm.

4) Water dripping unit could be included in seed sowing machine.

1. **REFERENCES**
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6. Research and development in agriculture robotics : a perspective of digital farming by Remond Ramin Shamshiri, Cornelia Weltzien, Ibrahim A. Hameed, Ian J. Yule, Tony E. Grift, Siva K. Balasundram, Lenka Pitonakova, Desa Ahmad, Girish Chowdhary (International Journal of Agriculture and biological Engineering).
7. **“**Agriculture seed sowing equipment a review”. Present review provides brief information about the various types of innovation done in seed sowing equipment. In this multi-purpose seeding machine equipment consist of cylindrical shape container in which the seeds can fill. the container is attached on the four wheeled carrier assembly.