A
Project Report On

EXPERIMENTAL INVESTIGATION ON FARM SEED SOWING USING AUTOMATED ROVER

Under the Course "Environmental Project" (SH2602)
Submitted by

Second Year B. Tech. (Computer Engineering)

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CERTIFICATE

This is to certify that below mentioned students of S.Y.B.Tech. (Automobile) have successfully completed the project entitled **"FARM SEED SOWING USING AUTOMATED ROVER"** under the course "Environmental Project" (SH2602). The content of this report, in full or in parts, have not been submitted to any other institution or university for the award of any degree.

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Place : R.I.T., Rajaramnagar

Date :

DECLARATION

We, the undersigned, the students of S. Y. B. Tech. (Automobile) hereby declare that the project the project entitled **"FARM SEED SOWING USING AUTOMATED ROVER"** under the course "Environmental Project" (SH2602)is a genuine work conducted by us through practical on–site observations, and the data collected by us is true to the extent of our awareness.

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ACKNOWLEDGEMENT

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1. INTRODUCTION

1.0 PREAMBLE

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.

1.1 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.

1.2 PROBLEM STATEMENT:

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. Therefore, farmers have to use upgraded technology for cultivation activity (seed sowing, fertilizing, spraying etc.). So, it's a time to automate the sector to overcome this problem which in turn will also eliminate the requirement of Labors and also avoid the wastage of seeds.

1. Automation in "Seed sowing" and other features of Agricultural activities.
2. Reduce the manpower which is required to seed plantation process in farming.
3. with help of technology to improve the Accuracy of seed plantation process in farming.

1.3 OBJECTIVES:

1. Automation in seed plantation on farms

2. Access of rowers from all over the world

3. Large area of farm covered with efficient work.

4. Plantation of seed with proper environment

1.4 TIME FRAME :

Activity	Dates of coalition	Required time	status
Rover structure	13/04/2022	3 days	Complete
Circuit designing	16/04/2022	2 days	Complete
app	17/04/2022	1 days	Complete
Arduino designing	19/04/2022	2 days	Complete
Circuit applying to structure	20/04/2022	1 days	Complete
Hopper designing	24/04/2022	3 days	Complete
Hopper component applying	25/04/2022	1 days	Complete
Hopper attaching to structure	28/04/2022	1 days	Complete
Testing of overall components	02/05/2022	1 days	Complete
Aesthetics	03/05/2022	1 days	Complete
Final testing	08/05/2022	1 days	complete

2. 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

2. **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.

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

4. **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.

5. **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.

6. **Arduino Uno:**
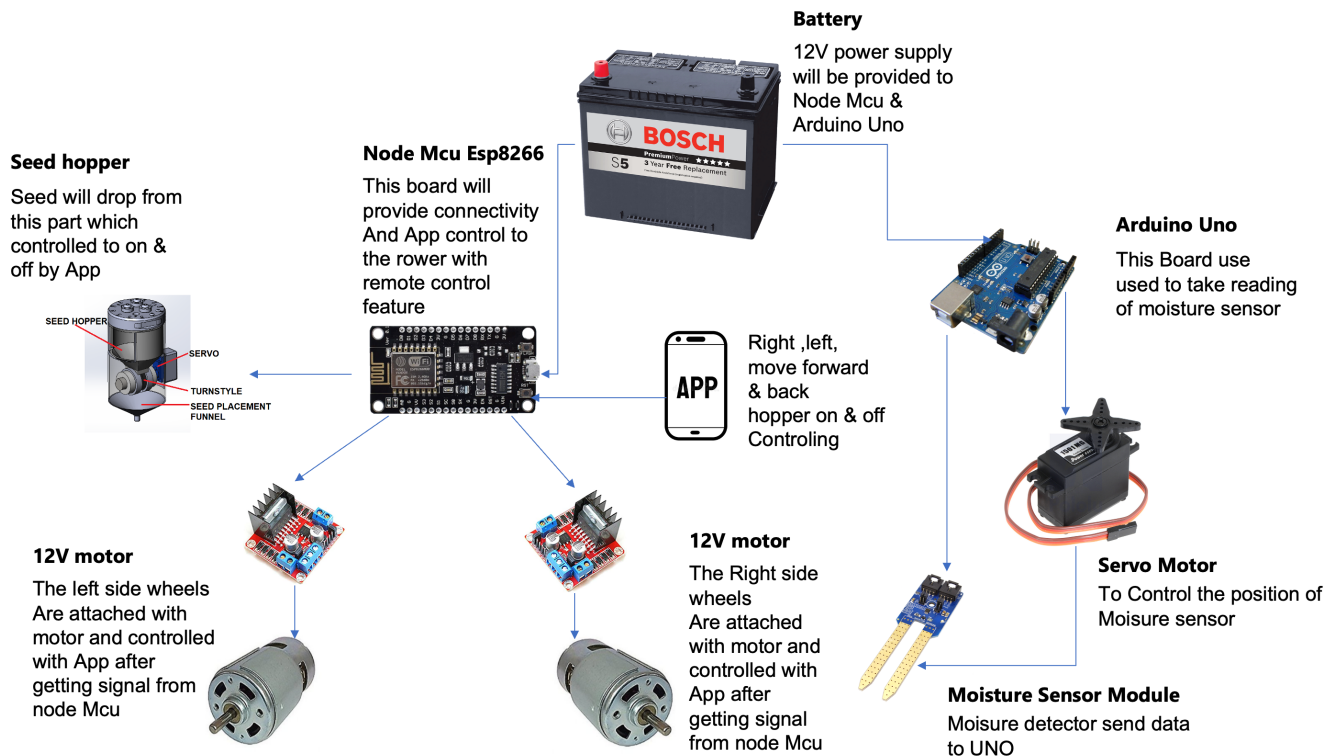   Ardunio Uno is used to take the reading of moisture sensor.

7. **Servo Motor:**
   Servo motor is used to controller position of Moisture sensor

8. **Moisture Sensor:**
   It detect the moisture and Moisture detector send data to UNO.

o **BLOCK-DIAGRAM**

Battery

12V power supply will be provided to Node Mcu & Arduino Uno

Seed hopper

Seed will drop from this part which controlled to on & off by App

Node Mcu Esp8266

This board will provide connectivity And App control to the rower with remote control feature

SEED HOPPER

SERVO

TURNSTYLE

SEED PLACEMENT FUNNEL

Arduino Uno

This Board use used to take reading of moisture sensor

APP

Right ,left, move forward & back hopper on & off Controling

12V motor

The left side wheels Are attached with motor and controlled with App after getting signal from node Mcu

12V motor

The Right side wheels Are attached with motor and controlled with App after getting signal from node Mcu

Servo Motor

To Control the position of Moisure sensor

Moisture Sensor Module

Moisure detector send data to UNO

3. RESULTS AND DISCUSSION

3.1 The forest planting machine has been designed and fabricated and the process of seed sowing is automated using Iot in order to minimize the human effort.

3.2 The cultivators tilts the soil as machine moves forward and the seeds are dropped at regular intervals into the soil through distributer mechanism which consist of hopper and seed flow system. Thus, the model fabrication and its automation have been done to overcome the difficulties of forest planters by achieving regular distance between rows and consecutive seeds.

3.3 The rower should be control by APP which is specially designed for the rower. The App is connected with ESP 8266 Node MCU so the range and user-friendly environment is created to the Rower operator.

3.4 Hopper seed dropping timing within specific manner to avoid the wastage of the seed .

3.5.Humidity measurement also can be calculated by the Rower to know and analysis the Environment condition to plan the crop of plant. Soil analysis also have to done by Arduino UNO with help of moisture sensor.

4. CONCLUSION:

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.

5. 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.

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[5] 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).

[6] "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.