Automated Seed Sowing Machine Using Atmega2560

B. Annapurna, B. Anusha, S.V.S Prasad, B. Somanaidu

ABSTRACT--- In this paper we are discussing about the sowing techniques which are useful in farming. Agriculture plays an important role in economic status in india. As india is the second largest producer of wheat and rice. stilltraditional agriculture methods are being implemented in farming which is very costbecause of farm workers. Farm workers availability inclinesthe farmers as workers expenditureis huge, this vehicle creation minimizesthe endeavors and reduces the spending amount on sowing seeds. Compare to traditional method this process has a various advantages in sowing the seeds and removing the weeds during cropping seasons. Seed sowing vehicle is regulated hand-operated but slashes exercise of farmers and increases the capability ofseed sow compare to normal planting which was performed by farm workers[1]. seeding machine can be utilized for various types of seeds and small plants also we can automize the spacing between the seeds while operating the seed sowing machine. it increases the planting efficiency and accuracy rate will be high compare to traditional sowing process. It is an simplified design which even canoperated by unskilled farmers. machine is designed using low cost equipment so it can be easily available for small scale farmers.

KEYWORDS: ARDUINO atmega2560 microcontroller, motor driver L2930, IR Sensors.

1. INTRODUCTION

Agriculture is dominant employment activity of Indian people which determines the Indian economy. Greater part ofurban areas in India do not have adequate talented labor in farming segment and that influences the advancement of creating nation. Hence agriculturists should use advanced methods in cultivating lands. So far Seed strewing is performed physically by hands and spacing between seeds was not accurate while sowing the seeds. Traditional method of sowing seeds is achieved by hand and in some cases by scatter such that forming gaps and drip seeds by fist is utilizedor two bullocks are used to liftthe bulkymachinery for dropping seeds and leveling the land.Hence automation is necessary to solve the issues in agriculture sector by enhancing agricultural machinery.seed sowing is crucial task for farmer during the plantation seasons, if seeding the land area is more it requires more number of workers for sowing the seeds[2]. In traditionalprocess, we cannot expert accurate results because of less seed placement and spacing of seeds by workers which increases the burden on farmers.

Hand-operated sow is prominent in suburb but for extensive scale farming the present process is difficult. small scale farmers cannot effort the expenses of workers during this process. To reduce the efforts of farmers this machine is designed in a simplified manner.

Fig 1.TRADITIONAL METHOD OF SOWING

2. EXISTING SYSTEM

This method of implementation of seed sowing manually or automatically exists but this is the simpler version that untrained framers can work with it. This is done with simple components as motors and mainly this works on bases of Arduino micro controller, IR sensors are used in this they are attached to the front wheels that any obstacles are found it gives an alert.

ARDUINO ATMEGA2560 MICRO CONTROLLER :

TheATMEGA2560 microcontroller boardhas 54 digital I/O ports (15 canused for PWM outputs), 16 analog inputs, 4 UARTs (hardware serial ports), USB connection and 16 MHz crystal oscillator, power jack, ICSP header, and reset button.

3. BLOCK DAIGRAM

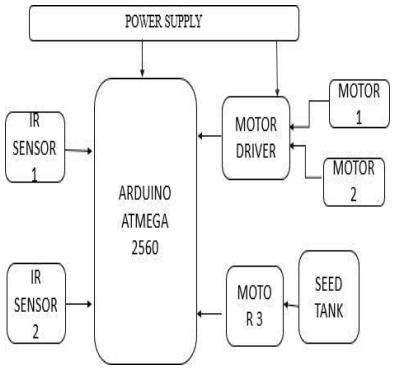


FIG 2 BLOCK DIAGRAM OF MACHINE

Revised Manuscript Received on December 22, 2018.

B. Annapurna, Department ofElectronics and Communication Engineering,MLR Institute of Technology, Hyderabad, Telangana, India

B. Anusha, Department ofElectronics and Communication Engineering, MLR Institute of Technology, Hyderabad,Telangana India

Dr.S.V.S Prasad, Department of Electronics and Communication Engineering, MLR Institute ofTechnology,Hyderabad,Telangana, India

B. Somanaidu, Department of Electronics and Communication Engineering, Institute of Aeronautical Engineering, Hyderabad,Telangana India

MOTOR DRIVER L2930:

In this design we are using motor driver L2930 which drives the shaft motor by coupling with battery bank. As motor starts rotating this vehicle starts moving. Seed storage tank is coupled at finest of module nearby wheels[5]. When vehicle starts moving confer to modification, it concede precise seed to drop into the hoper sothere is no wastage ofseeds and sowing trial goes evenly.

It is a module usedto control the speed and direction of motors synchronously. It is two-directional driver which controls current at 5V-36V.

30rpm MOTOR: Motor is an electrical component used to convert electrical source to mechanical source. Motors works on the principle of forces which is generated by magnetic fields[3].

Fig 3.DC MOTOR

IR SENSORS:

IR sensor is electronic device used to sense assured tendencies. It performs this operation by eitherdetecting or emitting radiations.IR sensors also used to measure heat which is emitted by objects.

In this process, as motorstarts moving vehicle which operated using calibrate structure[4]. Seed storage tank is coupled at the finest of module near wheels. The sensor is used to guide the vehicle. If obstruction show up in front of wheels it accords signals and diverts path of vehicle.IR sensoralso sensesplane of seed in hopper as a consequence accords an alarm whentank is uninhabited.

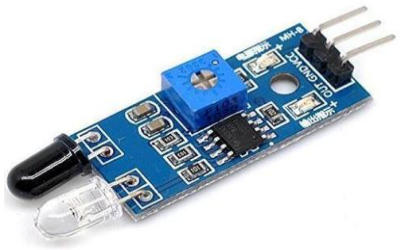


Fig4IR SENSOR

4. FACTORS AFFECTING SEED

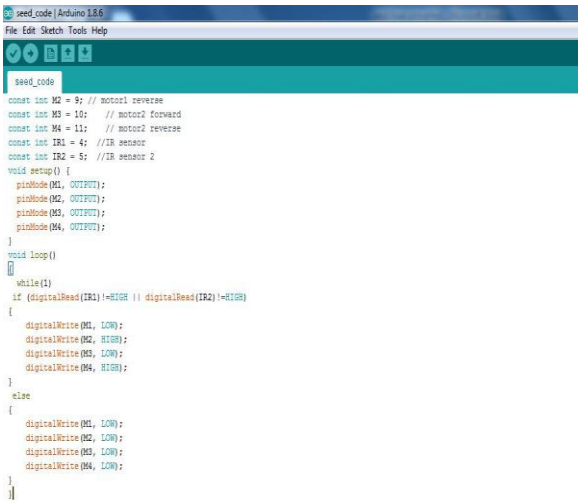
1. Seeds should be placed consistently.
2. Seeds should equally dispensed onward rows.
3. Soil should cover consistently over seed.

5. SOFTWARE DESIGN

For the machine to work we use Arduino software.

1. Open the Arduino software.
2. Create a file.
3. Type the code.
4. Compile and upload the codeand test.

6. STRUCTURE OF CODE & RESULT



```
seed_code | Arduino 1.8.6
File  Edit  Sketch  Tools  Help

 seed_code

const int M2 = 9; // motor1 reverse
const int M3 = 10;   // motor2 forward
const int M4 = 11;   // motor2 reverse
const int IR1 = 4;  //IR sensor
const int IR2 = 5;  //IR sensor 2
void setup() {
  pinMode(M1, OUTPUT);
  pinMode(M2, OUTPUT);
  pinMode(M3, OUTPUT);
  pinMode(M4, OUTPUT);
}
void loop()
{
  while(1)
 if (digitalRead(IR1)!=HIGH || digitalRead(IR2)!=HIGH)
 {
    digitalWrite(M1, LOW);
    digitalWrite(M2, HIGH);
    digitalWrite(M3, LOW);
    digitalWrite(M4, HIGH);
 }
  else
 {
    digitalWrite(M1, LOW);
    digitalWrite(M2, LOW);
    digitalWrite(M3, LOW);
    digitalWrite(M4, LOW);
 }
}
```

Fig5 STRUCTURE OF CODE

7. FUTURE SCOPE

This project helps the farmers in large scale. Farmers can easily do their work, uneducated farmer can also work with this machine.

8. CONCLUSION

This seed farmstead instrument has great probable for expanding the fertility of the plantation. In farming, tractor was the main instrument in farming with the adaptation of this seed planting instrument farmers can be benefited. Thus it is essential to promote this kind of technology and make it available tosmall scale farmers with affordable valuation. Hence design canmanufactured using staple sources which minimizes the product amount and conveniently available in open markets. Only we need to purchase IR sensors and metering device. Finally we conclude that this machine is malleable and this device can perform the same function for various seeds.

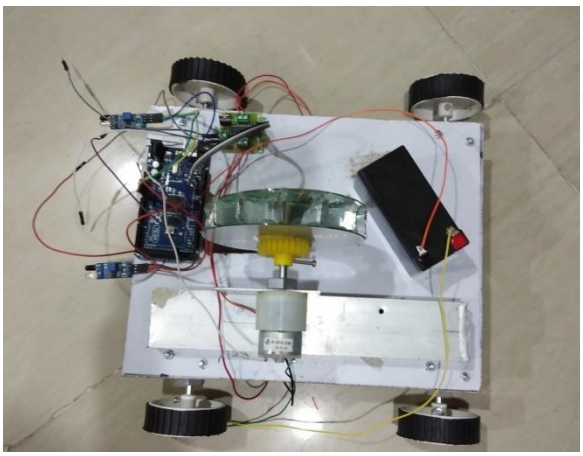


Fig 6. DESIGN MODULE

REFERENCES

1. S.M Bashi, N. Mariun and A.rafa (2007). _Power Transformer protection using microcontroller based relay', Journal of applied science,.
2. Swetha S.1 and harsha G.H.2, "Solar Operated Automatic Seed Sowing Machine", Cloud Publications International Journal of Advanced Agricultural Sciences and Technology 2015, Volume 4, Issue 1, pp. 67-71,February 2015.
3. Kyada, A. R Patel,"Design and Development of Manually Operated Seed Planter Machine", 5th International & 26th All India Manufacturing Technology, Design and Research Conference,Assam, India, December 12th–14th, 2014.
4. http://www.iraj.in/journal/journal_file/journal_pdf/1-120-142815439551-53.pdf
5. I. B. Gartseev, L. F. Lee, and V. N. Krovi, "A low-cost real-time mobile robot platform (ArEduBot) to support project-based learning in robotics & mechatronics," in Proc. 2nd International Conference on Robotics in Education, INNOC Austrian Society for Innovative Computer Sciences, 2011.
6. B. Astrand and A. Baerdveldt, A vision based row following system for agricultural field machinery,vol. 15, no. 2, pp. 251269, 2005
7. Jincui Kang, J. G. (2012). Application of Ontology Technology in Agricultural Information.2nd International Conference on Computer and Information Application (ICCIA 2012) (pp. 1183-1186). Atlantis Press, Paris, France