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### AUTOMATIC SEED SOWING ROBOT

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#### Abstract

Agriculture plays a most influential act in history of human being. It is a spine of our country saving method. In this project work we have fixated on seed sowing processes and reliable to solve the question. In source sowing structure scheme we have battery stimulate wheels, dc engine deep-rooted in these wheels and Arduino uno is for control the all whole process. When the seeds are empty it detects the level of depository source and signifies by way of sensor. When some impediment comes in-front of apparatus or entertain course the beginning sowing system can detect the impediment very surely by way of quick sensor. It can further check the soli status with the help of crooked piece. In each complete turn of alternating wheel skilled is seeds falls from this source beat and the source homestead process can happen smoothly in addition to outside use without thought of sources. This scheme determines all the facility that can work capable.

Keywords: Arduino uno, dc motor, ultrasonic sensor, cam module.

#### 1 Introduction

As we experience spine of our country is farming. Recently numbers of changes are happening in farming science like ploughing, plant, fertilizing, rip out of a place, harvesting, spraying etc. Accompanying climbing populace and growing food devouring per person, the demand for feed be necessary to overtake our ability to produce it shortly. This design determines fast soil unbinding, sowing seed and android moves forward in mechanical style. The Arduino uno is used to conduct the motor jockeys. The dc engine is in the machine applications.

# Methodology

#### Machine making process

1) Assemble the frame: join the frame components together using screws, bolts, or welding.

2) Mount components: attach the motors, gears, sensors, and other components to the frame.

3) Testing: test each component individually before assembling the entire machine.

4) Wiring: wire the electrical components according to the schematic diagram. Ensure proper grounding and insulation for safety.





Fig 1:Design and Development of Agribot



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Experimental setup



Machine was tested for agriculture purpose in various places. After the finalization of the design, the manufacturing phase begins which will yield a working prototype of the machine. This paper will culminate with the testing of the prototype in real world situations and appropriate modifications to the design and troubleshooting will follow.

#### 3. 3.1 Basic components

- Seed container :- Holds the seeds to be fed.
- DC Motor :- controls the seed feeding mechanism used to moves a conveyor belt.
- Motor driver:- Drives the DC motor
- Power supply:- provides power to the Arduino, motor driver, and their components.
- Breadboard:- for prototyping and connecting components.
- Jumper wires :- connects components to the Arduino and other boards.
   3.2 Main components
- Arduino UNO :- microcontroller board for controlling the machine.
- Ultrasonic sensor :- measures distance or level of seeds in the commainer.



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• Cam module :- enables communication between Arduino and other devices using the Cam protocol.

### 4 Literature Reviews

Table 1: Literature Reviews according to various case studies

Title	methodology	remark
Design and development of	This system is controlled by	This paper is mainly based on
seeding agricultural robot	microcontroller.	minimizing man power and
		cost of the equipment, which
		can be affordable to all
		farmers.
Seed sowing using robotics	Electric assembly design.	The mode of operation of this
technology		machine is very simple even
		to the lay man.
Seed sowing robot	This is an electromechanical	The seeds have been sowed in
	wireless control of automated	a proper sequence of seeds.
	guided machine.	
Agriculture seed sowing	The microcontroller is used to	By using innovative seed
equipments: review.	control and monitor and	sowing equipments we can
	process of system motion of	save more time required for
	vehicle.	seeding process.

### 5 System overview

1) Arduino uno -arduino uno is the heart of system which is connected with all the sensors and other hardware assembly required to achieve the desire work. All the software programming is written in arduino integrated development environment (ide).

2) Arduino ide software-ide stands for integrated development environment. It is a computer program to develop a software.

3) Ultrasonic sensor- detect obstacles and measure distance by emitting high frequency sound waves by knowing the speed of sound and the time it took for the echo to return, the distance to the object can be calculated.

4) Seed sowing mechanism- for planting seeds at precise depths and intervals.

5) Motor driver- for controlling the movement of the robot.

6) Camera module- for capturing images of the soil and detecting soil conditions.

### 6 Working principle –

1. Initialization- the robot is powered on, and the arduino uno initializes the system.

2. Obstacle detection-the ultrasonic sensor detects obstacles in the path and sends signals to arduino uno.

3. Soil condition detection -the camera module captures images of the soil, and the arduino uno process the images to detect the soil conditions (eg-moisture levels,texture).

Seed sowing-the seed sowing mechanism plants seeds at precise depths and intervals based on the soil conditions detected

### 7 Results and discussion

By putting the seed and fertilizer in rows at desired depth and seed spacing, cover the seeds with soil and provide compaction over the seed.



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 Table 2. Different seeds and their distance

Seeds	Distance
Coriander seeds	1.5 cm
mungdaal seeds	1.5cm



Fig. seeding process of mung daal

# 8 Limitations and future work-

1. Environmental factors- the system performance may be affected by environmental factors such as weather conditions, soil type, and crop variety.

2. Integration with other technologies- integrating the system with other technologies , such as GPS and precision agriculture, could further enhance its capabilities and efficiency.





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# 9 Conclusion

The sowing disc is rotate in the seed chamber, the seed fare falls in the seed chamber through seed storage tank. The seed buckets are collect the seeds from the chamber and it sows in the ground as required depth and drill the soil. And if any obstacles comes in front of machine it detects with the help of ultrasonic sensor. And capture the images of soil with the help of cam module.

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