

# **AUTOMATED SOLAR POWERED SEED SOWING MACHINE**

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## **KEY WORDS:**

Sowing, solar, pitch, microcontroller

## **INTRODUCTION:**

Sowing is the process of planting seeds. An area or object that had seeds planted will be described as being sowed. Among the major field crops, oats, wheat, and rye are sown, grasses and legumes are seeded, and maize and soybeans are planted. In planting, wider rows (generally 75 cm (30 in) or more) are used, and the intent is to have precise, even spacing between individual seeds in the row; various mechanisms have been devised to count out individual seeds at exact intervals.

## **OBJECTIVES:**

1. The main objective of this project is to design and fabricate smart seed sowing machine which can automatically sow seeds in the field based on variable pitch which is given as input by the farmers using the keypad present on the machine.
2. Make this smart machine economical and user friendly for Indian farmers to operate.
3. To implement functionality of adding the number of seeds to be sowed using keypad.
4. To make this vehicle solar powered so that the farmer need not worry about charging.

## **METHODOLOGY:**

1. Initially input the pitch at which it is expected to sow the seed using numerical key pad provided on the machine and initiates the seed sowing sequence.
2. The data input is provided to the microcontroller, which is mounted in the machine to processes the input data.
3. Depending on the pitch, the machine then moves through the distance specified in the pitch.
4. The distance is calculated using rotary encoders.
5. When the machine covers the respective distance the machine stops to sow the seed. When the machine stops the microcontroller signals the seed sowing mechanism to sow the seed at specified pitch.
6. Seed sowing mechanism is responsible for sowing the seeds at a particular pitch. It consists of hopper in which seeds are added and a small plough which digs the field.

7. When the machine stops at a particular pitch the seed from the hopper is sowed into the field.
8. The machine can run using battery, which is charged through solar energy.

### **RESULTS:**

The time required for one pass of seed sowing varies. However this greatly depends on the pitch and number of steps entered by the user.

<b>SL.NO</b>	<b>SEEDS</b>	<b>PROBLEMS IF ANY</b>	<b>SOLUTION</b>	<b>TIME</b>
1	Jowar seeds	Too many seeds drop at a time	Setting the servo angle to smaller value	4.6 sec/ 2ft
2	Chickpea seeds	Drop without any problem	Start servo motor to open hopper end.	4.6 sec/ 2ft
3	Ground nut	Seeds get stuck in the hopper	A vibrator is incorporated to the hopper to solve this problem	4.6 sec/ 2ft

### **CONCLUSION:**

After considering different advantages and disadvantages of the existing machine, it is concluded that the automated robotic vehicle for farmers can

1. Maintain row spacing
2. Proper utilization of seeds can be done with less loss.
3. Perform the various simultaneous operations and hence saves labor requirement, labor cost, labor time, total cost of saving and can be affordable for the farmers.
4. Achieves automation in agricultural field.

### **FUTURE SCOPE:**

The developed robotic vehicle can be a full-fledged example of agricultural automation. However since the field of agriculture is very large, further improvements can be done in this projects to make it smarter and multipurpose.

This vehicle can be added with other sensors such as soil pH sensors and temperature and humidity sensors 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.

