

# FABRICATION AND DEVELOPMENT OF SEED SOWING ROBOT

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**Abstract** - Here in this study efforts are taken to design and develop a manually operated seed planting machine which is suitable for marginal land holdings and plant the seed at specific distance with specific quantity and reduce the requirement of seed per unit area and with suitable furrow covering device. The aim of this project is to design and develop a solar operated seed sowing machine.

**Index Terms** – 1. D C Motor, 2. Battery, 3. Wheel, 4. Ferros/ Plough 5.

**Introduction**- There is a demand in agriculture for technology that is simpler for farmers to use, understand, and put into practise. The agricultural industry relies heavily on equipment that can be implemented quickly, cheaply, and with little human labour. A seed sowing robot is a tool that assists farmers in saving time and money by helping to spread seeds at the desired location. One of the primary agricultural procedures is seed sowing. It is time-consuming and necessitates a lot of human effort. The purpose of this project is to develop and create a smart seed-planting robot for the aforementioned duty. This sophisticated seed-sowing machine uses several ferros to plant seeds taken from a container. It takes a lot of time and labour from humans to complete. This project's goal is to design and build a clever seed-planting robot to perform the aforementioned task. This smart seed-sowing device plants seeds that are retrieved from a container using multiple ferros.

**Literature survey**- The procedure of spreading seeds with a Bluetooth-operated machine is the topic of this research. The machine's integrated design makes it easy to operate. Conventional sowing requires more time and labour during the farming process. A higher sowing rate results in a longer overall operating time and higher labour costs. So, one of the workable solutions would be to automate some aspects of farming. We're planning to automate the seed-planting mechanism to do that. A smartphone is used to operate this device. The goal of this project is to create a mobile device that uses Bluetooth technology to sow seeds more accurately and for less money A 12V battery is needed to power the machine's entire system, and a solar panel can be connected to this circuit as well. The machine is navigated via a Bluetooth interface and controlled by a PIC microcontroller for the appropriate sowing process.

Journal of Emerging Technologies and Innovative Research | An International Open Access , Peer-reviewed, Refereed Journal | ISSN: 2349-5162 Bluetooth Based Solar Seed Sowing Machine 1 Sai Krishna, 2Gowtham Yadav, 3 Hemanth Kumar, 4Punith N, 5Ashwini M V 1,2,3,4 UG Students, 1Assistant Professor. School of Mechanical Engineering, REVA University, Bengaluru, India.

All sectors, including agriculture, are expected to grow quickly in the current era. Farmers must adopt new practises that won't alter the soil's texture but will boost crop productivity overall in order to fulfil future food demands. The creation of a solar-powered seed-sowing device is the goal of this project. The seed-sowing machine is an essential tool in the agricultural sector. India uses a variety of techniques, including manual, ox, and tractor operator, for planting seeds and applying fertiliser. Therefore, we are creating this apparatus to address and fulfil all of these needs. This equipment, which is used in small-scale farming, performs four agricultural tasks (digging and seeding).

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A Review Study on Existing Manually Operated Seed Planter for Marginal Farmers of India Uday Veer Singh\* and Sheen C. Moses  
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India's manually operated planting equipment is examined. The results of the current study demonstrate the universal applicability of manually operated planting equipment for various seed and land holdings. The use of farm machinery is a crucial aspect of agriculture. Agriculture mechanisation is a crucial component of contemporary agriculture. Mechanisation also enhances the safety and comfort of agricultural workers, the efficiency with which other inputs are used, and the quality and added value of the produce. When examining the distribution of land ownership in India, it should be noted that 84% of holdings are smaller than one hectare. The average size of operational holdings is continuing to diminish due to land fragmentation, and the proportion of marginal, tiny, and semi-medium operational property is increasing. With that little land, owning and operating agricultural equipment is both economically and practically impossible. The main goal of the sowing process is to place the seeds in rows at the correct depth and seed-to-seed spacing, cover the seeds with soil, and apply proper compaction over the seeds. For a given crop and set of agroclimatic conditions, variable row-to-row spacing, seed rate, seed-to-seed spacing, and depth of seed placement are advised in order to maximise yields. Devices for sowing seeds are widely used in agriculture. In this study, efforts are made to build and create a manually operated seed planting machine that is suitable for small parcels of land, plants the seed at a certain distance and in a specific quantity, and reduces the amount of labour needed.

**Methodology-** Frames of all automobiles differ based on the load, speed, and torque and engine transmission. It may be reinforced with super materials as per the requirement.

### 1. D C Motor



DC Motor Voltage = 12 V

Current = 30 A

High speed motor,

$$\begin{aligned} \text{Power} &= V \times I \\ &= 12 \times 30 \\ &= 360\text{W} \\ &= 360/746 \\ &= 0.482 \text{ HP} \end{aligned}$$

Torque = (power in HP x 9550) / (Speed in rpm)

$$= (.482 \times 9550) / (2500)$$

$$= 1.8412 \text{ Nm}$$

High Torque motor

Torque = (power in HP x 9550) / (Speed in rpm)

$$= (0.482 \times 9550) / (750)$$

$$= 6.137 \text{ Nm}$$

## 2. Battery

The robot is powered by a lead acid battery with a 12V 30Ah capacity. By lowering the 12 DC from the battery to 5 Vdc, the voltage regulator (LM7805) can power the microcontroller and The battery is charged using a solar cell rated at 40 watts.



## 3.

### Wheel

Wheel diameter : 305mm

Wheel width : 40mm



## 4. Ferros / Plough

The fundamental practise in farming is tillage or ploughing. It is done to facilitate the germination of seeds and the growth of plants..



## CONCLUSIONS-

In this study, attempts are made to design and create a manually operated seed planting machine that is suitable for small land holdings, plants the seed at a certain distance and in a specific quantity, and reduces the amount of seed needed per unit area with an appropriate furrow covering mechanism. All sectors, including agriculture, are expected to grow quickly in the current era. Farmers must adopt new practises that won't alter the soil's texture but will boost crop productivity overall in order to fulfil future food demands. The creation of a solar-powered seed-sowing device is the goal of this project. The purpose of the seed-sowing machine is to increase the productivity of small farmers. A common seed storage area is added to this machine to lower the cost of the device. This machine can be easily produced in accessible workshops and can also be created from raw materials, which lowers the cost of the entire project. The metering device is the only expense.

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