

# FABRICATION OF MULTIPURPOSE SEED SOWING MACHINE

<sup>1</sup>Abhilash S, <sup>2</sup>Abhinandan Deshpande, <sup>3</sup>Anjan Kumar G R, <sup>4</sup>B S Mohan Reddy, <sup>5</sup>Dharamendara M  
<sup>1,2,3,4</sup>Student, <sup>5</sup>Assistant Professor.  
 School of Mechanical Engineering,  
 REVA University, Bengaluru, India

**Abstract:** This paper presents the Design And Fabrication Of Multipurpose Seed Sowing Machine. It has been observed that the human labour for tasks that requires special dedication has dropped down drastically due to various reasons, it was necessary to find an alternative and efficient system to help ease the farmer. Agro-Technology is the process of applying the technology innovation occurring in daily life and applying that to the agriculture sector which improves the efficiency of the crop produced and also to develop a better mechanical machine to help the agriculture field which reduces the amount and time of work spent on one crop. Hence in this work of project we decided to design a better mechanical machine which is available to the farmers at a cheaper rate and also which can sow and seed the crop at the same time. This project consists of the better design of the machine which can be used specifically for rice, wheat crops etc

**Index Terms – Seed Sowing Machine, Agro-Technology, Multipurpose Machine.**

## I. INTRODUCTION

In the field of agriculture, various operations for handling heavy material are performed. For example, in vegetable cropping, workers should handle heavy vegetables in the harvest season. Additionally, in organic farming, which is fast gaining popularity, workers should handle heavy compost bags in the fertilizing season. These operations are dull, repetitive, or require strength and skill for the workers.

In the 1980.s many agricultural robots were started for research and development. Kawamura and co-workers developed the fruit harvesting in orchard. Grand and co-workers developed the apple harvesting robot. They have been followed by many other works. Many of the works focus on structure systems design (e.g., mechanical systems design) of the robot and report realization of the basic actions in actual open fields. However, many of the robots are not in the stages of diffusion but still in the stages of research and development. It is important to find rooms to achieve higher performance and lower cost of the robots.

Over history, agriculture has evolved from a manual occupation to a highly industrialized business, utilizing I wide variety of tools and machines. Researchers are now looking towards the realization of autonomous agricultural vehicles. The first stage of development, automatic vehicle guidance, has been studied for many years, with a number of innovations explored as early as the 1920s. The concept of fully autonomous agricultural vehicles is far from new; examples of early driverless tractor prototypes using leader cable guidance systems date back to the 1950s and 1960s. In the 1980s, the potential for combining computers with image sensors provided opportunities for machine vision based guidance systems. During the mid-1980s, researchers at Michigan State University and Texas A&M University were exploring machine vision guidance. Also during that decade, a program for robotic harvesting of oranges was successfully performed at the University of Florida. In 1997, agricultural automation had become a major issue along with the advocacy of precision agriculture. The potential benefits of automated agricultural vehicles include increased productivity, increased application accuracy, and enhanced operation safety. Additionally, the rapid advancements in electronics, computers, and computing technologies have inspired renewed interest in the development of vehicle guidance systems. Various guidance technologies, including mechanical guidance, optical guidance, radio navigation, and ultrasonic guidance, have been investigated.

## II. LITERATURE REVIEW

Different mechanisms are used here to make the machine automatic. Seed meter mechanism, Plunger mechanism, Lever fulcrum mechanism, Power transmission mechanism, pulling mechanism. By using of this machine, achievement of flexibility of distance and depth variation for different seed plantation is possible [1].

The brief information about the various types of innovations done in seed sowing equipment. The different types of seeding equipment are studied. Rotary Dibbler. Manual Seed and Fertilizer Drill. Animal Drawn Seed cum Fertilizer Drill., Animal Drawn Tool Frame for Seeding Multi-Purpose Seeding Equipment [2]

In the existing sowing machine, every seed distributor needs separate seed storage place and seed metering mechanism. In this work a common seed storage place is introduced in the machine. The Common seed storage needs a single metering mechanism instead of number of mechanisms in the existing machine. If it is removed the design is going to be simple and easy to fabricate. The size of the machine, the production cost, transportation, everything will be reduced. The entire arrangement of the multipurpose sowing machine is connected together with the tractor through the provision provided in the machine. When the tractor moves forward, the ground wheel will be rotated [3].

the design and fabrication of a manually operated multi crop planter sowing for different crop seed is done. The developed manually operated single row planter sowing for different crop seed consists of the adjustable handles, seed hopper, adjustable furrow opener, transport wheels, seed discharge tube, Furrow covering device, and seed metering wheel housing, adjustable row marker, chain and sprocket, idler sprocket and stand. This work focused on the design and fabrication of a manually operated single row multi-crop planter that is cheap, easily affordable, easy to maintain and less laborious to use [4-5].

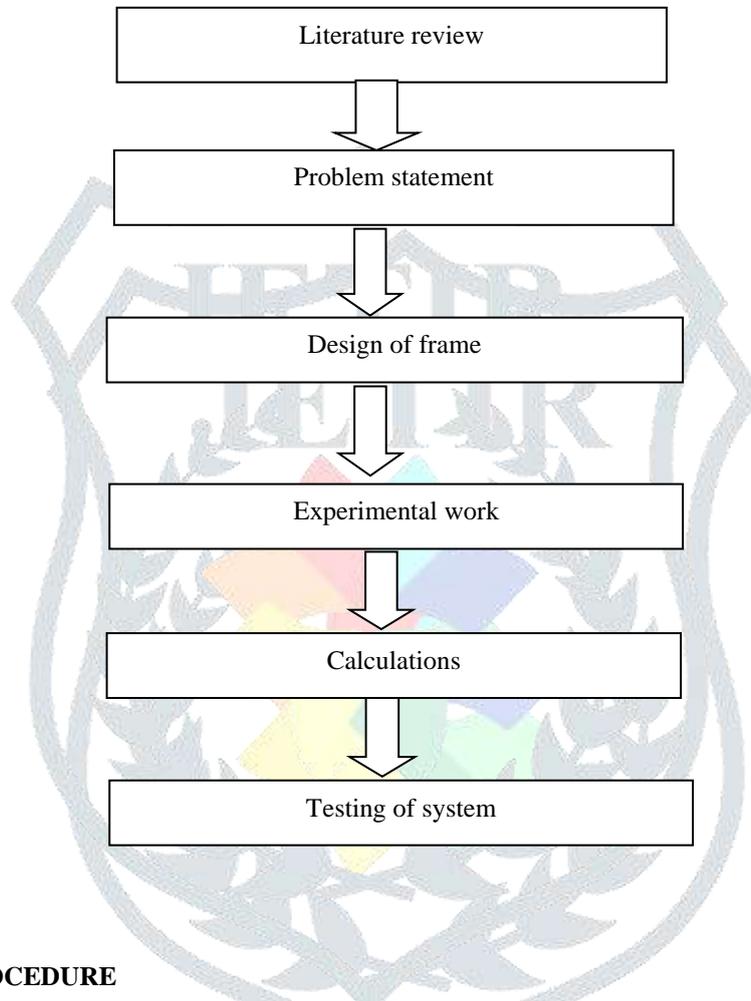
A robot which will perform pesticide spraying, water supplying, Ploughing, dropping of seed , accurately and automatically is done, and the solar plant provide the supply source to whole robot which makes it eco-friendly. The pesticide liquid which is contained in the tank comes through the rubber pipe to the tip of DC motor ,at that shaft of motor a fan blade is attach , which revolves at the

delay time of robot or on front of crop. Due to revolution the liquid get spray on crop. The standard level is maintained by how much time delay is provided to the robot or the time in which the robot stands in front of crop [6].

Instead of the conventional fuels solar panels are used here to harness solar energy. Working speed of the machine depends upon the DC motor and energy stored in the battery. Prototype Machine can dig the soil in three rows up to 5 inch by rotating the digging tool by the help of DC motor. At the same instant from the seed dropper seed is placed in all the three rows at a distance of 4 inch. No. of seed placing at an instant can be varied by altering the size of holes in the dropper. By the help of 4 post sensors, machine will sense the track length of the field and takes an automatic turning at the end of the boundary. Solar operated automatic seed sowing machine will help the farmers of those remote areas of country where fuel is not available easily [7-8].

### III. METHODOLOGY

The methodology followed for carrying out the work is shown in the following representation.



### IV. EXPERIMENTAL PROCEDURE

The machine is propelled manually by pushing it the plough digs the hole for sowing of the seed The seed distributor which is operated by the motor distributes the seeds equally in equal distances for sowing and directs the seeds to pipe attached and then they are sowed in the soil through plough. The levelling plate closes the soil after the seed sowing process is over and makes the land flat up to some extent. The fertilizer spray is followed by the levelling process after the closure of soil the fertilizer is sprayed on it The harvester may be used whenever required for harvesting of crops and for cutting of unwanted weeds

### V. RESULTS & DISCUSSION

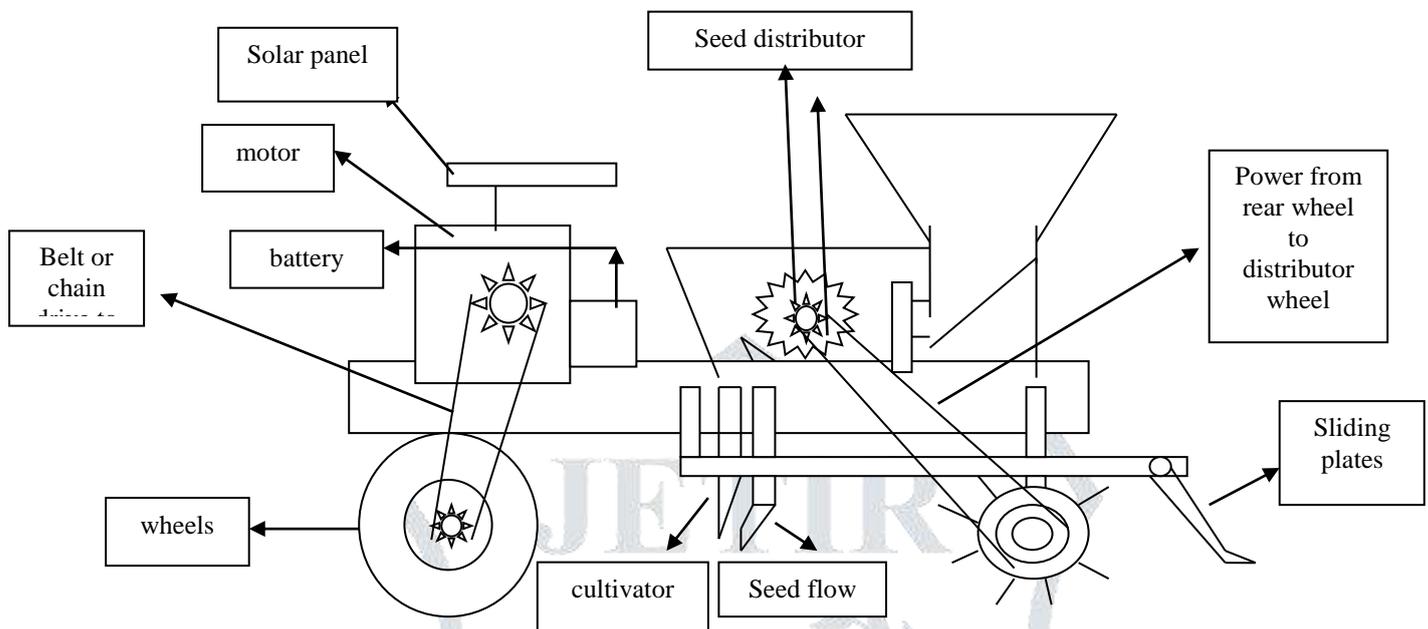
Mechanical factors, which affect seed germination and emergence are:

- Its depth should be uniform with regard to placement of seed
- It should be distributed uniformly along the rows.
- Its transverse displacement with regard to row also considered.
- Loose soil getting is also prevented. • Soil is covered uniformly over the seed.
- Fertilizer is mixed with seed during placement in the.

By fulfilling above factors, we get best performance of the seed drill or planter. To improve the performance, we need to optimize the above factors also so that we get desired efficacy from the system in economical way. Its design is simplified, and components are selected to suit the need of the corps. In the working of the robot seed drill or planter also plays vital role in manipulating the physical environment. The metering system allows the metered or required quantity of the seed in the farm. This system also serves the seed so that seed should not be damaged while working.

Following are the major parts which are used in this machine.

- Structural frame
- Battery powered wheels
- Seed storage tank.
- Seed sowing disc
- Seed bucket.
- Seed chamber.
- Plough.

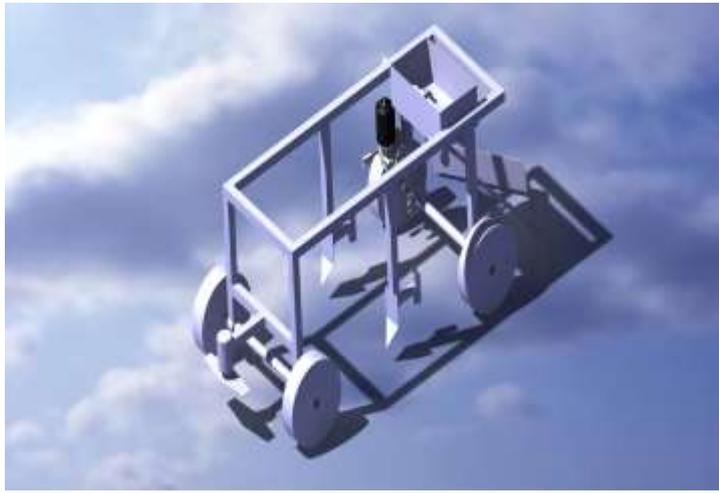


**Figure 1: Block Diagram of Model**

**Seed storage tank:** Storage device is one of the important devices of the system. And is designed according to weight sustained by the robot as well as the required capacity for planting. This component is stationary. To the bottom of this tank seed sowing disc is arranged. This disc serves the function of distribution of the seeds, as for each complete rotation of the rotating wheel, only one seed falls from the tank. Also, number of seeds falling from tank is varied according to requirements. This disc evenly opens the way to seed hence planting is done smoothly and accurately.

**Seed sowing disc & seed bucket:** Disc which is attached at the bottom of the tank allows one seed during one rotation of wheel. In the above fig seed sowing disc is also included. The buckets are screwed on the disc. These buckets are very similar to half shape of pelton buckets. As these are screwed to disc its size is varied according to diameter of the seed and required distance between the seeds.

**Developed Seed Mechanism:** Seed metering device meters the quantity of the seed which is going into the farm. It also maintains the required level of the sand in the tank. Mostly metering is necessary to track the *number* of seed also determine the when the seed tank is again filled. It gives the length or the distance which can be sowed. *Thus*, only required seed falls for every rotation of the wheel.



**Figure 2: Isometric view of the evaporator**



**Figure 3: Top view of the model**



**Figure 4: Side view of the model**

**VI.CONCLUSION:**

Applications of the multipurpose seed sowing machine can be seen in the following fields:

- ✓ In agricultural works such as, large scale farms for harvesting and sowing the seeds in farm.
- ✓ In small farmlands for individual farmers and single operating workers.
- ✓ The seed sowing machine has great potential for increasing the productivity of the planting.
- ✓ The experiment can be continued further by identifying the errors in the machine which are mentioned in the above report.
- ✓ The experiment can be conducted with installing I.C. Engine and we can use as Hybrid Vehicle.
- ✓ Different type of model can be designed for more operations and simple use of the machine.

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