

# Design and Fabrication of Multipurpose Seed Sowing Machine

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**Abstract-** In India, 75% of the people are dependents on agriculture. So in India the agriculture system should be advanced to reduce the efforts of farmers and save the time as well as labour cost. As there are various operations are performed in agriculture field like seeds sowing, cutting, pesticides spraying etc. These all operations are performed by the farmers manually which require efforts and consume time more. The basic and significant operation is seed sowing. Presently the operation is done manually which consumes time, increases labour cost and effort. So to overcome these problems in this paper, efforts are taken to develop “multipurpose seed sowing machine” which introduce a three disc having a six notches at equal distance which are mounted on shaft. Used to drop the seeds at a particular depth at equal distance in rows. This technology reduce the manual efforts of farmers, saves time, energy & labour cost.

**Index Terms-** Agriculture equipment, control mechanism, seed sowing techniques, seed sowing mechanism, spacing.

## 1. INTRODUCTION

Agriculture has been the backbone of the Indian economy and it will continue to remain so for a long time. Farmers have to face lots of problem due to ineffective time consuming techniques. Lack of labour which ultimately increases the cost of farming. So Advancement in farming increases economic level of country. And this project is about to plant seeds at desired depth at equal distance in rows. Various types of seeds can be sowed by this machine. By changing certain parameters like depth, distance between two seeds. The main objective is to reduce the farmer's effort and save time as well as energy. So the

“multipurpose seed sowing machine” is a device which helps the farmers to save their energy, time etc. The basic aim is to put the seed in rows at desired depth and equally spaces one by one. The project tells us different aspects of seed sowing machine that will be helpful for the agriculture industry to move closer to mechanization. In manual seeding it is impossible to achieve uniformity in distribution of seeds. But in our multipurpose seed sowing machine is possible to do so.

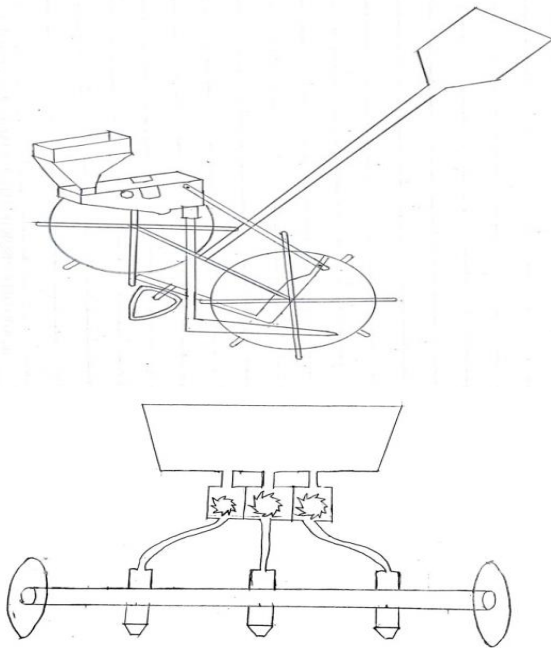
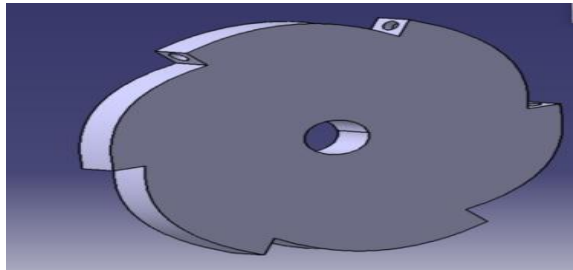
### 1.1 Traditional Seed Sowing Techniques

1. Dibbling : In this placing the seeds at cross marks made in the field. It is done manually by dibbler. This method is followed in crops like groundnut, castor, etc.
2. Line sowing: It is the dropping o seeds into the soil with the help of implementing such as seed drill. This method is followed in crops like, wheat, jowar, bajra etc.
3. Broad casting: In this the seeds are scattered by hand all over the prepared field area. Crops like wheat, methi, etc
4. Putting seeds behind the plough: Dropping of seeds behind the plough in the furrow with the help of manual labour by hand. This method is followed for crops like wal, gram.

## 2. METHODOLOGY

First we fill the hopper with seeds manually. System that will made, uses the manual pull force to run mechanism. Rotary motion of wheels provided to the sowing shaft (which will placed in seed storage tank)

by chain sprocket drive. With controlled distance interval, seed get sowed inland by pipe and digging arrangement and seed is covered with soil by tiller.



### 3. CONSTRUCTION AND WORKING

#### 3.1 Seeding Mechanism

When the machine is pull forward the rotary motion of the wheels is transmitted to the upper shaft(consist of three disc having a six notches at equal distance) through chain sprocket mechanism. Due to this shaft will rotate and it drop the seed from hopper to the digger through the hose for digging in soil.

For one revolution of shaft six seeds are dropped at equal distance at certain depth.

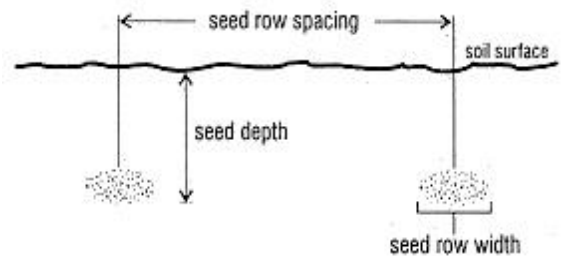
#### 3.2 Digger mechanism

There are three adjustable digger. This mechanism is used for digging and seeding. As it is connected to the frame by nut bolt.

#### 3.3 Power Transmission Mechanism

Power transmission is done by chain sprocket mechanism. There are two sprockets (driving & driven) driving sprocket having 16 teeth which is mounted on main shaft. And driven having 32 teeth which is mounted on upper shaft. As the wheel shaft rotates the driving sprocket. the power is transmitted from driving to driven sprocket by chain.

The machine is pulled forward by using handles, the rare wheels rotates and gear is mounted on the axle of the wheel is starts to rotate and its power is then transmitted to the driven gear through the chain drive. Three discs are mounted on the upper shaft which has six equidistance flutes at about 29.5mm that lift up one seed at a time and feeds into the seed distributor which gets transferred to the ground through the digger.



### 4. SPECIFICATIONS

Length (mm)	609.6
Width (mm)	457.2
Height (mm)	215.9
Weight (kg)	22
Power Transmission	Chain and sprocket drive
Seeding mechanism	Fluted disc with narrow flutes
Hooper capacity (kg)	2
Number of discs	3
Seed placement device	Jaw type
Jaw spacing (mm)	406.4
Capacity (ha/day)	0.6
Labour requirement (man-h/ha)	2

### 5. CALCULATIONS

According to the weight of labor (kg)	Distance between to seeds(cm)	Time (min)	Area (sq.ft)
50	10	40	1000
55	10	36.5	1000
60	10	33	1000
68	10	30	1000
83	10	27	1000

## 6. ADVANTAGES OF PROPOSED MACHINE

- 1) Distance between each row can be adjusted.
- 2) Required seed spacing can be achieved.
- 3) Less manpower is required.
- 4) Different types of seeds can be sown by this machine.
- 5) As compared to traditional sowing methods time required is less.
- 6) Seed flow can be controlled.

## 7. CONCLUSION

A multipurpose seed sowing machine is designed for small farmers to improve their productivity. The main problem being faced by the farmer was sowing a seeds manually by hand which requires labours, and consumes time and energy. So this problem is efficiently solved by the adoption of this method.

Using this machine improvement in agriculture processes like sowing of seeds in multiple rows at desired depth & distance on ploughed land is possible.

## 8. REFERENCE

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