

# Study of Multiple Seed Planting Machine

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**Abstract** – The basic objective of showing operation is to put the seed and fertilizer in rows at desired depth and seed to seed spacing, cover the seeds with soil and provide proper compaction over the seed. The recommended row to row spacing, seed rate, seed to seed spacing and depth of seed placement vary from crop to crop and for different agro-climatic conditions to achieve optimum yields. The comparison between the traditional sowing method and the new proposed machine which can perform a number of simultaneous operations and has a number of advantages.

As day by day the labor availability becomes the great concern for the farmers and labor cost is more, this machine reduces the efforts and total cost of sowing the seeds and fertilizer placement meet the demands farmer have to use new techniques in cropping to increase the yield. The requirements of small scale sowing machines are, they should be simple in design, affordable for small scale peasant farmers, easy maintenance for effective handling by unskilled farmers. In this project the attempt has been made for reduction in cost of machine and developing the multifunctional sowing machine which can perform simultaneous operations.

**Key Words:** Seed s equipment, seed metering device, multi seeds, shovel, etc

## 1.INTRODUCTION

India is agriculture based country. Near about 70% people of our country are farmers. Our economy also depends on agricultural product. Nowadays tremendous changes have occurred in conventional methods of agriculture like seed plantation, irrigation system, pesticides and spray used. For developing our economic condition, it is necessary to increase our agricultural productivity and quality also. There are various types of crops yielded from farm such as cotton, various vegetables, onion, tomato, potato etc. Among all of them cotton is one of the important crops as it is used to make a number of textile products.

In Maharashtra (26.63%), Gujarat (17.96%) and Andhra Pradesh (13.75%) and also Madhya Pradesh are the leading cotton producing states; these states have a predominantly tropical wet and dry climate suitable for cotton. Cotton farming process includes many stages, out of which cotton seed plantation is one of the important stage and which is not exploded up to the mark up till now.

Top cotton producers—2017(480-pound bales)	
 People's Republic of China	33.0 million bales
 India	27.0 million bales
 United States	18.0 million bales
 Pakistan	10.3 million bales
 Brazil	9.3 million bales
 Uzbekistan	4.6 million bales
 Australia	4.2 million bales
 Turkey	2.8 million bales

Table 1. Worldwide Scenario of Cotton

Now-a-days, we are used to do farming for cotton seed plantation in traditional way which is time consuming, costlier as well as not provide comfort to the labour. Also, some tractor operated machines for cotton seed plantation are available. So, what we need is can alternative to the traditional as well as tractor operated cotton seed plantation machine which will fulfill all the requirements. So, we are going to design a manually operated machine for cotton seed plantation by taking into consideration the user group and their needs which helps to them to work easy and functional.

### 1.1 Methodology

It is well known that by using farm equipment's, farmer's yields more crop productions which ultimately have impact on national economy. It self it gives prior need of agro equipment's in the field of agriculture. As we can see today, the major problem faced by the farmers is shortage of labours and also the time required for plantation of cotton seed is more. So, in order to have solution to it, it was proposed to manufacture a cotton seed plantation machine. So, the farmers can work more easy and functional.

Proposed work started with the problem identification in agriculture process of planting of different type of seeds. By collecting available information and specification further solution finding approached. It is found that Quality and productivity play important role in today's farming market. multi-seed planting is the cheapest and most efficient way to improve the productivity and reducing labour cost.

### FLOW DIAGRAM OF METHODOLOGY

Methodology used for whole processing Design And manufacturing of multiple seed planting machine. This methodology gives way about how work is to be carried out in systematic way. It is standard process of describing process, how it is done in simplest manner.

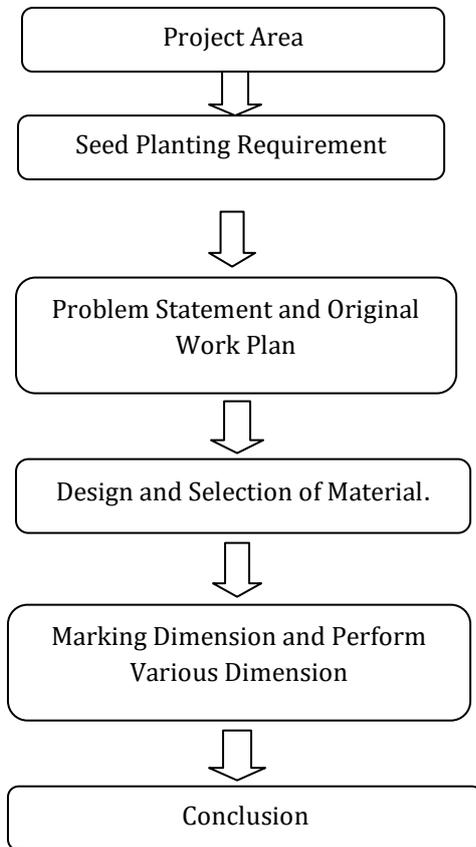


Fig.1.1 Flow Diagram of Methodology

### 1.2 Existing System

At present seed plantation is done by manual method as well as tractor operated method. In manual method after preparation of soil, sowing is done by hands by digging and placing the seed. The cotton seed is placed at a distance of 60-65 cm gap between two seed. It requires skilled labour.

Large human labour and skilled workers are required in manual method. Heavy cost is incurred in tractor operated method. This machine is an outcome of need of reducing labour involved in manual method and also to reduce cost of plantation and hence to increase margin of profit.



Fig.1.2 Manual Method of Plantation

### 1.3 Objectives

1. To manufacture seed planting machine which can be operated by the single or semi-skilled operator.
2. To set fertilizer with sowed seed
3. To level the ground as per recommendation.
4. To enable the machine for the planting of several of seed like maize, wheat, cotton etc.
5. To maintain the equal distance between two seeds at the time of planting process.
6. No requirement of any external energy source.
7. To reduce the labour cost.

### 2. Purpose to use mechanism

Main three types of mechanism is set in machine to planting as per requirement of varying seed to seed spacing and depth of seed plant from crop to crop.

#### 2.1 Seed Metering Mechanism:

In cotton plantation, the seed is planted at a constant interval of distance. Generally, 2-4 feet distance should be kept between two seeds. This condition is satisfied by maintaining the gear ratio 1:1 and accordingly diameter of big wheel.



Fig.2.1 Seed Metering Mechanism

Figure 2.1 shows the seed metering mechanism. One sprocket is mounted on the axle of big wheel and another is fitted to the shaft. On the same shaft seed metering wheel is mounted for picking the seed from seed box. The motion of big wheel is transmitted to shaft by sprocket chain arrangement. As machine moves in forward direction shaft rotates, seed metering wheel picks single seed and insert it into the tube. The tube is fitted behind the furrow opener. Furrow opener, tube and covering device are fitted in line.

### 2.2 Height Adjustment Mechanism:

The height of handle can be adjusted according to height of operator. The two metal bars are bolted in between the handle pipe and supporting plate as shown in figure 4.9. The height can be adjusted by shifting the bolts according to height of operator as bars having holes.



Fig.2.2 Height Adjustment Mechanism

### 2.3 DIGGING, PLACING OF SEED, COVERS THE SEED WITH SOIL MECHANISM:

Digging, placing of seed, covers the seed with soil these three operations are performed simultaneously by this

adjustment. Furrow opener, tube and cover plate are maintained in line. The digging, placing of seed covers the seed with soil mechanism. Furrow opener digs the soil at uniform depth, from tube the seed is dropped at constant interval of distance, cover plate continuously covers the seed with soil.

### 3. Future Scope

Seed sowing machine is a device which helps in the sowing of seeds in the desired position hence assisting the farmers in saving time and money. So, considering these points related to spraying and seed sowing an attempt is made to design and fabricate such equipment which will able to perform both the operations more efficiently and also will result in low cost. Decrease the operational cost by using new mechanism.

- Work reliably under different working conditions.
- Decrease the cost of the machine.
- Decrease labor cost by advancing the spraying method.
- The machine can be operated in the small farming land (1 acre).
- Making such a machine which can be able to perform both the operation.

### 3. CONCLUSIONS

Our goal was to build a system which is efficient to perform some various applications with the help of Manually Operated Cotton Seed Plantation Machine. With the scope of improvement, the project is done to fulfill the demands of agricultural applications. The main objective of our project was to fulfill the need of farmers suffering from the problems of increasing cost of plantation, labour cost and availability. As it is operated by single person and the operations of digging, placing the seed at constant interval of distance and covering of seed with the soil is done simultaneously. With this machine percentage reduction in time required for plantation of one-acre cotton seed was observed to be 84.37%. And reduction in labour cost as compared to conventional method was 80.77%. It has solved the problem of traditional way of cotton seed plantation. Since the capital cost is essential factor while selecting type of equipment for farming. This machine has very less capital cost as compared to other type of machines and also principal advantages of having eco-friendliness and easy troubleshooting. By undergoing all this discussion and undergoing all the factors associated with Cotton Seed Plantation, this machine will be great boon for the Indian Agriculture.

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