DES IGN AND FABRICATION OF MOTORISED SEED SOWING MACHINE

THE PROJECT REPORT
Submitted by

1. A. Anand sai	17127149
2. D. Sheiksha vali	17127159
3. P.V. Sudarshan	17127164
4. P. Roopak	17127174

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PADUR, CHENNAI - 603 103

HINDUSTAN
INSTITUTE OF TECHNOLOGY & SCIENCE
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BONAFIDE CERTIFICATE

Certified that this project report titled **"Design and fabrication of motorized seed sowing machine"**is the bonafide workof **" A. Anand sai (17127149), D. Sheiksha vali (17127159), P.V. Sudarshan kumar reddy (17127164), P. Roopak (17127174)"**who carried out the project work under my supervision. Certified further that to the best of my knowledge the work reported here does not form part of any other project / research work on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

INTERNAL EXAMINER **EXTERNAL EXAMNER**

ABSTRACT

Sowing machine should be suitable to all farms, all types of corps, robust construction, also is should be reliable, this is basic requirement of sowing machine. Thus we made sowing machine which is operated manually but reduces the efforts of farmers thus increasing the efficiency of planting also reduces the problem encountered in manual planting. For this machine we can plant different types and different sizes of seeds also we can vary the space between two seeds while planting. This also increased the planting efficiency and accuracy. We made it from raw materials thus it was so cheap and very usable for small scale farmers. For effective handling of the machine by any farmer or by any untrained worker we simplified its design. Also its adjusting and maintenance method also simplified.

Keyword: Seed, Sowing, Planting, agriculture, efficiency

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INTRODUCTION

Cropping is important and tedious activity for any farmer, and for large scale this activity is so lengthy also it needs more workers. Thus agriculture machines were developed to simplify the human efforts. In manual method of seed planting, we get results such as low seed placement, less spacing efficiencies and serious back ache for the farmer. This also limited the size of field that can be planted. Hence for achieving best performance from a seed planter, the above limits should be optimized. Thus we need to make proper design of the agriculture machine and also selection of the components is also required on the machine to suit the needs of crops.

The agriculture is the backbone of India. And for sustainable growth of India development of agriculture plays vital role. The India has huge population and day by day it is growing thus demand of food is also increasing. In agriculture we saw various machines. Also there traditional methods are there. Since long ago in India traditional method is used. Also India has huge man power. This manual planting is popular in villages of India. But for large scale this method is very troublesome. The farmer has to spend his more time in planting. But time available is less for him. Thus it requires more man power to complete the task within stipulated time which is costlier. Also more wastage happens during manual planting. Hence there is need of developing such a machine which will help the farmer to reduce his efforts while planting. This process of using machines is called as '' mechanization''.

Along with mechanization ''automation'' also helps to increase the efficacy of the process.

This article represents the advanced system for improving the agricultural processes such as cultivation on ploughed land, based on robotic assistance. We developed a vehicle having 4wheels and operated by DC motor. The machine will cultivate the farm by considering particular column at fixed distance depending on crop.

- Crop planting operation is the art of placing seeds in the soil to obtain good germination (the development of plant from a seed or spore after a period of dormancy) and crop stands.
- A perfect sowing gives

- Correct amount of seeds per unit area.
- Correct depth of sowing.
- Correct spacing between row to row and plant to plant
- Correct seed ratio

LITERATURE REVIEW

The basic objective of sowing 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. From this we know that mechanical factors effects on seed germination like uniformity of depth of placement of seed, uniformity of distribution of seed along rows. In this power transmission mechanism, seed metering mechanism, chain-gear mechanism.

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. Seed sowing devices play a wide role in the agriculture field.

In this multipurpose seeding machine equipment consists of cylindrical shape container in which the seeds can fill. The container is attached on the four wheeled carrier assembly. It consists of metering plate bevel gear mechanism and two holes at the bottom depending on seed size. The working as plate will rotate in container when the bottom holes of container and meter plate hole coincide seeds will flow through pipe to soil. Here the metering plate gets rotating motion by bevel gear assembly and the bevel gears get the motion by rear wheels with the help chain and sprocket assembly

Mechanization enables the conservation of inputs through precision in metering ensuring better distribution, reducing quantity needed for better response and prevention of losses or wastage of inputs applied. Mechanization reduces the unit cost of production through higher productivity and input conservation.

The main objective is to make it affordable to the farmers so that they can manually do their own work without depending on labor. The above mentioned machine increases the efficiency of seed sowing so there by reducing the wastage of seeds and thus improving overall yield.
There are various types of innovations done in seed sowing machine available for plantation. The seed sowing machine is a key component of agriculture field. The performance of seed sowing device has a remarkable influence on the cost and yield of agriculture products. Presently there are many approaches to detect the performance of seed-sowing device.

The seed sowing cum fertilizer drilling machine completes the task of soil drilling, seed sowing, fertilizer spreading and soil marinating as it proves itself for a multipurpose usage. The machine comes with its biggest advantage that it is a nonelectrical, manual or mechanically operated machine. It is also a comparatively less

time consuming machine than the previous methods used for farming and crops cultivation.

This document represents the method used and the design of the machine. In this paper main objective is to make seed sowing simple and easy for the farmers. The design is simple and the machine is locally manufactured with light materials. The main objective is to make it affordable to the farmers so that they can manually do their own work without depending on labor. The above mentioned machine increases the efficiency of seed sowing so there by reducing the wastage of seeds and thus improving overall yield.

SEED RATING &SEED SPACING

The primary objective of any planting operation is to establish an **optimum plant population and plant spacing**. The ultimate goal being to obtain the maximum net return per unit area

Population and spacing requirements are influenced by

- Type of crop
- Type of soil
- Fertility level of the soil
- Amount of moisture available

METHODS OF PLANTING

- **Broad casting:** Random scattering of seeds over the surface of the field.
- **Drilling:** Drilling consists of dropping the seeds in furrow lines in a continuous stream and covering them with soil. The spacing between the seeds is not uniform.
- **Hill dropping:** placing groups of seeds at about equal intervals in rows.
- **Precision planting:** accurate placing of single seeds at about equal intervals in rows.

METHODS OF PLANTING IN INDIA

- Mostly Indian farmers normally spread seeds manually or by hand or by broad casting.

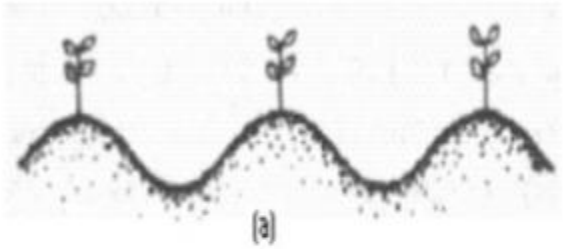
- But in manual seeding, it is not possible to achieve uniformity in distribution of seeds. A farmer may sow at desired seed rate but inter- row and intra-row distribution of seeds is likely to be uneven resulting in bunching and gaps in field. In addition there will be a poor control over depth of seed placement, these results in poor emergence of the crop.This gain leads to low productivity.

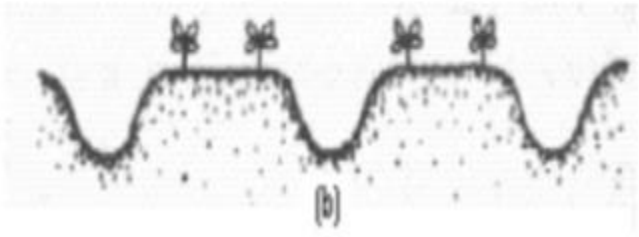
PLANTING SYSTEMS

- Planting may be done on the flat surfaces of the field, in furrows or on beds.

FURROW PLNTING (OR) SHIFTER PLANTING: This planting method is widely practiced under semiarid conditions for row crops such as corn, cotton and grains because this system places the seed down into the moist soil and protects young plants from wind and blowing soil.

BED PLANTING: It is often practiced in high rain fall areas to improve surface drainage.





FLAT PLANTING: This type of planting generally predominates where moisture conditions are favourable.

GENERAL PROBLEMS IDENTIFIED IN SEED SOWING

- **WASTAGE OF SEEDS:** During manual sowing of seeds scattering of seeds here and there results in irregular ways also irregular lines. So watering the may get disturbed and plants will not grow up to the mark.

- **IRREGULAR PLACING OF SEEDS:** Irregular way of placing seeds occurs due to throwing of the seeds manually all over the field. Due to this
  seeds also grows irregularly.

- **TIME CONSUMING PRCESS:** More over sowing of seeds is a very much time consuming process. If the area is less then it will not be a burden
  But if the area is more then it is very difficult.

- **SOWING OF SEEDS TOO DEEPLY:** If the seeds are sown too deeply even if we water the plants the seeds will not raise. It should be needed moderate depth.

- **INSUFFICIENT GROUND TEMPERATURE:** if the ground temperature is cool then seeds will not get enough temperature for raising and growing. Ground temperature should be in warm condition.

- **QUALITY OF SEED RISING MIX IS LACKING:** Seed rising is very important. Seed quality should be good for the good rising of seeds. if quality is less growth will be not good.

PROPOSED WORK:

- This machine has very less cost. This planter is very simple to use hence, unskilled farmer is also able to handle this machine. We simplified the design also made it cheaper and affordable to every rural farmer. We made various adjustments and simplified it from controlling and maintaining point of view. In this design we connected drive shaft to metering mechanism which eliminates the attachments such as pulleys and belts system.

- As motor starts it moves this robot as well as operates the metering mechanism. Seed storage tank is connected at the top of the robot near rear wheels. For every rotation of the wheel according to the adjustment it allows the definite seed to fall into the hoper so that there is no wastage of the seeds also the sowing process does smoothly. Also its adjusting and maintenance method also simplified. Seeds will fall on to the soil in the portion where

plough is digged. Then the v-shaped will come into action and cover the digged soil to same position. We also thought of placing the water sprinkler to spray the water on to the soil.

COMPONENTS REQUIRED

SL NO	COMPONENTS	QUANTITY
1	DC Motor	1
2	Sprockets	2
3	Chain	1
4	Mild steel rods	2
5	Wheels	4
6	Plough	2
7	Seed sowing gear	2
8	Square tube	3m
9	Seed box	2

The above components are taken after calculating the weight of each components .We tried to make the machine somewhat weight less so that it is easy for handling and moving the machine comfortably .

FUNCTIONS OF SEED SOWING MACHINE:

- To carry the seed
- Open the seed furrow to the required /or/ proper depth
- Meter the seed

- Deposit the seed in the furrow in acceptable pattern

- Cover the seed and compact the soil around the seed to the proper degree for the type of the crop involved

- When accomplishing these functions , the planter should not damage the seeds enough to appreciably affect germination.

- After studying all the types of planting and plantation methods we are using the precision planting method and bed planting system with our motorized seed sowing machine

MECHANISM

Mechanism is very much needed for the movement of machine. Here we are using two mechanisms. The two mechanisms are:

- **Seed metering mechanism**
- **Chain-gear mechanism**

Seed metering mechanism:

- The mechanism which picks up seeds from the seed box and delivers them into the seed tube is called “SEED METERING MECHANISM”
- Mechanical metering:
- The seed enters cells in the edge of a flat, circular plate that rotates in the bottom of the seed box. The plate then carries the seeds to the knock out tube where it falls down to the furrow opener.
- Bulk flow metering devices deliver more or less a continuous flow of seeds

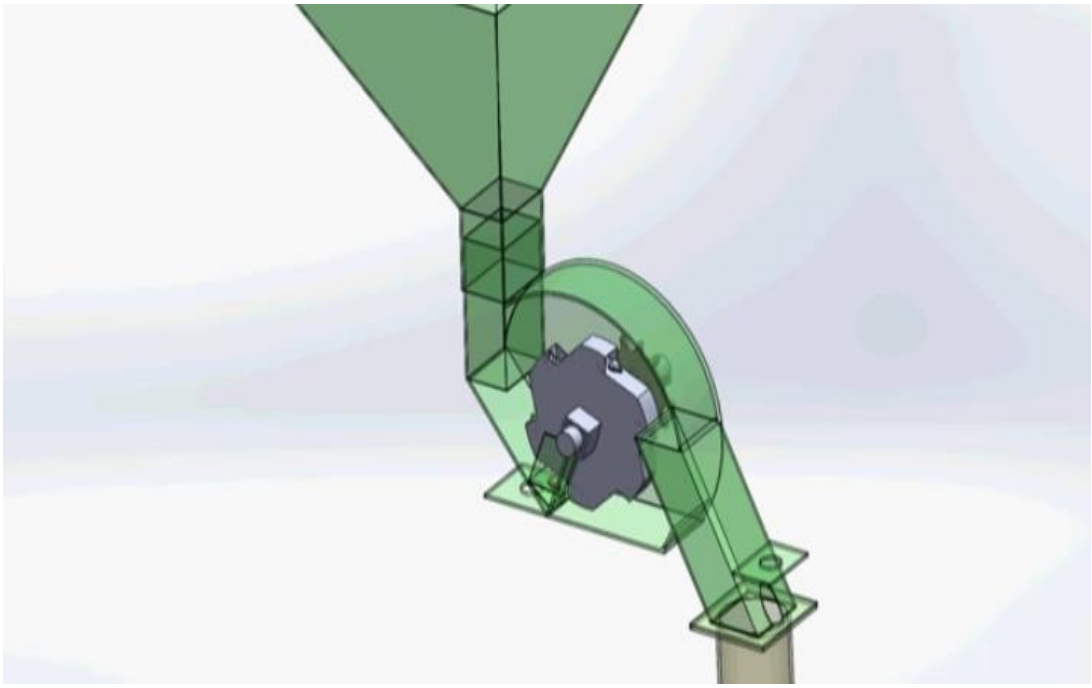


Fig. seed metering mechanism

- As we seen from the above diagram the seeds are coming from the seed hopper (funnel shaped structure which holds the seeds) and directly paced into the seed chamber.
- In the seed chamber, seed sowing gear takes the seeds into the cup like structure at the top of it and rotates. Then
  through the help of rotation seeds will fall on to the soil.

- After that the seeds are covered by the digged soil which was done which was done with the help of plough.

- This is called seed metering mechanism.

Chain-gear mechanism:

- Here the mechanism used is chain-gear mechanism.
- The chain is used to connect to sprockets.
- One sprocket is driver sprocket and another driven sprocket.
- Motion and force can be transmitted via the chain from one sprocket to another, therefore from one shaft to another.

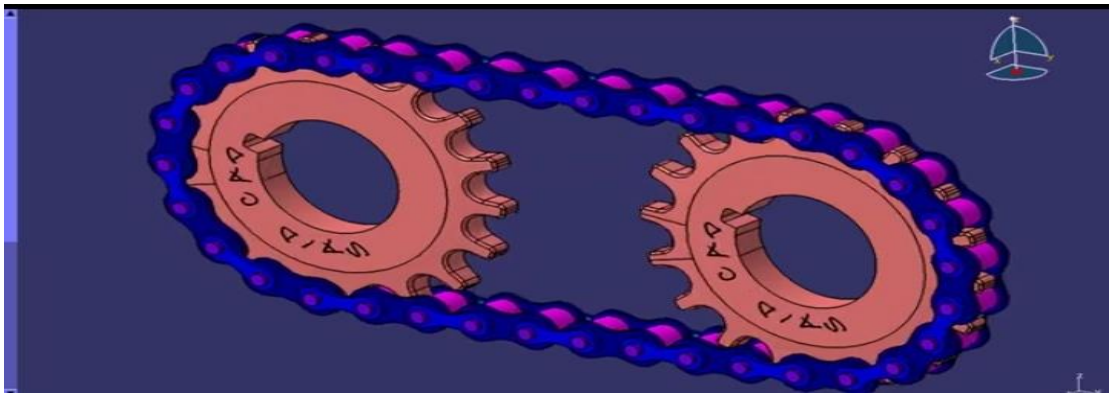


Fig. chain gear mechanism

- Driver sprocket is connected to the dc motor, so that the driver sprocket is rotated with the help of that dc motor.
- Then the driver sprocket is connected to the driven sprocket with the help of the chain according to tooth thickness of the sprockets.
- Two wheels which are connected to the rods of the sprockets are rotated and motion is generated which results in movement of the vehicle.
- This is called chain-gear mechanism.

BLOCK DIAGRAM

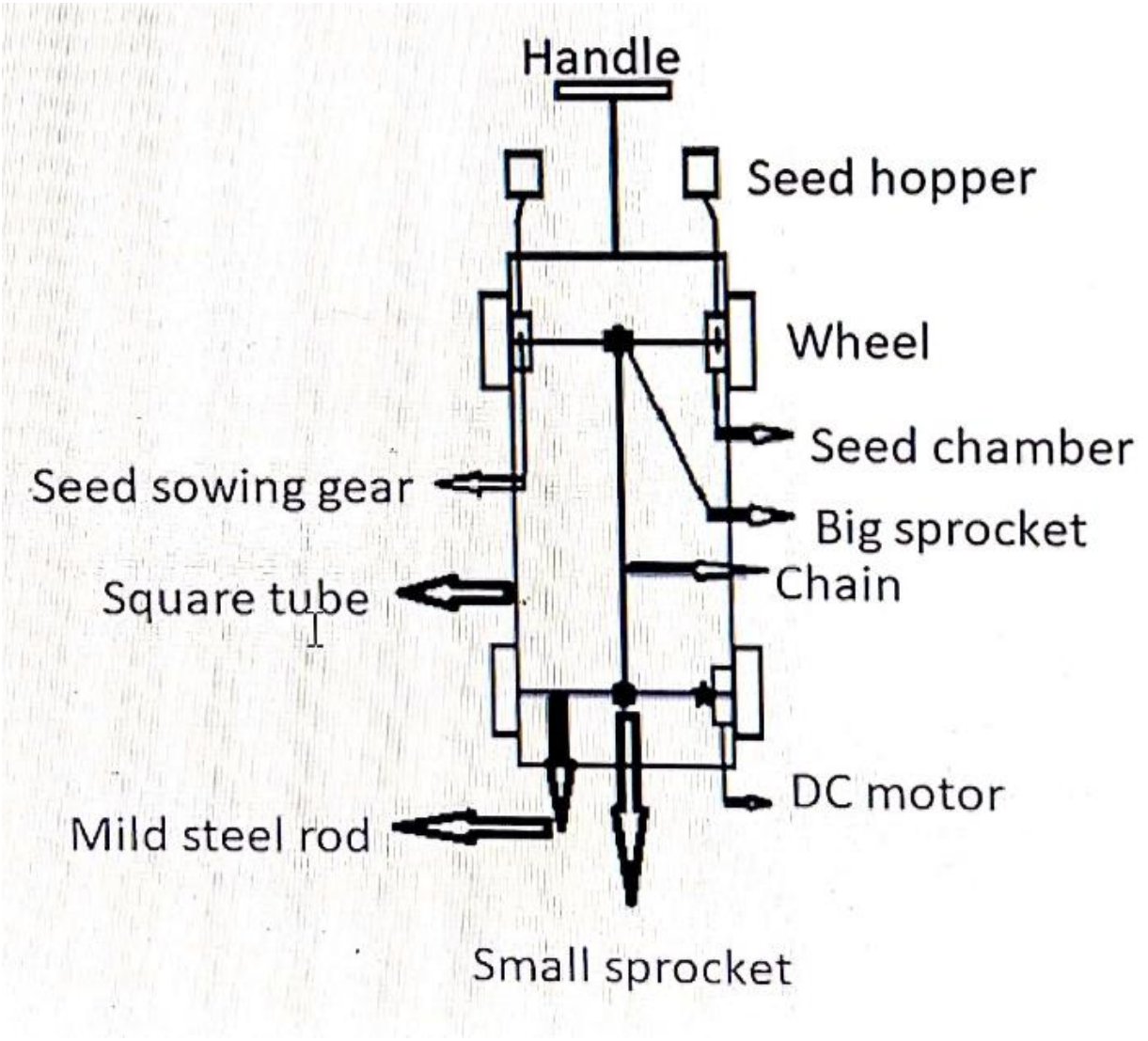


Fig. Block diagram of seed sowing machine

We seen a lot designs of seed sowing machines. We made slight modifications through the design approaches of the previously made machines.

ROUGH DESIGN MODEL OF SEED SOWING MACHINE

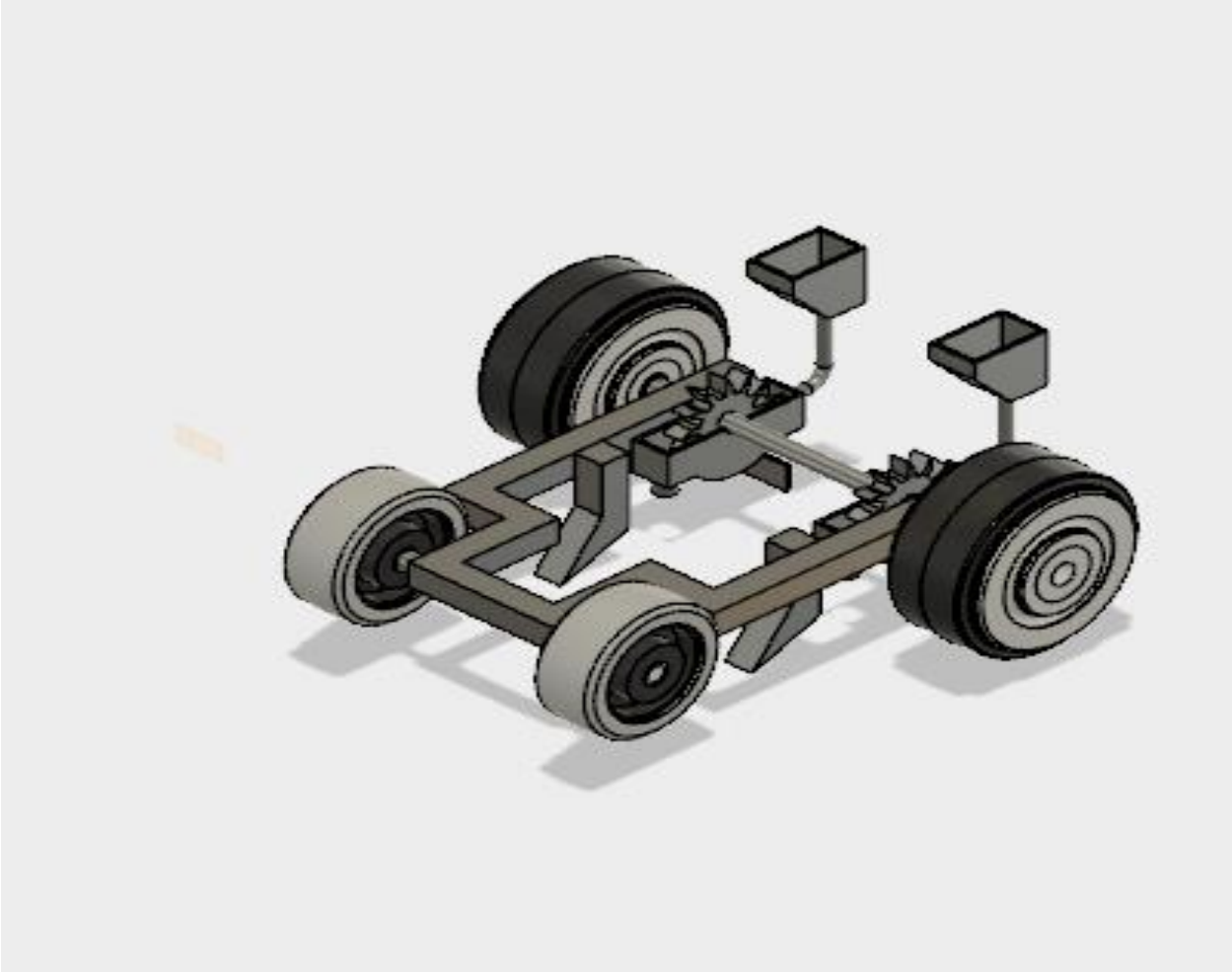


Fig. Roughly fabricated model

This is the design that we gone through thoroughly to design the model of our seed sowing machine. The extra modifications we made here is that we attached the chain gear mechanism and also added the motor to ride the machine with the help of this motor.

SPECIFICATIONS OF THE COMPONENTS

1. SMALLER WHEEL:

The wheels which we are using in front of the machine are made of hard plastics. The reason we chose because they are weight less and helps in fast movement of the vehicle .They can also offer a good resistance to the surface soil.

Dimensions are:
Outer diameter = 180mm
Inner diameter = 20mm

Fig. plastic red polymer trolley wheel

2. BIGGER WHEEL :

In the back side we are using normal wheels which are rubber coated and great resistance to the soil that means no slipping occurs. They are like auto wheels which we seen commonly on roads. They are somewhat more heavier than plastic wheels which we are using on the front side of the machine.

Dimensions are:
Outer diameter = 250mm
Inner diameter = 20 mm

We have seen these tires normally on roads so we made a design that the back wheels should bear all the load of the machine on these tires only. That's why we used these tires.

3. SMALLER SPROCKET:

It is fitted on the middle of the mild steel rod and it is the driver sprocket. chain is connected to it and the driven sprocket which helps in movement of the vehicle**.**

Dimensions are:

Teeth=21
Module=2
pitch circle dia=teeth*module = 42

Circular pitch = PCD. Module／ teeth =4
Diametrical pitch = teeth／PCD = 0.5
Tooth thickness = circular pitch／2 = 2
Width of space = circular pitch／2 = 2
Addendum = 1／diametrical pitch = 2
Clearance = circular pitch／20 = 0.2
Addendum circle dia = PCD+2*addendum = 46
Dedendum = addendum+clearance =2.2
Dedendum circle dia = PCD−2*dedendum = 37.6
Circular pitch angle = circularpitch*360／m*PCD*4 =4.28

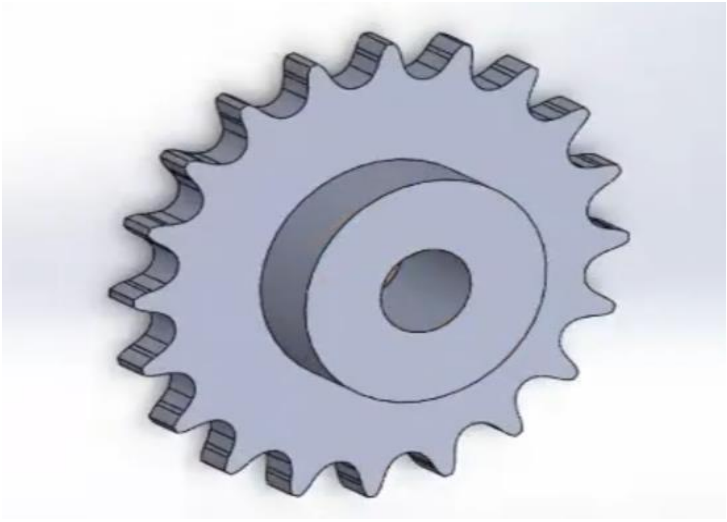
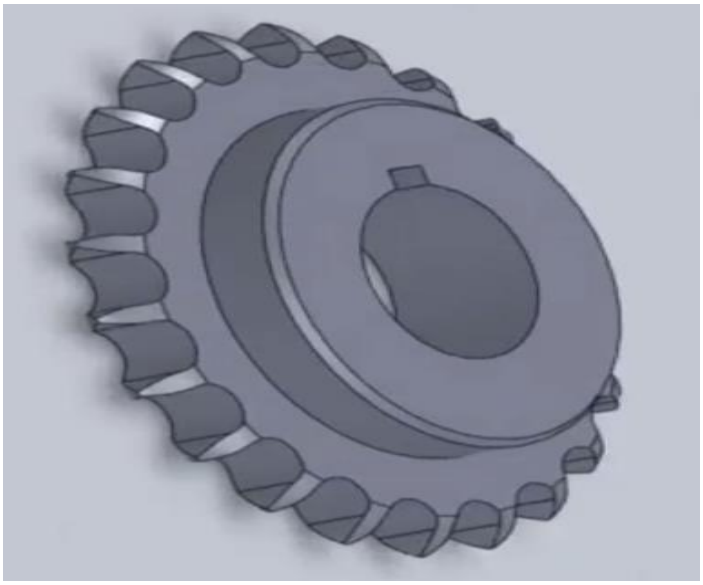


Fig. smaller sprocket

4. BIGGER SPROCKET:

It is attached at the back side i,e., at back mild steel shaft of the machine. it has to control the pressure of the load why because back side load is heavier the front side.



Dimensions are:

Teeth=40

module= 2

pitch circle dia=teeth*module = 80

Circular pitch = PCD. Module／ teeth = 4
Diametrical pitch = teeth／PCD = 0.5
Tooth thickness = circular pitch／2 = 2
Width of space = circular pitch／2 = 2
Addendum = 1／diametrical pitch = 2
Clearance = circular pitch／20 = 0.2
Addendum circle dia = PCD+2*addendum = 84
Dedendum = addendum+clearance = 2.2
Dedendum circle dia = PCD−2*dedendum = 75.6
Circular pitch angle = circularpitch*360／m*PCD*4 = 2.25

Fig. Bigger sprocket

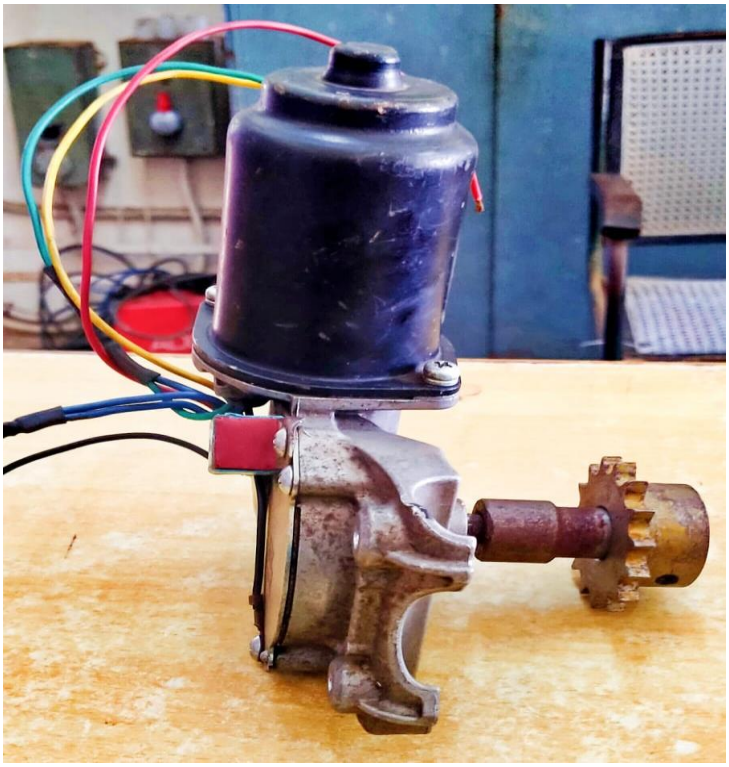
5. DC MOTOR:

Here the motor used is dc motor. A small sprocket is connected to it at one end. This sprocket is connected do the smaller sprocket i.e., the driver sprocket. Then the driver sprocket along with it driven sprocket also rotates which helps in movement of the vehicle.

Dimensions are:

Voltage = 12volts
RPM = 60rpm
Motor diameter = 37cm
Length without shaft = 28.3cm
Weight = 180gm
Torque = 38kg cm

Fig. DC Motor



6. V-SHAPED METAL:

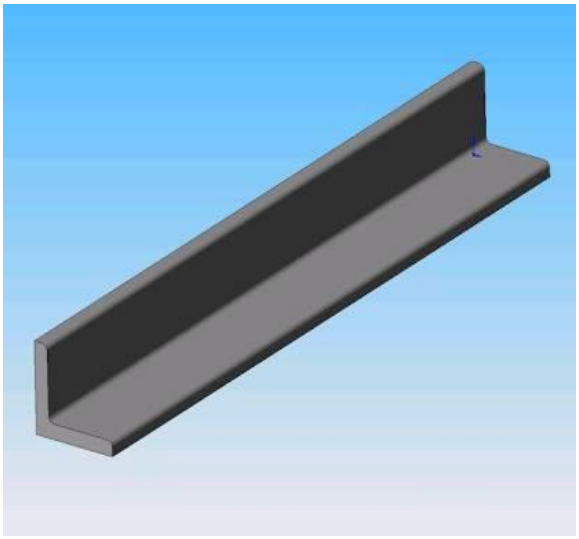


Fig. v-shaped metal

Dimensions are:

Length = 30mm
Breadth = 30mm
Height = 30mm
Angle = 50 degrees

- The main use of v-shaped metal we used is to cover the seeds with soil that is to flatten the surface after sowing the seeds.
- It is arranged at the back side of the seed chamber so that immediately after sowing of the seeds this v –shaped metal come into action to cover the soil. this modification will reduce the work of manually covering of soil by the hands of farmers**.**

7. Seed sowing gear:

- The seed gear is the one which helps in performing the process after the seed falls from the hopper.
- When the seed falls from the hopper to seed box ,from then seeds are carried by seed gear and then one after one falls into the soil.

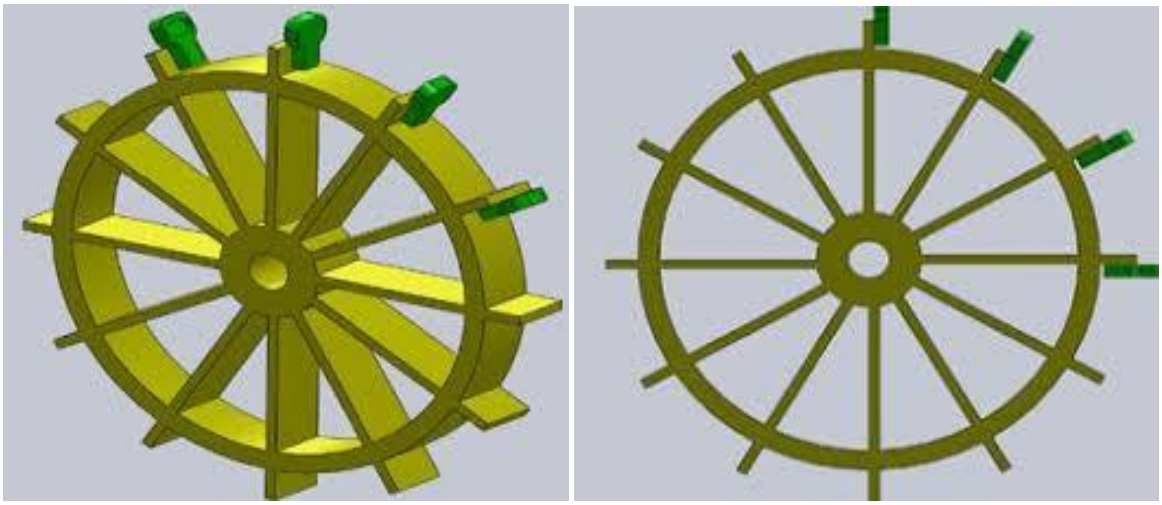


Fig. Seed sowing gear

Dimensions are:

Outer diameter = 120mm
Inner diameter = 20mm
Rectangular plate length = 90mm
Rectangular plate breadth=35mm
Seed holding cup diameter=10mm

8. SEED HOPPER:

The hopper is the essential part it helps in processing the grains from the seed box to the place we have digged**.**

Dimensions are:

Length = 75mm
Breadth = 75mm
Height = 70 mm
Rectangular hole = 30*30 mm

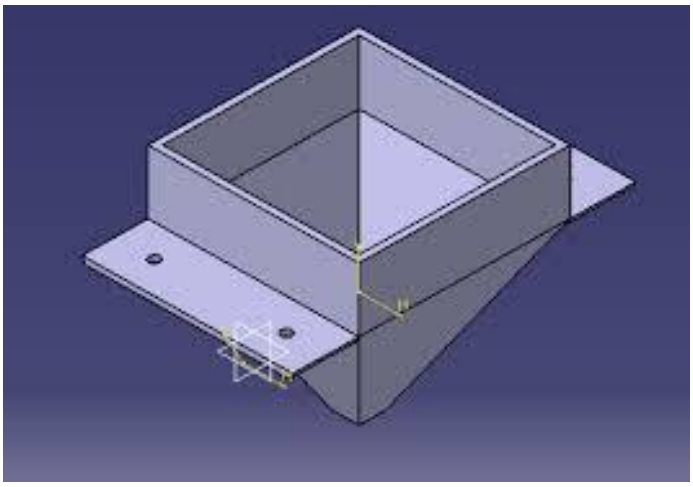


Fig. Seed hopper

9. PLOUGH:

The plough helps in digging the soil and sowing of the seeds into the soil. The material to prepare plough is mild steel.

Dimensions are:

Upper rectangular length = 100mm
Upper rectangular breadth= 30mm
Sharp edge length = 75mm
Angle between upper rectangular
Length and sharp edge metal = 135degrees

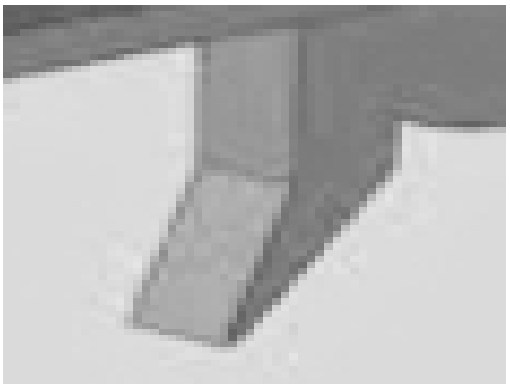


Fig. plough

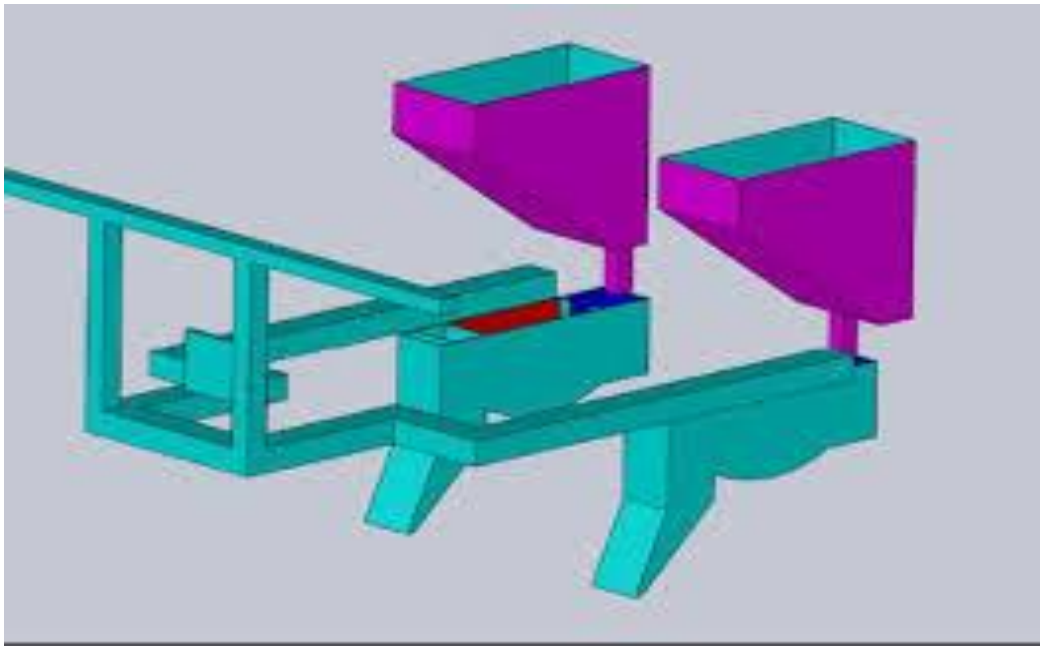
10. **HANDLE:**

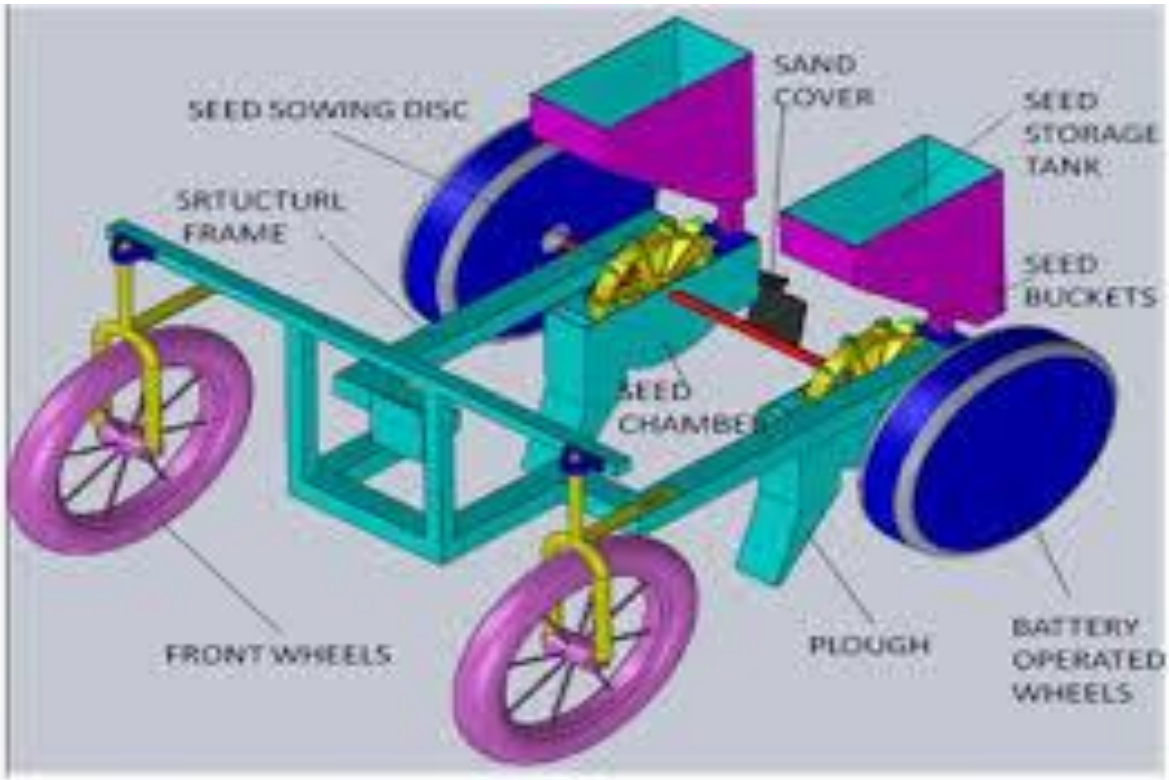
With the help of handle we can control the movements (left to right (or) right to left).

Dimensions are:

Total length of the handle = 750mm
Angle between the handle = 120degrees
Rectangular tube = 30*30 mm

FABRICATED MODEL:





POST FABRICATION REVIEW OF ASSEMBLY

- As per observations made through the analysis of the design
- The main factors to b considered are

1. **Total weight**: The weight should be greater because of this it should not break the seeds after sowing of seeds in the soil.

2. **Tires slippage**: There must be some slippage between tires and soil that's why handle which is connected to tires must hold properly. And also less slippage tires are to be used.

3. **Seed hole management**: In the seed chamber a hole is present along with the seed sowing gear to fall on to the soil. If the hole is too large then at a time at the position lot of seeds will be fallen on to the soil. This will be a major defect of seed sowing machine. so to reduce this the hole should be the size of the seed cup (which holds the seeds) so that it will rotate and reach the hole. Also the hole should be at the exact position where the seed cup touches seed chamber. Then the seeds will travel through the hole and will fall onto the soil.

CALCULATIONS:

1. Seed rate(Rs)
2. Row spacing(S)
3. Spacing between seeds(X)
4. Bulk density of seeds(Pb)
5. Rpm
6. No.of cells in seed chamber(n)
7. Seed hopper volume(Vc)

- Transmission ratio (i) = N1/N2
  = no.of teeth on driver sprocket/no.of teeth on driven sprocket
  = 21/40 = 0.525

As for testing purpose we are taking "BENGAL GRAM" seeds. We use these Bengal gram seeds in making "dal" chana curry etc., and it is a daily routine in our life. That's whty we took these seeds for testing.

1.Seed rate (Rs)

- it is defined as the quantity of seeds sown per unit area
- The seed rate depends on spacing or plant population, test weight, germination percentage.
- Units are kg/ha (kg per hectare)

Seed rate =

Plant population (per ha) * no.of seeds per hill (Or) test weight (gm) * 100 * 100 / germination percentage * purity percentage * 1000 * 1000

- From the study of Bengal gram (through various research articles we concluded that)

  For Bengal gram,
  Germination percentage = 90%
  Purity percentage = 90%
  Test weight = 26gm per 100 seeds
  Seed bulk density = 714.86 kg/m3
  Normal seed rate = 65-70 kg/ha

2. Plant population = area to be planted / space between plant to plant * space between rows

Area to be planted = 1 hectare
1 hectare = 2.471 acres
1 acre = 4046.856 m2

Therefore, 1 hectare = 2.471 * 4046.856 = 9999.78 m2
= 10000 m2

3. Space between plant to plant = 30cm = 0.3 m
4. Space between row to row = 60cm = 0.6 m

Plant population = 10000 / 0.3 * 0.6 = 55,555 plants

We took to test 1000 grams i.e., 1kilo gram of seeds are taken as test weight to know how much seed rate will come per kg.

- Seed rate = 55555 * 1000 * 100 * 100 / 90 * 90 * 1000 * 1000
  = 68.58 kg/hectare

The value is in between 65- 70kg/ha. We got the right value.

To meet that standard velocity of seed sowing machine very important here. Velocity depends on the diameter of the wheel that rotates.
This can be assumed or can be taken from standard book not to cause seed breakage,

- So, velocity (v) = 0.2 m/s
- Rpm of the motor = 60pm

5.No.of cells should be in the seed sowing gear = n = 3.14 * D
/ i*X

- n = no.0f cells
- D= big wheel diameter
- I = transmission ratio
- X = space between seeds

n = 3.14 * 0.25/ 0.525 * 0.3 = 4.98 = 5 cells

5 cells need to be present in the seed sowing gear

6. FLOW RATE :

$$Q = Rs * S * V / 10000 * Pb$$

Q = flow rate
Rs = seed rate, kg/ha
S = Space between rows, m
V = velocity of seed sowing machine, m/s
Pb = seed bulk density, kg/m3

Q = 68.58 * 0.6 * 0.2 / 10000 * 714.86
1.1512 * 10^(- 6) m^3/s

7. Volume of seed hopper:

$$Vc = Q * 60 * 10^6 / n * Nd$$

Vc = volume of seed hopper, m^3
Q = flow rate, L/s
n = no.of cells in seed sowing gear
Nd= rotational speed of seed sowing gear, r.p.m
Nd = N * i

Vc = 1.1512 * 10^(-6) * 60 * 10^6/ 5 * 60 * 0.525
= 0.448 m^3 = 0.5 m^3

8. Planting depth:

without breaking of seeds the seed should be planted to the depth that is required. For that after covering of seeds with the help of V-shaped metal, tires should go through the rows where the plough was digged.
Then the seed will be at the required depth.

Now we will go through the table in which required depth and required

gap between the plants was show.

TABLE

Seed	Required distance between plants	Required depth
Soya beans	25-30	2-5
Ground nuts	20-25	2-4
Corn	45-55	2-5
Wheat	35-40	1-3
Peanuts	40-50	2-4
Cotton	55-60	2-3
Bengal gram	55-60	3-5
Kidney beans	45-50	2-4

Performance results:

TABLE

Crop	wheat	Bengal gram	soya been	peanuts
Seed rate (kg/ha)	102	68.58	52	74
Width of coverage (mm)	660	1000	900	800
Depth of placement (mm)	45	60	40	50
Operating speed (km/h)	2.77	0.72	2.96	3.12
Field efficiency (per cent)	52.2	75.5	62	67
Plant population/m2	135	5	29	32

Labour requirement (man-h/ha)	10.4	4	4.1	3.4

- After calculating the results of Bengal gram, for some other seeds calculations are done. Because to know the differences of the values of respective parameters. Lot of differences came into existence.
- Major difference is the seed rate. Due to the size differences of different types of seeds, seed rate will be varying.

SEEDS	DIAMETER
Soya beans	5-11
Bengal gram	5-10
Kidney beans	9-11
Corn	6-7
Wheat	2-3
Peanuts	6-9
Cotton	6-8
Ground nuts	6-9

TYPES OF SEEDS THAT CAN BE USED

- Any type of seeds with some what large size can be used in this seed sowing machine
- Examples :
- Soya been
- Ground nuts
- Corn
- Wheat
- Peanuts
- Cotton
- Bengal gram
- Kidney beans etc,.

ADVANTAGES:

- *Following are the advantages of manual seed planter machine are :*
- Improved efficiency in planting
- Increased yielding and reliability in crop. Increased cropping frequency.
- Increased speed of seed planting
- Durable and cheap as low cost materials are used.
- Less maintenance cost
- Since seed can be poured at any required depth, the plant germination is improved.
- Dependency on labor also decreased. Also it saves time of sowing.
- Uniform placement of seeds in row with required distance.
- Proper compaction over the seeds is provided**.**
- Does not require any external source of energy.
- Uniform spraying.

FACTOTRS AFFECTING SEED EMERGENCE:

- 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 furrow.
- Uniformity of depth of placement of seed
- Uniformity of distribution of seed along rows
- Transverse displacement of seed from the row
- Prevention of loose soil getting under the seed
- Degree of soil compaction above the seed
- Uniformity of soil cover over the seed and
- Mixing of fertilizer with seed during placement in the furrow

APPLICATIONS:

- Seed sowing machine can be utilized for various types of **seeds** and small plants also we can automize the spacing between the **seeds** while operating the **seed sowing machine**. it increases the planting efficiency and accuracy rate will be high compare to traditional **sowing** process.

- It is also useful for gardening purpose.

CONCLUSION:

- In each complete rotation of rotating Wheel there is seeds falls from this seed drum and seed plantation process taken place smoothly and without wastage of seeds. The sowing disc is rotate in the seed chamber, the seeds are falls in the seed chamber through seed storage tank .The seed buckets are collect the seeds from the chamber and it sow in the ground as required depth with the help of plough.
- This seed plantation machine has great potential for increasing the productivity of the planting. Till now tractor was the main traction unit for nourishment in farming. With the adaptation of this seed planting machine its purpose will be done. Hence there is need to promote this technology and made available to even small scale farmers with affordable prices. This machine can be made by raw materials also which saves the cost of whole project and is easily manufactured in available workshops. Hence by using this machine we can achieve flexibility of distance and control depth variation for different seeds, hence usable to all seeds.

FUTURE SCOPE:

- Introduction of cutter can be used as grass cutter equipment.
- Using remote control machine can be made automatic.
- If the system can attach to the solar vehicle this will be very time efficient as well as effortless work will be done by the farmer with automatic , accurate and efficient way.
- Plough can be replaced with drills for accurate holes for the planting of seeds

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