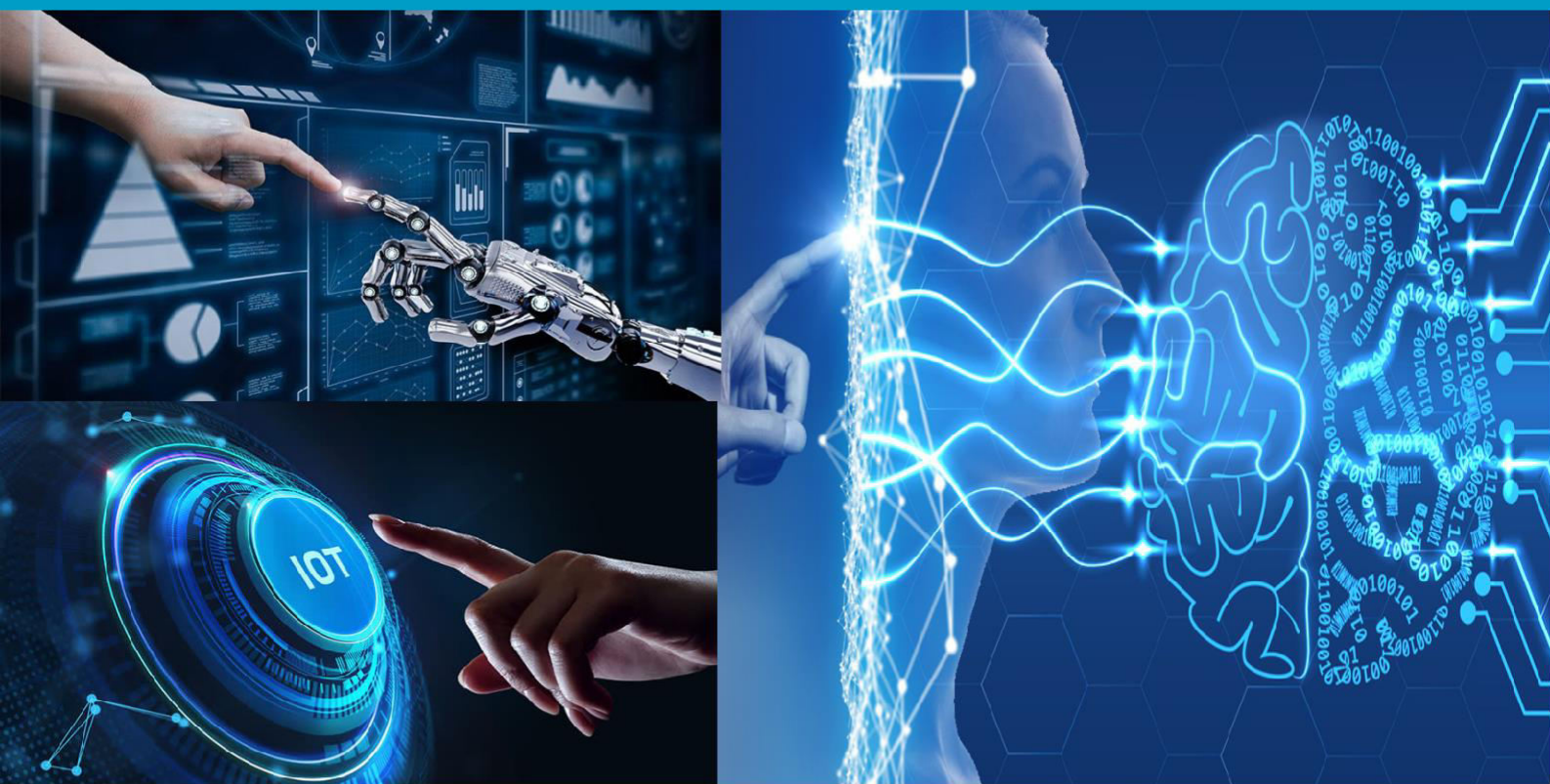




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# Fabrication of Seed Sowing Machine

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**ABSTRACT:** - The aim is to develop an automatic seed sowing machine that is powered by an engine to make farming easier. The first pulley is driven by the engine; the second pulley is attached to the front axle. This mechanism will reduce human efforts as well as the time required for seed sowing operations. The main objective of the machine is to sow the seed at the proper depth and spacing and cover the seed with soil. Seed sowing machines will meet the criteria of simple design, affordability for small-scale farmers, and ease of maintenance for effective use by anyone.

**KEYWORDS:** - Fabrication, labour cost, ploughing, sowing method,

## I. INTRODUCTION

The seed sowing machine is an innovative technology that helps farmers efficiently sow seeds in their fields. It is a machine that automates the process of seed sowing and reduces the labour and time required for this task. The machine can be used for sowing a variety of seeds, including crops such as wheat and maize. The seed sowing machine will be designed with several advanced features, such as an adjustable seed rate, depth control, and uniform seed distribution. It will also be capable of handling different types of seeds, including small and large seeds. The machine's user-friendly interface will make it easy for farmers to operate and maintain.

By developing this machine, we aim to provide farmers with a cost-effective solution to reduce their workload, save time, and increase their yield. This project has the potential to revolutionise the agriculture industry and promote sustainable farming practises

## II. METHODOLOGY

The fabrication of seed sowing machines for several crops is represented in this project. For fabrication, we select materials for the machine based on factors such as durability, strength, and cost effectiveness. After material selection, start the fabrication of individual components, such as the frame, seed tubes, and plough or furrow opener, using various techniques such as cutting, welding, drilling, and machining. We purchase other mechanisms such as bearings, belt pulleys, belts, sprockets, chains, and engines. Now to process the assembly of all components and mechanisms. Our project machine is now suitable for working

## III. OBJECTIVE

The basic objective of this machine:-

- ❖ The main objective of this project is to fabricate seed sowing machine.[13]
- ❖ To reduce effort of farmer by using this engine operated machine.[13]
- ❖ To reduce amount of time for operation.[13]
- ❖ To minimize the cost of so that it should be affordable for everyone.[13]

#### IV. LINE DIAGRAM OF MACHINE

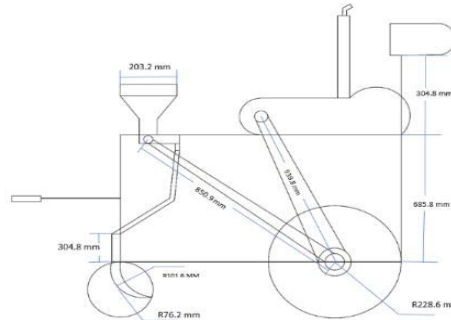


Fig IV.1:- Line Diagram

#### V. WORKING PRINCIPLE

This machine is mainly engine-powered. The engine used to transmit the motion to the shaft with the help of an open belt drive system that is mounted on the shaft [5]. To control the vehicle, we have the accelerator on the handle [13]. The arrangement of the third wheel on the backside of the car is made to run on the road [13]. The engine motion is transmitted to the seed metering device. The motion of the front wheel is transmitted to the metering device through chain drive. The rotary motion metering device drops the seed into the farm land, and at the same time, the land has been ploughed and the seed sowing operation is done.

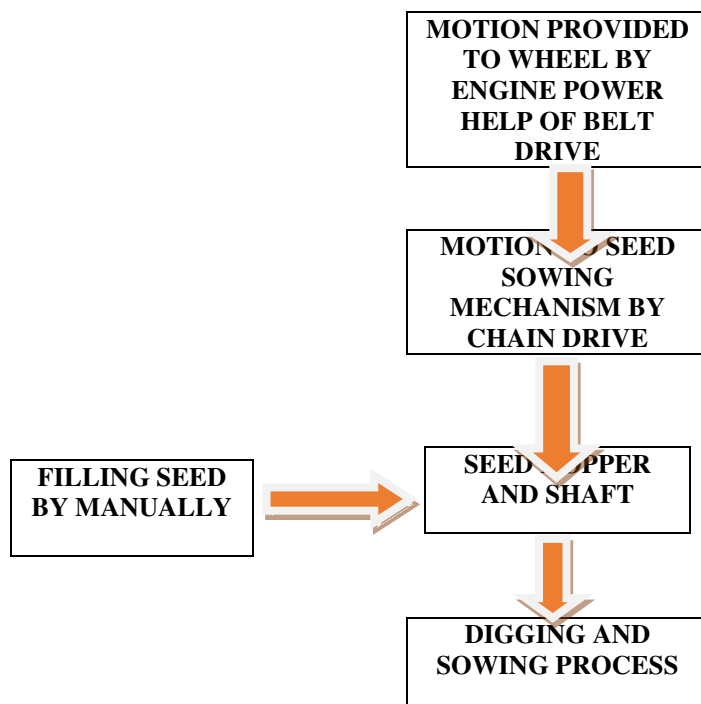


Fig.V.1Working Methodology

#### VI. COMPONENT OF MACHINE

**VI.1Frame& Chassis:** - The frame of the project is made from mild steel; this is the main structure of the machine, which provides stability and support to the other components. It is usually made of sturdy materials, such as metal. The fabricated structure holds all components of the machine. The rear side carries one dead wheel and a sowing mechanism, or plough. The front side of the frame carries the front shaft and wheel, which run the machine in the farm. The front side of the frame carries the engine on the top side. Carriehopper is on the back side of the frame



Fig: VI.1.1:- Frame

◆ **Specification**

- I. Material: Mild steel
- II. Height: 685 mm
- III. Length: 812 mm
- IV. Width: 558 mm

**VI.2 Engine**



Fig.VI.2.1:- Engine

Engine is the power generation unit of the project; it is a device that runs the entire machine with drive assembly. The maker of the engine is TVS.

Specifications of the engine is as follows,

- I. Engine type: Single-cylinder, 2stroke, petrol engine
- II. Displacement: 87 CC
- III. Maximum power: 5.3 bhp at 5500 RPM
- IV. Starting Mechanism: Electric and Kick

**VI.3 Plough:** - A seed plough is a device that sows the seed in meters, positions them in soil in the perfect depth, and covers them with soil. These drills sow the seeds at equal distances and proper depths, ensuring that the seeds get covered with soil and are saved from being eaten by birds. Before the introduction of this drill, a common practice was to plant seeds by hand. Besides being usually imprecise, it led to a poor distribution of seeds, leading to low productivity. The use of a seed drill to improve the ratio of crop yield (seeds harvested per seed planted) by as much as nine times. Some machines for measuring out seeds for planting are called planters. The concepts evolved from ancient Chinese practice and later evolved into mechanisms that pick up seeds from a bin and deposit them down a tube. Drilling consists of dropping these seeds in furrow lines in continuous flow and covering them with soil. Seed metering may be done either manually or mechanically. The number of rows planted may be one or more. This method is very helpful in achieving proper depth, proper spacing, and the proper amount of seed to be shown in the infield [4].



Fig: VI.3.1:- Plough



- I. Material: Mild steel
- II. No. of plow: 2
- III. Height: 304 mm
- IV. Width of blade: 101 mm
- V. Type: Adjustable

#### VI. 4 Hopper:-



Fig: VI.4.1:- Hopper

A seed hopper is a container that holds the seeds for a seed-sowing machine. It is an essential component of the machine, as it allows for a continuous supply of seeds to be fed onto the conveyor system for sowing. It was mounted on a frame and linked to a seed drill. The seed hopper has a mechanism to control or adjust the seed flow rate as per requirements [4].

#### Specification:-

- I. Material: Fiber
- II. Make: Balaji Argo
- III. Height: 304 mm
- IV. Width: 203 mm
- V. Length: 203 mm

#### VI.5 Wheel:

A wheel is a circular component that is intended to rotate on an axle bearing. The wheel is one of the key components of the wheel and axle, which is one of the simplest types of machine. Wheels allow heavy objects to move easily from one place to another. Common examples are founding transport applications. A wheel greatly reduces friction by facilitating motion by rolling together with the use of axles. In order for wheels to rotate, a moment needs to be applied to the wheel about its axis, either by way of gravity or by the application of another external force or torque [4]. The wheel has a width of 3 inches, and teeth are provided on the outer surface of the wheel, which gives it a good grip on farmland.



Fig. VI.5.1 Wheel

#### Specifications:

- I. Material: Mild steel
- II. Diameter of wheel: 431mm [17 inches ]
- III. No. of wheel: 2

**VI.6 Bearing:** -A bearing is a machine element that constrains relative motion to only the desired motion, and decrease friction between moving parts. The design of the bearing may, for example, provide for free linear movement of the moving part or for free rotation around a fixed axis this pillow block housing fits insert bearings with OD curved outer race. This housing is cast-iron and has a high shaft centre height compared to other pillow block housings. The housing includes grease fitting for lubricating re-lube style [4].

#### Specification

Bearing width, total:-34 mm

Centre distance between bolt holes: - 105 mm

Centre height (pillow block)

Housing overall width: - 38 mm, Shaft diameter: - 25 mm



Fig: VI.6.1 Bearing

**VI.7. Accelerator :-** It is control the air-fuel mixture into the cylinder by control mechanism ,in the carburettor engine it is placed in carburettor and it is control the air-fuelmixture .It is use to control the speed of the vehicle[13].

**VI.8. Sprocket & Chain:** -It is use to transmit motion from shaft to seed sowing mechanisam. Roller chain is v and sprocket is very efficient for power transmissions [13].



Fig. VI .8.1 Chain and sprocket [11]

**VI.9. Belt drive:** - A mechanism in which power is transmitted by the movement of a continuous flexible belt [11]. A belt drive has one smaller pulley and bigger pulley. A smaller pulley (driver) is attached to engine and big pulley (driven) is attached to the front shaft. Belt drive has maintained the ration and speed of the vehicle.

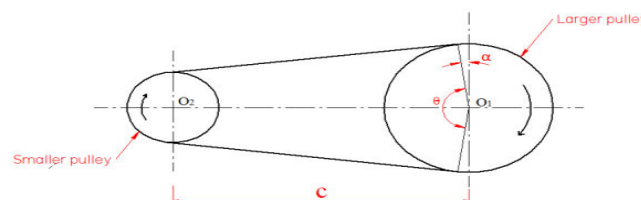


Fig .VI .9.1.An open belt drive system connecting the two pulleys

**VI.10.Assembly of machine:-**

Fig.VI.10.1 assembly of machine

**VII.1Working:** - Lets we discuss about working of the project .Firstly we can run our machine on road as well as in farm. The engine is used to transmit the motion from engine to shaft. To control the vehicle we have accelerator system on handle. The arrangement of the third wheel on the backside of is to run on road [13]. In the back side plough has fitted which adjustable in up and down and also we have adjust the distance between two rows as per requirements. Suppose that we are running machine on the road plough will be adjust in upside which they don't touch to road and our vehicle is run smoothly on road. On reaching in farm we have to arrange or adjust the plough depth as per requirement and carry on work by starting the engine and accelerate the machine to move the our model if the land is hard then we required more power so can do operation in slow speed so that operation can perform in good way, if the farm land is soft then we don't require so much power in this case we can easily cover up operation in high speed so we can save our time. In short we can arrange speed according to the farm condition. Lastly we can stop the engine by turning off the nob [13].

Let's see the operation which we will be performed:

For ploughing we have to keep the plough or adjust as per depth of requirement and start engine and by giving acceleration the vehicle will move forward and the plough will take out the sand and ploughing will perform. For seed sowing us use mechanism which consists of seed hopper, pipe and the metering device having teeth's which will rotate by chain and sprocket mechanism. The wheel rotating through the hopper full of seed will carry seed in the metering device which will fall in the funnel to pipe to ground and this is how the sowing operation will be performed [13].

**VIII. CONCLUSION**

This seed sowing machine is innovative and fulfill the demand of small scale farmers. The machine has great potential for increasing the productivity and efficiency of seed sowing. It reduces the time required as compared to manual and ox driven seed sowing. By using this seed sowing machine farmers can improve the time and also cost towards farming. Hence there is a need of introducing new technique of machine. Assembly and production cost of the machine is affordable, it can be easily constructed in workshop.

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