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Portable Electric Power Tiller

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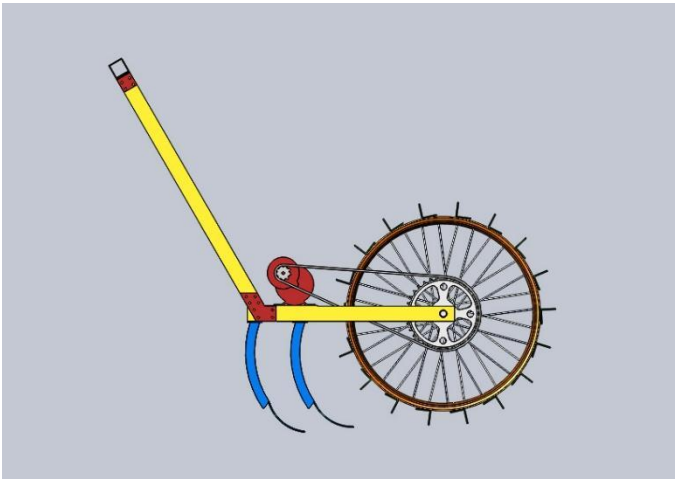
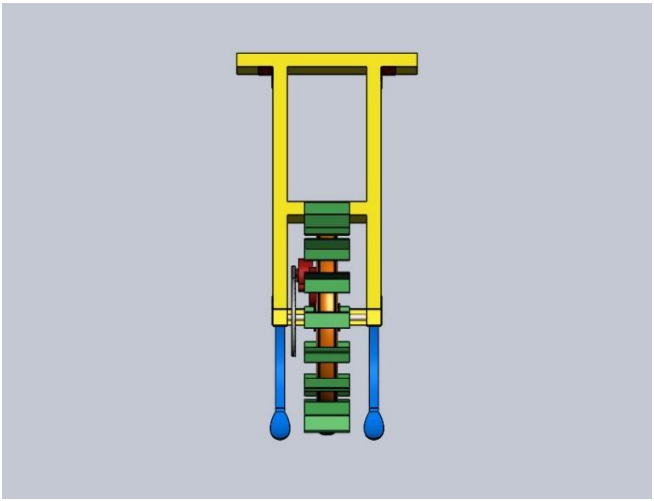
Abstract

In Indian Agriculture, Generally tractor or. Cultivator. Machines are Commonly Used or Ploughing Before his method farmers uses the traditional method this is the time consuming and hardworking and costly so we are introducing a new machine. This machine Useful for agriculture in India is of a much larger level. Al machine high price and useful for agriculture but not affordable to farmers so we have created a new machine with the problem in mind to increase the maximum weed removal capacity of the Triller blade in the new design. We have Added some extra parts to this machine help improve the maximum weed removal Efficiency.





1. INTRODUCTION

In India currently farmers are unhappy to Spend money For plowing operation because of Raise in Petrol price day By day. To solve this problem, we made an Electric power Tiller and Cutter machine which is power by Battery to Electric motor. The battery is eco friendly and Easily Recharge. The power tiller is mainly used in farming Operation for preparing a Seedbed on upper level of land. The portable power tiller is not only the large soil mixing ca-Pacity compared to The other machine but also good weed Cutting capability In a market various power tiller machine Is Available and it is operated on internal

2. LITERATURE REVIEW

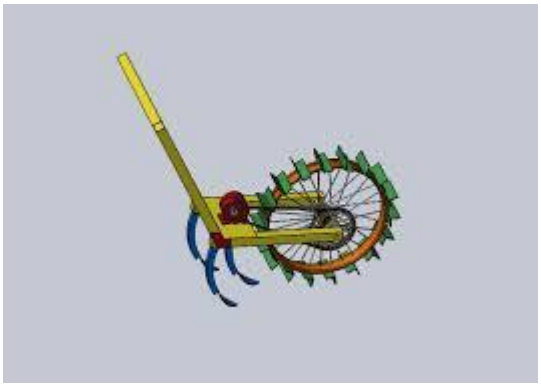
Pankaj Kumar et al. (2011) demonstrated the Mechanization of paddy transplanting through cooperative Societies in Jalandhar District, Punjab state. The study Revealed that these societies purchased 14 paddy Transplanters, and the total area under mechanized Transplanting was 170 acres in 2009 to 365 acres In 2010. One reason for the non-adoption of paddy Transplants was the high cost and the expertise required in Growing mat-type nurseries and operating the machines1 Fazlollahi et al.'s study (2012), they examined the essential Requirement of using suitable tractors and Agricultural Instruments in agricultural areas, focusing on Marand, the Hometown of Azerbaijan province. The study aimed to Evaluate quantitative agricultural mechanization and Environmental challenges in the region. Based on field studies Considering power resources, agricultural products, climatic
Conditions, and environmental capacity, two issues were Evaluated: agricultural mechanization and environmental Capacity. The results indicated a cropped area of 54,020 Hectares, with a mechanization level of 1.052.

PROBLEM DEFINITION

Table 1 show the peak signal to noise ratio of performance of our proposed method of watermarked image and original image with various watermark image, where our watermarked images peak signal to noise ratio has a better performance than others.research will he carried out on electric power tiller Machine on Field of agriculture to test parameters of Machine. On the field the soil and other Weeding factors Could affect efficiency or any other parameters which Reduces the Efficiency. So it is necessary to use other Active machines and analyze properties of The Respective parameter.

3. OPERATION

A motor rised tiller is operated by walking behind the Machine. The machine consists of electric motor, Battery, chain sprocket, wheel angles, bearing,



electrical & wiring, mounts and joints, supporting frames, screw And fitting, bicycle wheel, the machine is powered by an Electric motor that drives the pulling wheel using a Sprocket chain configuration. The motor that drives the Forks into the soil is powered by a battery. The cultivator Forks enable for precise and easy tilling, as required by Farming. The machine is light in weight and portable. Due to easy construction of machine the maintenance is Very low.

METHODOLOGY

The Following is the methodology used to design and Fabricate our portable electric tiller machine 1.Design the aesthetic look of the power tiller.
2.Machine modeling (Solid works).
3.Consideration of forces and loads.
4..Conclusion and Future Directions

WORKING

This power tiller has a main component controller. It has Different output functions Like a motor, display, reverse, Neutral, and forward gear, and an accelerator (throttle).This facility for speed variation is in that controller. A Battery of 48 volts and 40 watts is Installed in this. The Output terminal of the battery is connected to the Controller. So, The controller turns on. Simultaneously, All controller functions are turned on, and the Controller Comes into working condition.The output terminal of the Controller has an accelerator, a 48-volt BLDC motor Rated at 1000 watts, and three gears. In that three Forward gears, one reverse gear, and one Neutral gear If The motor is kept in the forward position on first gear, The motor will run At a low speed; if it is kept in second Gear, the speed of the motor becomes medium; And if We keep it in third gear, the motor will run at full speed. Also, reverse gear starts The rotation of the motor in Reverse, or the opposite direction. Neutral gear can be Used to stop the motor.It has a display that is used to Indicate the battery charging Level, power tiller speed**,** And which gear the power tiller is in. The shaft of the Motor is Mechanically connected to the gear wheel. And The gear wheel is connected to the Rotary below by Means of a chain. Also, a rotary rotates according to Gear. And the land Is plowed with a blade attached to the Plow shaft.When plowing is not the purpose or When Plowing is done, we can use tires instead of plowing Blades and a trolly behind The tiller to carry the goods. This power tiller can easily carry up to 750 kg. Due to The High torque of the motor, more pickup is available For the power tillery side by side capable of digging in Agricultural land with ease. One sensor is provided. The Working of sensor is to stop or to cut off the extra or Over or the extra energy which not needed battery is Placed for energy supply to working of tiller machine.

4. CALCULATION

Motor power = 250 W= 0.25 KW

Motor Speed = 300 rpm 250 W = 0.335256 Hp

1. Machine Torque =9.5488XPower .

Speed = 9.5488X 0.25 300 Torque = 7.96 N/m

2. Power (KW) = Torque X Speed 9.548 = 7.96 X 300 9.5488 = 0.25 KW

3. Efficiency (η) = 0.745 X Hp X load Pi = 0.745 X 0.335256 X 90 0.25. = 89.91%

CONCLUSION

Today in the world fuel prices and environmental Pollution increases day by day. So Control. Environmental pollution, to save fuel and bio product This project is design. For this model requires low Investment at the starting stage but its gives more Energy Output with low maintenance. Our new project Developed battery powered minimizing The harmful Effort of manual tiller. Here in our project we conclude That by using this Machine we reduce the farming cost, Animal use, and air pollution and manpower. Our Main Objective is to help the farmer

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