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Design and Fabrication of Sugarcane Planting Machine

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Abstract: ***Sugarcane being largely cultivated in Tamilnadu have greater need to reduce the work of farmers in large scale production as well as in small scale production. Since the cutting and planting of sugarcane takes much longer time and a mandatory work in the farm fields. This project sugarcane planting machine is concerned with reducing the man power and planting more number of pieces in a shorter time. It involves sowing the pieces inside the land at a required depth so as to produce good growth of sugarcane plant which may not be in manual planting by the workers. It reduces the manpower and the cost spend for planting also becomes low due to less cost of machine. This machine is much more compact and easily driven compared to large machine. The major advantage in that it can be made by a small scale farmers having major contribution in sugarcane cultivation.***
Keywords: sugarcane, planting, cutting, compact, cultivation.

I. INTRODUCTION

India has agriculture based economy and more than 50% of population depends on agriculture works. India is the second top most country of the world. The production rate is 361037000(Metric Ton) .The plantation of sugarcane is varies with the environment condition and soil quality.

The sugarcane production rate in India at different states. In this map, dark brown colour states are highest sugar producing states which are Uttar Pradesh, Maharashtra, Odisha (500-1500 Lakh metric ton according to survey of FARMAR'S PORTAL of government of India. Medium brown colour states are medium sugar producing states which are Bihar, Gujarat, Andhra Pradesh, Karnataka, and Tamil Nadu (100-500 lakh metric tons). Light brown colour represents the lower sugar producing states which are Punjab, Haryana, and Madhya Pradesh (below 100 lakh metric tons)

Our machine is a mechanical sugarcane planter machine which facilitates the five operations at a time without using power take-off. The power obtained from the rotation of the wheel to cut the sugarcane. The traditional method of sugarcane planting is very time consuming process.

The sugarcane sets are placed manually and then covered by animal operated plough or manually. Conventional methods require more men power. Some tractor operated planters are available in market but they need the power take-off. Our machine is a mechanical sugarcane planter machine which facilitates the five operations at a time without using power take-off. It makes two furrows at a time, cut the cane into sets and placed in furrows.

II. OBJECTIVES

A. To reduce the labour wages
B. To reduce human work.
C. To satisfy the requirements of farmers.
D. To reduce the sugarcane planting time.

III. COMPONENTS USED:

A. Plough
B. Hopper
C. Chain drive
D. Wheel
E. Shaft
F. Sprocket

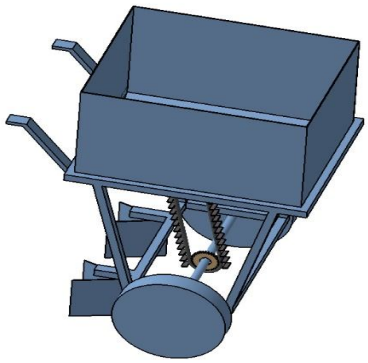
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1) *Plough:* A plough is a tool or farm implement used in farming for initial cultivation of soil in preparation for sowing seed or planting to loosen or turn the soil.
2) *HOPPER:* A storage container used to dispense granular materials through the use of a chute to restrict flow, sometimes assisted by mechanical agitation paintball loader. A manufacturing line hopper. A storage container used to collect granular materials designed to easily dispense these materials through the use of gravity. Part of an agricultural aircraft to store the chemicals to be spread.
3) *Chain Drive:* Chain drive is a way of transmitting mechanical power from one place to another. It is often used to convey power to the wheels of a vehicle, particularly bicycles and motorcycles.
4) *Sprocket:* This has inverted teeth. Sometimes the power is output by simply rotating the chain, which can be used to lift or drag objects. In other situations, a second gear is placed and the power is recovered by attaching shafts or hubs to this gear. Though drive chains are often simple oval loops, they can also go around corners by placing more than two gears along the chain; gears that do not put power into the system or transmit it out are generally known as idler-wheels.

IV. WORKING PRINCIPLE

A. The sugarcane pills are first filled in hopper box its capacity
B. The machine is moved forward manually
C. When the machine moves the motion from the ground wheel to the hopper with the help of a chain drive
D. The chain drive is fitted with the an arrangement of transporting the sugarcane pill from the hopper to the soil
E. Through this arrangement the sugarcane pills are placed in the soil ,that is prepared Already .
F. Then the normal sugarcane cultivation process is carried out for cultivation of sugarcane.

V. 3D DIAGRAM



A. 3D Diagram

VI. MACHINE PHOTOGRAPHY



Photography

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VII. RESULT AND CONCLUSION

This semi-automatic sugarcane planting machine is a time saving and economical alternative for reducing the cost of sugarcane production. Also this semi-automatic plantation reduces the human effort and also provides proper spacing.

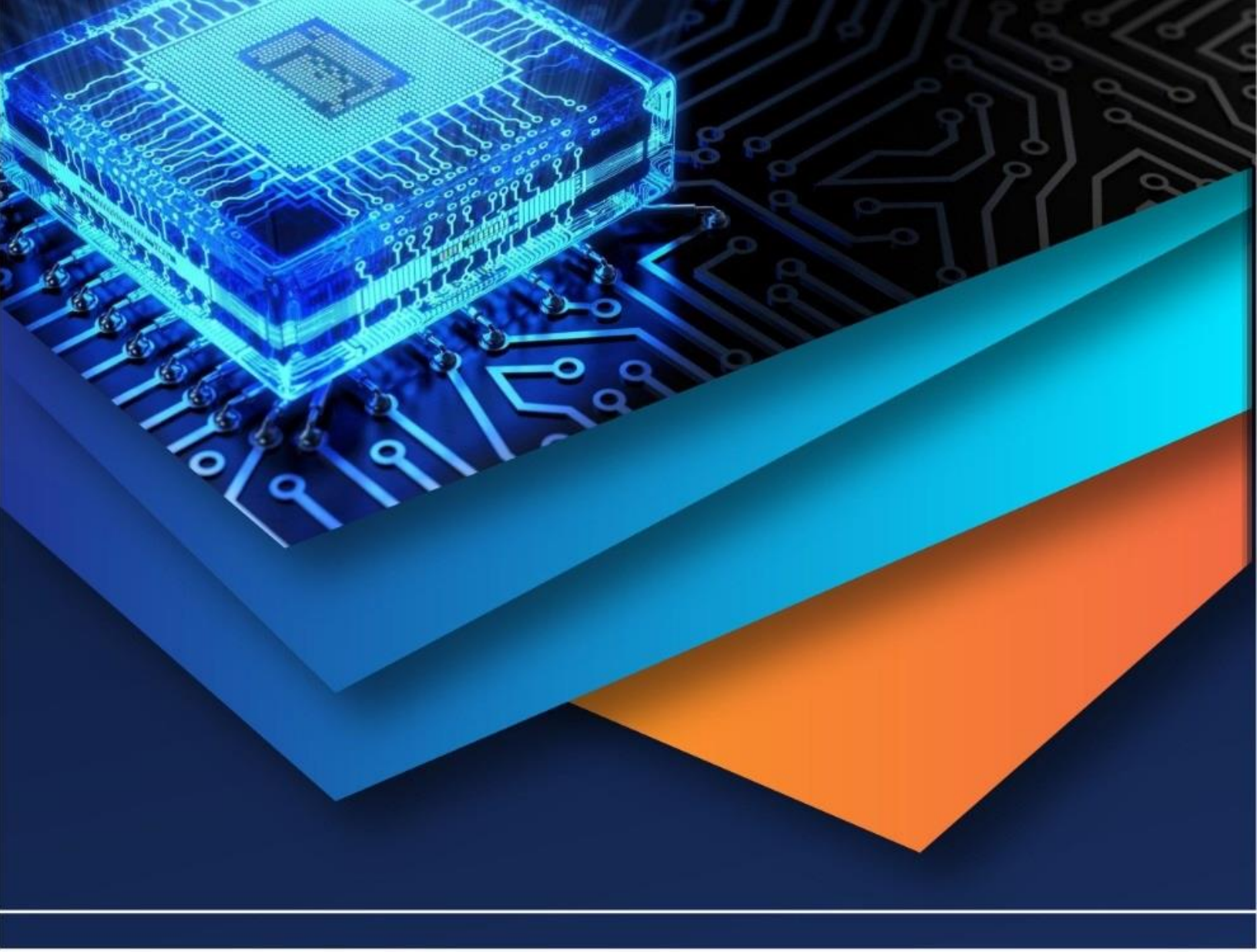
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