

Review Paper on Mechanical Operated Bud Cutting Machine

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ABSTRACT

This paper describes about Mechanical operated bud cutting machine which can be used in industries for cutting process. A usual shaper machine operates by a principle of whit worth quick return mechanism where materials are processed at one end and other end remain idle. The current method of deploying sugarcane sets proved laborious, time consuming and costly, a farmer, faced acute difficulties in cultivation and alternative method of planting individual saplings did not help. The farmer wondered whether the sugarcane buds, instead of being planted, could be sown like potatoes on the fields. Based on the encouraging feedback we received to give it a try, we started working on the idea and developed a simple device, called sugarcane bud cutter, is floor mounted and equipped with a knife with a semicircular edge to surgically cut out the buds in a high impact operation, with clean finish and practically no damage to the cane. "Using this device a person can remove nearly 500buds in an hour,"

Keywords: Construction, Working, Detailed view, Analysis.

INTRODUCTION

Over the world, India is biggest producer. in India sugarcane production is to between 11 to 12% of overall production in the world .With the help of sugarcane part of the sugarcane used for plantation and remaining part uses for the products like sugar, jiggery, fiber , sucrose, fuel and chemical, fodder for animal etc. Most of sugarcane production belonging to rural areas , where the employment of the people plays a vital role. In such areas there is no dwell developed machine used now a days. They uses traditional hand operated machine which is very time consuming as well as effort required is more as machine operated by hand it creates problem like muscle pain, cramps etc. also in traditional bud cutting equipment's there is possibility at slippage of sugarcane during cutting operation due to this the proper bud not cut for an sugarcane and at some extent the wastage of sugarcane is possible.

To overcome all these problems faced by the people in the rural areas we suggest the development and modification of the existing machine in which we uses two sides cutting tool mounted on tool post which is able to cut the sugarcane bud at a single cutting operation which is operated by foot . According to ergonomics aspects to reduce the human effort, we suggest the machine which is peddle operated. Because of this arrangement the production rate increases as well as manual effort is reduced. As the installation of clamping to hold the sugarcane in proper position, so there is no slippages will occurs mean while bud cut in proper shape and reduce the injuries. As the productivity increases per hector, the economy will increase and the employment will boost in rural areas which will help for former to survive with their families. Shaper tool will be the best option to cut sugar cane bud by using tool motion.

What we studied -

It has been observed in rural areas most of the people cut the sugarcane buds manually. This consumes a lot of sugar cane and time to cut the buds. In order to identify this cause, we have designed and fabricated the sugar cane bud chipping machine which works on electricity. It reduces about 70% of seeding cost. And get more yield the machine reduces tremendous labor and produces more number of buds in less time. This machine can be easily lifted as it is light in weight. It will prove one of the good ideas for the farmers.

MATERIAL

Sr. No	Part Description
1	Frame is a rigid body that supports the entire mechanism.

2	Crank is a rotating part, Which is either a hand driven or motordriven.
3	Slotted bar has a slot in whichthe crank pin engages or slides over it.
4	Crank pin is welded on a crank at a pitch circle diameter (PCD)of130 mm.
5	Shaft is a rotating machine element, which is used to transmit the torque. One end of the shaft is connected to the handle slot and other end of the shaft is welded to the center of the crank disc.
6	Connecting rod is used to connect the slotted bar to the cutting tool on either sides of the bar. The connecting rod is supported at the frame.
7	Plummer block is used for holding rotating shafts with help of bearing and other parts.

WORKING

Shaper is the metal cutting machine tool designed for cutting flat work piece by a tool. Shaping is used to machine thin and soft plates. The operation of machine is simplified to few simple operations involving a motor and tool head arrangement. When the crank is driven by a motor or by handle, the crank rotates about the axis, so the crankpin slides inside the slot of the slotted plate. As the crank rotates, the slotted bar reciprocates due to the sliding of crank pin. The connecting rod attached with the slotted plate on both sides, reciprocates as the crank rotates. The cutting tool is attached at the both sides of connecting rod, to carry out the cutting operation. Since the cutting tool is placed on both sides, operation can be done at both the sides of the machine i.e. the return stroke at one end is converted into cutting stroke at the other end, thereby it reduces the production time and increases the Metal removal rate (MRR).using this Action of the Machine We can Cut the sugarcane Bud without any harm to them and it also reduces the time require to work with gradual and sustainable method. It is very helpful for today's farmer.

Plan of work:

Given below shows the progress of project work and detailed activities to be carried out throughout the year for the completion of project work.

CONCLUSION

We have designed a dual side shaper with appropriate dimensions and analyzed various properties for a cutting tool (Shaper tool) using scotch yoke mechanism. We have applied various rapid wear of the slot in the yoke caused by sliding friction and high contact pressures. This wear can be reduced or controlled by maintaining lubricant near yoke. Scotch yoke mechanism plays an important role in shaping, planning, and slotting machine. This Mechanism is also used in scotch yoke engines. This can also be used in valve actuators in high-pressure oil and gas pipelines. It has been used in various internal combustion engines, such as the Bourke engine, SyTech engine, and many hot air engines and steam engines. It is best suitable for machining brittle materials like iron, copper, zinc etc.

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