

Sugarcane Bud Cutting Machine

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^{#1}Prof. Mahesh Bhandare, ^{#2}Chavan Akshay, ^{#3}Dhaigude Rajkumar,
^{#4}Gaikwad Ganesh, ^{#5}Jadhav Sunil

⁵suniljadhav241@rediffmail.com

^{#1}Asst. Professor, Mech. Department,
^{#2345}Department Of Mechanical Engineering,

Trinity Academy Of Engineering Pune.



ABSTRACT

Now a day's most of the agricultural equipment is working on the automatic system. we know that agriculture is the backbone of the Indian economy and Indian farmers are facing the problem of shortage of worker for doing the on field work. To overcome this problem we are designing the sugarcane bud cutting machine which reduces the wastage of sugarcane and also reduces the transportation cost. The production of bud using this automatic sugarcane bud cutting machine is high as compare to other conventional machines available in the market. The buds cut by using this machine are light in weight and economic sugarcane seeding material. These technique of farming using the buds helps to the farmer developing the new varieties of the sugarcane. There is problem of initial growth using the sugarcane bud but it can be over come using the suitable growth regulators and fertilizers. Also this machine faster production rate which make it suitable for the competition with conventional sugarcane bud cutting machine.

Key words: Cutting Blade, Sugarcane Bud Cutting Machine, cutting Bud.

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I. INTRODUCTION

India is the largest sugarcane producer in the world producing around 250-300 million tons of cane per annum, sugarcane is the third important cash crop in India. Sugarcane is the renewable resource crop. The current method of deploying sugarcane sets proved laborious, time consuming and costly. An owner of a nursery, or a farmer faced acute difficulties in cultivation and alternative method of planting individual saplings did not help. It was hampered by lack of availability of saplings in large number. The farmer wondered whether the sugarcane scopes, instead of being planted, could be sown like potatoes on the fields. device, called sugarcane scope chipper, is floor- mounted and equipped with a knife with a semicircular edge to surgically cut out the scopes in a high Impact operation, with clean finish and practically no damage to the cane. The machine is used for removing scopes from the sugarcane plantation in horticulture. By using this device a person can remove nearly 1000 of scope in hour. The device includes a hemispheric knife actuated by a hand operated lever. By pressing the handle, the unit removes the scope from the node of the sugarcane, which is then used for planting. It reduces cost of plantation by over 90% and time.

Challenged by an engineer to make a machine that can remove buds from the sugarcane for the plantation purpose to minimize losses as well as time, money and seeds, with this implement. By pressing the handle with help of machine oriented automatic, the unit removes the bud from the node of the sugarcane, which is then used for planting. The technique is considered novel though they have suggested some ergonomic feasibility study.

Sugarcane is planted commercially using stalk cuttings or sets 25-30 cm stalk pieces having 2-3 buds each. This method of cultivation is gradually becoming uneconomical as the cost of seed cane used for replanting accounts for over 20 percent of the total cost of production. About 5 – 6 tons of seed cane /feddan 1 feddan= 4200m² is used as planting material. This large mass of planting material imposes hardship in transport, handling and storage. It also undergoes rapid deterioration that could reduce buds viability and subsequently their germination percentage in field. The modify the design of scooping machine which can allow the farmer to cut the sugarcane bud in a form which can be utilized as a planting for agricultural of sugarcane. The ease and this reducing the manual work of farmer and

increases the production. The machine is for removing buds from the sugarcane sticks. This buds are used for sugarcane plantation in horticulture.

1. Supply power source to Electric motor:

They are using single phase 2 H.P motor so we require single phase power supply. Input speed of our electric motor is 1440 rpm .In order to rotate the shaft we have to rotate them by using power drives.

2. Power transmission through Gear box which are mounted on shaft:-

For transmitting power we choose gearbox arrangement. This gearbox arrangement is coupled to Ellipse by using shaft and key. liner motion of cutter occurs.

3. To remove sugarcane bud:-

They are keep the sugarcane on the Supporting Plate. The linear motion of cutter helps to cut the bud of sugarcane and the same size of bud is collected. The Collection of sugarcane is done in the box.

4. Spaced Transplanting Technique :-

A spaced transplanting technique has been developed for synchronisation of tillering and quick seed multiplication of sugarcane. It increases seed multiplication ratio from 1:10 to 1:40. I It has contributed in fast spreading of newly evolved varieties at several places.

Methods of Raising Bud Chip Settlings:



Fig-(1) Buds With One Eye



Fig (2)-Buds Are Put In Plastic In Cups Or Trays



Fig-(3) Buds Covered With Soil



Fig-(4) Sugarcane Crop Growth



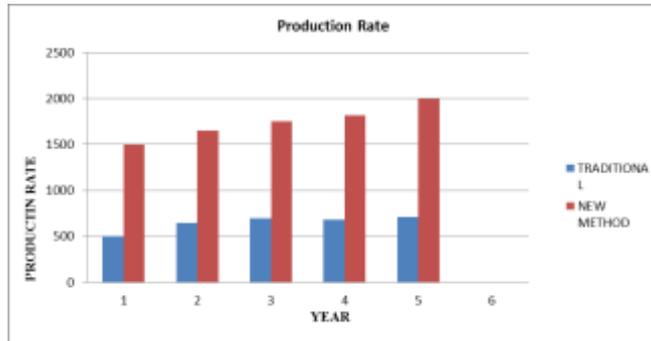
Fig-(5) After 4weeks Sugarcane Crop Ready To Plantation.

Select fresh harvested sugarcane stalk free from disease sugarcane must be 8-10 months age. cut out buds from stalk by using sugarcane bud cutting machine fig no-(1). Put this buds in plastic cups or trays filled with soil, organic material like death leaves of plants in ratio1:1 fig no-(3)&(4). After 4 weeks later sugarcane crop ready to plant in field fig no-(5).in nursery sugarcane crop get full sun, energy and its free from any disease. Also buds is directly plantation in field.

II. RESULT

The following results obtained by comparing with traditional method & sugar cane bud cutting machine (advanced method by using machine).

Parameter	Traditional Method	Using Automatic Bud Cutting Machine
Production Rate	500-800/ Hrs	1800-2000/Hrs
Labour	3-5	1-2
Transport	Critical	Easy
Wastage	More	Less
Cost Required For Cutting	More	Less Compare To Traditional



III. RESULTS AND DISCUSSION

The data of this study shows that bud chip technology could be a variable and economical alternative in reducing the cost of sugarcane production. Necessary precautions are taken in handling and storage of bud chip seed material and their subsequent multiplication in the field. Normally, 5 to 6 tons of sugarcane are required to plant a feddan of land if 17200 three-budded sets are used. However, bud chips are used; only 140-150 Kg of material is sufficient, which results in a saving of about 97% of cane by weight. This is economical in terms of the crop cultivation costs. It also saves several thousand tons of raw material that could be used for extracting sugar. This technique would immensely help sugarcane breeders to handle their valuable cane genotypes with less risk, assured survival, and good establishment. Additionally, transporting the bud chips instead of whole stalks from one location to another would greatly reduce its cost and help in propagation of new and improved cane varieties. Seedlings raised in trays are recommended due to their higher survival percentage (95%) in the field.

IV. CONCLUSION

Sugarcane bud cutting is very useful for new plantation of sugarcane plants. It is very useful for farmers and nurseries. It saves the cost of plantation and wastage of sugarcane. Normally 10 to 12 tons of sugarcane are used for plantation in 1 hectare. However, if bud chips are used, 350Kg-400Kg of material is sufficient, which results in a saving of about 96% of cane by weight. By using bud chips, we reduce cultivation and plantation costs. It also saves thousand tons of raw material that could be used for extracting sugar or preparing juice. Cane yield could be enhanced using bud chips raised seedlings. Plant mortality rate, damages, and wastage of buds could be reduced using bud cutting machines. Bud chip technology could be one of the most viable and economical alternatives for manually operated machines. By using an electric motor, we converted manually operated machines into

automatic ones. Bud chips are less bulky, easily transportable, and more economical seed material.

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