

Design and Fabrication of Sugarcane Trash Removal Machine

Mr. Shreeyash Sambhaji More¹, Mr. Amit Pravin Bhosale², Mr. Swapnil Shivaji Mohite³,
Mr. Ajim Rajekhan Shikalgar⁴, Mr. Sachin Shankar Pandewad⁵, Prof. Hemant K. Shete⁶

UG Students, Final Year B. Tech., Department of Mechanical Engineering^{1,2,3,4,5}

Professor & Guide, Department of Mechanical Engineering⁶

Dr. Daulatrao Aher College of Engineering, Karad, Maharashtra, India

Abstract: *Sugarcane, known as one of the most important and commercialized crops of India, is a renewable, natural agricultural resource producing mainly sugar and bio-fuel along with other by-products like, fiber and fertilizer, etc. But, the production cost of sugarcane is increasing year after year. Many reasons are there for increased production cost, like increased prices of fertilizers, unexpected weather change, shortage of skilled labours, day-by-day reducing capability of a lands' crop growing strength, etc.. This reduces the profit margin of both the sugarcane growers and the sugar industry. Most of the frequent intermediate cultivity actions, which are necessary, are delayed or not taken up at all for want of sufficient skilled labour at reasonable wages, which results in low weight, production and overall productivity of sugarcane and other by-products. Harvesting of sugarcane is the laborious operation, which involves many efforts, starting from on-field individual sugarcane's base cutting, de-trashing, de-topping, bundle making, loading on vehicle and transport of sugarcane to the sugar mill. Labours' strength requirement of sugarcane harvesting range varies from 800 to 1500 human hours per Hectares, which is the highest of other agricultural operations. Mechanization of sugarcane harvesting is essential for reducing the sugarcane production cost, drudgery involved in manual harvesting operations, saving valuable time, to ensure quality produce, etc. Mechanical combine harvesters that are presently available are of high capacity, but they also require high capital investment. Thus, neglected by small and medium scaled farmers. Our Sugarcane de-trasher, using Engine as power source, would be less expensive and suitable for small and medium scaled farmers. Among the high costed sugarcane harvesters currently available in the markets, this machine would be the cheaper option, forming less deterioration of the sugarcanes on storage. An Engine de-trasher suitable for small and medium scaled farmers, is an essential requirement for mechanizing the harvesting of sugarcane to tide over the labour scarcity.*

Keywords: De-Trashing, Sugarcane Harvesting, Sugarcane Trash Remover, Engine Operated De-Trasher.

REFERENCES

- [1]. Design and Fabrication of Sugarcane Trash Removal Machine Mr. Ganesh Nikam Mechanical Department KIT' College of Engineering Kolhapur, India Mr. Onkar Dake, Mr. Aditya Deshpande Mechanical Department KIT's College of Engineering Kolhapur, India
- [2]. Investigation On De-trashing Cum Conveyance Of Sugarcane And Development Of Tractor Operated Whole Cane Combine Harvester by Joby Bastine
- [3]. A Study of Sugarcane Leaf-Removal Machinery during Harvest by Sopa Cansee, Department of Mechanical Engineering, Faculty of Engineering, Thailand
- [4]. De-trashing of sugarcane: A review Animesh Chandravanshi, Ajay Verma and Dhananjay Roy
- [5]. Design and fabrication of sugarcane trash removal equipment B.Babu, P.Esakkiappan, J.Dinesh, P.S.Aswhath Krishnan, R.Ahash IAssistant professor, Ug student I Mechanical Department, IAmrita college of Engineering and Technology, Nagercoil
- [6]. Supan Yangyeun and Seri Wongpicheth, 2008. The study and development of soil and sand separation machine. Harvest Technol. Innovat. Center, 6: 2-4.

- [7]. Thawat Tinnangwattana, 2008. Modern sugarcane farm harvest and transportation. <http://www.ocsb.go.th/udon/All%20text/1.Article/01-Article%20P9.1.htm>.
- [8]. Cochran BJ, Clayton JE. Basic studies on mechanical de-trashing of bulk sugarcane. Proc. ISSCT, Taiwan 1968;13:1551-1561.
- [9]. <https://www.researchgate.net/publication/322050396>
- [10]. <https://www.researchgate.net/publication/331950478>
- [11]. <https://www.researchgate.net/publication/283870068>