



Power Tiller Operated Stubble Shaver, Sugarcane Trash Grinder, Tractor Operated Stubble Shaver

Farm Machinery

National Second

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Background

Owner of an agricultural repairs shop, Ganesamurthy (47), has come up with these three useful implements to help farmers in their agricultural work.

In his native village, agriculture is the main source of livelihood for most of the people, with sugarcane being the major agricultural crop of this area. Initially, he engaged himself in agriculture but later joined his father in his repair shop and learnt some of the basic techniques in cart making from his father. Being inquisitive, he explored and mastered details about the working of tractors and farm implements and went on to establish a tractor repair shop.

In his family, Ganesamurthy has a wife and two sons. His sons have completed their studies upto the secondary standard and they are now managing his father's workshop. Ganesamurthy on the other hand studied only upto sixth standard and had to discontinue his studies in order to assist in his father's bullock cart repair shop.

Genesis

Fourth National Technological Innovations & Traditional Knowledge Awards

His village was surrounded by sugarcane fields, and growing in this environment, he could relate to the problems associated with sugarcane harvesting and the effect of shortage of labor to do all the required tasks in time.

Therefore, in his workshop, he started designing and building customized implements such as stubble shavers, the tractor operated off baring plough, which can be fitted on to tractors and tillers. The agriculturists in his locality accepted these options, since they were practical, effective and were able to solve their local problems.

The story of the development of the sugarcane trash grinder, one of his innovations, is quite interesting. It started with his belief that chemical fertilizers affect the agricultural land adversely and in order to maintain the fertility of the soil, something natural should be used instead of the chemicals.

Since sugarcane leaves were aplenty, so he thought of using them as an alternative source of organic manure for agricultural crops. However, he later

realized that the usage of sugarcane leaves would be practically difficult in the field.

Hence, he developed the sugarcane trash grinder to create compost and cattle feed and progressively refined the product and sold it locally. Similarly, for the other two products, he felt that the existing options did not give enough help to the farmers so he came up with his own solutions.





Innovation

Power tiller operated stubble shaver

Sugarcane stubble shaving has to be done immediately after harvesting, before it becomes dry. The manual methods employed are tedious and impractical and affected by labour shortage.

This machine is a power tiller operated sugarcane stubble shaver and helps in good ratoon management. The cutting mechanism is rotary on a horizontal plane and unique as compared to swinging blades available in most of the alternatives¹. This enables fine and closer depth of stubble cutting.

It can also be used as a vertical axis rotary tiller for weeding and intercultural separation in sugar cane cultivation. This attachment can be fitted to all kinds of power tillers.

The disc blade is used for stubble mulching and intercultural operation for row crops. The fuel (diesel) consumption is around 3.7 liters/hectare and the

field capacity is 0.4 hectare/hour.

Tractor operated stubble shaver

Similar to the power tiller operated stubble shaver mentioned above, this device is a tractor PTO operated rotary horizontal disc type stubble shaver, provided with a depth wheel to control the depth of operation. The unit can be fitted with a 35-40 hp tractor through a three-point linkage mounting.

It can work in a single row for stubble shaving and achieve better crop management in sugarcane cultivation. The unique innovative rotary cutting mechanism is able to give fine and closer depth of stubble cutting as compared to swinging action of conventional cutters² (rotary slasher/mower, shrub-master, stable shaver, etc).

The fuel (diesel) consumption is estimated to be about 8.6 litres/hectare, with a field capacity at 0.8 hectare/hour.

Sugarcane Trash Grinder³

The innovator lives in the sugarcane belt where the composting process took many months because of the large size of the organic feed. To bring down this time, it was felt necessary to reduce the sugarcane trash feed to smaller sizes by using this machine to crush it to sizes ranging from 2-20 mm.

The sugar cane trash grinder, which can handle both dry and fresh sugarcane trash, has a safe feeding chute with rollers that take in the input and then it moves on to a heavy duty grinding drum powered by an 3HP electric motor and the size reduction up to two mm is done by the crushing action.

The machine can grind dry sugarcane trash up to 350 kg per hour and is useful for compost preparation and to prepare cattle feed as well. The whole unit is mounted over a trolley with wheels so that it can be easily shifted anywhere.

Apart from selling them locally, he has also sold his machines to EID Parry, a large engineering conglomerate. The company has appreciated his innovative efforts in developing these machines. He wants to patent his innovations so that his sons can enjoy the commercial benefits. Patent for the same has been filed by NIF on his behalf.

¹ Power tiller operated implements for weeding and land preparation is known in the art. Light weight power tiller (<http://agricoop.nic.in>, www.icar.org.in), Power tiller operated rotary tiller (www.indiamart.com, www.indianindustry.com, www.sasmotors.net, www.kubota.com, www.vstillers.com, text books on etc), Mini power tiller for weeding (www.indiaagronet.com), Garden Tillers & Soil Cultivators (<http://www.hoffcocomet.com>) etc. The tractor operated implements which are being employed for stubble shaving are rotary slasher/mower (www.jaikisan.org, www.shanasheel.com), shrub-master (<http://agricoop.nic.in>), stubble shaver (<http://agricoop.nic.in>), etc. The shrub master, rotary mower and the stubble shavers has the swinging blades for cutting





stubble/shrubs/grass. Weeding can also be practiced using these implements.

² Sugar cane stubble shaving (causes better ratooning) is well known practice. The implements/machines which are being employed for this job are rotary slasher/mower (www.jaikisan.org, www.shanasheel.com), shrub-master (<http://agricoop.nic.in>), stubble shaver (<http://agricoop.nic.in>), etc. The shrub master, rotary mower and the stubble shavers has the swinging blades for cutting stubble/shrubs/grass.

³ The chaff cutters, forage chopper and grinders have been available for many years (text books, www.indianindustry.com/agriculturalmachinery, www.indiamart.com/damil-engg, www.kisancom.com, www.icar.org.in, www.agricoop.nic.in, www.indiamart.com/bansalironfoundary, www.aureka.com). US patent No. 5,199,653 (Nov. 1991) described a shredder/chipper discharge assembly for varying size of the shredded materials. US patent No. 5,605,291 (April 1994) described a disc type chipper/mulcher having multi-blade flails; a screen for governing the size of the processed materials. Some of these are motorized and the others are manually operated. They are used for chopping green grass, forage or plant leaves and the shredded particle sizes in the range of 5-20 mm.

