TRACTOR OPERATED BANANA STEM SHREDDER

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Introduction

Banana is a major cash crop of the country, cultivated on 4.4 lakh hectares. Out of the total of about 10.4 million tonnes produces, the state of Maharashtra alone accounts for 63000 ha under this crop.

In India about 20 cultivars viz., Dwarf Carvendish, Rabusta, Monthan, Proven, Nandran, Red banana, Nyali, Safed Vekhi, Basarao. Ardhapuri etc., are cultivated.

Method of Plantation

Banana is mostly check row planted with the spacing varying from 1250x1250 to 1500x1500 mm, depending upon the variety. Plant population is about 4500 per ha.

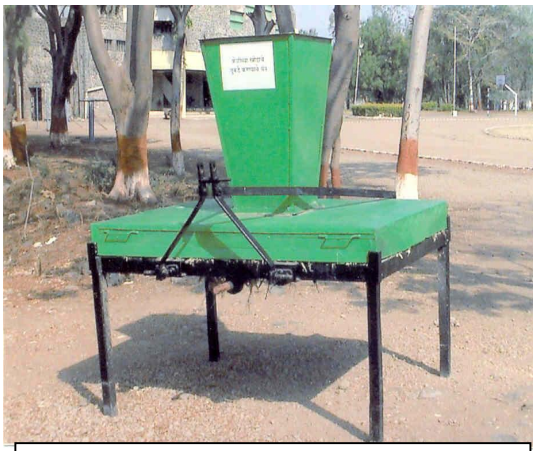

Fig.1: Banana Stem Shredder

Traditional practices and necessity of development of machine

After the harvest of the banana bunch, the psendo stem is manually cut and left in the rows. After the harvest of the whole field, these are collected and left near the boundary for drying and subsequent burning. This process is tedious and time consuming.

The banana stem shredder helps in disposing of the stem immediately after harvest. Shredded material is suitable for mulching in the banana garden and also for vermin compost. The average diameter of banana stem is 225 mm at the bottom and 100 mm at the top with the average height of 2400 mm.

Salient features of machine

The banana stem consists of 95% of water and only 5% of fiber. The force required to cut the stem was calculated and accordingly the speed of the shredding drum (1060 rpm) were fixed. The shredding unit (Fig.) consisted of 4 blades placed perpendicular to each other at 2250 mm distance. Additionally, 12 nos. of spikes with

flat cutting edge are fitted with a gap of 120 mm between the rows. The whole device is mounted on a frame made of MS angle.

The blades are driven by the pto of the tractor with a bevel gear box and the hopper is trapezoidal in shape with a height of 800 mm.

Performance of machine

During field trials it took 1.2 minutes to shred the stem having average height of 2400 mm. The stem was cut into small pieces and the water and fibre were separated.

Present status of technology

Working of the prototype was satisfactory.

Specifications

Length x width x height, mm	1530 x 1220 x 1550
Shredding unit:	
(i) Number of cutting blades	4
(ii)Shredding unit	12 spikes in two rows
Power transmission unit	Bevel gear box
Hitching	Three point linkage
Speed of the shredding unit, rpm	1060
Number of labours required	Skilled : 1 Unskilled : 4
Cost of shredding per stem, Rs.	5.61
Cost of operation per hour, Rs.	291.90

Available from

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