

PERFORMANCE STUDIES ON POWER OPERATED CHAFF CUTTER WITH PARAGRASS (*BRACHIARIAMUTICA*)

M. KARUNYA¹, E. GOWTHAMI², K.V.S.RAMI REDDY³ & I. S. PAVANI⁴

^{1,2}Teaching Associate, College of Agricultural Engineering, Sangareddy, Medak, Telangana, India

³Assistant Professor, College of Agricultural Engineering, Bapatla, Guntur, Andhra Pradesh, India

⁴Engineer, Micro Irrigation Project, Andhra Pradesh, India

ABSTRACT

India ranks first in the livestock population of 485 million as per livestock census (2008). Occasionally farmers chop the fodder into smaller sizes, using sickles or sharp knives for feeding the animals which may increase the utilization and digestion ratio. To meet the growing livestock farms demand, use of high efficiency, safe forage chaff cutters are the need of the hour. Traditional fodder chaff cutters are not suitable for fast and large scale chopping. The power chaff cutters alone could serve as alternative under present labour crisis particularly in India. Optimization of working parameters is highly essential in improving the efficiency of chaff cutters. Hence, a study was taken up to evaluate 'SwarajToka' make power operated chaff cutter under three speeds (0.1, 0.12 and 0.14 m/s) with two different blades (Straight edge and Serrated edge) for para grass at different levels of moisture content (63.13%, 56.25 % and 51.3%) at College of Agricultural Engineering, Bapatla. It was found that the efficiency increased with the increase in cutting speed and moisture content. The maximum efficiency of 85.1 % was obtained at the maximum speed of 0.14 m/s at maximum moisture content of 63.13% whereas the minimum efficiency of 48.5% was obtained at the speed of 0.1m/s at a moisture content level of 51.3%. The efficiency was more in serrated edge of 85.1% than in straight edge of 66.4%. The maximum and the minimum capacity of chaff cutter obtained were 0.471 Mg h⁻¹ and 0.309 Mg h⁻¹ respectively. A maximum length of cut was observed to 2.24 cm at a moisture content of 51.36% and a minimum length of cut was observed to be 1.84 cm at 63.13% moisture content in case of serrated edge blade while a maximum length of cut was observed to be 2.52 cm and 2.24 cm at 51.36% and 63.13% moisture content of chaff for straight edge blade. Finally, it was concluded that the maximum efficiency of chaff cutter can be obtained at highest moisture content of Para grass, highest speed of chaff cutter with serrated edge blade and with an inverse relationship between chop length and moisture content.

KEYWORDS: Chaff Cutter, Fodder, Length of Chaff, SwarajToka and Efficiency

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