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Performance evaluation of cutting unit of tractor operated Sorghum harvester

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The cutting mechanism of tractor operated sorghum harvester was developed with the objectives to evaluate the performance of cutting unit regarding cutting and windrowing the stalks of sorghum crops and modifications during trials. A tractor operated sorghum harvester was developed in Department of Farm Power and Machinery, Dr. PDKV, Akola and the performance evaluation was carried in three different locations i.e., Dry Land Agriculture, Integrated Farming System Research (IFSR) and Sorghum Research Unit, Dr. PDKV, Akola. The mechanical harvester performs both the operations at onetime i.e. cutting and windrowing of sorghum stalks with cutting unit. Hydraulic drive system was the major power transmission system to operate the hydraulic cylinder to adjust the height of cut and ease in transportation also the cutter bar, lug belt, windrower unit. The performance of tractor operated sorghum harvester was evaluated with operating speed of 2.67 km/h. The power required for cutting sorghum stalks of 15 mm diameter were 0.32 hp. The cutting efficiency and field efficiency was found 93.16 per cent and 73.65 per cent respectively. The plant damage was found as 8.07 per cent in mechanical harvesting and fuel consumption for harvesting sorghum crop was found to be 8.50 lit/ha. The total saving on labour and cost requirement in mechanical harvesting over traditional was 80 per cent and 82.66 per cent respectively.

Keywords: Hydraulic drive system, cutter bar, lug belt, windrower unit.

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