

Performance evaluation of high capacity sunflower thresher

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■ **ABSTRACT** : Sunflower is one of the main oilseed crop in Northern Karnataka. Shortage of labour demands suitable machinery in this region during threshing operation. Evaluation trials of high capacity sunflower thresher for sunflower crop were carried out. The studies were also conducted for comparing the cost of operation over conventional multi crop thresher. The average value of output capacity, broken grains per cent of the machine was found to be 14.65 kg/mm, 1.84 per cent, respectively as compared to conventional multi crop thresher. Cleaning efficiency and threshing efficiency was more 85 and 98.50 per cent as compared to conventional multi-crop thresher. The performance evaluation trials indicated the suitability of machine for threshing operation in sunflower crop.

■ **KEY WORDS** : Multi-crop thresher, Cleaning efficiency, Threshing efficiency

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Oilseed crops occupying an important position in the agricultural economy of any country. In India sunflower is one of the main oilseed crop. Threshing is one of the most crop processing operation to separate the grains from the earheads and prepare the grains for selling. Various types of threshers are available in the market like spike tooth, chaff cutter type, rasp bar type, cylindrical drum with screen type etc. meant for threshing of by hand scraping or beating with sticks and also rubbing two flower heads. Though these methods are safer for seeds development point of view, but they are time consuming and labour intensive job. Such labour intensive post harvest operations not only reduced the profit but also increase the human drudgery. Keeping these factors in a view, an investigation study was under taken to study the performance of high capacity sunflower thresher.

■ METHODOLOGY

Study was conducted at Department of Farm Machinery and Equipment at College of Agricultural Engineering, Raichur. This place is situated in the North-eastern dry zone (Zone-2, Region-1) of Karnataka state at 16° 15' N latitude and 77° 20' E longitude at an elevation of 389 m above the mean sea level. The thresher has an axial flow threshing system. In which the material flows parallel to the axis of threshing cylinder. It consisted of a threshing cylinder, concave casing, blower unit and separation unit with thrusters of sieves, outlet for grains, feeding hopper, and transport wheels. The constructional

specifications are given in the Table A.

Threshing cylinder:

It was made up of I.S steel of size 2.75x10x6 mm. The cylinder length was 1520 mm which has been divided into portions namely threshing and straw throwing. The threshing portion was one of 1320 mm and the end portion has a length 200 mm of the cylinder. It consisted of spikes

Concave:

It was made up of mild steel sheet molded into U-shape. It has the dimensions as 940-mm width 1320 mm length. The concave has two portions the first portion was of 1120 mm and the end portion of length 200mm the cylinder concave clearance was 40mm and was uniform throughout its length.

Blower unit:

The blower unit was made up of mild steel sheet 10mm thick. The blower unit was of backward curved centrifugal narrow type. It has the dimensions as 1320x940 mm. The blower unit consisted of blower drum and fan blades. There are four blades.

Separation unit:

The separation unit consisted of three sieves, the sieves were made up of perforated mild steel sheet of 10 mm 5 mm and 2 mm sizes for effective cleaning. The threshed seeds