



CONSOLATION

Tractor Mounted Combine Harvester with Straw Collector

Sunil Kumar
Ara, Bihar

Facing acute shortage of workers, Sunil Kumar (40), an agriculturist hailing from a small village in Ara district, has come up with a tractor mounted combine harvester, which can collect straw as well.

Like his father, most people in Sunil's village undertake farming as a profession. Choosing agriculture as a profession came naturally to him and he joined his father after completing his higher secondary. He lives with his mother, wife and three young daughters. His spouse is a housewife and helps him in his work

occasionally. During summers, in addition to farming, he makes ice candies and sells them in his village and nearby areas. Since childhood, he had been interested in machinery and wanted to study further but family circumstances forced him to start helping his father in their farm.

Genesis

About six-seven years ago, farmers of his village had to face a lot of problems due to non-availability of workers for harvesting standing crops. He started thinking about the possible solutions and taking about a year



or so conceptualizing the design, he started working on the prototype in early 2012. His first prototype was short of his own expectations but he analysed the problems and learning from his mistakes, developed an improved prototype in 2013. His first trial on paddy crop was successful however, there were still certain areas, which needed improvement. Hence, in an attempt to make the machine more efficient, he kept on redesigning and rebuilding, developing about 4-5 prototypes in the process. He also filed a patent for the same. Being a determined and self motivated man, he could take all the problems in their stride. However, recalls the support of his three close friends, who not only supported him emotionally but also helped with some finances whenever required. He also acknowledges the support of spare part sellers from Haryana and Punjab, who helped him. He was ably supported by his wife and other family members as well in his attempt to make a good machine.

Tractor Mounted Combine Harvester with Straw Collector

It is a tractor mounted combine harvester with the provision of collecting chaff. The machine is combination of vertical conveyer reaper, crop conveying mechanism, thresher and sheet metal tank/bin for chaff and straw collection.

It can be operated using tractor of 45 hp and above. Front mounting on tractor and collection of straw with less height of left over

straw after harvesting are unique features of this combine harvester. A vertical conveyer reaper is mounted in front of the tractor which can be lifted up to 9 inch from the ground. A commercially available thresher is attached in between the reaper and the tractor front. Both harvesting and threshing unit are connected through two self-made conveyer units. Cereal crops are gathered in by the header in the front, the cutter bar runs the entire length of the header to cut off the crops at their base and convey vertically to one end and windrow the crops on one conveyer. The cut crop travels up through conveyer to the processing mechanism inside the threshing unit. A threshing drum beats the cut crop and separates the grains from their stalks, which are separately collected. The straw chaff, after being cut into small pieces, gets collected in a separate tank.

It can cut and process 12 quintals of grains straw in one hour. It has been successfully used for harvesting wheat and paddy and may also be suitable for soyabean, mustard and all other crops for which the traditional harvesters are suitable. The speed of operation was found to be 4 km per hour with fuel consumption of 12 litres per acre. This harvester eliminates the dependence on labor while increasing the productivity. Since straw is cut close to the ground, there is no requirement for burning it hence it helps in retaining soil micro flora and prevents pollution too.