

IMPROVED DESIGN OF SMALL ENGINE-OPERATED
RICE THRESHER

by 1264

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INTRODUCTION

Grain at harvest time has a maximum potential of quality and quantity. Its handling and treatment during and after harvest should preserve that maximum potential. The present practices of threshing and separating, adopted in India, cause losses of grain higher than 25 per cent (11). Besides, men and animals used in producing a crop consume it as a fuel leaving nothing to exchange with the non-food producers (17). The wages of one man-day being 3 to 10 kgs of paddy is equal to the production of an agricultural laborer per day. Forty-three per cent of the food produced in India is rice (3.10 crore tons of rice out of 7.23 crore tons of total food grains) (15). Saving of the losses during the harvest and post-harvest operations of paddy alone may completely dispense with the import problem of food in the country.

Farmers in Andhra Pradesh State, India, grow two to three crops of paddy in a year (29) and have hardly three to four weeks time in between to attend to the crop operations as well as land preparations. Bullock power cost, Re. 0.865 per H.P. Hr. is high as compared to Re. 0.20 per H.P. Hr. (electrical) and Re. 0.50 per H.P. Hr. (tractor) (5). Labor wages are increasing by 6 to 7 per cent every year (29). Employment in factories and industries is also increasing by 4 per cent a year in Andhra Pradesh State (15). Besides, greater returns are received from the high yielding varieties and multiple cropping program recently introduced by the Government.

Compared to local varieties, two to three times greater force is required to separate the grain from high yielding varieties of paddy. These factors are inducing the farmers to grow more and more eager to take to mechanical appliances on the farm. Quick operations of threshing by mechanical means help to save grain losses, alleviate the problem of timely operations, and also make full use of the small amount of power, such as oil engines, gas engines, etc., already available with the farmers (15).

Though some successful work has been done in developing a thresher for wheat and small grains in India, no significant work has been done to develop a paddy thresher. Experience has also indicated that the conventional threshers are large and precision built requiring accurate adjustments. Besides being bulky and expensive they need special skills and experience for operation and maintenance, which is lacking today. Small pedal-operated threshers did not compare favorably with hand threshing (24,26). Improved designs of the existing animal operated olphad thresher for wheat proved to require more draft on animals besides being uneconomical (27). A medium-sized thresher operated by a 5 hp engine may, therefore, be of considerable use to the farmer.

OBJECTIVE

The object of this report is to prepare plans for an improved design of a rice thresher over the double-drum thresher already developed (2) at the Agricultural Research Institute,