

A review on harvesting and threshing methods for paddy crop - I

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ABSTRACT

Harvesting methods adopted for paddy crop are largely dependent on the land size of the farmers. Mechanized methods are completely implemented by the farmers of medium and large category. On the other hand, the marginal and small farmers are struggling between manual and mechanized methods because of unavailability of implements that can suits to their land size an economic level. Cutting and threshing operations are performed separately which are responsible for more input cost and grain loss. Various methods of harvesting were studied and the loss of grain associated with the methods is emphasized. In manual method, before threshing, the cutting, collecting, bundling and transportation operation requires which consumes time, energy and cost, and increase the grain loss significantly. In mechanized methods, these factors can be minimized. The manual crop cutting requires about 8 to 12 and 25 to 45 times, respectively more man-hour per hectare compared to rotary blade cutter and vertical conveyor reaper. The field capacity of manual harvesting methods is 4 to 10 times less than the mechanized methods.

KEYWORDS: Conventional header, Harvesting, Header loss, Reel index, Stripping.

INTRODUCTION

Rice, (*Oryza sativa*) is a staple cereal food consumed by a large population in India. In the past several years, Indian farmers have been facing a challenge of producing enough food for a very large and rapidly growing population while the labour engagement in the farm has been declining. In the year 2004-05, the agricultural workforce was 258.93 million which decreased to 228.36 million in the year 2011-12 (Singh and Kapoor, 2015). To increase production with a decrease in the agricultural workforce, it has become essential to mechanize the farm operations to save time and reduce dependency on human labour. This will also help in maintaining the timeliness of agricultural operations. As per the statistics of Food and Agriculture Organization (FAO) of the United Nations, the production and productivity of rice in India were 169 million tons and 3.87 ton/ha, respectively in the year 2017 (Anon, 2020a). This puts India to a second position in the world in the production of rice after China. As per the land use statistics of 2016-17, the total geographical area of India was 328.7 million hectares and the net sown area was 156.4 million hectares. Out of this, 43.79 million hectare land, that is, approximately 28% of the total sown area was under cultivation of rice. It contributes significantly to the economy of India. According to the FAO report, rice was grown globally over an area of 167.13 million hectare land in the year 2018 from which the production was 782 million ton (Anon., 2020b). Asia had the largest share of 90.7% in production. On the other hand, the share of America, Africa, Europe and Oceania was 5.2, 3.4, 0.6 and 0.1%, respectively. Average production of top ten rice producing countries of the world in the 25 years from 1994 to 2018 is shown in Figure 1.