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Selective mechanization for enhancing productivity of rice cultivation

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ABSTRACT : An OFT was done in the *Kharif* of 2009 and *Rabi* of 2010. For this a 500m^2 plot in a preselected village in Garhwa district of Jharkhand using mechanical transplanter. In *Kharif* 2009, significant grain yield (3.14t/ha) was obtained when transplanting was done with mechanical transplanter. All the yield parameters such as panicle number, panicle weight were highly significant in the treatment number 1. Similarly in *Rabi,* 2010, significant grain yield (3.26t/ha) was obtained when transplanting was done with mechanical transplanter. All the yield parameters such as panicle number, panicle weight were highly significant in the treatment number 1.The results indicated that mechanical transplanting reduced the human drudgery and labour inputs during both the seasons. Rice yields were enhanced by 4 .6 per cent during *Kharif* when compared with manual transplanting and 9.7 per cent higher yields in *Rabi* season.

KEY WORDS : Mechanization, Productivity, Mechanical transplanter

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Transplanting, weeding and harvesting operations consume most of the labour requirement in rice cultivation (Amiri *et al.*, 2012). The traditional method of rice transplanting is labour intensive, hazardous with low per acre plantation and time and cost consuming (Avasthe *et al.*, 2012). Labour scarcity and its costs are impeding rice cultivation profitably; hence, thrust is always given for mechanizing these farm operations and is being increasingly advocated (Baskar *et al.,* 2012). Farm mechanization in rice aims at not only at reducing labour inputs, human drudgery but also at improving farm productivity. These obstacles can be overcome by mechanical transplanting technique. Rice transplanter is a specialized transplanter fitted to transplant rice seedlings in paddy fields. One transplanter (6-row at a time) can transplant about 4-5 acres in a day (highly efficient as compared to traditional method). The recommended per acre plant population is 80000 plants and with the help of transplanter farmer can transplant 80000 to 120000 plants per acre (Basu and Cees, 2012). The government is promoting farm mechanization on a large scale through subsidies for purchase of machinery and developing custom hire services to farmers in case of high cost machines like transplanters. With this background, an OFT was done in the *Kharif* of 2009 and *Rabi* of 2010 with the aim of reducing human drudgery involved in manual transplanting and to enhance production and profitability of rice planted at optimum geometry through machines. This study continued during *Kharif* 2010 farmer's fields in Garhwa district of Jharkhand .

The OFT was planned in the *Kharif* of 2009 and *Rabi* of 2010. For this a 500m^2 plot in a preselected village in Garhwa district of Jharkhand was screened out after carrying out Rapid roving survey of the area. Source of technology selected was mechanical transplanter developed by BAU, Ranchi. Test crop was rice variety Naveen and there were two treatments as per the technologies selected which is given below:

Details of technology selected :

Treatments :

T_1 -Mechanical transplanter

T_2 -Manual transplanting

The experiments were replicated ten times in different farmers fields of the same village keeping the plot sixe and sample size and the technologies selected same.

In *Kharif* 2009, significant grain yield (3.14t/ha) was obtained when transplanting was done with mechanical transplanter (Table 1). All the yield parameters such as panicle number, panicle weight were highly significant in the treatment number 1 . Similarly in *Rabi,* 2010, significant grain yield (3.26t/ha) was obtained when transplanting was done with mechanical transplanter . All the yield parameters such as panicle number, panicle weight were highly significant in the treatment number 1.The results indicated that mechanical transplanting reduced the human drudgery and labour inputs during both the seasons. Rice yields were enhanced by 4 .6