



Assessment of eight row paddy drum seeder for sowing of sprouted/ pregerminated paddy seeds

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ABSTRACT

Rice (*Oryza Sativa*) is major crop in the Dhamtari district of C.G. and the about 80 to 90 % of rice cultivation area the farmers doing traditional methods for sowing of paddy i.e. broadcasting, broadcasting of sprouted seed and manual transplanting. These methods have some problem i.e. poor yield, improper plant population etc. to overcome these types of problems and to make awareness of agricultural machineries the present investigation "Assessment of eight row paddy drum seeder for sowing of sprouted/ pregerminated paddy seed" was carried out at three different villages of Distt. Dhamtari C.G. during year kharif 2016-17. In the investigation, we used two different methods of paddy sowing i.e. T₁- traditional method- broadcasting (lehi method) & T₂- sowing of pre-germinated seed by eight row paddy drum seeder. The observations were recorded during experiment i.e. No. of tiller per m², yield q/ha, net income Rs/ha and B:C ratio. The results shown that the treatment T₁ and T₂ gave the average net income 22205 Rs./ha, 30620 Rs./ha respectively. In traditional method gave yield (q/ha.), no. of tillers per m² and B:C ratio were recorded 38.9 q/ha, 258 and 1.64 respectively. Sowing of paddy by paddy drum seeder gave yield (q/ha.), no. of tillers per m² and B:C ratio were recorded 43.6 q/ha, 279 and 1.93 respectively. These results revealed that the sowing of paddy by drum seeder is a best suited technology for the farmers as compare to broadcasting (lehi method) of sprouted seed, it gives 12.08 % increases in yield and help to make easy the weeding operations also.

Keywords- Paddy drum seeder, Paddy, Sprouted seed

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INTRODUCTION

Paddy is one of the important crops of the world. Paddy as a major staple food is vital for the nutrition of much of the population in Asia, as well as in Latin America and the Caribbean. Developing countries account for 95 percent of the total production, with China and India alone responsible for nearly half of the world output (Crawford et al., 1998; FAO, 2001).

Rice (*Oryza Sativa*) is the major crop of Chhattisgarh, in district Dhamtari the total rice cultivation area under kharif season is about 134000 ha and about 80-90% of the farmers belonging to these areas following traditional method i.e. broadcasting (direct seeding) and manual transplanting, these methods have some disadvantages i.e. poor yield, improper plant population etc. The direct seeding is further of two types viz., broadcasting and row seeding by using drum seeder. The direct seeding is grouped in to first, dry seeding i.e. dry seeds are directly seeded on the dry soil and second wet seeding i.e. sprouted seeds are sown in the puddle field. The wet seeding of rice is generally followed in irrigated areas. For wet drum seeding sprouted seeds, soaked for 24 hours and incubated for 24-48 hours are sown in the puddled soils 1-2 days after paddling using perforated drum seeder. Eight row paddy seeder is manually operated low cost equipment and it is simple in construction. (R.P. Murumkar et al. 2014)

Eight row paddy is manually operated low cost equipment and it is simple in construction. The advantage of drum seeder is that row to row spacing can be easily maintained and dropping of seeds in hills is possible. Drum seeder is an effective mean for timely sowing of rice. (Subbaiah et al. 2002). Therefore the study was undertaken to evaluate the performance of paddy drum seeder in puddle rice fields.

MATERIALS AND METHODS

The present study was carried out at three different villages of district Dhamtari, C. G. In order to assessment of eight row paddy drum seeder.

Table 1: Following basic information were considered to execute the experiment:-

Paddy variety	MTU 1010
Soil type	Inceptisol
Treatments	T1 : Traditional farmers Practice (Broadcasting) T2 : Sowing of paddy by drum seeder
Irrigation Source	Borewell
No. of farmers	5

T1, Traditional method: broadcasting of germinated seeds after the field preparation, these methods have some problem i.e. poor yield, improper plant population etc.

T2, Direct sowing with drum seeder, the paddy seeds were soaked in water for 24 hours followed by incubation in gunny bags for 24-48 hours. The field was well puddled and leveled after draining the standing water before sowing to avoid damage of sprouted seed and to enable water to spread uniformly over the field. After puddling, the field was left for 1-2 days for settling of the puddle soil. Care was taken to maintain thin film of water in the field at the time of sowing. Seed rate required for direct sowing of sprouted seed in puddled fields was quantified and pre germinated seeds were filled in all drums upto 2/3rd of its capacity at a time. The ground wheels make the impression to serve as a marker for next row and helps for good movement of drum seeder due to lugs provided on the periphery of the wheels. After turning the drum seeder for second row, care should be taken that the first wheel should go through the same line of previous row in order to maintain the inter row distance of 20 cm, care should be taken to watch for any blocks of the drum. Refill the drums with seed when it reaches to the 1/4th of its capacity and continue the operation. Minimum two labour were required for completing the sowing operation i.e. one labour is for pulling the seeder and the other is for checking the drop of seeds from holes and filling the pre-germinated seeds in the drum. The field was kept moist without standing water in the field upto 20 days after sowing. (C. Radha Kumari et.al. 2015)

A low cost and manually operated KSNM Direct Paddy Seeder was developed and certified by Tamilnadu Agriculture University, Coimbatore, India. Drum seeder consists of four seed drums made of mild steel mounted over a shaft, ground wheels, floats and handle. Baffles are provided inside the drum between seed holes resulting in uniformity of seed rate throughout the operation. These baffles also ensure hill dropping of seeds. Each seed drum has two rows of planting. Wheels are provided at both ends made up of plastic material to provide floating characteristics. The wheel diameter is 2 feet. The specification of paddy drum seeder is shown in table 2.

Table 2. Specifications Eight row Paddy drum seeder.

S.No.	Particular	Specification
1.	Power Source	Hand operated
2.	Row to row spacing	200 mm
3.	Shape of the seed drum	Hyperboloid
4.	Number of rows	8 rows
5.	Diameter of the drum	200 mm
6.	Diameter of the seed metering hole	9 mm
7.	Number of seed metering hole	9 Nos.
8.	Weight of the unit	10 Kg.
9.	Diameter of the ground wheel	600 mm
10.	Operating speed	1-1.5 Km/h
11.	Weight of seed drum	600 grams
12.	Seed requirements	12 - 15 kg per acre.
13.	Type of ground wheel	Lugged ground wheel
14.	Shape of hole	Circular

The observations were recorded the average value of experiment done in five different farmers field and the different parameters taken i.e. yield q/ha, seed rate kg/ha, no. of tillers/ m² and no. No. of panicles/m² and in term of economic performance cost of cultivation Rs./ha, gross income Rs/ha, net income Rs/ha & B:C ratio were calculated.



Plate 1: Pregerminated Seed



Plate 2 : Feeding Seeds in to the drum



Plate 3: Sowing of pre-germinated paddy seeds by paddy drum seeder



Plate 4 : Paddy crop after 15-20 days of sowing



Plate 5 : Standing crop

RESULT AND DISCUSSION

The pre-germinated seeds were filled in the drums and the seeder was operated in the puddle field condition. The combination of 75% drum fill and 1.5 km/h travel speed was used field test of the eight row paddy drum seeder. The result shown in table 3 the comparison in various parameters for broadcasting and direct sowing by paddy drum seeder i.e. No. of tiller per m², seed rate kg/ha, yield q/ha and no. of panicles/ m². And table 4 shown the comparison in various economic parameter in both treatments i.e. cost of cultivation Rs/ha, gross return Rs/ha, net income Rs/ha & B:C ratio. The results shown that the treatment T₁ and T₂ gave the average net income 22205 Rs./ha, 30620 Rs./ha respectively. In traditional method gave yield (q/ha.), no. of tillers per m² and B:C ratio were recorded 38.9 q/ha, 258 and 1.64 respectively. Sowing of pre-germinated paddy seeds by paddy drum seeder gave yield (q/ha.), no. of tillers per m² and B:C ratio were recorded 43.6 q/ha, 279 and 1.93 respectively. Sowing of paddy by paddy drum seeder T₂, has recorded higher grain yield (43.6 q/ha) which was 12.08 per cent higher over broadcasting method T₁ (38.9 q/ha). Higher number of tillers /m² might be the reason behind the yield increase in direct sowing method. Shekhar and Singh (1991) stated that direct sowing of sprouted seeds under puddled condition results in significant improvement in yield attributes like number of effective tillers and grain yield.

The net income was obtained 37.89 % higher in sowing of paddy by paddy drum seeder as compare to the broadcasting method, this might be due to the lesser cost of cultivation & higher yield as compare to broadcasting method. Sowing of paddy by paddy drum seeder T₂, has calculated cost of cultivation (32600 Rs/ha) and in broadcasting method T₁ (34200 Rs/ha). It was clearly showed that the sowing of paddy by paddy drum seeder reduces cost of cultivation. Higher net returns and B:C ratio were recorded with drum seeder method due to less seed purchasing cost, reduced labour for weeding denoting lower cost of cultivation in drum seeder method resulted in increased profitability compared to traditional practice (broadcasting).

Table 3: comparison in various parameters in traditional method and direct sowing by paddy drum seeder

S.No.	Parameters	T1 Broadcasting (<i>lehi</i> method)	T2 Sowing of pre-germinated seeds by eight row paddy drum seeder
1.	Yield q/ha	38.9	43.6
2.	Seed rate kg/ha	37	65
3.	No.of tillers/m ²	258	279
4.	Speed of operator with drum seeder, km/hr	-	1.5
5.	No. of penicles/m ²	223	245

Table 4: Comparison in various economic parameters in traditional method and direct sowing by paddy drum seeder

S.No.	Particulars	T1 Broadcasting	T2
1.	Cost of Cultivation	34200	32600
2.	Gross Return	56405	63220
3.	Net Income	22205	30620
4.	B: C Ratio	1.64	1.93

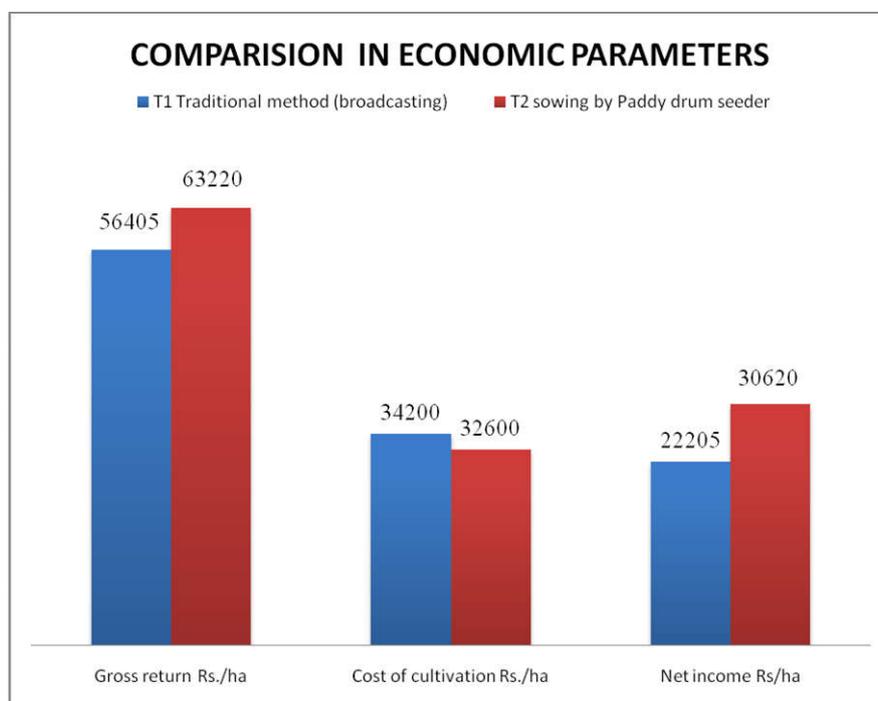


Plate 6: Comparison in economic parameters between Traditional method and Sowing of paddy by eight row paddy drum seeder

CONCLUSION

It is a best suited technology for the farmers as compare to broadcasting (*lehi* method) of sprouted seed , it gives 12.08 % increases in yield and help to make easy the weeding operations also.

It reduces the seed rate kg/ha against the traditional method. Direct sowing of pre-germinated paddy seeds by eight row paddy drum seeder help to reducing the cost of cultivation and increasing the net income.

REFERENCES

1. Kumari, C. Radha and Sudheer, M. John (2015) On-farm evaluation of paddy drum seeder (8row) in farmers fields. *Advance research journal of crop improvement* vol.6, Issue 2: 139-143
2. Murumkar, R.P., Dongarwar, Usha R., Pisalkar, P.S. and Phad, D.S. (2014) Evaluation of Field Performance of Eight Row Paddy Drum Seeder. *International Journal of Innovative Science, Engineering & Technology*, Vol. 1 Issue 9.
3. Shekhar, J. and Singh, C. M.(1991). Influence of methods and dates of stand establishment on growth and yield of rice. *Oryza*, 28 : 45-48.

4. Subbaiah, S.V., Balasubramanian, V. and Krishaiah, K. (2002). Evaluation of drum seeder in puddled field conditions. *Agricultural Mechanization in Asia, Africa and Latin America*. 33(4): 23-41.

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