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Participatory Approach for Conducting Front Line Demonstration on Rain-Fed Upland Direct Seeded Rice Technologies

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ABSTRACT
Front line demonstrations on rain-fed direct seeded upland rice were carried out by Krishi Vigyan Kendra, Simdega, Jharkhand. To demonstrate the improved technologies, frontline demonstrations were conducted in farmers fields. The objective was to show the potentiality of technologies along with package of practices analyse the constraints to provide feedback to the research system. The demonstration were conducted by selecting technologies on the basis of agro-ecosystem analysis through using PRA tools.. Intervention points were identified by consultation with farmers from problem- cause diagram. The deciding factors for selecting technologies under demonstrations were yield gap and percentage of farmers not following the recommended improved practices. Based on the finding it may be concluded that the top-down approach should be avoided and scientist- farmer interaction should be operationalised for programme formulation, implantation and assessment. This approach led to selection of right interventions for convincing the farmers in a better way about the production potentials of selected technologies. Due to selection of better technologies yield advantage was received to an extent of 58.9 %.

Introduction

Rice used to be dry sown in a mixture of other crops under the shifting cultivation system (Grigg 1974). The conventional modern system of transplanted rice cultivation oriented over water, labour, energy intensive and direct seeded rice cultivation. This is acclaimed as modern state of art technology that can assure as a viable alternative method (Kumar and Ladha 2011). An experiment on direct seeded rice was conducted to assess performance of two rice genotypes under different methods of sowing.

Materials and Methods

The field experiment was conducted during 2012-13 and 2013-14 in farmer's fields of Lumbai village of Lumbai Panchyat under Geldega block of Simdega district where. The soils of the village were sandy loam to sandy clay loam, analyzing low in available N, low to medium in available P (8-9 kg/ha) and medium to high in available K (175-182 kg/ha) with pH ranging from 5.3 to 6.4 The on farm trial was designed with three treatments TO_1 : Farmers practice Direct seeding with local variety (Gora), TO_2 : Direct Seeding (Vandana) with $N_{40}P_{20}K_{20,}$ TO_3 : Direct Seeding (Vandana) with $N_{40}P_{20}K_{20}$ and prepare 6 to 7 meter plot size with ½ fit height.

The trial was conducted in 20 replications/ locations in randomized block design with 1000m^2 plot size i.e. each treatment covering 2000m^2 area. Data were collected through observation and using PRA tools. The intervened technologies were assessed on the basis of yield attributing characters income and farmers preferences. The farmers reaction towards the intervened technologies were measured with the help of scoring system developed on a 5 point rating scale for eight selected attributes of technology i.e. for home consumption, for higher income, for religious purpose, for social purpose, for making beer, format making, for fuel purpose, for compost making with their scores given in parentheses as most suitable, (5) suitable, (4) moderately suitable, (3) least suitable (2) and unsuitable (1).The overall choice scores were calculated and subsequently ranking was done.

Results and Discussion

Yield attributing characters

The yield attributing characters pertaining to selected varieties are given in table-1.

Table -1 shows that plant height was highest in technology option TO_3, (1.16m) variety Vandana with $N_{40}P_{20}K_{20,}$ under Direct Seeding (Vandana) with $N_{40}P_{20}K_{20}$ and prepare 6 to 7 meter plot size with ½ fit height followed by TO_2 (1.4m) variety Vandana with $N_{40}P_{20}K_{20}$, technology option, TO_1 (1.12m) Farmers practice Direct seeding with local variety (Gora) lowest height was observed in technology option. Number of tillers was also found highest in technology option-III (Var.- Vandana) i.e. 21 tillers/hill, followed technology option-III (Var.- Vandana) lowest was observed in technology option I i.e. farmers variety 6 tillers/hill.

Effective tillers/hill was also found highest in technology option –III (Var.- Vandana) 10.7 followed by technology option-II (Var.- Vandana) 10. The number of grain/panicle was found highest in technology option-III (76) in variety Vandana followed by technology option-II (75) variety Vandana. The test weight was found highest in technology option-III (25.12) followed by technology option-II (24), technology option-I (19).

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Table 1 . Yield attributing character of selected rice varieties under direct seeded Condition (2012-13 and 2013- 14). (N=20)

Technology	Height of plant (cm)	Number of tillers/plant	Number effective tillers/plant	Number grain/panicle	Test weight
TO_1 : Farmers practice Direct seeding with local variety (Gora)	1.12	7	6	42	19
TO_2 : Direct Seeding (Vandana) with $N_{40}P_{20}K_{20}$	1.14	14	10	75	24
TO_3 : Direct Seeding (Vandana) with $N_{40}P_{20}K_{20}$ and prepare 6 to 7 meter plot size with ½ fit height	1.16	21	10.7	76	25.12

Table 2 .Average yield and economics of rice varieties under direct seeded rice (2012-13 and 2013-14).
(N=20)

Technology option	Grain yield (q/ha)	Straw yield (q/ha)	Gross Income (Rs/ha)	Net Income (Rs/ha)	B:C Ratio
TO_1 : Farmers practice Direct seeding with local variety (Gora)	15.80	34.56	19680	9985	1.92
TO_2 : Direct Seeding (Vandana) with $N_{40}P_{20}K_{20}$	28.00	75.84	38076	24256	2.68
TO_3 : Direct Seeding (Vandana) with $N_{40}P_{20}K_{20}$ and prepare 6 to 7 meter plot size with ½ fit height	30.5	86.93	42239.	28419	2.98

The highest yield was observed in TO_3 : Direct Seeding (Vandana) with $N_{40}P_{20}K_{20}$ and prepare 6 to 7 meter plot size with ½ fit height (30.5q/ha) followed by TO_2 : Direct Seeding (Vandana) with $N_{40}P_{20}K_{20}$ (28.00q/ha), The gross income and net income were also found highest in TO_3, i.e. (42239.5 & 28419) followed by TO_1 (19680 & 9985), B:C ratio was also calculated and found highest in TO_3 (2.98) followed by TO_2 and TO_1 respectively.

Preference Ranking of selected rice varieties

Data of preference ranking for knowing the choice of farmers related to demonstrated technology are given in Fig.-1.

Fig 1. Preference ranking of demonstrated rice varieties

Preference criteria	TO_1 : Farmers practice Direct seeding with local variety (Gora)	TO_2 : Direct Seeding (Vandana) with $N_{40}P_{20}K_{20}$	TO_3 : Direct Seeding (Vandana) with $N_{40}P_{20}K_{20}$ and prepare 6 to 7 meter plot size with ½ fit height
Home consumption	000	0000	00
Higher income	000	0000	00
Religious purpose	0	0	00000
Social purpose	000	0000	000
Making beer	00	00	00000
Mat making	-	00	000
Fuel purpose	0000	0	0
Compost making	0	0000	00000
PREFERENCE	V	III	I

Fig 1 shows that TO_3 i.e. Direct Seeding (Vandana) with $N_{40}P_{20}K_{20}$ and prepare 6 to 7 meter plot size with ½ fit height under direct seeded condition in upland (Tar III) emerged as the first choice of farmers considering all the preference criteria i.e. home consumption, higher income, religious purpose, social purpose, mat making, fuel purpose and compost making. followed by TO_2, & TO_1 respectively.

Conclusion

Technology option **3 (**Direct Seeding (Vandana) with $N_{40}P_{20}K_{20}$ and prepare 6 to 7 meter plot size with ½ fit height**)** was highly accepted by majority of the farmers which has now diffused among rice growers of Chatra district.

References

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