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Performance of Paddy Variety MTU-1081At Mandla District of Madhya Pradesh

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Abstract

Rice variety MTU-1081 was tested at Mandla district (M.P.) to examine the production potentials at farmer's fields.. Twelve farmers were selected on their knowledge basis. 0.4 ha area was allotted for individual farmer's to conduct On Farm Testing's (OFT,s). Out off nine parameters fully gap has been observed in five parameters i.e. using of traditional varieties and degenerated seeds, higher seed rate more than ten times, without treatment of seed, no plant protection measures and no use of bio fertilizer (Blue green algae) . Whereas partial gap was found in three parameters i.e. Nursery raising, Manures , Fertilizers , Transplanting method & spacing. Only no gap was observed in land preparation. Yield performance of the data revealed that yield of all demonstrated plots of paddy MTU 1081 was higher in all the years,. The recommended package of practices as compare to farmer's practices. Under demonstration plot, the performance of paddy yield was found to be higher than farmer's practices during three consecutive years of testing i.e.2013, 2014 and 2015. The yield of paddy under testing was recorded, 52.38, 51.83 and 52.68 q/ha respectively. The yield enhancement due to technological intervention was 37.36%, 34.62% and 32.75% higher over farmers practice (FP) in all the respective years. The cumulative effect of the technological intervention over three years revealed that on an average yield of 52.30 q/ha was recorded which was 34.91% higher over FP. The yield attributing character of the variety i.e. number of tillers per plant was observed higher (27 /plant) over farmers practice (13 tillers /plant) mean of three years. Economics of the data clearly indicate that the net return from the recommended practice was substantially higher than FP. The average net return from recommended practices was observed i.e. Rs.65598/ha in comparison to FP i.e. Rs.36419/ha. On an average Rs.29179/ha in additional income was attributed to the technological intervention in demonstrations under SRI method The average B:C ratio 3.31 was found under OFT's trials whereas 2.49 in farmers practice.

Key words : Paddy, Variety, Yield.

Introduction

Rice (*Oryza sativa* L.*)* is the world's single most important food crop and staple food than half of the World's population. More than 90% World's rice is grown and consumed in Asia. The total area under rice in India is 143.39 million hectare with production of 104.32 million tones and productivity of 2404 kg/ ha. In Madhya Pradesh, rice is cultivated an area of 2260 thousand hectares with the production of 8098 Mt. The average productivity of rice is 3583 kg/ ha. It is not enough due to use of traditional varieties, improper method of transplanting, erratic and uneven distribution of rainfall and degenerated seed. Cultivation of high-yielding varieties of rice is grown in different ways out of them transplanting method showed a dramatic improvement in rice yield and two fold or more produced yield[5]. Krishi Vigyan Kendras are grass root level organization meant for application of technology through assessment, refinements and dissemination of proven technologies under different micro farming situation in the district[1]. Present investigation were carried out to study the Performance of paddy variety MTU-1081 with System of Rice Intensification (SRI) at farmers field through "on farm Testing"(OFT) . SRI is a rice growing

system that involves principles that is radically different from traditional method of rice growing. It involves single seedling transplantation of young seedlings with care instead of conventional method of transplanting multiple and mature seedlings from the nursery. SRI provides more space to rice plants and does not require continuous flooding of rice fields with less seed rate and chemical inputs.

Materials and Methods

A total number of 36 OFT's of 0.4 ha each with adjacent plot of local practices and variety were done by Krishi Vigyan Kendra, Mandla (Zone-III, Northern hill of Chhattisgarh), consecutively during Kharif season of 2013, 2014 and 2015 at farmers field of three villages viz; Semarkhapa, Bakchheradona, and Mohgaonchak, in an area of 14.4 ha. The farmers were selected through PRA (Participatory Rural Appraisal). The Soil of the demonstrated area was clay loam. The variety MTU 1081 was used to know the performance with SRI system. Space from row x plant was 25x25 cm. In this system less seed, chemical inputs and water is required. Farmer's field visit, group discussion and farmers meeting were conducted in villages. The inputs were procured and provide by KVK, Mandla . The composite nursery was raised in last week of June, 5kg Seed rate / ha was used under demonstrated plots, 10 to 15 days old seedlings were transplanted from Ist week of July to IInd week of July in main field. Weed management (One hand weeding was done after 30-35 Days after transplanting (DAT).Integrated Pest Management (IPM) one spray of Quinalphos 25EC @1.5 lit./ha with 500 lit. of water was used and proper agronomical practices were adopted under demonstrated plots. Under Nutrient Management the uniform dose of fertilizers 100: 60: 40 NPK kg/ ha were applied. All fertilizers were given as basal dose except nitrogenous fertilizer. Half dose of nitrogen was given at the time of transplanting and half dose was in two equal part Ist after 30-35 DAT just after weeding and IInd dose at 50 to55 DAT in all the years. The observations were taken from 10 randomly selected plants in each plot in different aspects. Field days and group meetings were also organized to provide the opportunities for surrounding farmers to witness the benefits of demonstrated technologies. Data were collected by KVK, scientists. The crops were harvested after 110 -115 DAT at maturity stage. The following parameters viz, Technological gap between the potential yield and demonstrated yield, extension gap between demonstrated yield and farmers yield, technological index and seed yield under existing practices were calculated with the help of formulas given[4].

% increase in yield over F.P. = (Demonstration yield – Farmer practice yield/) ×100
Farmer practice yield

Technological gap = Potential yield-Demonstration yield

Extension gap = Demonstration yield- Yield under farmer practice

$$\textbf{Technological index} = \frac{\text{Technology gap}}{\text{Potential yield}} \text{X } 100.$$

Cost benefit (B:C) ratio= Grass return
Grass cost

Table1 Gap analysis between On Farm Testing (OFT's) practices and farmer's practices

S.No.	Technologies	Demonstration Practices	Farmer's practices	Gap
1	Land preparation	Two ploughing	Two ploughing	No gap
2	Variety	MTU 1081	Local seed	Full gap
3	Seed rate (kg/ha)	5kg/ha	50-60 kg/ha	10 times Higher seed rate
4	Seed treatment	Thirum+Bavistin 2:1 @ 2.5 g/kg seed	No seed Treatment	Full gap
5	Nursery raising and transplanting method & spacing	Ridge bed nursery were prepared and after 10-15 days old seedlings were transplanted in main field with spacing of 25X25 cm. row x plant	Flatbed nursery were prepared and planting was done through traditional method (without maintaining row x plant distance)	Partial gap
6	Manures & Fertilizers	100 :40:20 NPK kg/ha	Little amount of imbalanced fertilizer	Partial gap
7	Weed management	One hand weeding at 30-35 DAT	One hand weeding at 40-45 DAT	Partial gap
8	Plant Protection measure	Need based plant protection measures were adopted	No plant protection measures were adopted	Full gap
9.	Inoculation of BGA culture	Inoculated 25 kg/ha	Not inoculated	Full gap

Result and Discussion

I-Gap analysis between On Farm Testing (OFT's) and farmer's practices

During the course of knowledge test of farmer's it was found that out off nine parameters fully gap in five parameters i.e. using of traditional varieties and degenerated seeds, higher seed rate for more than ten times(higher seedlings), without seed treatment, No plant protection measures and no use of BGA (Blue green algae) Table-1. Whereas partial gap was found in three parameters i.e. nursery raising, Manures & Fertilizers and transplanting method & spacing. No gap was observed in land preparation.

Grain yield

The yield performance and economic indicators are presented in Table 2. The data revealed that yield of all demonstrated plots of paddy MTU 1081 was found to be higher in all the years, due to high yielding variety and SRI planting method. The recommended package of practices as compare to farmer's practices. Under demonstration plot, the performance of paddy yield was found to be higher than

farmer's practices during three consecutive years of testing (2013, 2014 and 2015). The yield of paddy under testing was recorded, 52.38, 51.83 and 52.68 q/ha respectively during 2013, 2014 and 2015 . It was reported that the rice variety MTU-1081 planted with SRI method gave significantly higher yield[2, 3].

The yield enhancement due to technological intervention was 37.36%, 34.62% and 32.75% higher over farmers practice (FP) in respective years. The cumulative effect of the technological intervention over three years, revealed that on an average yield of 52.30 q/ha was recorded which was 34.91% higher over FP. The yield attributing character of the variety i.e. number of tillers per plant was observed higher (27 /plant) over farmer's practice (13 tillers /plant) on three years average. The above findings were also reported[1] that depending on identification and use of farming situation, specific intervention may have greater implications in enhancing systems productivity. Yield enhancement in different crops in OFT has also been documented[6].

Economics

Economic indicators i.e. gross expenditure, gross returns, net returns and B: C ratio is presented in Table 3. The data clearly indicated that the net return from the recommended practice was substantially higher than FP. Average net returns from recommended practice were observed to be Rs.65598/ha in comparison to FP i.e. Rs36419/ha. On an average Rs.29179/ha as additional income is attributed to the technological intervention in demonstrations under SRI method The average B:C ratio 3.31 was found under OFT trials whereas 2.49 in farmers practices, There are three fold increase in benefit in demonstrated fields over two fold increase in farmers field who followed their own practices.

Table 2 Productivity, extension gap, technology gap and technology index of Paddy Variety MTU 1081 with SRI as grown under OFT'S and existing package of practices

Year	Area (ha)	No. of OFT's	Variety	Average yield q/ha			Increase yield over F.P. (%)	Extension gap (q/ha)	Tech. gap (q/ha)	Tech, Index
				Potential	Demo.	Farmer				
2013-14	4.8	12	MTU 1081	53.00	52.38	32.58	37.36	19.80	0.62	1,17
2014-15	4.8	12	MTU 1081	53.00	51.83	33.48	34.62	18.35	1.17	2.21
2015-16	4.8	12	MTU 1081	53.00	52.68	35.32	32.75	17.36	0.32	0.60
Total	14.4	36	-	159.00	156.89	101.38	104.73	55.51	2.11	3.98
Mean	4.8	12	-	53.00	52.30	33.79	34.91	18.50	0.70	1.33

Table 3 Profitability of Rice variety MTU-1081 through OFT's.

Year	Average cost of cultivate on (Rs./ha)		Average gross return (Rs./ha)		Average net return (Rs/ha)		B:C Ratio	
	OFT's	F.P.	OFT's	F.P.	OFT's	F.P.	OFT's	F.P.
2013-14	28738	23428	94284	58644	65546	35216	3.32	2.50
2014-15	28290	24480	93294	60264	65004	35784	3.30	2.46
2015-16	28580	25320	94824	63576	66244	38256	3.32	2.51
Total	85608	73228	282402	182484	196794	109256	9.94	7.47
Average	28536	24409	94134	60828	65598	36419	3.31	2.49

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