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Impact of frontline demonstrations on paddy variety MTU-1075 in tribal areas of East Godavari district of Andhra Pradesh

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ABSTRACT

Paddy is the major crop grown in East Godavari district of Andhra Pradesh. The frontline demonstrations were carried out in six villages of the district with high yielding variety MTU-1075 and applying scientific practices in cultivation. The paddy productivity and economic returns under improved technologies were calculated and compared with the corresponding farmers' practices. Results revealed that improved technology recorded higher yield of 5450 kg/ha in 2014-15 than 4230 kg/ha by farmer practices. The improved technology gave higher gross return (Rs 54380/ha), net return (Rs 32680/ha) with higher benefit:cost ratio (2.50) as compared to farmers' practices.

Keywords: Paddy; MTU-1075; gross return; net return; B:C ratio

INTRODUCTION

Paddy is the most important crop among major cereals and staple foods for over half the world's population (Singh et al 2012).

Selection of proper variety and agronomic practices can play a vital role in increasing productivity (Singh et al 2008). Even a simple intervention like planting pattern has shown potential to improve productivity, a good example of non-material intervention to improve productivity (Singh et al 2013). Krishi Vigyan Kendra (KVK), an innovative science-based institution plays an important role in bringing the research scientists face to face with farmers. KVKs are grassroot level organizations meant for application of technology through assessment, refinement and demonstration of proven technologies under different micro-farming situations at the district level. Frontline demonstration (FLD) is one of the important programmes to evaluate and demonstrate the production potential of the recently released crop cultivars in the farmer fields. The aim of the frontline demonstrations enables to build-up confidence of the farmers to adopt the latest technologies and also help them to collect valuable feedback to modify the research

programme based on their field experiences regarding performance of the technologies. It was found that farmers were using old varieties without proper use of chemical fertilizers, herbicides and pesticides. This study was conducted on frontline demonstration on paddy variety MTU-1075 with crop management practices.

MATERIAL and METHODS

The study was carried out by Krishi Vigyan Kendra, Pandirimamidi, East Godavari during Rabi 2014 at farmers' fields of 6 villages covering 2 agency Mandals viz Rampachodavaram (2 villages) and Gangavaram (4 villages). In total 30 demonstrations were conducted in selected 6 villages. The improved variety MTU-1075 (Pushayami) was used as seed material and procured from Andhra Pradesh Rice Research Station, Maruteru, West Godavari district for demonstration purpose. The selected farmers were facilitated by KVK scientists in performing field operations like sowing, spraying, weeding, harvesting etc. The yield data were collected from both the demonstrations and farmer fields and analyzed using simple statistical tools. The technology gap, extension gap and technological index (Samui et al 2000) were calculated by using following equations:

Technology gap= Potential yield **-** Demonstration yield

Extension gap= Demonstration yield **-** Farmer practices yield

$$\text{Technology index (\%)} = \frac{\text{Technology gap}}{\text{Potential yield}} \times 100$$

RESULTS and DISCUSSION

The data given in Table 1 indicate the comparison between practices adopted by the farmers and in the demonstrations.

Yield

The yield of MTU-1075 (5450 kg/ha) was much higher in demonstration plots as compared to farmer practices (4230 kg/ha). The results indicated that the frontline demonstrations had given a good impact over the farming community of East Godavari district as they were motivated by the new agricultural technologies applied in the FLD plots (Table 2). This finding is in corroboration with the finding of Singh (2002).

The yield performance and its related economic indicators presented in

Table 1. Comparison between technological intervention and existing farmer practices under FLDs in paddy

Parameter	Technological intervention	Existing practice
Variety	MTU-1075	Local
Land preparation	Three ploughings	Two ploughings
Seed treatment	Seed treatment with thiram @ 2 g/kg	Nil
Seed rate	40 kg/ha	30 kg/ha
Fertilizer dose (NPK)	90-60-60 kg/ha	60-40-40 kg/ha
Plant protection measures	Need-based application of chloripyriphos @ 2ml/l for protection against leaf folder	Nil
Weed management	Need-based hand weeding after transplanting (30 DAT) & at panicle initiation stage (60 DAT)	Nil

Table 2. Yield and yield attributing characters of paddy variety under demonstration package and farmers' practice

Yield parameter	Demonstration package	Existing farmer practice
Productive tillers	270	200
# grains/panicle	265	242
# filled grains/panicle	230	198
# unfilled grains/panicle	35	44
Test weight (g)	21	17
Grain yield (kg/ha)	5450	4230

Table 2 reveal that production of paddy yield was found to be substantially higher than that of farmer practices.

Total number of grains and filled grains per panicle under the demonstration was higher (265 and 230 respectively) compared to farmer practices (242 and 198 respectively) which ultimately lead to the higher grain yield of 5450 kg/ha.

Technology gap

The technology gap, the differences between potential yield and yield of demonstration plots were 550 kg/ha during 2014-15. The technology gap observed may be attributed to dissimilarity in the soil fertility status, agricultural practices and local climatic situation.

Extension gap

Extension gap of 1220 kg/ha was observed during 2014-15. Extension gap emphasized the need to educate the farmers through various extension means viz frontline demonstration for adoption of improved production and protection technologies and to revert the trend of wide extension gap. More and more use of latest production technologies with high yielding

varieties will subsequently change this alarming trend of galloping extension gap.

Technology index

The technology index shows the feasibility of the demonstrated technology at the farmer fields. The lower the value of technology index more is the feasibility of the technology. The technology index in the present study was 9.1 per cent (Table 3). Technology index under FLDs programme shows the efficacy of good performance of technical interventions.

Economic return

The input and output prices of commodities prevailed during the study of demonstration were taken for calculating net return and benefit:cost (BC) ratio (Table 4). The cultivation of paddy under improved technologies gave higher net return of Rs 32680 per ha in 2014-15 as compared to Rs 19990 per ha in farmer practices. Similar findings were reported by Kirar et al (2006). The benefit:cost ratio of paddy cultivation under improved cultivation practices was 2.50 as compared to 2.01 under farmer practices. This may be due to higher yield obtained under improved technologies compared to farmer practices. This finding is in corroboration with the finding of Mokidue et al (2011).

CONCLUSION

The results of frontline demonstrations showed that the yield of paddy increased with the help of innovative technological intervention coupled with the proper management. The suitable technology for enhancing the productivity of paddy crop and need to conduct such demonstrations may lead to the improvement and empowerment of farmers.

Table 3. Technology and extension gap and technological index of paddy variety MTU-1075 under FLDs in an area of 8 ha

Technology gap (kg/ha)	Extension gap (kg/ha)	Technology index (%)
550	1220	9.1

Table 4. Economics of paddy under frontline demonstrations in tribal area

Parameter	Return (Rs/ha)	
	Improved practice	Farmer practice
Cost of cultivation (Rs/ha)	21700	19690
Gross return (Rs/ha)	54380	39680
Net return (Rs/ha)	32680	19990
B:C ratio	2.50	2.01

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