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Evaluation of Different Front Line Demonstrations on Rice and Wheat in Cooch Behar District under Terai Region of West Bengal

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Abstract

The results of different front line demonstrations on imporved variety and updated technology of two principal crops rice and wheat in different villages of Cooch Behar district under terai agro-climatic region showed that rice variety Radha can be introduced safely being better suited with existing agro-climatic condition, with minimum Rajlaxmi may be the better choice to the farmers not noly due to higher demonstration yield (39.0 q/ha) but also with higher return : cost ratio (1.71 : 1).

Key words : Demonstrations, Rice, Wheat, Improved variety, Technology.

Rice and wheat, the two principal crops cover the largest area and play major role in the total food-grain production of India. In terai zone West Bengal non-adoption of suitable improved variety and technology seems to be the major constraints in improving productivity of these crops at farmers' at field. Considering the changing scenario in rice and wheat cultivation there is further need to adopt high yielding varieties suitable for this zone with recommended package of practices in farmers' community to increase the area and production. Demonstrations have successfully shown the yield gaps as they exist between the farmer's yields under normal condition. Such information are useful for the scientists in perfecting the package of practices of different crops. Thus it is an important link between fanner on one hand scientists, planner, extension workers and administrators on the othe (1). Keeping in view the significance of transfer of technology, the present investigation was conducted with the objective to study the yield gap between different demonstration trials in farmers' field, extent of technology adoption and return-cost ratio.

Methods

This study was conducted in four villages namely Atialguri, Sakunibala, Bararangrash and Basantapur of Cooch Behar district of West Bengal. The survey on those villages showed lack of timely availability of suitable variety, delay and improper method of sowing, minimum or no care in nursery bed, imbalanced nutrient management are the major causes for lower productivity of these two major crops in this region. Hence, to evaluate the effect of these factors on yield, 60 front line demonstrations on rice and twenty-four on wheat were conducted at different farmers' field of those villages. All the demonstration plots were under similar farming situation having area of 0.2 ha for each with sandy loam soils. The varieties for demonstrations of rice were Annada, Radha, Kanak and Sita and for wheat were Rajlaxmi and Sonali. The yield data corresponding to different varieties of rice and wheat and inputs used per hectare were collected from the demonstration trials. In addition yield data from traditional practices followed by the farmers were also collected. The mean yield data were calculated by computing the weighted mean. To estimate the technological and and extension gap and technology index, the following formulae were used (2, 3).

$$\text{Technological gap} = \text{Potential yield} - \text{Demonstration yield}$$

$$\text{Extension gap} = \text{Demonstration yield} - \text{Farmers' yield}$$

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

The comparative profitability from different rice

Table 1. Yield gaps, technology and adoption index for different varieties of rice and wheat under front line demonstrations.

Crop with variety	Year	No. of demonst-ration	Yield (q/ha) Potential	Demonst-tration	Local check (farmers' practice)	Percent increase in yield over local check	Techno-logical gap (q/ha)	Exten-sion gap (q/ha)	Techno-logy index (%)
Rice									
Annada	2001 & 2002	26	65.0	60.0	41.25	45.45	5.0	18.75	92.3
Radha	2001 & 2002	13	60.0	58.5	27.0	116.66	1.5	31.5	97.5
Kanak	2001	13	60.0	57.0	27.0	111.11	3.0	30.0	95.0
Sita	2001 & 2002	8	50.0	48.0	27.0	74.07	2.0	21.0	96.0
Wheat									
Rajlaxmi	2000 & 2001	16	55.0	69.0	15.5	151.61	16.0	23.5	70.9
Sonali	2001 & 2002	8	40.0	37.2	15.5	140.00	2.8	21.7	93.0

and wheat varieties was studied by estimating return : cost ratio.

Results and Discussion

Technological Gap

Corresponding to all demonstration trials more or less technological gaps were found. Though the demonstration trials were laid out under the supervision of KVK scientists in farmers' field, the gap between the potential yield and the demonstration yield was probably due to the variation in soil fertility and micro-climatic condition of different demonstration plots (4). Among the rice varieties, technological gap (Table 1) was maximum in Annada (5.0 q/ha) and minimum in Radha (1.5 q/ha). This implied that rice varieties Radha suited better under terai agro-climatic situation being second highest yield achiever (58.5 q/ha) in demonstration trials and side by side with minimum technological gap. In wheat the technological gap was higher corresponding to Rajlaxmi (16.0 q/ha) than in Sonali (2.80 q/ha). Because genetically Rajlaxmi had the higher yield potentiality (55.0 q/ha) than Sonali (40.0 q/ha).

Table 2. Economics of different rice and wheat varieties used in front line demonstrations (calculated on price-index, 2000). Price of rice (Rs/kg) : Annada = 5.75 ; Radha = 5.50 ; Kanka = 5.50 ; Sita = 5.75. Price of wheat (Rs/kg) : Rajlaxmi = 5.50; Sonali = 5.54.

Crop with variety	Cost of cultivation (Rs/ha)	Gross return (Rs/ha)	Net return (Rs/ha)	Return : cost ratio
Rice				
Annada	21000.00	37950.00	16950.00	1.80 : 1
Radha	12915.00	28050.00	15135.00	2.17 : 1
Kanak	12915.00	25500.00	12585.00	1.97 : 1
Sita	12115.00	22425.00	10310.00	1.85 : 1
Wheat				
Rajlaxmi	12510.00	21450.00	8940.00	1.71 : 1
Sonali	12510.00	20625.00	8115.00	1.64 : 1

Extension Gap

In general, the extensions gaps for all the crop varieties were higher as compared to the technological gap. With regard to extension gaps, among the rice varieties Radha realized the maximum value (31.5 q/ha) and Annada secured the minimum value (18.75 q/ha) and in wheat, Rajlaxmi achieved higher value (23.5 q/ha) than Sonali (21.7 q/ha). The over all picture on extension gap emphasized on the need to educate the farmers and thereby to increase their

efficiency in adoption of improved technology.

Technology Index (%)

Among the rice varieties, technology index (%) was maximum in Radha (97.5%) followed by Sita (96.0%) and was minimum in Annada (92.3%). In wheat, the variety Sonali (93.0%) experienced higher index value than Rajlaxmi (70.9%).

Economics of Demonstration of Different Rice and Wheat Varieties

The increase in yield of different rice and wheat varieties, over farmers' practice was mostly due to the use of improved pure seed and improved production technology by the ZARS-KVK, Cooch Behar. Among the rice varieties Radha produced maximum net return (Rs 21,480.00/ha) and return : cost ratio (3.0 : 1). This was probably due to higher yield (8.5 q/ha), being suited better under terai agro-climatic region of West Bengal. Lowest return : cost ratio (Table 2) was recorded in Annada (2.23 : 1) as it was cultivated during summer season and faced higher cost of cultivation (Rs 15,465.00/ha) due to extra costlier input like irrigation. Among the two wheat varieties, Ranlaxmi produced maximum yield (39.0 q/ha) and gave more return : cost ratio (1.71 : 1) than var Sonali (1.64 : 1). This implied that under terai agro-climatic region, practicing variety Sonali can be replaced by newly introduced Rajlaxmi being suited better under prevailing climatic condition.

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