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EVALUATION OF FRONT LINE DEMONSTRATION TRIALS ON RICE IN RAIGAD DISTRICT OF MAHARASHTRA

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ABSTRACT

The development of the agriculture is primarily the application of the science and technology by making the best use of available resources. One of the major constraints of traditional rice farming is low productivity due to non-adoption of recommended package of practices and improved varieties. To replace this anomaly, Krishi Vigyan Kendra under Dr.BSSKKV,Dapoli had conducted Front Line Demonstrations at adopted farmers fields. Cultivation practices comprised under FLD viz. improved varieties, seed treatment, spacing, balance use of fertilizers, intercultural operations and plant protection measures showed per cent increase in yield of rice from 17.34 % to 53.52% over local check during the course of study.Technology gap was lowest (555 kg/ha) and highest(1900 kg/ha) was observed in summer season. The extension gap in Karjat-3 and Sahyadri hybrid was higher as compared to technology gap. In kharif season technology index was 21.33 % in Karjat-5 variety followed by Sahyadri hybrid (17.14%) and Karjat-3 (15.80%) variety of rice. Technology index was highest (22.14%) in Sahyadri hybrid grown in summer season. The lower the value of the technology index more is the feasibility of the technology.

INTRODUCTION

In India, rice is the most important and extensively grown food crop for more than two third of the Indian population. During the period 1950-51 to 2001-02, the area has increased by one and half times (31.0 million hectare to 44.6 million hectares), productivity by three times (668 kg/ha to 2086 kg/ha) and production by four and half times (20.58 million tons to 90 million ton) (Mishra, 2005). But the projected demand for rice is 125 million tons by 2020 at the current rate of population growth.

In Konkan region, rice occupies an area of about 4.20 lakh hectares with an annual production around 10.40 lakh tones. The area under rice in Konkan is nearly about 30 per cent of total area in Maharashtra State (15.22 lakh ha) where it is grown in Kharif and Rabi season. The per hectare productivity of rice was 1489kg and 2273kg in Kharif and Rabi season, respectively.

The agricultural technology is not generally accepted by the farmers completely in all respects. As such there always appears to be a gap between the recommended technology by the scientist and its modified form at the farmer's level. The technological gap is thus the major problem in the efforts of increasing agricultural production in the country. A need of the day is to reduce the technological gap between the agricultural technology recommended by the scientist and its acceptance by the farmers on their field.

Keeping in view the significance of transfer of technology the present investigation attempts to study the yield gaps between front line demonstration trials and farmers' yield, extent of technology adoption and benefit cost ratio.

RESEARCH METHODOLOGY

The study was conducted in Raigad district of Maharashtra during the year 2007 to 2009. The data on output of different varieties of rice crop and inputs used per hectare have been collected from the front line demonstration trials conducted by KVK,Raigad. In addition to this, data on traditional practices followed by farmers have also been collected. In the present study, technology index was operationally defined as the technical feasibility

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obtained due to implementation of Front Line Demonstrations in rice. To estimate the technology and extension gap and technology index following formulae used by Sharma (2004) have been used:

1. Technology gap = Pi (Potential yield) - Di (Demonstration yield)

2. Extension gap = Di (Demonstration Yield) - Fi (Farmers yield)

3. Technology index = $\frac{Pi - Di}{Pi} \times 100$

Where,

Pi = Potential yield of the crops

Di = Demonstration yield of the crops

Fi = Farmers yield

RESULTS AND DISCUSSION

Technology gap, extension gap and technology index:

Yield of the Front Line Demonstrations and potential yield of the respective crop varieties were compared to estimate the yield gap which was further categorized into technology gap and extension gap as given in Table 1.

Table 1. Technology gap, Extension gap and Technology index for different varieties of rice

Crop/ variety	Year	No. of Demo	Yield(kg/ha)			% increase in yield over farmers field	Technology gap (kg/ha)	Extension gap (kg/ha)	Technology index (%)
			Potential	Demo	Farmers field				
Rice (Kharif season)									
Karjat -3	2007	10	5000	4210	3340 (Ratna)	26.04	790	870	15.80
Karjat -5	2008	10	4500	3540	2712 (Jaya)	30.53	960	828	21.33
Sahyadri Hybrid	2009	10	7000	5800	4120 (Jaya)	40.77	1200	1680	17.14
Rice (Summer season)									
Karjat -3	2007	10	5000	4368	3471 (Ratna)	25.84	632	897	12.64
Karjat -5	2008	10	4500	3755	3200 (Jaya)	17.34	745	555	16.55
Sahyadri Hybrid	2009	10	7000	5450	3550 (Jaya)	53.52	1550	1900	22.14

The description of Table 1 is summarized under following heads:

Technology gap and Extension gap

In the case of rice variety Karjat-3, it is seen that technology gap was lowest (632 kg/ha) in summer season as compared to Kharif season (790 kg/ha).Whereas in Karjat-5 variety it was highest (960 kg/ha) in kharif season and lowest (745 kg/ha) in summer season. Technology gap of hybrid variety sahyadri was highest i.e.1200 kg/ha and 1550 kg/ha in kharif and summer season, respectively. Though the Front Line Demonstrations were laid down under the supervision of KVK Scientist in the farmers field, there exist a gap between the potential yield and demonstration yield. This may be due to the soil fertility and weather conditions. Hence location specific recommendations are necessary to bridge the gap. These findings are similar to the findings of Sharma and Sharma (2004).

As regarding extension gap of rice varieties under demonstrations it is observed that extension gap of Karjat-3 variety was 870 kg/ha in kharif and 897 kg/ha in summer season. Similar kind of results are seen in case of Hybrid rice variety Sahyadri, where 1680kg/ha and 1900 kg/ha extension gap was observed in kharif and summer season, respectively. Extension gap in Karjat-5 variety was less than

technology gap which is quiet encouraging and needs to bring at minimum level. The extension gap in Karjat-3 and Sahyadri hybrid was higher as compared to technology gap, which emphasized the needs to educate the farmers in adoption of improved technology to narrow the these extension gaps.

Technology Index

The transfer of technology through Front Line Demontrations was studied through technology index. From Table 1 it is seen that in kharif season technology index was 21.33 % in Karjat-5 variety followed by Sahyadri hybrid (17.14%) and Karjat-3 (15.80%) variety of rice. Whereas, technology index was highest (22.14%) in Sahyadri hybrid grown in summer season. As regards to improved variety Karjat-3 and Karjat-5, the technology index was 12.64% and 16.55 %, respectively. Technology index showed the feasibility of the evolved technology on the farmers field. The lower the value of the technology index more is the feasibility of the technology. The findings are in line with the findings of Singh *et al.* (2007).

Comparison of input cost and returns

The comparative profitability of different rice varieties has been studied by estimating input cost, total cost, gross returns, net returns and benefit cost ratio and depicted in Table 2.

Table 2. Cost and returns of different rice varieties (Rs/ha)

Rice variety	Input cost	Total cost	Gross returns	Net returns	Benefit:cost ratio
Karjat-3	29300	35100	35800	700	1.01
Karjat-5	29530	36000	37500	1500	1.04
Sahyadri hybrid	30000	35000	49800	7250	1.42

From Table 2, it is seen that, the per hectare cost of cultivation of improved variety Karjat-3 ,Karjat-5 and Sahyadri hybrid was nearly equal. Amongst the three rice varieties gross return from Sahyadri hybrid was highest(Rs.49800/- per ha) as compared to variety Karjat-3 (Rs.35800/- per ha) and Karjat-5 (Rs.37500/- per ha). The benefit cost ratio of variety Karjat-3, Karjat-5 and Sahyadri hybrid was 1.01, 1.04 and 1.42, respectively. Yield of the hybrid variety was directly influenced by the benefit cost ratio. The adoption of recommended practices in front line demonstration trials on rice has increased the yield over the respective check(control) varieties. These findings are similar to the findings of Suryawanshi and Prakash (1993).

CONCLUSION

The findings of the study revealed that wide gap existed in potential and demonstration yield in rice varieties due to technology and extension gap in Raigad district of Maharashtra. By conducting front line demonstrations of proven technologies, yield potential of rice can be oncreased to a great extent. This will substantially increase the income as well as the livelihood of the farming community. There is need to adopt multi-pronged strategy that involves enhancing rice production through improved technologies in Raigad district. The study emphasizes the needs to educate the farmers in adoption of improved technology to narrow the extension gaps through various technology transfer centers.

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