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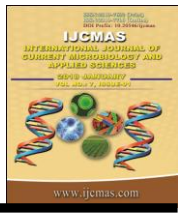

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Study on Production Potential of Rice through Front Line Demonstration in Deoria District of Uttar Pradesh, India

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A B S T R A C T

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 traditionally rice growing varieties is low productivity due to non-adoption of recommended package of practices and improves varieties. Krishi Vigyan Kendra, Deoria under ICAR- Indian Institute of Vegetable Research had conducted Front Line Demonstration (FLD) in adopted farmer fields. Cultivation practices comprised under FLD *viz.* improved varieties, seed treatment, spacing, balance use of fertilizers, intercultural operations and plant protection measures showed increase in yield of rice from 1.05% to 51.90% over local check. Technology gap was lowest 130 kg/ha and highest 1090 kg/ha was observed. The extension gap in Pusa Sugandha 2511 was higher (1683 kg/ha) as compared to technology gap. Technology index was highest 24.22% in Pusa 519 followed by Pusa 44 (24.0%) and Pusa Sungandha 2511 (14.36%). The lower the value of the technology index indicates the more 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 2001-2002, 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 time (20.58 million ton 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.

The agricultural technology is not generally accepted by the farmers completely in all respects. As such there is always appears to be a gap between the recommended technology by the scientist and its modified form at the farmers 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 farmer on their field.

Keeping this in view the significance of transfer of technology the present investigation was attempt to study the yield gaps between Front Line Demonstration trial and farmers yield, extent of technology adoption and benefit cost ratio.

Materials and Methods

The study was conducted in Deoria districts of UP during the year 2010-2014. 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 Krishi Vigyan Kendra, Deoria. In addition of 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 obtained by implementation of Front Line Demonstration in rice. To estimate the technology and extension gap and technology index the methodology proposed by Sharma (2004) has been used.

Technology gap= Pi-Di
Extension gap= Di-Fi

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

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 improved rice varieties were compared to estimate the yield gap which was further categorized into technology gap and extension gap as given in table 1.

In case of rice variety Pusa Sugandha (1121), it is seen that technology gap was lowest (130 kg/ha) in kharif season. Where as in Pusa 519 variety it was highest (1090 kg/ha) followed by variety Pusa 44 (1080 kg/ha) in year 2012. Though the front line demonstrations were laid down in the supervision of KVK scientist in the farmer's field but a significant gap was noted between the potential yield and demonstration yield. This may be due to the variation in soil fertility and weather conditions. Hence location specific recommendations are necessary to bridge the gap. Return on per rupee investment of capital can easily be seen in figure 1. These findings are similar to the findings of Mandavkar and *et al.,* (2012) and Sharma and Sharma (2004).

Extension gap analysis was done for all rice varieties under demonstrations. It was observed that extension gap of Pusa Sugandha 2511 variety was 1683 kg/ha in year 2010 and 959 kg/ha in 2011. In case of Pusa Sugandha 1121 variety 840 kg/ha extension gap was observed in year 2010. Extension gap in Pusa variety was less than technology gap which is quiet encouraging and need to bring at minimum level. The extension gap in pusa sugandha 2511 and pusa sugandha 1121 was higher as compared to technology gap. This emphasized the need to educate the farmers in adoption of improved technology to narrow down the extension gaps.

Technology index

The transfer of technology through front line demonstrations was studied through technology Index. It was observed (Table 1) that in kharif season the technology index was highest 24.22% for pusa 519 variety followed by pusa 44 (24.00 %) and pusa sugandha 2511 (14.36 %) variety of rice. The technology index was low in improved variety Pusa 44 and Pusa sugandha 2511 i.e. 14.66% and 10.49%, respectively.

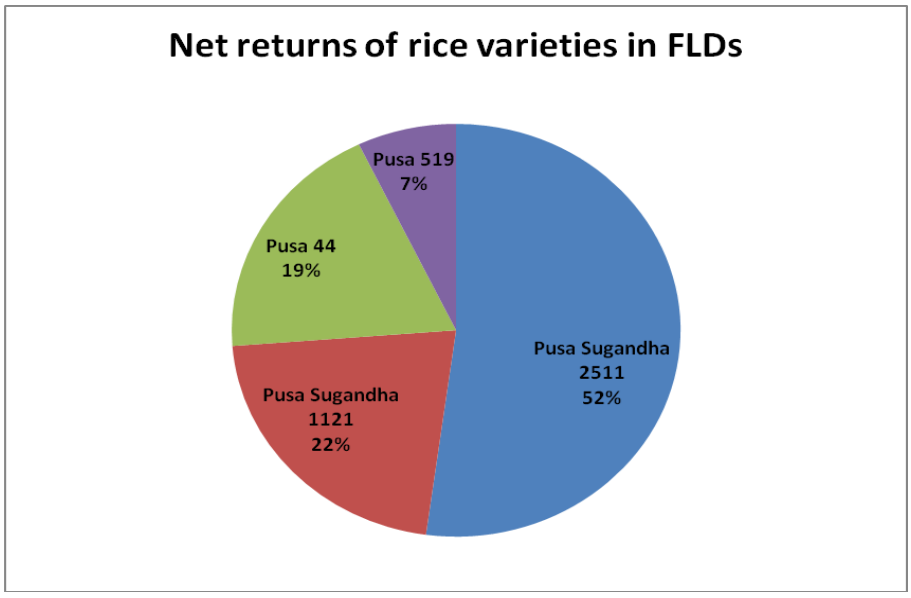
Table.1 Technology gap, extension gap and technology index for different varieties of rice

Variety	Year	No. of demo	Yield (kg/ha)		Farmers field	% increase in yield over farmers field	Technology gap (kg/ha)	Extension gap (kg/ha)	Technology index (%)
			Potential	demo					
Paddy (*kharif* season)									
Pusa sugandha 2511	2010	3	5500	4923	3240	51.90	577	1683	10.49
Pusa sugandha 1121	2010	3	4500	4370	3530	6.23	130	840	2.88
Pusa sugandha 2511	2011	4	5500	5199	4240	22.61	301	959	5.47
Pusa sugandha 1121	2012	5	4500	4280	4190	2.14	220	90	4.88
Pusa 519	2012	2	4500	3410	3220	5.9	1090	190	24.22
Pusa 44	2012	2	4500	3420	3300	3.5	1080	120	24.00
Pusa sugandha 2011	2013	5	5500	4710	4280	33.5	790	430	14.36
Pusa 44	2013	5	4500	3840	3800	1.05	660	40	14.66

Table.2 Economics of demonstration of different rice varieties (Rs/ha)

Rice variety	Gross cost	Gross returns	Net returns	Benefit: cost ratio
Pusa Sugandha 2511	25180	45783	20603	1.8:1
Pusa Sugandha 1121	25843	40641	14798	1.6:1
Pusa Sugandha 2511	26750	57189	30439	2.1:1
Pusa Sugandha 1121	29500	51360	21860	1.7:1
Pusa 519	28220	35510	7209	1.3:1
Pusa Sugandha 2511	27850	37620	9770	1.4:1
Pusa Sugandha 2511	27340	80024	52680	2.9:1
Pusa 44	26810	46080	19270	1.7:1

Fig.1 Net returns of rice varieties in FLDs at farmers' fields of Deoria



Technology index showed the feasibility of the evolved technology on the farmer's 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).

Per hectare cost of cultivation of improved variety pusa sugnadha 2511 and pusa sugnadha 1121 was almost equal (Table 2). Among the four rice varieties gross return from pusa sugnadha 2511 was highest (Rs 80024) as compared to variety pusa sugandha 1121, pusa 519 and pusa 44. The benefit cost ratio of variety pusa sugnadha 2511 was 2.9 in year 2013. Under this study the yield of the rice variety was directly influenced by the benefit cast ratio. The adoption of recommended practices in front line demonstration trials on rice has increased the yield over the respective check varieties. These findings are similar to the findings of Suryawanshi and Prakash (1993).

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 Deoria district of Uttar Pradesh. By conducting Front Line Demonstrations of proven technologies the yield of rice can be increased 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 Deoria district. The study emphasized 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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