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Front Line Demonstration on Rice Variety Swarna Shreya by KVK in Katni District of Madhya Pradesh: A Impact Study

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ABSTRACT: Rice is one of the oldest cultivated crop and staple food for world's half population. KVK Katni made an attempt with an objective to substitute existing variety with improved rice variety Swarna Shreya. Front Line demonstrations (FLDs) is a unique approach to provide an direct interface between researcher and farmers as the scientists are directly involved in planning, execution and monitoring of the demonstrations for the technologies developed by them and get direct feedback from the farmers' field about the crops. The FLD on improved variety Swarna Shreya was carried out during the two consecutive years 2018 and 2019 in Village Banda and Jarwahi, Block: Katni of Katni district. Result from the 20 conducted FLD indicated that improved variety Swarna Shreya exhibited mean grain yield 43.70 q/ha which 26.11% higher than the farmer practices. This might be due to knowledge and adopting of improved variety Swarna Shreya coupled with the scientific package of practices. Thus the FLD might have a positive impact on farming community in the district. The technology gap of the demonstration plot were 5.85 q/ha and 6.75 q/ha during 2018-19 and 2019-20, respectively with an average of 6.30 q/ha. Extension gap of 9.10 q/ha and 9.00 q/ha were observed during 2018-19 and 2019-20, respectively with an average of 9.05 q/ha. The technology index varied from 11.70% to 13.50% with a mean value of 12.60%. This shows the efficacy of demonstrated technology improved variety Swarna Shreya coupled with scientific package of practices. This will accelerate with the adoption of demonstrated technology to increase the yield of rice. This variety found to be suitable since it fits well to the existing farming situation and also it had been appreciated by the farmers. In the coming years, rice growercontributes much to the district economy.

Keywords: Extension Gap, FLDs, Improved variety, Rice, Technology Gap

INTRODUCTION

Rice is the staple food crop of India and occupies highest area among all the crops grown in the country (Shobha Rani *et al.*, 2010). Rice crop has occupied almost 43.86 million hectares and producing 104.80 million tonnes in India (Jatav and Pradhan, 2004). The major crop of the Katni district is rice and area under the rice is 172.10 thousand ha area which covered the 91.5% of the kharif area in the district. The crop is grown in wide range of climatic conditions largely depending on the monsoon rains. Achieving self sufficiency in rice production and maintaining price stability are important political objectives in less developed countries as it caters to the national food security, generating employment and income for low income people (Ghosh *et al.*, 2009; Samant, 2015). The possibility of the extension of the area under rice in the near future is limited. Therefore, this extra rice production has to come by increase in productivity (Chaudhary *et al.*, 2021). The crop's economic viability has steadily dropped due to non availability of high yielding medium duration variety. Due to this reason farming community still uses the local or old varieties. The continued use of same variety with mixed seed over the year, leads it to susceptible to many disease and pest. Similarly the local unidentified varieties are low yielder with low responsive to the inputs and prone to many diseases and pest. Achieving self-sufficiency in rice production and maintaining price stability are important political objectives in low-income countries because of the importance of this crop in providing national food security and generating employment and income for low-income people (Ghosh *et al.*, 2009; Samanth, 2014). To overcome these problems Krishi Vigyan Kendra, Katni conduct the Front Line Demonstration Programme on improved variety Swarna Shreya. Front Line Demonstration (FLD) has been used as an useful extension tool to demonstrate HYV along with production, protection and management practices in the farmer's field under different agro-climatic regions and farming situations (Beigh *et al.*, 2015). By conduction of Front Line Demonstrations on the farmer's field, there was significant increase in knowledge level of the farmers and majority of technologies (Raj *et al.*, 2014; Samant, 2015). Keeping in view such problems and after detailed survey, the KVK Katni made an attempt with an objective to substitute existing variety with a newly released promising high yielding variety of rice Swarna Shreya. The main objective of the study was to substitute the existing medium duration variety with the newly released medium duration variety Swarna Shreya. The FLDs was evaluated on yield and economic parameters of Swarna Shreya for its suitability in the existing farming situation for higher productivity and income.

MATERIAL AND METHODS

Front line demonstration on rice variety Swarna Shreya was conducted by Krishi Vigyan Kendra, Katni during the Kharif season of 2018 and 2019. The newly released promising high yielding variety Swarna Shreya is medium duration, high yielding, resistant to major insect and pest and suitable for both irrigated and rainfed condition. The Purposive cum random sampling techniques was followed for selection of block and respondents. The FLD was conducted in in the two adopted villages Banda and Jarwahi of Katni District. The soil of the area under study was reddish brown to black soil. The average rainfall of the area

was 1050 mm. The components in FLDs comprised of improved variety Swarna Shreya, proper tillage, adequate seed rate, seed treatment, STV based fertilizer application and plant protection measures. The various training programme and field day was organized prior and during the conduction of Front line demonstration. Total 20 ha area covered in two consecutive years. In the demonstration, one control plot was also kept where farmer practices were carried out. The crop were transplanted during the first week of July and harvested in 2nd week of November. The yield data was collected from both demonstration and farmer practices by random crop cutting methods. The extension gap, technology gap and technology Index, Benefit cost ratio (BCR) were worked out as per Samui *et al.*, (2000), as given below.

Extension gap = Demonstration plot yield – farmers practice plot yield

Technology Gap = Potential yield- Demonstrated yield

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

RESULT AND DISCUSSION

The gap between the farmer practices and recommended technology of rice in Katni district is presented in Table 1. Full gap was observed in case of high yielding variety, seed rate, seed treatment, fertilizer dose and plant protection measures, while, partial gap was observed in weed management practice. These are the reason for not achieving the potential yield. Farmers were generally not adopting the seed treatment which leads to make the crop more susceptible to disease. They applied the higher dose of seed and fertilizer than the recommended leading to higher cost of cultivation with low yield.

Table 1: Technology intervention and farmer practices under FLD on Improved variety Swarna Shreya.

Particulars	Technology intervention	Existing practices	Gap
Variety	Swarna Shreya	Local or low yielding	Full gap
Land preparation	Three ploughing and pudling	Three ploughing and pudling	Nil
Seed rate	12 kg/ha	30 kg/ha	Full gap
Seed treatment	Thiram @ 3g/ kg of seed	-	Full gap
Transplanting	Manual	Manual	Nil
Fertilizer dose	Based on soil test value	100: 50: 50 NPK kg/ha	Full gap
Weed management	Londex power @ 10 kg/ha	Butachlor @ 20 kg/ha and Manual	Low cost
Plant protection	Need based	No	Full gap

Yield: Results of 20 front line demonstration conducted during the Kharif 2018 and 2019 in farmers field indicated that Improved variety of rice Swarna Shreya with scientific package of practices recorded average grain yield 43.70 q/ha which is 26.11% higher than the farmer practices i.e. 34.65 q/ha (Table 2). These findings revealed that FLD might have positive impact on farmers of the district over the local check. Therefore, it can be concluded that FLDs have enhanced the overall grain yield with additional returns as compared to farmers practice. The result was also confirmatory with the findings of Lathwal (2010), Dayanand *et al.* (2011), Beigh *et al.* (2015), Samant (2015), Kumar *et al.*, (2019) and Girish *et al.*, (2020).

Table 2: Technology gap, Extension gap and Technology Index under FLD on Improved variety Swarna Shreya.

Year	Area (ha)	No. of farmers	Average yield (q/ha)		Increase yield over farmer practices	Extension gap (q/ha)	Technology gap (q/ha)	Technology index (%)
			Demo	Check				
2018-19	4.0	10	44.15	35.05	25.96	9.10	5.85	11.70
2019-20	4.0	10	43.25	34.25	26.27	9.00	6.75	13.50
Mean	**4.0**	**10**	**43.70**	**34.65**	**26.11**	**9.05**	**6.30**	**12.60**

Technology Gap. The difference between the potential yield and yield of the demonstrated plot was 5.85 q/ha and 6.75 q/ha during 2018 and 2019, respectively with an average 6.30 q/ha. The technology gap observed may be attributed to dissimilarity in the soil fertility status, agricultural practices and local climatic situations (Girish *et al.*, 2020). The result was in consonance with the finding of Girish *et al*. (2011) and Beigh *et al.* (2015).

Extension Gap. Extension gap which represents the productivity gain possible with the existing technologies were 9.10 q/ha and 9.00 q/ha during 2018 and 2019, respectively. On an average extension 19.05 q/ha was observed. This gap might be due to lack of awareness and knowledge on actual package of practices, strategies and lack of skill on modern rice cultivation techniques. Therefore, widespread extension activities like FLDs, trainings, field days etc need to be organized to educate the farmers for adoption of improved variety and production technologies to revert the trends to wide extension gap. Similar results were also reported by Shrama *et al.* (2011), Samant (2015) and Girish *et al*. (2020).

Technology Index. Technology index can also be used as an indicator of feasibility of growing the varieties under real farming situations. The technology index varied from 11.70% to 13.50% with an average of 12.60%. This showed the efficiency of good performance of technical interventions and will accelerate the adoption of demonstrated technical interventions to increase the yield performance of rice. This finding is collaborated with the findings of Raj *et al*. (2014) Samant (2015) and Girish *et al.* (2020).

Economic Returns. The average net return of demonstrated variety Swarna Shreya was higher in demonstrated improved variety over the local check (Table 3). The benefit cost ratio under improved cultivation practices were 2.02 and 2.04 as compared to 1.69 and 1.72 under farmer practices. This finding was collaborated with Samant (2015) and Girish *et al.* (2020). This may be due to higher yield obtained under improved technology compared to local check (farmer practices).

Table 3: Comparison of economics under FLD on Improved variety Swarna Shreya.

Year	Cost of cultivation		Gross return		Net return		B:C ratio	
	Demo	Check	Demo	Check	Demo	Check	Demo	Check
2018-19	38145	36135	77262	61337	39117	25202	2.02	1.69
2019-20	38500	36300	78499	62614	39999	26314	2.04	1.72
Mean	**38322.5**	**36217.5**	**77880.5**	**61975.5**	**39558**	**25758**	**2.03**	**1.70**

Impact of Technology. The technology had greater impact in adoption of improved variety Swarna Shreya to an extant of 310 ha in past three years. The Improved variety Swarna Shreya had parameter like medium maturing and drought tolerant and higher yield potential up to 45-50q/ha. The demonstration also had promotion of scientific package of practice. The demonstration had a higher yield of 43.70 q/ha compared to farmer practices with 34.65 q/ha which had a benefit cost ratio of 2.03 and 1.70, respectively. The technology had a greater impact with farming community for horizontal spread. This shows positive impact of frontline demonstration on knowledge of the farmers. The similar findings were also reported by the Singh and Sharma (2004), Singh *et al.* 2007 and Beigh *et al*., (2015).

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REFERENCES

Beigh, M. A., Rufaida Mir, S. Z. A., Matoo, J. M. and Sibat, F. K. (2015). Impact analysis of front line demonstration of rice (*Oryza sativa*) on the yield, economics and farmer's knowledge in temperate region of India. *Scientific Research and Essays*, *10*(14): 449-455.

Choudhary, K., Srivastava, V.K., Singh, U.P., Devedee, A. K. and Meena, A. K. (2021) Impact of Water Management and Crop Establishment Methods on Growth and Qualitative Characters of Rice (*Oryza sativa* L.). *Biological Forum – An International Journal*. *13*(2): 120-124.

Dayanand, R., Verma, K. and Mehta, S. M. (2011). Boosting Mustard Productionthrough Front Line Demonstrations. *Indian Research Journal of Extension Education*, *12*: 3-12.

Girish, K. J., Burman, R. R., Dubey, S. K. and Gajab, S. (2011). Yield Gap Analysis of Major Rice's in India. *Journal of Community Mobilization and Sustainable Development*, *6*(2): 209-216.

Girish, R., Bharath Kumar, T. P., Shruthi, H. R., Shivkumar, L. and Praveen, K. M. (2020). Frontline demonstration of paddy variety KPR 1 by KVK Chikkamgaluru district of Karnataka, India: An impact study. *Journal of Pharmacognosy & Phytochemistry*, Sp *9*(2): 303-305.

Ghosh, R. K., Sharma, L., Barman, S. and Dolai, A. K. (2009). Sustem of rice intensification: The alternative approach for increasing production of field crops. *Journal of Crop & Weed*, *5*: 65-67.

Jatav, S. K. and Pradhan, N. (2020). Economic Impact of Front Line Demonstration on Hybrid Rice (JRH 05). *International Journal of Current Microbiology and Applied Sciences*, Special Issue-*11*: 1811-1816.

Kumar, P. G., Prasanna Laxmi, R. and Subramanyam, D. (2019). Effect of on farm trial in popularization of rice variety NDLR-7 (Nandyal Sona) in Chittoor district of Andhra Pradesh. *International Journal of Agricultural Sciences, 11*(8): 8275-8276.

Lathwal, O. P. (2010). Evaluation of front line demonstrations on blackgram in irrigated agro ecosystem. *Annals of Agricultural Research*, *31*(1&2): 24- 27.

Raj, A. D., Yadav, V. and Rathod, J. H. (2014). Impact of frontline demonstration (FLD) on the yield of pulses. *International Journal of Science and Research, 9*(3): 1-4.

Samant, T. K. (2014). Evaluation of front line demonstration on rice (Manaswini). *Agriculture Update*, *9*(3): 311-315.

Samant, T. K. (2015). Impact of frontline demonstration on yield and economics of hybrid rice (Rajlaxmi). *Indian Journal of Agricultural Research*, *49*(1): 88-91.

Samui, S.K., Maitra, S., Roy, D.K., Mandal, A.K. and Saha, D. (2000). Evaluation of front line demonstration on groundnut. *Journal of Indian Society of Coastal Agricultural Research,18*(2): 180-183.

Shobha Rani, N., Prasad, G.S.V., Prasad, A.S.R., Sailaja, B., Muthuraman, P., Meera, S.N. and Viraktamath, B. C. (2010). Rice Almanac- India DRR technical Bulletin No 50 pp. 6.

Shrama, A. K., Kumar, V., Jha, S. K. and Sachan, R. C. (2011). Frontline demonstration on Indian Mustard: An Impact Assessment. *Indian Journal of Extension Education*, *11*(3): 25-31.

Singh, N. and Sharma, F. L. (2004). Impact of front line demonstration on gain in knowledge about mustard production technology among farmers, 2nd National Extension Education Congress, Society of Extension Education, Agra and MPUAT, Udaipur.

Singh, S. N., Singh, V. K., Singh, R. K. and Singh, K. R. (2007). Evaluation of on farm front line demonstrations on the yield of mustard in central plains zone of Uttar Pradesh. *Indian Research Journal of Extension Education, 7*(2&3): 79-81.