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Evaluation of Front Line Demonstration on Black Gram In Datia District of Bundelkhand Zone

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Abstract

To find out the worth or value of the improved technology, front line demonstrations on black gram were conducted by the KVK at farmers' fields in district Datia (Madhya Pradesh) during Kharif seasons of the year 2012, 2013, 2014,2015 and 2016. On five years overall average basis about 37.88 per cent higher grain yieldwas recorded under demonstrations than the farmers' traditional practices. The extension gap, technology gap andtechnology index were 239.20 kg/ ha, 342.20 Kg/ha and 28.18 per cent respectively. An additional investments of Rs.1426 per ha coupled with scientific monitoring of demonstrations and non-monetary factors resulted in additionalreturn of Rs. 9477 per ha. Fluctuating MSP sale price of mustard during different years influenced the economicreturns per unit area. On five years overall average basis Incremental benefit: Cost ratio was found as 2.69.

Key Words:*Front line demonstration, extension gap, technology gap, technology index*

Introduction

KVKs are grass root level organizations meant for application of technology through assessment, refinement and demonstration of proven produce technologies under different micro farming situations in a district(2). The main objective of front line demonstration was to show the worth or value of the technology. Hence this is a challenging task for the scientist and farmers. Under such condition it is quite imperative that reasons for the technological gap in black gram should be identified and studied critically in order to face the existing challenge of low productivity. In this context the present study has been undertaken to evaluate the difference between demonstrated technologies vis-a-vis practices followed by the local farmers in black gram crop.

Material and Methods

The present study was carried out by the Krishi Vigyan Kendra, Datia (M.P.) in *kharif,* seasons at the farmers' fields of six villages of Datia district in Bundelkhand zone during 2012 to 2016. All 60 front line demonstrations in 25 ha area were conducted in different villages. Technology for the present study with respect to FLD was on following:

S. N.	Practice	Demonstrated practice	Farmers' practice
1	Variety	IPU94-1, Sekhar-2, PU-31	Local variety
2	Seed treatment	Carbendazim @ 2g/kg	No seed treatment
3	Sowing Method	Ridge and furrow	Broadcast
4	Seedrate & spacing	16 kg/ha and 45X10 cm	20 kg and not definite
5	Fertilizers	20:60:20:30:: NPKS	Use of N & P as DAP mixing with seed at sowing
6	Weed control	Spray of Imazethapyr 10% SL @ 55g/ha at 15-20 DAS	No or Non judicious use of weedicides
7	Plant protection management	Yellow mosaic virus: Two spray of insecticide Thiamethoxam 25% WG @ 120g/ha	Non judicious use of insecticide

The improved technology included improved varieties, treatment of seed, plant protection measures was maintained during period of research study. In general, soils of the area under study were medium black clay with medium to low fertility status Seed treatment is done with Carbendazim50 WP @ 2 gm/kg of seed.The seed rate of Black gram is kept 16 kg / ha in demonstration fields. The sowing of black gram crop seed was done during first week of July to second week of July. The spacing between row to row and plant to plant was kept 45 x 10 cm for the front line demonstration. The fertilizers doses were also given as basal dose. Weed management through weedicide was done at 18 to 20 days after sowing. The data were collected through personal contact with farmers at farmer's field and after that tabulated and analyzed to find out the findings and conclusion. The statistical tool like percentage used in this study for analyzed data. The technology gap, extension gap and technology index were calculated using the following formula[7].

Extension gap = Demonstration yield- farmers' yield (control)
Technology gap = Potential yield- Demonstration yield
Technology index (%) = Technology gap × 100/Potential yield

Results and Discussion

The increase in grain yield underdemonstration was 32.26to 52.13 per cent than farmers'local practices. On the basis of five years, 37.88 percent yield advantage was recorded under demonstrationscarried out with improved cultivation technology ascompared to farmers' traditional way of black gram cultivation.The results indicated that the front line demonstrations have given a good impact over the farming community of Datia district as they were motivated by the new agricultural technologies applied in the FLD plots (Table 1). However, the obtained seed yield in FLD's was low as compared to Potential yield of the varieties due to drought like situation at the time of flowering and pod formation stage of the crop. This finding is in corroboration with the findings reported in the past[6].

Gap analysis*:* An extension gap of 200-318 kg per hectare was found between demonstrated technology and farmers practices during different five years and on average basis the extension gap was 239.20 kg per hectare (Table 1). The extension gap was lowest (200kg/ha) during Kharif 2013 and was highest (318 kg/ha)during Kharif 2016 (Table 1). Such gap might be attributed to adoption of improved technology in demonstrations which resulted in higher grain yield than the traditional farmers' practices. The similarly observations were also obtained in black gram crop[1].

Technology Gap: Wide technology gap were observed during different years and this was lowest (300 kg/ha) during Kharif 2014 and was highest (380 kg/ha) during Kharif 2013.On five years average basis the technology gap of total60 demonstrations was found as 342.20 kg per hectare (Table 1). The observed technology gap may be attributed dissimilarity in soil fertility status, rainfall distribution, disease and pest attacks as well as the change in the locations of demonstration plots every year. The difference in technology gap during different years could be due to more feasibility of recommendedtechnologies during different years.

Technology index: The technology index for all the demonstrations during different years were in accordance with technology gap. The highest technology index per cent of 31.67 was recorded in the year Kharif 2013 and the lowest was observed in the year Kharif 2014 which is 25.00 per cent. The technology index shows the feasibility of the evolved technology at the farmer's fields and the lower the value of technology index more is the feasibility of the technology[3, 4] (Table 1).

Economic return: The input and output prices of commodities prevailed during the demonstrations were taken for calculating

Table 1 Grain yield and gap analysis of front line demonstrations on Black gram at farmer's field

Year	No. of Demo	Variety	Potential Yield	Demo yield (kg)	Farmers Practice Yield (kg)	Yield increase (%)	Extension gap(kg)	Technology gap (kg)	Technology index (%)
2012	**12**	**IPU 94**	1200	848	627	35.25	221	352	29.33
2013	**12**	**IPU 94**	1200	820	620	32.26	200	380	31.67
2014	**12**	**IPU 94**	1200	900	673	33.73	227	300	25.00
2015	**12**	**Sekhar 2**	1225	868	638	36.05	230	357	29.14
2016	**12**	**Pant urd 1**	1250	928	610	52.13	318	322	25.76
Average			**1215.00**	**872.80**	**633.60**	**37.88**	**239.20**	**342.20**	**28.18**

Table 2 Economic analysis of front line demonstrations on Black gram at farmers' field

Year	Cost of cultivation		Selling price of Black gram in Rs./quintal (included MSP + Bonus)	Gross return		Increase in Gross Return (%)	Net Return		Increase in Net Return (%)	B: C ratio	
	Improved technologies	Local farmers practices		Improved technologies	Improved technologies		Improved technologies	Local farmers practices		Improved technologies	Local farmers practices
2012	12330	11000	4300	36464	26961	35.25	24134	15961	51.21	2.96	2.45
2013	13200	11900	4300	35260	26660	32.26	22060	14760	49.46	2.67	2.24
2014	14000	13000	4350	39150	29276	33.73	25150	16276	54.53	2.80	2.25
2015	**15900**	**14300**	4625	40145	29508	36.05	24245	15208	59.43	2.52	2.06
2016	18700	16800	5000	46400	30500	52.13	27700	13700	102.19	2.48	1.82
Average	**14826**	**13400**		**39484**	**28581**	**37.88**	**24658**	**15181**	**63.36**	**2.69**	**2.16**

gross return, cost of cultivation, net return and benefit cost ratio. Use of pricy seeds for crop sowing, seed treatment, recommended dose of chemical fertilizers, proper pest management etc, all of these are the main reasons for high cost of cultivation in demonstration fields than local check. Therefore, the average cost of cultivation of five years increased in demonstration practice (14826 Rs/ha) as compared to Local check (13400 Rs/ha). The cultivation of black gram under improved technologies gave higher net return of Rs. 24658/ha (63.36%) as compared to farmers' practices (Rs. 15181/ha. The benefit cost ratio of black gram under improved technologies was 2.69as compared to 2.16 under farmers' practices. The lowest and highest incremental benefit cost ratio depends on grain yields obtained and MSP sale rates under improved technologies compared to local check (farmers' practice). The similar results were also observed by earlier investigator [1, 5] (Table 2).

Conclusion

The above results showed that the integration of improved technology along with active participation of farmer has a positive effect on increase the grain yield and economic return of black gram crop Production. The suitable technology for enhancing the productivity of black gram crop and need to conduct such demonstrations may lead to the improvement and empowerment of farmers. These demonstration trails also enhance the relationship and confidence between farmers and KVK scientists. The recipient farmers of FLDs also play an important role as sourceof information and quality seeds for wider disseminationof the improved varieties of blackgram for other nearbyfarmers. It is concluded that the FLD programme is asuccessful tool in enhancing the production andproductivity of blackgram crop through changing theknowledge, attitude and skill of farmers.

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