

## **IMPACT OF FIRST LINE DEMONSTRATION OF SOYABEAN IN MALWA REGION OF MADHYA PRADESH**

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### **ABSTRACT**

*Demonstration is an effective tool of showing the worth of an improved practice over existing ones. The present investigation attempts to study the yield gaps between FLD trials and farmers fields. The FLD on soyabean had remarkable influence on the farmers about the use of improved variety seed, application of seed treating fungicide, inoculation of seed with rhizobium and phosphorus soluble micro organisms and application of IPM. FLD trials has helped in increasing production by rapid dissemination of farm information about new technology.*

### **INTRODUCTION**

First line demonstration is the new concept of field demonstration evolved by the Indian Council of Agricultural Research with the inception of the Technology mission on oilseed crops during mid eighties. The basic concept of demonstration is "seeing and believing". This is the most powerful instrument to motivate and convince the farmers to adopt the innovation beneficial is them . It is a way of showing farmers the worth of an improved practice over existing ones. When farmers are to show how to carry out an entirely new practice or an old practice in a better way, the demonstration is very efficient tool.

The first line demonstration on oilseed crop in Rajgarh district was started in the 1998-99 in order to demonstrate newly released crop production and protection technologies and its management practices in the farmer's fields.

Keeping in view the significance of transfer of technology the present investigation attempts to study the yield gaps between first line demonstration trials and farmers field, extent of technological gap, extension gap, technological index and additional benefit and cost ratios.

### **METHODOLOGY**

This study was conducted in the Rajgarh district of Madhya Pradesh during the years 1998-1999, 1999-2000, 2000-2001, 2001-2002 and 2002-2003. During the five years of period ninety two first line demonstrations conducted by the multi disciplinary team of Krishi Vigyan Kendra, Rajgarh. These FLD were conducted in different four locations (block) of district i.e. nineteen FLD in Kolukehdi village of Rajgarh block 25 FLD in Berkheda Village of Biora block, 22 FLD in Kadiya village of Narsinghgarh block 26 FLD in Chodapura Village of Rajgarh block. Thus the total number of FLD respondents were 92. The area of FLD and local control plots in between one acre to one hectare . The soil type of fields were medium black to gravel mixed medium black soil. The whole package of practices were demonstrate with J.S. 335 variety. Farmers practice was considered as control plot. The data on output of soybean crop & inputs used per hectare were collected from the first line demonstration. In addition to this data of traditional practices followed by the farmers have also been collected.

To find out the technological gaps, Extension gap and technological index, the following

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formula were applied :

1. Technological gap =  $P_i - D_i$
2. Extension gap =  $D_i - F_i$
3. Technological index =  $\frac{P_i - D_i}{P_i} \times 100$

where,

$P_i$  = Potential yield of  $i^{\text{th}}$  crop ( soybean)

$D_i$  = Demonstration yield of  $i^{\text{th}}$  crop (soybean)

$F_i$  = Farmers yield of  $i^{\text{th}}$  crop ( soybean)

## RESULTS AND DISCUSSION

The data presented in table 1 shows the number of first line demonstrations their yield performance, average yields of local check (control) plot, percentage increase in yield over local check, technological gap, extension gap and technological index for years 1998-99 to 2002-2003.

It is evident from the table that the average yield of first line demonstrations were 18.08, 14.46, 16.47, 19.18 and 6.54 quintal per hectare in the year 1998-1999, 1999-2000, 2000-2001, 2001-2002 and 2002-2003. respectively. Similarly the average yield of control plots were 11.47, 10.47, 12.50, 12.80 and 3.98 quintal per hectare. It shows 57.09, 38.01, 31.76, 49.84 and 64.32 percent increase in yield of first line demonstrations over control plots yield in

the respective five years. This is because of good quality improved variety seed, application of seed treating fungicide and its inoculation with Rhizobium and phosphorus soluble micro organism alongwith other all improved management practices under the supervision of Krishi Vigyan Kendra scientists. The lowest yield of 6.54 quintal per hectare in first line demonstration and 3.98 quintal per hectare in local control plots was due to sever drought during the year 2002-2003 in the district.

Though the first line demonstration were laid down under the supervision of scientists but there exists a gap between the potential yield, this might be due to the variation in micro field situations. Hence location specific technology are necessary to bridge this gap. The technological gap 18.46 was highest in the year 2002-2003 it was due to severe drought, However it was narrowed in other four years.

The extension gap of 6.63 3.99, 3.97, 6.38 and 2.56 were observed during the year 1998-1999, 1999-2000, 2000-2001, 2001-2002, and 2002-2003 respectively. However the yield of first line demonstration have normally maintained a high level over control plots.

**Table 1 : Impact of first line demonstration of soybean on yield gap, extension gap and technological index.**

Sr.No	Particular	Period of Study				
		1998-99	1999-00	2000-01	2001-02	2001-03
1	Total area (ha)	10	10	10	5	5
2	Number of FLD	19	25	22	12	14
3	Average yield (Quintal /ha)					
	FLD	18.08	14.46	16.47	19.18	6.54
	Control	11.45	10.47	12.50	12.80	3.98
4	Additional yield (Quintal /ha)	6.63	3.99	3.97	6.38	2.56
5	Percentage increase in yield over control	57.09	38.01	31.76	49.84	64.32
6	Technological gap	6.92	10.54	8.53	5.82	18.46
7	Extension gap	6.63	3.99	3.97	6.38	2.6
8	Technological index	27.68	42.16	34.12	23.28	73.84

**Table 2 : Economic analysis of first line demonstrations and control plots.**

Sr.No	Particular	Period of First Line Demonstration					
		1998-99	1999-00	2000-01	2001-02	2001-03	
1	Input	<b>FLD</b>	2785	3133	2576	2905	2905
		<b>Control</b>	1595	1949	1896	2087	2087
2	Labour and other cost	<b>FLD</b>	4500	4650	4800	4900	3500
		<b>Control</b>	4000	4100	4200	4300	2500
3	Production cost	<b>FLD</b>	7285	7783	7376	7805	6405
		<b>Control</b>	5595	6049	6096	6387	4587
4	Additional Cost of FLD		1690	1734	1240	1418	1818
5	Returns	<b>FLD</b>					
		Grain	18080	15183	18117	23016	7848
		Straw	904	759	905	1150	392
		<b>Control</b>					
		Grain	11450	10993	13750	15360	4776
		Straw	572	549	687	768	238
6	Gross returns	<b>FLD</b>	18984	15942	19022	24166	8240
		<b>Control</b>	12022	11542	14437	16128	5014
7	Net return on production cost	<b>FLD</b>	11699	8158	11645	16360	1834
		<b>Control</b>	6427	5493	8340	9741	427
8	Additional return		5272	2665	3304	6619	1407
9	Percentage increase in gross income.		57.91	38.12	31.75	49.83	64.33
10	B:C ratio on production cost		3.11	1.53	2.66	4.66	0.77
11	B:C ratio on additional input		4.43	2.25	4.85	8.08	1.71

Cost of grain 1000, 1050, 1100, 1200 and per 1200 per quintal for the 1998-99, 1999-2000, 2000-01, 2001-02 and 2002-03 respectively.

The extension gap in all the five years was lower than the technological gap which shows that the farmers were motivated with the results of first line demonstration so they adopted the demonstrated technology. The consequences of adoption of innovations in the form of low extension gap. It is concluded that first line demonstration is the best teaching training tool to motivating the farmers for adoption of improved new technologies.

The adoption of technology in first line demonstration trials was studied through technological index. Technological index shows the feasibility of generated technology on the micro situation of the farmers. The lower the value of the

technology index more is the feasibility of the technology. The technological index was lowest in the 2001-2002. These findings get support with the findings of Kadian et al (1997) The technological index of 73.84 in the year 2002-2003 was due to severe drought.

Economic analysis of first line demonstration and control plots:

Table 2 revealed that the input and production cost of first line demonstration were higher than the control plots in all the five years. It was due to the fact that farmers were not applied recommended dose of fertilizer and pesticides and they were sown their self produced seed of unidentified varieties. The gross returns of rupees 18984,

15942, 19022, 24166 and 8240 were obtained from first line demonstration plots and 12022, 11542, 14437, 16128 and 5014 from local check plots during the year 1998-1999, 1999-2000, 2000-2001, 2001-2002 and 2002-2003 respectively. There were 57.91, 38.12, 31.75, 49.83, and 64.33 percent increase in gross income of farmers with demonstration over control plots these finding supported by Mishra (1992).

The additional returns of rupees 5272, 2665, 3304, 6619 and 1407 were obtained in the year 1998-1999, 1999-2000, 2000-2001, 2001-2002 and 2002-2003 respectively. The highest additional return of Rs. 6619 was obtained in the year 2001-2002 due to favorable weather conditions during whole crop season of 90 days. Similar findings were reported by Sharma et al (2001).

On the basis of benefit obtained over production cost Benefit cost ratio were completed for all the five years of study Highest B:C ratio (4.66) was observed in the year 2001-2002 followed by 3.11 in the year 1998-1999. It may be due to higher yield obtained with favourable weather conditions. The lowest B:C ratio 0.77 was in 2002-2003 this was due to the lowest yield in severe drought condition.

## CONCLUSION

The study concluded that first line demonstration on soybean had remarkable influence on the farmers about the use of improved variety seed, application of seed treating fungicide, inoculation of seed with rhizobium, and phosphorus soluble micro organism (PSM), application of IPM (Integrated Pest Management) practices to increase the yield of soybean. It is suggested that first line demonstration trials has helped in increasing production by rapid dissemination of farm information about improved new technology.

## REFERENCES

- Anonymous. 1992. Basic Agricultural Statistics 1993-1994 to 1997-1998. Commissioner land records, Bhopal, M.P.
- Kadian, K. S., Sharma Ravindra and Sharma A. K. 1997. Evaluation of front line demonstration trials on oilseed in Kangra valley of Himachal Pradesh. *Ann. Agric. Res.* 18(1): 40-43
- Mishra, C. M. 1992. Studies on effect of improved package of practices and local practices on the yield on summer groundnut Bhartiya Krishi Anusandhan Patrika. 7:131-135
- Sharma R. K. and Kushwah, S. S. 2001. Evaluation of first line demonstration trials in Rajgarh district of Madhya Pradesh *Agric. Sci. Digest.* 21(3) : 182-185
- Tomar, R. K. S. 2002. Yield net return and sustainability of blackgram under front line demonstration in Bundelkhand Agro Eco system of Madhya Pradesh. *Bhartiya Krishi Anusandhan Patrika.* 17(4): 202-207