

Yield gap analysis through Front Line Demonstration in Wheat crop

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Abstract- Front Line Demonstration is one of the most powerful tools for transfer of technology. The present study was undertaken to find out the yield gap through FLDs on wheat crop. Krishi Vigyan Kendra, JAU, Amreli(Gujarat) conducted 100 demonstration on wheat since 2006-07 to 2009-10 in different seven adopted villages. Prevailing farmers' practices were treated as control for comparison with recommended practices. The average four year data observed that an average yield of demonstrated plot was obtained 43.26 q/ha over control (36.59q/ha) with an additional yield of 6.67 q/ha and the increase average wheat productivity by 18.22 per cent. The average technology gap and index were found to be 6.74 and 13.48 per cent.

Index Terms- Front Line Demonstration; Transfer of Technology; Recommended practices; yield gap;

I. INTRODUCTION

Wheat (*Triticum*) is the second most important winter cereal in India after rice contributing substantially to the national food security by providing more than 50% of the calories to the people who mainly depend on it. In historical perspective India had made spectacular advancement in productivity and sustainability of wheat and wheat based cropping system. The scenario of the past ten years has clearly indicated that the wheat production in the country has soared ahead despite area remaining the same. The wheat programme has released 399 wheat varieties, comprising bread wheat (335), durum (54), dicoccum (5) and triticale (5), for cultivation under different production conditions in all the wheat growing zones. (Anonymous, 2012)

Wheat is an important food crop of Amreli district of Gujarat state. Amreli district has been considered as productively potential region of wheat crop due to assured irrigation facilities and favourable soil and climate conditions. However there is still a wide gap between the productions. Potential and the actual production realized by the farmers. This may be due to partial adoption of recommended package of practices by the wheat growers. Technology gap is a major problem in increasing wheat production in Amreli district of Gujarat State. So far, no systematic effort was made to study the technological gap existing in various components of wheat cultivation.

II. METHODOLOGY

The study was carried out by Krishi Vigyan Kendra, Junagadh Agricultural University, Amreli during *rabi* season from 2006-07 to 2009-10 (four consecutive years) in the farmers field of seven adopted villages.(Detad, Khambhaliya, Sajiyavadar, Hamapur, Gopalgram, Morzar and Bagoya) of Amreli district. During this four year of study, in area of 40 ha was covered with plot size 0.4 ha under Front-line demonstration with active participation of 100 farmers. Before conducting FLDs, a list of farmers was prepared from group meeting and specific skill training was given to the selected farmers regarding package of practices of wheat. The difference between demonstration package and existing farmers practices are given in Table 1.

In general the soils under study were medium black soil in texture with a PH range in between 6.8 to 8.0. The available nitrogen, phosphorous and potassium varied between 100-250, 26-60, 150-300 Kg/ha, respectively. However, the soils were deficient in micro nutrients particularly zinc, magnesium and ferrus.

In demonstration plots, use of quality seeds of improved varieties, timely weeding, need based of pesticides as well as balanced fertilization, irrigation were emphasized and comparison has been made with the existing practices. (Table 1). The necessary step for the selection of site and farmers, lay out of demonstration, etc were followed as suggest by Chaudhary (1999). The tradition practices were maintained in case of local check. The data output were collected from both FLD plots as well as control plot and finally the extension gap, technological gap, technological index along with the benefit-cost ratio were calculated. (Samui *et al.*,2000) as given below.

Technology gap = Potential yield- Demonstration yield

Extension gap = Demonstration yield- Farmers yield

Technology index = $\frac{\text{Potential yield} - \text{Demonstration yield}}{\text{Potential yield}}$

Table 1 : Comparison between demonstration packing and existing practices under wheat crop

Sr. No.	Particulars	Wheat	
		Demonstration	Farmer

			practice
1	Farming situation	Irrigated	Irrigated
2	Variety	GW-496	Lok-1
3	Time of sowing	November	Octo-Nov.
4	Method of sowing	Line sowing	Line sowing
5	Seed treatment	Thirum 3 g/kg of seed	Without seed treatment
6	Seed rate	120-125 kg/ha	130-140 kg/ha
7	Fertilizer dose	NPK (120-60-00)	NPK (100-80-00)
8	Plant protection	Application of mencozeb for control of black spot on seed	Injudicious use of pesticides and fungicides
9	Weed management	Pendimethalin @ 55 ml in 10 lit of water as a pre-emergence followed by Metsulfuron @ 0.8 g in 10 lit of water as a post emergence	No weeding

III. RESULT AND DISCUSSION

The data showed in Table 2 that the yield of wheat fluctuated successively over the years in demonstration plot. The maximum yield was reported (46.11 q/ha) during the year 2006-07 and minimum yield was reported in the year 2007-08 (7.04 q/ha) and the average yield of four year was reported 43.26 q/ha over control (36.59 q/ha). During four year of study, the increase in per cent of yield was ranging between 14.08 to 21.92. The results are similar with the findings of Tomer *et al.*(2003), Tiwari and Saxena (2001) and Tiwari *et al.*(2003). The data indicated that the positive effect of Front line demonstration over the existing practices towards increasing the yield of wheat in Amreli district of Gujarat State. B. C. ratio was recorded to be higher under demonstration than the control during all the year.

The extension gap ranging between 5.34 to 8.12 q/ha. During the period of study emphasis the need to educate the farmers through various techniques for adoption of improved agricultural production reverse the trend of wide extension gap.

Table 2 Productivity, technology gap, extension gap and Technology index in Wheat (GW-496) under Front Line Demonstration

Sr. no.	Year	Area (ha)	No. of Farmers	Seed yield (q /ha)			% increase over control	Technology gap (q/ha)	Extension gap (q/ha)	Technology Index (%)	B. C. ratio	
				Potential	Demonstration	Control					Demonstration	Local check
1	2006-07	10	25	50	46.11	38.41	20.04	3.89	7.70	7.78	2.16	1.88
2	2007-08	10	25	50	37.04	31.70	16.85	12.96	5.34	25.92	1.81	1.79
3	2008-09	10	25	50	45.16	37.04	21.92	4.84	8.12	9.68	5.13	3.73
4	2009-10	10	25	50	44.72	39.20	14.08	5.28	5.52	10.56	3.19	2.57
	Average				43.26	36.59	18.22	6.74	6.67	13.48	3.12	2.49

The technological gap i.e. the difference between potential yield and yield of demonstration plot (**yield**) were 3.89, 12.96, 4.84 and 5.28 during the year 2006-07, 2007-08, 2008-09 and 2009-10, respectively. The average technology gap in all the years was 6.74 q/ha. Technology gap imply researchable issues for realization of potential yield, while the extension gap imply what can be achieved by the transfer of existing technologies.

The technological index revealed the feasibility of the demonstration technology. As such variation in technology index (7.78 to 25.92 per cent) during the study period in certain area may be attributed to dissimilarity in the soil fertility condition, pest-diseases attack, non availability and poor quality of irrigation water and weather condition.

IV. CONCLUSION

On the basis of the result obtained in present study it can be concluded that use of improved method of wheat cultivation can reduced the technology gap to a considerable extent thus leading to increase productivity of wheat in the district. Extension gap ranged between 5.34 to 8.12 q/ha which emphasis the need to educate the farmers through various means like village level training, on campus training, method demonstration, front line

demonstration, etc. Technology index which shows the feasibility of the technology demonstrated has depicted good performance of the intervention.

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