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Study of frontline demonstration of wheat under irrigated conditions

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Abstract

Front Line demonstrations (FLDs) is a unique approach to provide an direct interface between the research of the 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. Seeking the aforesaid statement the present study was undertaken at Seoni district to identify the yield gaps between improved practices with improved variety of Wheat for terminal heat JW 3382 and also rich in Iron, zinc and protein and suitable for chapatti making in the Front Line Demonstration (FLD) and farmers practice. The technology validated in FLDs documented 17.07% and 22.61% increased in yield over the farmers practice for two consecutive years *i.e.* 2017-18 and 2018-19 respectively. The study revealed that average yield of wheat in the improved practices for the year 2017-18 was 35.66 q/ha and 47.11 q/ha for 2018-19 which was found to be more as compare to farmer practice 30.46 q/ha for 2017-18 and 38.42 q/ha in 2018-19. The technology gap was observed to be 14.34 and 2.89 q/ha for the year 2017-18 and 2018-19 respectively. The extension gap calculated was 5.20 and 8.69 q/ha for the two consecutive years *i.e.* 2017-18 and 2018-19. The Technology Index thus obtain was 28.68% and 5.78% respectively for both the years.

Keywords: front line demonstration (FLD), extension gap, technology gap and technology index

Introduction

Wheat (*Triticum aestivum* L.) is the second most important cereal crop that contributes to a significant extent in global food and nutritional security. With the growing demands under the oblige of depleting natural resources, environmental versatility, and increased risk of epidemic outbreaks, the task of increasing wheat production has become disconcerting. However, in the past decade a general slowdown in increase in the productivity of wheat has been noticed, particularly under environments relatively unfavourable for growth and development of wheat (Nagarajan, 2005) ^[1]. During past few years, more than 50% sowing of wheat after gets delayed till December or early January causing substantial loss in grain yield due to late harvesting of the earlier crop. As a staple food, wheat is also used for making several products like bread, biscuit, cakes, pasta, noodles and grain alcohol. The scenario of the past 10 years has clearly indicated that the wheat production in the country soared ahead despite the area remaining same (Joshi *et al.*, 2014) ^[2].

The major producing states of wheat are Uttar Pradesh, Punjab, Haryana, Madhya Pradesh, Rajasthan and Bihar due to assured irrigation facility and favourable soil and climate condition. But there is large gap in production due to several living and inanimate factors. Beside the several constraints of low productivity, poor extension of improved agronomic practices is one top (Singh, 2017) ^[5]. The improper adoption of scientific package of practices leads to low production than the potential production. The front line demonstration is an important activity to disseminate the scientific package of practices and technology at farmer's field. With this perception, the front line demonstration was laid down with improved nutri rich variety JW 3382 and scientific package of practices to increase the production and livelihood of the farmers of Seoni district.

Material and Methods

The present investigation was carried out by the Krishi Vigyan Kendra, Seoni during *rabi* season 2017-18 and 2018-19 in farmers field of Village: Fareda district Seoni. According to district agriculture profile Seoni falls under Kymore Plateau and Satpura Hill Zone (MP-4) as per agro climatic zone (NARP Zone). As per geographic coordinated of the district it falls

between latitude 22°06'N longitude 79°35'N and altitude 45 msl with deep to medium black soil. In general, the PH of the soil ranges in between 5.5 to 7.2. Under the Study 4 ha area was covered with the plot size 0.4 ha with the active participation of 10 selected farmers for demonstration of improved variety JW 3382 of wheat. The farmers were trained with various training programme on scientific package of practices of wheat production. The nutri rich variety JW 3382 was demonstrated with emphasizing sowing with seed drill, use of recommended seed rate, proper application of fertilizer, timely application of insecticides as well as weedicide and most important providing irrigation to the crop during its critical growth stages and then comparison has been made between improved practices and the existing practices at farmer's field. (Table 1).

Wheat is an important winter cereal and grown by many farmers of Seoni district of Madhya Pradesh state. The district has been considered as productively potential region of wheat crop due to assured irrigation facilities along with fertile soil and climatic conditions. This may be due to partial or lack of adoption of recommended package of practices by the wheat growers. Technology gap is a major problem in increasing

wheat production in the district. So far, no systematic effort was made to study the technological gap existing in various components of wheat cultivation.

The data was collected from both recommended plots as well as farmers plot and finally the extension gap, technological gap, technological index in percentage along with the benefit-cost ratio were calculated. (Samui *et al.*, 2000) [6] as given below.

The formula used for calculating the aforesaid data was as follows

1. Technology gap = Potential yield- Demonstration plot yield
2. Extension gap = Demonstration yield - Farmers plot yield

$$\text{Technology Index (\%)} = \frac{\text{Potential Yield-Demonstration Yield}}{\text{Potential Yield}} \times 100$$

3.

$$\text{Benefit and Cost(B:C) Ratio} = \frac{\text{Gross Income}}{\text{Cost of cultivation}}$$

4.

Table 1: Comparison between improved practised adopted at demonstration plot and existing practices under farmers filed in wheat crop

Package of practices	Farming situation	Variety used	Time of Sowing	Method of sowing	Seeds rate	Seed treatment	stages of irrigation	application of fertilizer	Doses of insecticides applied	Use of pre emergence weedicide	Weedicide application	
Wheat crop	Improved practices	Irrigated	JW 3382	First Fort night of November	Use of seed drill machine	95-100 kg/hac	Thiram or Bavistin 3g/kg seeds	during critical growth stages	irrigated timely sown conditions is 120:60:40kg N:P2O5:K2O/ha	With endosulfan 35 EC @ 2.3L or chloropyriphos @ 3L/ha) at 15DAS for termites. For the management of aphids, foliar spray of imidacloprid 200SL @20g a.i./ha on border rows at the start of the aphid colonization be given.	Apply Pendimethalin @ 1000 g/ha at 0-3 days after sowing in 500-600 litres of water/ha as pre-emergence	For control grassy weeds only Clodinafop @ 60 g/ha or Fenoxaprop-ethyl @ 100 g/ha) in 250-300 litres of water/ha should be applied
	practices adopted at farmers field	irrigated	JW 3020/ Mixed seeds	End of October	Broadcasting the seeds	115-130/ kg/hac	No seeds treatment	as per the availability at farmer field	irrigated timely sown conditions is 120:80:20kg N:P2O5:K2O/ha	unwise use of insecticides and pesticides	no use of pre emergence weedicides	no weeding

Result and Discussion

The data showed in Table 2 revealed that the yield of wheat crop for the 2 successive years were recorded which indicates that seed yield was comparatively higher and it was found to be increased by adoption of improved scientific package of practices in the demonstration plot for both years i.e. 2017-18 (35.66 q/ha) and 2018-19 (47.11 q/hac) as compare to farmers

field which 30.46 q/hac for 2017-18 and 38.42 q/hac for 2018-19 was fluctuated successively over the years in demonstration plot. The data indicated that the positive effect of Front line demonstration over the existing practices towards increasing the yield of wheat in Seoni district of Madhya Pradesh State.

Table 2: Seeds Yield, Technology gap, Extension gap and Technology index in Wheat crop variety (JW 3382) under Front Line Demonstration (FLD) and Farmer practice for two years

Year	Area	no. of farmers	seed yield (q/ha)			% increase	technology index %	Technology gap (q/ha)	Extension gap	B:C ratio	
			potential	demo	farmer					demo	farmer
2017-18	4 hac	10	50	35.66	30.46	17.07	14.34	5.20	28.68	2.35	1.90
2018-19	4 hac	10	50	47.11	38.42	22.61	2.89	8.69	5.78	2.77	2.57

The Extension gap during the year 2017-18 was found to be 5.20 were as for the 2018-19 was recorded to be 8.69 which clearly shows that there is a greater need to train and educated

the farmers as well as the farm women to undertake and adopt advance package of practices which will help us to reverse the wider extension gap.

The technology gap thus calculated during the study indicates that during the year 2017-18 the technology gap recorded was 14.34 q/ha and 2.89 q/ha for the year 2018-19. which shows that the average gap recorded was 8.16 q/hac.

The Technology index used in the study revealed the suitability of the technologies which are being used in

demonstration. The variation in the technology index i.e. 28.68% for 2017-18 and 5.78% for 2018-19 thus lower the values of technology index indicates more feasibility of the technology similar finding were noted by Jeengar *et al.*, 2006^[10] and Singh *et al.*, 2007^[11].

Table 3: Economics of Front Line Demonstration (FLD) of Wheat variety (JW 3382) as affected by recommended practices and farmer practices under irrigated condition

Year	No. of demonstrations	Yield		% increase over FP	Gross Expenditure (Rs/ha)		Gross return (Rs/ha)		Net return (Rs/ha)		B:C	
		RP	FP		RP	FP	RP	FP	RP	FP	RP	FP
2017-18	05	35.66	30.46	17.70	25100	27120	70560	68544	47523	40854	2.35	1.90
2018-19	05	47.11	38.42	22.61	31012	28144	86056	72532	55044	44388	2.77	2.57

Therefore, it can also be accounted for diverseness in fertility status of soil followed by inaccessibility of irrigation water on time during the critical growth stages of crop moreover greater incidence of insect and pest in the prevailing crop.

Conclusion

Thus, it may be revealed that the yield and profit in wheat crop considerably increased with the adoption of improved and nutritive variety of wheat JW 3382 with scientific package of practices. Though, the seed yield level obtained under improved practice was greater than the farmer practice and seed yield of variety might be additionally increased by using suggested production technologies. Hence, it is prerequisite to publicize the improved wheat production technologies among the farmers with operative extension approaches such as training programmes conducted at village level, on campus and off campus training of farmers, farm women and rural youth. The variety involved in the study will not only increase the yield at farmers field but also it will greatly improve the health of the farmer family by providing more of nutrition like as zinc iron etc.

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