

Research Article

Impact of front line demonstrations of *Rabi* onion in Ambala district of Haryana

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SUMMARY : Front line demonstrations (FLDs) is an appropriate tool to demonstrate recommended technologies among the farmers. Krishi Vigyan Kendra, Ambala (Haryana) conducted 25 demonstrations especially on plant protection measures adopted in *Rabi* onion against the purple blotch and thrips attack in onion. The critical inputs were identified from the recommended package of practices of Punjab and their usages were discussed in practising farmer's trainings at the farmer's field and KVK campus. The constraints in the production of onion crop were identified and their remedies at farming situation were studied along with the participation of farmers with more emphasis to increase the productivity of onion per unit area and also get the feedback from farmers on the performance demonstrated plot of onion during the period of study of four years (2009-2010 to 2012-2013). The average four years data revealed that an average yield of demonstrated plot was obtained 190 q/ha and local check (171.50 q/ha) and the average percentage increase in yield over local check was 12.50 per cent. The average extension gap were found to be 18.40 q/ha. From the study, it revealed that over the year's local selection (*Kali Patti Pyaz*) performed better at demonstrated plot in comparison to local check. Benefit: cost ratio was recorded to be higher under demonstrated plot against check during the part of the study.

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KEY WORDS :

 FLD, *Rabi* onion,
Purple blotch,
Thrips, Extension
gap

BACKGROUND AND OBJECTIVES

Onion (*Allium Cepa* L.) is one of the most important commercial cool season vegetable crops (Hiremath and Hilli, 2012). Onion can be grown under wide range of climatic conditions and in all type of soils (deep fragile loam and alluvial soils are the best soil for its production) but it grows best under mild climate without extreme heat or cold or excessive rainfall (Anonymous, 2012 and Anonymous, 2013). The production and productivity of onion not only depends upon area and cultural practices but also on genotype and environment of the crop (Hiremath and Nagarj, 2010 ; Hiremath and Hilli, 2012 and Anonymous, 2008). The productivity of onion is much low in India than the world average (Pandey, 2000 and Lawande, 2005).

In Ambala district, most of the farmers use their own seed material of last year for cultivation,

which is not properly cleaned might be the possible reasons for reducing the productivity. Further, the replacement of traditional practices with improved or recommended package and practices and non-availability of sufficient quantity/quality seeds of improved variety in a time, which is the most important critical input. Moreover, the higher incidence of disease and pest attack leads to further reduce in yield. Excessive moisture favours incidence of purple blotch especially when the vegetative growth is over. With this in view, the present investigation was undertaken to evaluate the performance of onion variety local selection (*Kali Patti Pyaz*) with local variety through front line demonstration.

RESOURCES AND METHODS

The present study was conducted at Krishi

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Table A: Details of <i>Rabi</i> onion growing under existing farmer's practices and improved practices adopted in frontline demonstrations at farmer's field in Ambala district of Haryana			
Sr.No.	Operations	Existing farmer's practices	Improved practices adopted in demonstrated plot (FLDs)
1.	Farming situation	Irrigated	Irrigated
2.	Variety	Private company seeds or farmer's own seeds of last season kept for the cultivation of <i>Rabi</i> onion in next growing season	local selection (<i>Kali Patti Pyaaz</i>)
3.	Seed treatment	Not done by the farmers	Seed treatment with thiram or captan @ 0.3% (3.0 g per kg of seed) (Rec*.)
4.	Method of sowing	Broadcasting	Line sowing
5.	Fertilizers dosages	Non-adoption of recommended package of Practices. Usually more emphasizes were done on the higher dosages of urea and application of muriate of potash (MOP) is omitted due to higher cost.	Urea -90 kg per acre Single superphosphate – 125 kg per acre muriate of potash -35 kg per acre (Rec*.)
6.	Weed management	Chemical weed control by spraying of stomp 30 EC (pendimethalin) @500 ml/acre	Chemical weed control by spraying of stomp 30 EC (pendimethalin)@ 1lit./acre followed by one hoeing. Application of herbicide was done within a week after transplanting (Rec*.)
7.	Plant protection measures disease incidence (Purple blotch)	Non-adoption of recommended package of practices and injudicious use of pesticides	Spray the crop with 600 g of indofil M-45 mixed with 200 ml of linseed oil (as sticker) in 200 lit. of water per acre as soon as the disease appears. This should be followed by 3 or more sprays at 10 days interval. (Rec*.)
8.	Plant protection measures pest incidence (Thrips attack)	Non-adoption of recommended package of practices and injudicious use of pesticides	Spray 250 ml of malathion 50 EC in 80 lit. of water per acre as soon as the pest appears. Repeat the application if necessary after 15 days interval) (Rec*.)

Rec*.- (Recommended) Package of Practices for cultivation of Vegetables (PAU) 2013

Vigyan Kendra, Tepla, Ambala district from Haryana in the adopted villages of the operational area of KVK for four years (2009-2010 to 2012-13).

In total, 15 demonstrations of 0.4 ha. each was conducted in different villages of Ambala district of Haryana. The necessary step for selection of site and farmers, layout of demonstration etc were followed as suggested by Choudhary (1999). Before conducting FLDs, a list of farmers of different villages were prepared from survey and farmer's meetings and specific skill training was imparted in the form of practising farmer's training at the farmer's field or at KVK campus regarding different aspects of cultivation of onion and its plant protection measures. The traditional practices were maintained in case of local checks. The data output were collected from both FLD plot as well as check plots and finally the extension gap (Katare *et al.*, 2011) along with the benefit cost ratio were worked out (Samui *et al.*, 2000) as given below:

Extension gap N Demonstration yield > Farmers yield

In general the soils under study were sandy loam in texture with a pH ranging between 7 -7.5. The variety selected on the basis of preference of local selection of *Kali Patti Pyaz*. 4 to 5 kg seed were sown to raise seedlings in the nursery

for transplanting in an acre. The nursery has been raised from mid-October to mid-November and transplant from the middle of December to middle of January. The close planting at 15 cm between rows and 7.5 cm between plants is most conducive for high yields. Large (10 to 15 cm) and healthy seedlings are better to get higher yields.

The data on average cost of cultivation, average gross return and average net return and B:C ratio were collected from frontline demonstrations plots for working out the economic feasibility of local selection *Kali Patti Pyaz*. The recommended packages of practices were followed to conduct the front line demonstrations (FLDs) at the farmer's field (Anonymous, 2007). The difference between the demonstration package and existing farmers practices are given in Table A.

OBSERVATIONS AND ANALYSIS

The data of Table 1 revealed that the yield of local selection of onion *Kali Patti Pyaz* performed well at the farmer's field in demonstrated plot as compared to farmer's practices (check). The maximum yield recorded in demonstrated plot was 207.5 q/ha during 2012-13 and minimum yield was 169 q/ha. The average yield of four years in demonstrated plot was

recorded 190 q/ha over local check (171.50 q/ha). The increase in per cent of yield was ranged from 5.2 to 18.57 q/ha during four years of study Hiremath *et al.* (2007). On an average basis, 12.50 per cent increase in yield over local check was recorded. The extension gap showed an increasing trend. The extension gap ranged from 10.00 to 32.50 q/ha during the period of study.

The average gross returns (Rs.191937.50/ha), net returns (Rs.119437.50/ha) and B : C ratio (1.64) were recorded higher in the local selection *Kali Patti Pyaz* in the years 2012-13 as compared to local check. Benefit-cost ratio was recorded to be higher under demonstrated plot (Table 2) against check during all the years of study. The results clearly indicate the positive effects of FLDs over the existing practices towards enhancing the yield of *Rabi* onion in Ambala district of Haryana.

The reason for the higher yield in FLDs is due to recommended dosages of fertilizers and module for disease and pest management against purple blotch and thrips were followed properly. However, yield of *Rabi* onion varied in different years which might be due to the variation in climatic conditions and incidence of disease and pest attack. The percentage increases in yield over local check were recorded constantly year wise during the period of study.

The feedback taken from the farmers that the effective control of weeds with the pre-emergence application of pendimethalin (*i.e.* Stomp) well impressed the farmers of selected villages. However, the soil application of phorate, carbofuran and foliar application of un-recommended pesticides (Farmer's practices) against thrips attack could not much impress the onion growers. Reasons were that the complete controls of thrips were not done with one or two pesticides applications at their fields. Besides this, the farmers were well convinced with one or two foliar application of mancozeb as a precautionary spray against the purple blotch and the benefit of the recommended dosages of fertilizers in *Rabi* onion crop as these improved the quality of bulbs. In Ambala district of Haryana, the low productivity of onion is because of farmers are not adopting recommended package of practices.

Conclusion:

The above findings inferred that the usage of recommended package of practices leads to manage the disease (Purple blotch) and pest (Thrips) attack, thus, lead to increased productivity of *Rabi* onion in the Ambala district of Haryana. To reduce the technological gap and to production to reverse the trend of extension gap, emphasizes will be done to conduct more number of practising farmer's training at farmer's field and

Table 1: Performance of FLD (front line demonstrations) of *Rabi* onion in Ambala district of Haryana

Year	Area (ha.)	No. of demo.	Variety	Yield (q./ha) demo.	Yield (q./ha) check	Percentage increase in yield over local check (%)	Ext.gap* (q./ha)	Farming situation	Soil type
2009-2010	2.0	5	Local selection (<i>Kali Patti Pyaz</i>)	200	190	5.2	10.00	Irrigated	Sandy loam
2010-2011	2.0	5	Local selection (<i>Kali Patti Pyaz</i>)	183	171	13.5	12.00	Irrigated	Sandy loam
2011-2012	2.0	5	Local selection (<i>Kali Patti Pyaz</i>)	169	150	12.67	19.00	Irrigated	Sandy loam to loam
2012-2013	2.0	5	Local selection (<i>Kali Patti Pyaz</i>)	207.5	175	18.57	32.50	Irrigated	Sandy loam
Average	--	--	--	190.00	171.50	12.50	18.40	--	--

*Extension gap = Demonstration yield - Farmer's yield

Table 2 : Economic impact of cultivation of *Rabi* onion towards the farmer's

Year	Average cost of cultivation (Rs./ha)		Average gross return (Rs./ha)		Average net return (Profit) (Rs./ha)		Benefit cost (B:C)* ratio	
	Demo. plot	Local	Demo. plot	Local	Demo. plot	Local	Demo. plot	Local
2009-2010	46000.00	47000.00	100000.00	95000.00	54000.00	48000.00	1.17	1.02
2010-2011	40000.00	41600.00	91500.00	85500.00	51500.00	43900.00	1.28	1.05
2011-2012	49300.00	48290.00	84500.00	71250.00	35200.00	22960.00	0.71	0.47
2012-2013	72500.00	74000.00	191937.50	159250.00	119437.50	85250.00	1.64	1.15

B:C Ratio*=Average net return/average cost of cultivation

KVK campus regarding recommended package and practices and to convince them.

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