

## Boosting up the production of Raya crop through Innovative Extension Methodology.

V.P.S. Yadav<sup>1</sup>, Rajender Kumar<sup>2</sup> and B.K. Sharma<sup>3</sup>

1. Principal Extension Specialist (Ext.Edu.), 2. Principal Extension Specialist (Agronomy), 3. Sr. Coordinator, KVK, Faridabad

Corresponding author e-mail: vpsyadav7269@gmail.com

Paper Received on November 22, 2015, Accepted on December 12, 2015 and Published Online on December 20, 2015

### ABSTRACT

*Indian mustard (Brassica juncea (L.) Czernj. Cosson) is a major oilseed crop of India. It is predominantly cultivated in Rajasthan, UP, Haryana, Madhya Pradesh, and Gujarat. The crop can be raised well under both irrigated and rainfed conditions. The productivity of Mustard is still very low due to poor transfer of technology from the points of its development to the points of its utilization. There is a tremendous opportunity for increasing area and the production of Mustard crop by adopting the improved technologies. To boost the production and productivity particularly in oilseed crops, Krishi Vigyan Kendras are playing important role to popular the improved technologies by demonstrating at farmers' fields in their farming situation through Front Line Demonstrations (FLDs). Keeping the importance of FLD on Raya for enhancing the acreage and production of raya crop in District Faridabad of Haryana state, KVK Faridabad laid out Front line demonstrations at Farmers' fields under irrigated situation during Rabi seasons of the years 2009-10, 2010-11, 2011-12, 2012-13 & 2013-14. The impact of these Frontline demonstrations on raya crop were assessed. The findings of frontline demonstrations conducted on raya crop indicated that per cent increase in yield over farmers' practice (local check) ranged from 9.5 to 11.3 per cent over five years. It was further observed that in terms of economics, FLD fields recorded higher net returns per hectare compared to farmer's practice during all the years. The benefit cost ratio (BCR) of demonstration plots ranged from 2.25 to 2.86 in raya crop.*

**Key words:** Frontline demonstration; Raya; Yield performance; Economic analysis;

Oilseed crops form a significant part of the agricultural economy in India. In terms of acreage, production and economic value, oilseeds are second only to food grains. Rapeseed & mustard is the second most important edible oilseed after groundnut sharing 27.8 per cent in the India's oilseed economy. The share of oilseeds is 14.1 percent out of the total cropped area in India, rapeseed-mustard accounts for 3 per cent of it. (Shekhawat *et.al.*, 2013). According to area and production both mustard stands in second place among oil seed crops of India. In India, the area and production of rapeseed & mustard during the year 2012-13 was reported 6.1 million hectares and 6.89 million tonnes, respectively (Anonymous, 2013). This crop commodity is the major source of income especially even to the marginal and small farmers in rain fed areas. Rajasthan,

UP, MP, Gujarat and Haryana are the major rapeseed & mustard producing states. In Haryana, the area under rapeseed & mustard during the year 2012-13 was reported 0.56 million hectares which cover 8.83 percent of the total area grown under these crops. The production was 0.96 million tonnes which include 12.28 per cent of the total production of rapeseed & mustard in Haryana (Anonymous, 2013). A wide gap exists in oilseeds production between the available techniques and its actual application by the farmers which is reflected through poor yield in the farmers' fields. There is a tremendous opportunity for increasing area and the production of Mustard crop by adopting the improved technologies. The productivity of Mustard is still very low due to poor transfer of technology from the points of its development to the points of its utilization. To

achieve target of additional production of oilseeds, it is necessary to concentrate efforts on scientific cultivation of mustard. Recognizing the importance of oilseeds in Indian agriculture and urgent need to ensure household nutritional security, The Ministry of Agriculture, Govt. of India took an initiative by recommending an innovative technology to boost up the acreage and production of mustard crop in the country. Front Line Demonstrations (FLD) of oilseeds on farmers' field was initiated during 1990-91 under the financial support of Department of Agriculture & Cooperation, Govt. of India. The basic objective of FLDs is to demonstrate improved proven technology of recently released at farmer's field through KVKs to bring in enhanced application of modern technologies to generate yield data & collection of farmer's feedback. Initially the main emphasis of KVK is given on vocational trainings to the farmers and rural youths. It was very successful attempt made through the KVK. later on demand increases for additional functions to be operated through KVK. Likewise, activities of KVK tailored as per demand and Front Line Demonstrations and On-Farm Testing are being conducted by KVK. Front Line Demonstrations (FLDs) are playing important role to popular the improved technologies by demonstrating on farmers' field in their farming situation. FLD involves important principle of 'seeing is believing' and it is the combination of method demonstration and result demonstration. The FLDs conducted on farmers' field are closely monitored by the KVK scientists and arranged different extension activities like field day and kisan goshti to visualise the results over conventional method. Keeping the importance of FLD on Raya in enhancing the acreage and production of raya crop in District Faridabad of Haryana state, KVK Faridabad laid out Front line demonstrations at Farmers' fields under irrigated situation during Rabi seasons of the years 2009-10, 2010-11, 2011-12, 2012-13 & 2013-14.

The objective of were study as follows:

- i. To present the number of Front line demonstrations laid out by KVK during Rabi seasons of the years 2009-10, 2010-11, 2011-12 & 2012-13& area covered under FLD.
- ii. To exhibit the performance of demonstrated technology of raya crop.
- iii. To compare the yield levels of Farmers' field and local check under FLD.

- iv. To document feedback information for further improvement in research and extension programmes.

## METHODOLOGY

To improve the productivity of the crop, it is very necessary to adopt a suitable strategy. 150 Farmers of operational area of KVK, Faridabad were selected as per allotment of FLDs to KVK by Zonal Project Director, KVKs (Zone-I) from the years 2009-10 to 2013-14. Accordingly, the FLDs under raya crop were laid out in the villages, namely, Deeghot, Dakora, Bhopani, Prithla & Jaindapur. The training programmes were imparted to the farmers for acquainted them with the scientific production technologies of raya crop. These technologies were demonstrated at the farmers' fields under the front line demonstration (FLD) programme so that the farmers can easily understand and adopt the technologies. Then these demonstrations were organized to demonstrate the efficacy of newly released production technologies on farmers' field to explore their maximum potential in given farming situation. Field Days and group meetings were also organized at the demonstration sites to provide the opportunities for other farmers to witness the benefits of demonstrated technologies. The seed of improved varieties of raya crop as critical input was provided by the KVK to the selected farmers. Data were collected from the FLDs farmers and analyzed with the suitable statistical tools to compare the yield of farmers' fields and FLDs fields.

## RESULTS AND DISCUSSION

*Details of front line demonstrations laid out on raya crop:* The details of front line demonstrations laid out on Raya crop are presented in Table 1. The data in Table 1 showed that a total of 150 Front line Demonstrations were laid out on Raya crop. The seed of Raya high yielding varieties, viz., RH-8812, Pusa Tarak & RH- 0749 was provided as a critical input to the selected FLD farmers ( Total 150 farmers ) of villages , namely, Deeghot, Prithla, Bhopani, Dakora & Jaindapur covering the area ( 60 hectares) during the Rabi season 2009-10, 2010-11 , 2011-12, 2012-13 & 2013-14 to exhibit the performance of demonstrated technology.

*The yield performance of varieties demonstrated & local check variety of raya crop under FLD:* The yield performance of varieties demonstrated & local check variety of raya crop under FLD is presented in

**Table 1. Details of front line demonstrations laid out on Raya crop.**

Crop season	Technology Demonstrated	No. of FLDs	Area covered (ha)	No. of farmers
Rabi season 2009-10	RH-8812	30	12	30
Rabi season 2010-11	RH-8812	30	12	30
Rabi season 2011-12	Pusa Tarak	20	8	20
Rabi season 2012-13	RH-8812	30	12	30
Rabi season 2013-14	RH-0749	40	16	40
Total		150	60	150

**Table 2. The Yield performance of variety demonstrated & local check variety of raya crop under irrigated situation.**

Crop season	Variety demo.	Local check variety	No. of Demo.	Area Covered (ha)	Av. Yield of FLD (qtl / ha)	Yield of local check (qtl./ ha)	Increase in yield (%)
Rabi 2009-10	RH-8812	RH-30	30	12	18.7	16.8	11.3
Rabi 2010-11	RH-8812	T-59	30	12	19.2	17.4	10.3
Rabi 2011-12	Pusa Tarak	RH-30	20	8	15.6	14.2	9.8
Rabi 2012-13	RH-8812	T-59	30	12	17.3	15.8	9.5
Rabi 2013-14	RH-0749	RH-30	40	16	15.8	14.3	10.5

**Table - 3: Economic analysis of FLD's on Raya crop.**

Crop season	Varieties . demonstrated	Economics of demonstration (Rs./ha)				Economics of local check (Rs./ha)			
		Gross Cost	Gross Return	Net Return	BCR	Gross Cost	Gross Return	Net Return	BCR
Rabi 2009-10	RH-8812	17240	38803	21583	2.25	17000	34860	17860	2.05
Rabi 2010-11	RH-8812	18160	42820	24660	2.36	16900	39040	22140	2.31
Rabi 2011-12	Pusa Tarak	19250	50700	31450	2.63	18750	46150	27400	2.46
Rabi 2012-13	RH-8812	19350	53170	33820	2.75	19200	48820	29620	2.54
Rabi 2013-14	RH-0749	20850	59640	38790	2.86	20100	54690	34590	2.72

Table 2. During the rabi seasons 2009-10 & 10-11, a total of 60 demonstrations of high yielding variety RH-8812 in four villages, namely, Bhopani, Dakora, Jaindapur & Deeghot were conducted to exhibit the performance of high yielding variety RH-8812 (FLD Field) over farmer practice (local check). The average yield of RH-8812 plots was recorded as 18.7 as against 16.8 q / ha in Local check plots (var. RH-30) with an average increase of 11.3 per cent in rabi season 2009-10 whereas in the rabi season 2010-11, the average yield in FLD plots was recorded as 19.2 as against 17.4 q / ha in Local check plots (var. T-59) with an average increase of 10.3 per cent. Further, in rabi season 2011-12, Twenty demonstrations of high yielding variety Pusa Tarak in two villages, namely, Mohla & Chirsi were conducted to exhibit the performance of high yielding variety, Pusa Tarak (FLD Field) over local check variety. The average yield of Pusa Tarak plots was recorded as 15.6 as against 14.2 q / ha in local check variety (RH-30) plots with an average increase of 9.8 percent in rabi season 2011-12. Again, during the rabi seasons 2012-

13. Thirty demos. of high yielding variety RH-8812 in village Mohna were conducted to exhibit the performance of high yielding variety RH - 8812 (FLD field) over local check variety T-59. The average yield of RH-8812 plots was recorded as 17.3 as against 15.8 q / ha in Local check plots with an average increase of 9.5 percent in rabi season 2012-13. During Rabi season 2013-14, Twenty demonstrations of high yielding variety RH-0749 in four villages, namely, Hirapur, Jawan, Mohna & Chandpur were conducted to exhibit the performance of high yielding variety, RH -0749 (FLD Field) over local check variety (RH-30). The average yield of RH-0749 plots was recorded as 15.8 as against 14.3 q / ha in Local check variety plots with an average increase of 10.5 per cent in rabi season 2013-14. (Table 2). The results of this study in line with the findings of research studies carried out by Ahmad *et al.* (2013), Balai *et al.* (2012), Mitra *et al.* (2010) and Sharma *et al.* (2013)

*Economic analysis* : Cost of cultivation of raya crop include cost of inputs like seed, fertilizers, pesticides

etc. which were not available with the farmers and purchased by the farmers from the market used for cultivation of local variety (Local check / farmers practice) /supplied by the KVK (for technology demonstration / recommended practice) as well as hired labour (if any), sowing charges by bullocks / tractor (if any) and post-harvest operation charges (if any) paid by the farmers. while calculating the cost of cultivation, the farmers' family labour was not taken into consideration. The gross and net returns were worked out accordingly by taking cost of cultivation and price of grain yield of raya crop into consideration. Additional costs in frontline demonstrations include expenditure on improved technological inputs in frontline demonstrations over farmers' practice. Similarly, benefit-cost ratio was worked out as a ratio of returns and corresponding costs. The economic analysis of the data for the study period for raya clearly revealed that the gross return, net returns and benefit: cost ratio were higher in frontline demonstrations where recommended practices were followed compared to farmers' practice indicating higher profitability. The benefit - cost ratio of demonstration plots and Local check plots ranged from 2.25 to 2.86 and 2.05 – 2.72 respectively. The results of this study in line with the findings of research studies carried out by Ahmad *et.al.* (2013), Balai *et.al.* ( 2012), Gautam

*et.al.* ( 2011) and Vedna Kumari *et.al* ( 2007).

## CONCLUSION

The technical feedback collected from FLDs farmers and conclusion drawn from the study is presented as under:

- The yield of demonstrated plots was higher than local check plots.
- Weed management studies for the raya need to be intensified for timely control of weeds efficiently and effectively.
- Farmers should be made aware and trained about Integrated Pest Management techniques for control of Insect- pests and diseases in raya crop.
- The location based nutrient application for oilseed crops to be thoroughly reviewed and investigated.
- The demonstration farmers can be acted as primary source of information on the whole package / improved practices of Mustard cultivation.
- The concept of Front - line demonstration may be applied to all farmer categories including progressive farmers for speedy and wider dissemination of the recommended practices to the fellow farmers and other members of farming community. This will help in the removal of the cross-sectional barrier of the farming population.

## REFERENCES

- Anonymous (2013). Agricultural Statistics at a Glance - 2013. Directorate of Eco. & Statistics, GOI, New Delhi.
- Ahmad, Afzal, Prem, Guru and Kumar, Ramesh (2013). Impact of frontline demonstrations on Indian mustard through improved technologies. *Indian Res. J. Ext. Edu.* **13** (1): 117 - 119.
- Balai, C.M.; Meena, R.P.; Meena, B.L. and Bairwa, R.K. (2012). Impact of frontline on rapeseed and mustard yield improvement. *Indian Res. J. Ext. Edu.* **12** (2): 113-116.
- Gautam, U.S.; Paliwal, D.K. and Singh, S.R.K. (2011). Impact of frontline demonstration on productivity enhancement in chickpea. *Indian J. Ext. Edu.* **47** (3 & 4): 10-13.
- Mitra, B. and Samajdar, T. (2010). Yield gap analysis of rapeseed and mustard through frontline demonstrations. *Agri. Ext. Review.* **22** (2):16-17.
- Sharma A.K. and Thomas, Lijo (2013). Technology inputs and its impact on farm profits: A case study of Rapeseed-Mustard. *Indian Res. J. Ext. Edu.* **13** (3): 9 - 14.
- Shekhsawat, Kapila; Rathore, S.S.; Premi, O.P.; Kandpal, B.K. and Chauhan, J.S. (2012). Advances in Agronomic Management of Indian Mustard (*Brassica juncea* (L.) Czernj. Cosson) : An overview. *Intl. J. of Agronomy.* Volume 2012 (2012), Article ID 408284, 14 pages.
- Vedna Kumari, Kumar A., Kumar A. and Bhateria S. (2007). Demonstration - an effective tool for increasing the productivity of rapeseed – mustard in Kangra district of Himachal Pradesh. *Himachal J. Agri. Res.* **33** (2): 257-261.

