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Yield gap analysis through front line demonstration in cumin

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Abstract
Front line demonstration is an effective and appropriate tool to demonstrate recommended technologies among the farmers. Krishi Vigyan Kendra, SDAU, Tharad (Banaskantha-II) conducted 55 demonstrations on cumin during 2016-17 to 2018-19 in the villages of Banaskantha district. The study found, the yield of cumin in improved practises ranges from 8.50 to 8.86 q/ha whereas in Farmer Practices it ranges between 6.50 to 7.23 q/ha. The per cent increase in yield with IP over FP was recorded in the range of 21.25 to 36.30 per cent. The extension gap were ranging from 1.49 to 2.36 q/ha. The trend of extension gap reflected the farmers cooperation in carrying out demonstrations with encouraging results in subsequent years and also it is the impact of training given by KVK scientist. The cost benefit ratio was 2.99 to 3.15 under demonstration, while it was 1.32 to 2.05 under control plots. By conducting front line demonstration of proven technologies, yield potential of cumin crop could be enhanced to a great extent with increase in the income level of the farming community.

Keywords: Yield gap, front line demonstration, cumin

Introduction
Cumin (*Cuminum cyminum*) is grown largely in the arid zone of India, especiaaly in Gujarat and Rajasthan. However, the average productivity of the crop in this region is very low due to use of non-descript seed, inadequate supply of nutrients and improper disease management practices.

Front Line Demonstration (FLD) was started in cumin to generate production data and feedback information to various development agencies, which are engaged in dissemination of technological advances through researchers to the farmers fields. Fifty five FLDs were conducted from 2016-17 to 2018-19 in Banaskantha district of Gujarat to demonstrate the improved cumin production and disease management practices that are suitable for that particular eco-system. The concurrent impact of such demonstrations is given in (Table 1). An attempt was made to analyze the impact of the demonstrations in vertical and horizontal spread of the technologies and the resultant improvement in yield and income of the cumin growers, with the following objectives: (a) to document the profile characteristics of cumin growers; (b) to assess the knowledge and adoption level of cumin growers in Banaskantha district of Gujarat as an impact of FLDs; (c) to assess the impact of frontline demonstrations on yield and income obtained by the cumin growers; (d) to delineate the constraints encountered by the cumin growers in Banaskantha district of Gujarat and (e) to suggest strategies to improve the cumin cultivation scenario in Gujarat. It was found that farmers were using non-descript varieties of cumin and improper disease and weed management practices. Keeping in view the constraints, KVK, Banaskantha-II conducted front line demonstrations on cumin crop which would ensure livelihood and economic empowerment of tribal households at faster pace.

Material and Method
The present study was carried out during the year 2016-17 to 2018-19 in the (Kuvara, Sanval, Bhapi, Chandarwa, Kotda and Kolava) villages of Banaskantha district of Gujarat. Fifty five numbers of demonstrations was conducted in different villages with an objective to identify the yield gaps as well as to work out the difference in input cost and monetary returns under frontline demonstrations and farmers practices (local checks) of cumin crop. The critical inputs were applied as per the scientific package of practices recommended by Seed Spices. Research Station, SDAU, Jagudan, Gujarat (Table 1). The component demonstration of front line technology in cumin was comprised of improved wilt resistant variety GC-4, Line sowing, proper seed rate and sowing method, balance dose of fertilizer, seed treatment, proper irrigation, weed management and protection measure (Table 1). The data on production cost and monetary returns were collected for three years (2016-17 to 2018-19) from frontline

demonstration plots to work out the economic feasibility of improved and scientific cultivation of cumin. Besides, the data from local checks, data were also collected where farmers were using their own practices for cultivation of cumin crops. Extension gap was calculated as given by (Samui *et al*., 2000) [3] as:

Extension gap = Demonstration yield - Yield from farmers practice (Local check)

$$\text{Percent increase yield} = \frac{\text{Demonstration yield farmers yield}}{\text{Farmers yield}} \text{ X } 100$$

Table 1: Difference between technology intervention and farmers practice under FLD on cumin

Particulars	Technology intervention	Existing practice	Gap
Variety	GC-4 (wilt resistant)	Non-descript	Full gap
Seed rate	12-16 kg/ha	15-20 kg/ha	Higher seed rate
Sowing method	Line sowing (30 cm)	Broadcasting	Full gap
Seed treatment	Fungicide seed treatment	No seed treatment	Full gap
Fertilizer dose	(40:15:00 kg NPK/ha)	Higher fertilizer dose	Full gap
Weed management	Pre-emergence application of Pendimethalin @ 1.0 kg a.i./ha	One or two hand weeding and sometime farmer give herbicide with irrigation water	Full gap
Plant protection	Integrated Disease Management	Used different pesticides	Uneven use of pesticide

Source: Scientific cultivation of Seed Spices (Gujarati language), Book published by Seed Spices Research Station, SDAU, Jagudan (2015-16)

Results and Discussion

Technology intervention and farmers practice under FLD on cumin

The gap between the existing and recommended technologies of cumin in district Banaskantha presented in (Table 1). Full gap was observed in case of use of variety, sowing method, seed treatment, fertilizer dose, Weed management. These are the reason of not achieving potential yield. Farmers were not aware about recommended technologies. Farmers in general used old-age varieties with improper spacing and fertilizer because of lack of awareness. In plant protection measures farmers used uneven pesticide and high dose of pesticides so their cost increases.

Productivity and Economic impact of front line demonstrations

During the period of study, the inputs and outputs prices of commodities prevailed during each year of demonstrations were taken for calculating benefit cost ratio (Table 2). The economic analysis under front line demonstrations in improved practices (IP) recorded higher productivity and B: C ratio over local check (Farmer practices) in each year. These might be due to knowledge and adoption of full package of practices i.e. sowing of latest high yielding disease resistant variety with proper spacing, adoption of improved nutrient management practices, adoption of improved weed and disease management techniques. Similar results have been reported earlier by Padmaiah *et al*., (2012) [2] and Kumar *et al*., (2015) [1]. The year wise fluctuation in yields was observed mainly on the account of variations in soil fertility status, climate and moisture availability.

The study found, the yield of cumin in improved practises ranges from 8.50 to 8.86 q/ha whereas in Farmer Practices it ranges between 6.50 to 7.23 q/ha. The per cent increase in yield with IP over FP was recorded in the range of 21.25 to 36.30 per cent. The cost benefit ratio was 2.99 to 3.15 under demonstration, while it was 1.32 to 2.05 under control plots. By conducting front line demonstration of proven technologies, yield potential of cumin crop could be enhanced to a great extent with increase in the income level of the farming community.

Table 2: Cumin production, economics and extension gap of FLDs and local check

Year	Number of demonstration	Average yield (q/ha)		Percent increase in yield over local	Extension gap (q/ha)	B : C ratio	
		Improved practice	Farmer practice			Improved practice	Farmer practice
2016-17	25	8.86	6.50	36.30	2.36	2.99	1.32
2017-18	15	8.50	7.01	21.25	1.49	3.10	2.05
2018-19	15	8.85	7.23	22.40	1.62	3.15	1.99

Extension gap

Extension gap of 2.36 q/ha was recorded in the year 2016-17 as compare to the year 2018-19 (1.62 q/ha). This emphasized the need to educate the farmers through various extension means i.e. front line demonstration for adoption of improved production and protection technologies, to revert the trend of wide extension gap. By horizonatal spread of improved practices through front line demonstration, we can aware farmers about more and more use of latest production technologies with high yielding varieties which will subsequently change this alarming trend of galloping extension gap. Padmaiah *et al*., (2012) [2] has also opined that depending on identification and use of farming situation, specific interventions may have greater implications in enhancing system productivity.

References

1. Kumar AH, Rudramuni T, Naik HG, Chandrappa D. Yield gap analysis through front line demonstration in castor crop in Chitradurga districts of Karnataka. International Journal of Tropical Agriculture. 2015; 33(3):2367-2371.
2. Padmaiah M, Venkatkumar R, Singh IS, Solanki S, Sarad C. Castor (*Ricinus communis* L.) frontline demonstrations in Jodhpur district of Rajasthan: An impact study. Journal of Oilseeds Research. 2012; 29(1):84-88.
3. Samui SK, Mitra S, Roy DK, Mandal AK, Saha D. Evaluation of front line demonstration on groundnut. Journal of the Indian Society Costal Agricultural Research. 2000; 18(2):180-183.
4. Scientific cultivation of seed spices (Gujarati language), Book published by Seed Spices Research Station, SDAU, Jagudan (2015-16).