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Impact of Front Line Demonstrations on productivity of Chilli (*Capsicum annum* L.) cv. GVC 121 in Panchmahals district of central Gujarat

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Abstract

Chilli (*Capsicum annum* L.) is one of the most important vegetable crops of the country and used as a spice. The development of the agriculture primarily depends on the application of the science and technology by making the best use of available resources. One of the major constraints of traditional chilli farming is low productivity due to non-adoption of recommended improved production technologies. To overcome these constraints, KVK-Panchmahals was conducted Front Line Demonstrations at various farmers fields to show the difference between improved production technology and existing technology. During the study period, it was observed that in front line demonstrations, the improved Chilli variety Gujarat Vegetable Chilli-121 recorded the higher average yield (95.60 q/ ha) as compared to local check cv. G-4 (70.30 q/ ha). The per cent (35.98) increase in the yield over local check was recorded. The technology gap (25.30 q/ha) and the technology index values (26.46%) were recorded. It is concluded that wide gap existed in potential and demonstration yield in high yielding chilli varieties due to technology and extension gap in Panchmahals district of Gujarat. By conducting front line demonstrations of proven technologies, yield potential of chilli can be increased to a great extent. It is not only increasing the income but also livelihood of the farming community.

Key words: *FLD (front line demonstrations), local check (G-4), chilli, technology, yield*

Introduction

Chilli (*Capsicum annum* L.) also known as hot pepper was introduced in India from Brazil in 16th century by Portuguese and it is one of the most important vegetable crop of the country and used in culinary adding flavor, colour, vitamins and pungency (Thamburaj and Singh, 2001). It is widely used in preparation of curry powder, curry paste and all kinds of pickles and preparing sauces, soups, salad etc. The total area, production and productivity of chilli in India is 8.45 lakh ha, 21.26 MT and 2.51 MT/ha, respectively. In Gujarat, area, production and productivity of chilli is 43.40 (000 ha), 68.53 MT and 1.57 MT, respectively (Anonymous, 2016).

In Panchmahals district of Gujarat Chilli is one of the most important vegetable crops. The area and production of chilli of the district are 2211 ha and 2260.65 M.T (Anonymous, 2016).

The Gujarat Vegetable Chilli -121 is one of the most important variety of the area. A field trial was carried out at ten farmer's field at Panchmahals district of Gujarat under front line demonstration during 2009-2010. It can be grown throughout the year with ensure irrigation facility, havever, the large numbers of farmers grow chilli during season. The climatic conditions of the Panchmahals district of Gujarat is characterized as hot semi-arid ecosystem.

The main objective of Front Line Demonstrations (FLD) are popularizing the good Agriculture practices (GAP) like as high yielding varieties, seed treatment, spacing, integrated nutrient management (INM), integrated pest and disease management etc among the farmers. It is also involve in organizing extension programmes (field day) for horizontal disseminating the technologies. FLD is playing a very important role in proper transfer of technologies and changing scientific temperament of the farmers.

Generally, the agricultural technology is not accepted by the farmers completely in all respects. As such there always appears to be a gap between the recommended technology by the scientist and its modified form at the farmer's level. The technological gap is thus the major problem in the efforts of increasing agricultural prodnction in the country. A need of the day is to rednce the technological gap between the agricultural technology recommended by the scientist or researcher and its acceptance by the farmers on their field. In view of the above factors, frontline demonstrations were undertaken in a systematic manner on farmers' field to show the

worth of a new technology and convince the farmers to adopt the same.

Materials and Methods

The present study was conducted in Panchmahals district of Gujarat during 2009-10. The genuine or truthfully labeled seeds of chilli cv. Gujarat Vegetable Chilli -121 (GVC 121) was procured from Anand Agricultural University, Anand (Gujarat). The healthy seedlings were raised under keen supervision of KVK experts at farm and distributed to ten selected farmers of various villages *viz.* Ghoda, Manipur, Bhalania, Richhiya and Sureli under FLD programme. All the participating farmers were trained on various aspects of chilli production technologies. The field was prepared by one deep ploughing during May and two harrowing before transplanting. A one fifth area was also devoted to grow local check (cv. G-4). All the recommended practices *i.e.* seed treatment, spacing, recommended dose of manure and fertilizers, weed management, insect pest management have been adopted by the farmers in both treatments G-4 as local check and Gujarat Vegetable Chilli -121). The data related to cost of cultivation, production, productivity, gross return and net return were collected in both treatments time to time from all participating farmers. An average of cost of cultivation yield, net returns of different farmers was analyzed by the formula.

$$\text{Average} = \frac{(F1 + F2 \ldots \ldots \ldots \ldots Fn)}{N}$$

Fl = Farmer

N=No. of farmers (10)

In the present study, technology index was operationally defined as the technical feasibility obtained due to implementation of Front Line Demonstrations in Chilli. To estimate the technology gap, extension gap and technology index following formula used by Samui *et al.* (2000) have been used:

Technology gap = Pi (Potential yield) - Di (Demonstration yield)

Extension gap = Di (Demonstration Yield) - Fi (Farmers yield)

$$\text{Technology index} = \frac{\text{Potential yield} - \text{Demonstration yield}}{\text{Potential yield}} \times 100$$

Result and Discussion

Performance of FLD

A compression of productivity levels between demonstrated variety and local check (G-4) is shown in table-1. During the period of study, it was recorded that in front line demonstrations, the improved chilli cv. GVC 121 recorded the higher average yield (95.60 q/ ha) as compared to local check (70.30 q/ ha). The per cent increase in the yield over G-4 was 35.98. It is clear from the study that the performance of improved variety was found better than the local check under same management and environment conditions. Similar yield enhancement in different crops in front line demonstration has been documented by Kumar *et al.* (2014) in okra, Hiremath *et al.* (2007) in onion and Mishra *et al.* (2009) in potato. The farmers were motivated by results of agro technologies applied in the FLDs trials and it is expected that they would adopt these technologies in the coming years.

Technology gap

The technology gap shows the demonstration yield over potential yield and it was 25.30 q/ ha. The Front Line Demonstration was laid down under the keen supervision of KVK Specialist at the farmer's field. There exist a gap between the potential yield and demonstration yield. This may be due to the soil fertility and weather conditions. Hence location specific recommendations are necessary to bridge the gap. These findings are in line as reported by Samui *et al.* (2000) in ground nut and Sharma and Sharma (2004) in oilseeds.

Technology index

Technology index shows the feasibility of the production technology at the farmer's field. The lower the value of technology index more is the feasibility. Result of study depiction in Table- 1, revealed that the technology index values were 26.46 The results of the present study are in consonance with the findings of Kumar *et al.* (2014) in okra, reported 9.10 q/ha. The similar findings are also reported by Singh *et al.* (2007), Hiremath and Nagaraju (2009) in onion .

Table 1. Yield, technology gap and technology index of demonstration

Variables	Yield (q/ ha)	Increase (%) over Local check (G-4)	Technology gap- (q/ ha)	Technology index (%)
Local check (G-4)	70.30	-	-	-
Demonstration (GVC-121)	95.60	35.98	25.30	26.46

Economics of frontline demonstrations

The economics of chilli cultivation under front line demonstration was caculated and the results of the study have been presented in Table- 2. The front line demonstration recorded higher gross returns (Rs. 53200 / ha) and net return (Rs. 27700 /ha) with higher cost benefit ratio (2.08) as compared to local check (gross return 42500, net return 18500 and cost benefit ratio 1.77).

These results are in accordance with the findings of Kumar *et al.* (2014) in okra, Hiremath *et al.* (2007) in onion and Hiremath and Nagaraju (2009) in onion. Further, additional cost of Rs.1500 per hectare in demonstration has increased additional net returns Rs. 10700 per hectare with incremental benefit cost ratio 6.13 suggesting its higher profitability and economic viability of the demonstration. More and less similar results were also reported by Hiremath and Nagaraju (2009) in onion.

Table 2. Economics of frontline demonstrations

Variables	Cost of cultivation (Rs/ ha)	Gross return (Rs/ ha)	Net return (Rs ha)	Benefit: cost ratio
Local check	24000	42500	18500	1.77
Demonstration	25500	53200	27700	2.08
Additional in demonstration	1500	10700	9200	6.13*

* Incremental benefit cost ratio

The findings of the study revealed that wide gap existed in potential and demonstration yield in high yielding chilli variety due to technology and extension gap in Panchmahals district of Gujarat. By conducting front line demonstrations of proven technologies, yield potential of chilli can be increased to a great extent. This will substantially increase the income as well as the livelihood of the farming community.

References

Anonymous, (2016). Gujarat, State Government Report pp.27.

Anonymous, (2016). Indian Horticulture Database-2012. NHB, Ministry of Agriculture, Government of India.

Hiremath S M and Nagaraju M V. (2009). Evaluation of front line demonstration trials on onion in Haveri district of Karnataka. *Karnataka J Agric. Sci.*, 22(5): 1092-1093.

Hiremath, S. M., Nagaraju, M. V. and Shashidhar, K. K. (2007). Impact of front line demonstrations on onion productivity in farmers field. Paper presented In: *Nation Sem Appropriate Extn Strat Manag Rural Resources*. Univ. Agric. Sci., Dharwad, December 18-20, p. 100.

Mishra, D. K., Paliwal, D. K., Tailor, R. S. and Deshwal, A. K. (2009). Impact of Frontline Demonstrations on Yield Enhancement of Potato. *Indian Res J Ext Edu*, 9(3): 26-28.

Kumar, R., Khadda, B.S., Jatav, J. K, Rai, A. K and Lata, K. (2014) "Impact of front line demonstrations on productivity of Okra cv. Gujarat Okra-2 in Panchmahals district of middle Gujarat" *Int. J Arid Hort.*, 8 (1-2) 68-70

Samui, S. K., Maitra, S., Roy, D. K. Mondal, A. K. and Saha, D., (2000). Evaluation on front line demonstration on groundnut (*Arachis hypogaea* L.) *J. Indian Soc. Coastal Agric. Res.*, 18: 180-183.

Sharma, R.N. and Sharma, K.C. (2004). Evaluation of Front Line Demonstration trials on oilseeds in Baran district of Rajasthan. *Madhya Pradesh J. Ext. Edu.*, 7: 72-75.

Singh, D. K., Gautam, U. S. and Singh, R. K., (2007). Study on Yield Gap and Level of Demonstrated Crop Production Technology in Sagar District. *Indian Res J Ext Edu*, 7 (2&3): 94-95.

Thamburaj, S. and Singh, N. (2001) Textbook of Vegetables, Tuber crops and Spices Published by Directorate of Information and Publications of Agriculture ICAR, New Delhi pp 51.