

IMPACT ASSESSMENT OF FRONT LINE DEMONSTRATIONS OF IPM IN BT COTTON

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ABSTRACT

Krishi Vigyan Kendra's proved to be one of the best option for improvement of transfer of technology and knowledge level in farming community of rural India through Trainings, On Farm Trials (OFT), Front Line Demonstrations (FLD) and other extension activities. Among all, the FLDs plays pivotal role in transfer of technology. Keeping this in view, Krishi Vigyan Kendra, Jamnagar conducted 70 Front Line Demonstrations in the farmer's fields on Integrated Pest management (IPM) of Bt. Cotton crop during 2013-14(25 FLDs), 2014-15(25FLDs) and 2015-16 (20FLDs). The results showed that in the year 2014-15 the IPM demonstrated plot produced the highest yield (10.32 per cent) over local pest management practices. While in the year 2013-14 and 2015-16 the Integrated Pest management (IPM) practices gave 8.26 and 8.71 percent increase in yield over local pest management practices respectively.

Keywords : *impact, front line demonstrations, integrated pest management, bt cotton*

INTRODUCTION

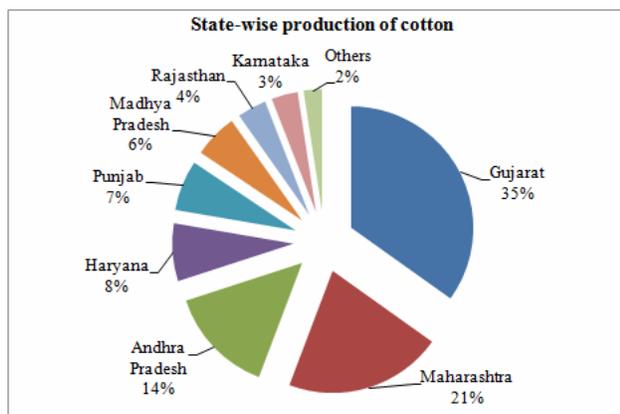
Cotton is one of the most important commercial fiber crops of India. The seed of cotton is a potential source of edible oil, cake and hull meal. It is also known as "King of Apparel Fiber" and "white gold". Besides food and housing, clothing is one of the primary needs of human being Cotton is cultivated in about 60 countries of the world. India is having the largest area under cotton; its average productivity is only 520 kg per hectare as against the world average productivity of 650 kg per hectare. In India, cotton contributes about 85.00 per cent of the total fiber consumed in the textile industries. Gujarat is one of the major cotton producing states in the country. (Gohil et al.,2016)

Cotton fibre has exercised a profound influence on humans from time immemorial. With a history going back to antiquity, the fibre has maintained its pristine purity and importance to this day. In India, cotton crop has had the pride of place among cash crops from the earliest time. It finds mention in the *Rig-Veda*, the oldest scripture of Hindus. Cotton fabrics were found in the Mohen-jo-daro relics from the ancient Indus Valley Civilization which flourished in India about five thousand years ago (Sethi *et. al.*, 1960).

Even in modern times, cotton is a vital crop of commerce in India and is popularly known as 'White gold'. With over 2500 textile mill units, about 1.5 million power-

looms, 4 million hand-looms and thousands of garment, hosiery and processing units, the textile industry has grown up as the largest agro based industry in the country (Rajendran and Jain, 2004). Cotton contributes 14 per cent of the value addition in the manufacturing sector and provides employment to about 35 million persons. Textiles exports contribute 20 per cent of the gross export earnings of the country. It is in fact the only industry in the country which is self-reliant from the raw material to the highest value added products (garments).

Cotton is the most important fibre crop not only of India but of the entire world. India has the largest area under cotton cultivation in the world though she is the world's third largest producer of cotton after China and the USA. It is also an important cash crop of Gujarat state next to groundnut. Gujarat is the single largest cotton producer state with 35 per cent (116 lakh bales) of the total national production from the area about 26.91 lakh hectares. Saurashtra account 65 % area of the state and contributes 68 % in the total production of the state. Average lint production of the Saurashtra is 754 kg/ha as against 615 kg/ha of the state. Among the different districts of Gujarat, Jamnagar produces 6.95 lakh ton cotton from 1.67 lakh hectare of land with 708 kg/ha productivity. Thus cotton is very important crop of the Saurashtra region for sustainable agricultural production and also of Jamnagar district too.



Source: Ministry of Agriculture, GoI

Cotton occupies 5% of the total cropped area distributed among three different agroclimatic zones in India, and consumes 55% pesticide share accounting for 40% of total production costs. This fact signifies the impact of insect pests and the increased agrochemical use in cotton production. Concern over human health and environmental consequences of agrochemicals besides pest resistance to pesticides has been a corner stone from the eighties.

In view of its great importance as a cash crop and its susceptibility to insect pests, cotton receives a disproportionately large share of pesticides. At the global level, roughly one fourth of the total pesticides used all over the world are applied to protect the cotton crop, while in India the share of the pesticide on this crop which occupies around 5 per cent of the cultivated area, is around 40 per cent of the national agricultural consumption of pesticides. Despite heavy use of pesticides, losses caused by insect pests continue to be unacceptably high. In India, the insect pests reduce cotton crop production by around 50 per cent (Dhaliwal and Arora, 2001).

In India, cotton was the first crop for which

Table 1 : Year wise Details of Front Line Demonstrations conducted in different villages

n=70

Sr. No.	Year	Village	Taluka	District	No. of FLDs
1	2013-14	Soyal	Dhrol	Jamnagar	06
		Limbuda	Jodiya	Jamnagar	07
		Vasantpur	Jamjodhpur	Jamnagar	08
		Ghunda	Jamjodhpur	Jamnagar	04
2	2014-15	Kalyanpur	Jamjodhpur	Jamnagar	05
		Udepur	Jamjodhpur	Jamnagar	10
		Soyal	Dhrol	Jamnagar	05
		Ghunda	Jamjodhpur	Jamnagar	02
3	2015-16	Ghelda	Jamjodhpur	Jamnagar	03
		Dharampur	Lalpur	Jamnagar	04
		Babarzar	Lalpur	Jamnagar	03
		Govana	Lalpur	Jamnagar	05
		Bhangor	Lalpur	Jamnagar	03
		Chhattar	Kalavad	Jamnagar	03
Morzar	Bhanvad	Devbhoomi Dwarka	02		
				Total	70

(Source: Annual Report(2013-14-15-16) of KVK, Jamnagar)

IPM technology was developed. The Indian Council of Agricultural Research, New Delhi, sponsored a village level project to evaluate and demonstrate the efficacy, practicability and economics of IPM in cotton in the Punjab in 1975 (Simwat, 1994). To reduce the use of chemicals for controlling pests in cotton is foremost important from cost of cultivation and environment point of view. In the jurisdiction of Krishi Vigyan Kendra, Jamnagar the majority farmers were using chemical pesticides only to control the different cotton pests. Therefore, it is very crucial to inspire farmers for Integrated Pest Management. To achieve this goal, front line demonstrations were conducted by KVK, on farmer's fields.

The concept Front Line Demonstrations was initiated by the Indian Council of Agricultural Research (ICAR) during the mid eighties. FLDs are very helpful for introducing new technologies and improved packages of practices specific for the region. FLDs are great instrument for the diffusion of new scientific technologies. The present study was undertaken to know the Impact of Front Line Demonstrations (FLDs) of IPM in Bt. Cotton conducted by Krishi Vigyan Kendra, Jamnagar in the district.

OBJECTIVE

To study the impact assessment of front line demonstrations of IPM in Bt Cotton

METHODOLOGY

The present study was conducted to assess the Impact of Front Line Demonstrations (FLDs) of IPM in Bt. Cotton. Krishi Vigyan Kendra (KVK) conducted 70 Front Line Demonstrations on IPM in Cotton on the farmer's field during the year 2012-13(25 FLDs), 2013-14(25 FLDs) and 2014-15(20 FLDs). KVK, Jamnagar selected different villages of some blocks of Jamnagar and Devbhoomi Dwarka district for its various extension activities. For this study the farmers were selected from such adopted villages of Krishi Vigyan Kendra, Jamnagar (Table: 1).

Extension Plus: Expanding the Horizons of Extension for Holistic Agricultural Development

The critical IPM inputs (Azardirectin, Beauveria, Profenophos and Imidachloprid) were provided and regular visits to the demonstration fields by KVK scientists ensured proper guidance to the farmers. Training, Field Days and group meeting also organized to aware farmers about scientific IPM methods of pest control technologies. Proper

guidance was provided to FLD beneficiaries about sowing date, planting distance, fertilizer doses, irrigation, plant protection measures and harvesting. The data of production were collected from both demonstration (FLD) plots as well as control plots. Accordingly, the cost of cultivation, net income and benefit cost ratio were worked out (Table: 2).

Table 2 : Average yield and cost parameters of Demonstration and local plots

n=70

Crop	variety	Crop Season	No. of FLDs	Area (ha)	Average Yield(q/hq)		% Increase	Gross Cost(Rs.)		Gross Return(Rs.)		Net return(Rs.)		C:B Ratio
					Demo	Check		Demo	Check	Demo	Check	Demo	Check	
Cotton	Bt. Variety	Kharif-13-14	25	10.0	36.68	33.88	08.26	56452	57076	174206	160911	117754	103835	3.09
		Kharif-14-15	25	10.0	24.75	22.22	10.32	33008	34160	93563	89400	60555	55240	2.83
		Kharif-15-16	20	08.0	15.25	14.05	08.71	31500	32570	64813	56187	33313	23617	2.06
Average					25.56	23.38	9.10	40320	41269	110861	102166	70541	60897	2.75

(Source: Annual Report: 2013-14, 2014-15, 2015-16) of KVK, Jamnagar)

RESULTS AND DISCUSSION

The data presented in table-2 depicted that the average cotton yield of demonstrated and local plot was 25.56 and 23.38 q/ha respectively which was 9.10 per cent higher than the check. The year wise productions of cotton in demonstration plot was 36.68, 24.75 and 15.25 q/ha while it was 33.88, 22.22 and 14.05 q/ha in local plot during the year 2013-14, 2014-15 and 2015-16 respectively. The results showed that in the year 2014-15 the IPM demonstrated plot produced the highest yield (10.32 per cent) over local pest management practices. While in the year 2013-14 and 2015-16 the Integrated Pest management (IPM) practices gave 8.26 and 8.71 percent increase in yield over local pest management practices respectively.

The economics and cost benefit ratio of control and demonstrated plot was also calculated (Vinaya et al, 2015). An average net return Rs. 70541 was recorded for demonstrated practice while it was Rs. 60897 under farmers practice. The cost benefit ratio was 2.75 and 2.48 for recommended and farmer's practices respectively. Thus, FLDs play vital role to prove the potentiality of new technology and increase the productivity with net return.

CONCLUSION

The findings infer that the yield of demonstration plot of integrated pest management (IPM) produced 9.10 per cent higher yield over the check with higher net return. It means that demonstration plot had better production than local plot of IPM in cotton crop. From the above findings an interference could be drawn that Front Line demonstrations (FLDs) conducted by KVK, Jamnagar played an important

role in increasing the production of cotton through adopting integrated pest management technology in the crop. The results also depict that demonstration plot had significantly higher yield of cotton crop as compared to local plot. From the results it may be assumed that FLD on IPM in cotton had played significant role in busting up cotton production with more net return. Thus, the Front Line Demonstrations (FLDs) will certainly be boon for convincing the farmers of Jamnagar and Devbhoomi Dwarka districts to adopt new integrated pest management technology of cotton crop.

REFERENCES

- Annual Progress Report (2013-14, 2014-15 and 2015-16). Krishi Vigyan Kendra, Junagadh Agricultural University, Jamnagar. (10-12).
- Anonymous.(2010). Department of Agriculture and Cooperation, Directorate of Economics and Statistics, Ministry of Agriculture, GOI.
- Gohil, G. R., Raviya, P. B. and Barad, V.G. (2016). Association between the adoption of crisis management practices and selected profile characteristics of cotton growers. *Guj. J. Ext. Edu. Vol. 27 (1) : 67* agropedia.iitk.ac.in
- Rajendran, T. P. and Jain, K. C. (2004): Achievements in Cotton Research. All India Co-ordinated Cotton Improvement Project. CICR Regional Station, Coimbatore
- Sethi, B. L. Sikka, S.M. and Dastur, R.H. (1960). Cotton in India: A Monograph. Indian Central Cotton Committee, Bombay.

Vennila, S, Ramasundram, P, Sheo Raj and Kairon, M. S.
: Cotton IPM and its current Status, <http://www.cicr.org.in>

Vinaya Kumar, H. M., Yashodhara. B., Preethi and Govinda

Gowda, V. (2015). Impact of Community Based Tank Management Project on Socio-Economic Status and Crop Productivity of Beneficiary Farmers in Tumkur District of Karnataka State. *Trends in Biosciences*. 8(9): 2289-2295.