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Impact of Front Line Demonstrations and Trainings on Knowledge Levels of Brinjal Growers With Respect to IPM Practices

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ABSTRACT

The study was conducted in two adopted villages of Krishi Vigyan Kendra, Undi in West Godavari district to assess the knowledge levels of brinjal growers before and after implementation of Front Line Demonstrations (FLDs) and trainings and to measure the knowledge gain of brinjal growers with respect to Integrated Pest Management (IPM) practices of brinjal crop. More than half of the brinjal growers after implementation of FLDs and trainings had medium level of knowledge of recommended IPM practices of brinjal followed by high (34.00%) and low (6.00%) level of Knowledge. There was a significant difference between 'before' and 'after' implementation of FLDs and trainings on knowledge level of recommended IPM practices. It was also observed that majority of the brinjal growers had medium level (54.00%) of knowledge gain about IPM practices.

Key words : Brinjal, Front Line demonstrations, Impact, IPM, Knowledge, Trainings,

Among the Solanaceous vegetables, brinjal (*Solanum melongena* Linn.) is the most important vegetable crop. In India, it occupies 0.39 m.ha. (Sardana, 2002) with an average production of 76 tones per hectare. In Andhra Pradesh it is grown in an area of 24, 662 ha with a production of 4, 93, 240 tones (www.aphorticulture.com, 2006). In recent years, however, the production of brinjal has been seriously affected due to steady increase in insect pest infestation, especially the shoot and fruit borer, *Leucinodes orbonalis* (Guen.). The pest poses a serious problem causing damage to fruits ranging from 25.8 - 92.5 per cent and yield reduction from 20.7 – 60% (Mall *et.al*., 1992). Brinjal crop is also known to be attacked by a range of sucking pests, which include leafhoppers, aphids, white flies, thrips and mites. Losses due to these sucking pests range from 25 – 40 per cent (Natarajan *et.al*., 1986).

Farmers all over the world use large quantities of chemical insecticides singly or in combination to get blemish free fruits, which fetch premium price in the market. This practice of indiscriminate use of insecticides has resulted in the build up of pesticide residues in the produce, destruction of natural enemies, pest resurgence and environmental pollution. Further more, insecticide application alone in brinjal is not much economic since the extra yield obtained due to insecticides does not commensurate with the investments towards pesticides. Crop protection to control insect pests in several crops through integrated approach is effectively used around the world. Since chemical control methods alone are costly and not absolute, integration of other pest control methods like use of pest resistant cultivars, agronomic practices known to reduce losses from pests, conservation practices that preserve and increase natural biological control, monitoring of pests through pheromone blends can prove an effective measure to combat insect pests in brinjal. This practice of Integrated Pest Management (IPM) would result in bringing down the cultivation costs of brinjal, as contribution of chemical pesticides to brinjal cultivation is sizable. To meet the production demand and to improve the farm profitability and health security of people at large, there is a need to adopt IPM as cardinal principle and main plank of plant protection measures. In this context, trainings and region specific Front Line Demonstrations (FLDs) on recommended IPM technologies in brinjal are being implemented by Extension wing of the state Agricultural and Horticultural Universities. If any technology has to be implemented successfully, there is a need to assess its impact periodically, so that any modification needed for fine tuning of the technology can be taken into consideration. Keeping in view of this, an attempt has been made in this paper to assess the impact of FLDs and trainings on knowledge levels of brinjal growers towards recommended IPM technology with the following objectives.

1.To assess overall knowledge level of farmers with respect to recommended IPM practices of brinjal crop.

Table 1. Categorization of brinjal growers according to their overall knowledge scores of selected IPM practices of brinjal crop

Knowledge category	Pre knowledge test (Before implementation of FLDs and trainings)		Post knowledge test (After implementation of FLDs and trainings)	
	Frequency	Percentage	Frequency	Percentage
Low	11	22.00	6	12.00
Medium	35	70.00	31	62.00
High	4	8.00	13	26.00
Total	50	100.00	50	100.00
Mean	17.62		24.22	
SD	2.00		3.60	
CV %	11.40		14.90	

2. To study the knowledge level of brinjal growers before and after implementation of FLDs and trainings on each selected IPM component

3. To measure the knowledge gain of brinjal farmers on IPM practices after implementing FLDs and trainings.

MATERIAL AND METHODS

The study was conducted during 2009-10 in two adopted villages of Krishi Vigyan Kendra (KVK), Viz., Kakaraparru (Peravali mandal) and Guttulavaripalem (Palakoderu mandal) in West Godavari district of Andhra Pradesh where majority of the vegetable farmers were growing brinjal. Trainings and FLDs were conducted by KVK, Undi in farmer's field on the IPM technology in brinjal recommended by Acharya N. G. Ranga Agricultural University to control the brinjal pests in 5 locations of each adopted village during Kharif 2008, Rabi 2008-09 and Kharif 2009. Regular follow up visits to demonstration plots were made by KVK scientists to ensure essential IPM components were followed by farmers. From each of the adopted village, 25 brinjal farmers who used to regularly attend trainings, practical involvement in FLDs and visit IPM demonstration plots were purposively selected for the study and thus 50 brinjal growers constituted the total sample size. To measure the knowledge of farmers with regard to IPM practices of brinjal, fifteen knowledge items on recommended IPM practices which were demonstrated by KVK scientists were obtained and the same formulated into a structured schedule. Knowledge was operationalzed as the amount of information and understanding possessed by the brinjal growers about IPM practices.

A translated version (Telugu) of all the fifteen items in the knowledge test was administered to the brinjal growers of sample area. The responses were obtained from the sample before conductying of training cum demonstrations using pre knowledge test schedule was considered as pre test knowledge score. After conducty of FLDs and trainings the same schedule was used to collect responses from same sample of farmers and it was considered as post test knowledge score. The correct and incorrect responses given by the selected sample of farmers were assigned scores of two and one, respectively. The total number of correct responses given by a farmer in the personal interview schedule constituted his knowledge scores both in 'before' and 'after' implementation of FLDs and trainings. Thus, the maximum and minimum possible score for each respondent is 30 and 15, respectively. Frequency and percentages were used to know the level of knowledge of different recommended IPM practices. The impact of the FLDs and trainings in terms of knowledge gain on IPM practices was measured with the help of schedule developed specially for the purpose at two stages i.e. 'before' and 'after' implementation of FLDs and trainings. The difference between the 'before' and 'after' implementation of programmes was taken as knowledge gain of an individual farmer. The brinjal growers were categorized in to three groups' viz., low, medium and high knowledge gain groups based on mean and standard deviation.

Table 2. Response analysis of knowledge of brinjal growers on selected IPM components.

S. No.	IPM component	Before implementation FLDs and trainings				After implementation of FLDs and trainings			
		Correct knowledge		In correct knowledge		Correct knowledge		In correct knowledge	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1	Shoot clipping and destruction of infested shoots	31	62.00	19	38.00	48	96.00	2	4.00
2	Regular destruction of fruit borer infested fruits	32	64.00	18	36.00	45	90.00	5	10.00
3	Growing of wilt resistant variety, Pusa purple cluster in areas where bacterial wilt is a regular problem	2	4.00	48	96.00	41	82.00	9	18.00
4	Seedling dip treatment with Imidachloprid 200SL @ 1ml/lt for 30 min	9	18.00	41	82.00	35	70.00	15	30.00
5	Installation of pheromone traps for monitoring shoot and fruit borer	14	28.00	36	72.00	47	94.00	3	6.00
6	Installation of 4 pheromone traps $acre^{-1}$	7	14.00	43	86.00	36	72.00	14	28.00
7	Application of neem cake for controlling root grub, ash weevil grubs, stem borer and shoot and fruit borer	15	30.00	35	70.00	41	82.00	9	18.00
8	Neem cake @ 200 kg $acre^{-1}$ at the time of final ploughing	5	10.00	45	90.00	38	76.00	12	24.00
9	Soil application of Carbofuran 3G granules for sucking pests	19	38.00	31	62.00	42	82.00	8	16.00
10	Carbofuran 3G granules @ 10 kg $acre^{-1}$	12	24.00	38	76.00	32	64.00	18	36.00
11	Installation of yellow sticky traps for monitoring and trapping of whitefly	9	18.00	41	82.00	45	90.00	5	10.00
12	Installation of 4-5 yellow sticky traps $acre^{-1}$	7	14.00	43	86.00	35	70.00	15	30.00
13	Preventive foliar application of NSKE	6	12.00	44	88.00	37	74.00	13	26.00
14	Foliar spray of 4 % NSKE at 15 days interval	16	32.00	34	68.00	46	92.00	4	8.00
15	Need based intervention of recommended plant protection chemicals	9	18.00	41	82.00	39	78.00	11	22.00

Table 3 Difference in knowledge scores of brinjal growers

Category	Mean	SD	'Z' value
Knowledge before implementation FLDs and trainings	3.88	1.48	
Knowledge before implementation FLDs and trainings	9.70	1.28	22.73**

Table 4. Distribution of brinjal growers according to their knowledge gain

Level of knowledge gain	Frequency	Percentage
Low	10	20.00
Medium	27	54.00
High	13	26.00
Total	50	100.00
Mean	9.60	
SD	2.34	

RESULTS AND DISCUSSION

Overall knowledge level of farmers with respect to selected IPM practices of brinjal:

The results presented in Table 1 revealed that before implementation of FLDs and trainings 70 per cent of the brinjal growers possessed medium overall knowledge level followed by low (22.00%) and high (8.00%) level of knowledge regarding IPM practices. After implementation of trainings cum demonstrations, more than half of the brinjal growers (62.00%) possessed medium level of knowledge followed by high (26.00%) and low (12.00%) level of knowledge categories, respectively. The coefficient of variation 'before' (11.4%) and 'after' (14.9%) reveal that there is high variation in the extent of knowledge scores of brinjal growers. This may be due to more exposure of farmers to the techniques of recommended IPM package of practices of brinjal acquired through the participation in implementation of trainings, FLDs and close contact with IPM implementing scientists of KVK in learning the skilled techniques about IPM practices. The mean knowledge score 'before' (17.62) and 'after' (24.22) establishes that FLDs and trainings helped farmers in improving their knowledge levels about IPM package of practices in brinjal.

Table 2 depicts the knowledge level of brinjal growers at pre and post knowledge test about specific IPM practices of brinjal crop.

The data indicated that great majority of the farmers had correct knowledge after implementation of FLDs and trainings in respect of shoot clipping and regular destruction of infested shoots and fruits by shoot and fruit borer (96.00%), use of pheromone lures for regular monitoring and trapping of shoot and fruit borer adult moths (94.00%), advantage of applying neem cake for controlling pests like root grub, ash weevil grubs, shoot and fruit borer and stem borer (76.00%), soil application of carbofuran 3G granules against early attack of sap sucking pests (82.00%), advantage of yellow sticky traps in monitoring and mass trapping of whitefly (90.00%) and preventive foliar application of 4% Neem Seed Kernel Extract at 15 days interval in repelling the adult moths to lay eggs and prevent foliar feeding by early stages of lepidopterous caterpillars (92.00%). It was however, observed that the farmers who had the correct knowledge on use of pheromone traps, yellow sticky traps and neem cake had comparatively less knowledge in respect of number of pheromone and yellow sticky traps to be used per acre of brinjal crop, dosage and time of neem

cake to be applied during the cropping period even after implementation of FLDs and trainings. The reason may be lack of practical involvement of few farmers in demonstrations. Before the implementation of FLDs and trainings, the brinjal growers had incorrect knowledge in respect of above practices, except shoot clipping and regular destruction of infested shoots and fruits by shoot and fruit borer. This may be due to simplicity, less cost and effectiveness of the cultural practice in control of shoot and fruit borer in brinjal.

After implementation of FLDs cum trainings, more than 70 per cent of brinjal growers had correct knowledge on recommended seed / seedling dip treatment chemicals, method of seedling dip treatment, growing of wilt resistant varieties in areas where bacterial wilt is a regular problem and need based pest management using recommended plant protection chemicals. But before implementation of training cum demonstrations, they had very less / incorrect knowledge on above IPM practices in brinjal.

Data in Table 3 reveals that the calculated 'Z' value (22.73) was more than the table value (1.96) and was found to be statistically significant at 0.01 level of probability. Therefore, it can be concluded that there was a significant difference in knowledge scores of brinjal growers 'before' and 'after' implementation of FLDs and trainings on IPM package of practices in brinjal. It clearly indicated that mean knowledge score of brinjal growers after implementation of FLDs and trainings was higher than before implementation of the same.

It was observed from the Table 4 that majority of the brinjal growers (54.00%) had medium knowledge gain about IPM practices of brinjal followed by high (26.00%) and low (20.00%) knowledge gain, respectively and similar with the results of Ramakrishna and Ram Chandra Reddy (2007). So the knowledge gain of brinjal growers indicated positive influence of FLDs and trainings on the respondents.

Conclusion:

It is concluded that FLDs and trainings conducted by KVK on IPM in brinjal had significant impact on knowledge level of brinjal growers in adopted villages. The results also clearly indicate that brinjal growers acquired correct knowledge of several improved IPM practices after implementation of the FLDs and trainings through active participation in these programmes conducted by KVK compared to before implementation of the above programmes. So this reflects that there is a need for organizing FLDs and training programmes effectively for horizontal spread of the technology to benefit the large number of vegetable farmers.

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