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Effectiveness of Training on Bio-intensive IPM Practices in Vegetables among Tribal

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ABSTRACT

IPM is an ecosystem-based strategy that focuses on the long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties. Pesticides are used only after monitoring indicates they are needed according to established guidelines, and treatments are made with the goal of removing only the target organism. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and non-target organisms, and the environment. This study was conducted to measure the training effectiveness of IPM technologies and awarness about the bio control agents among the tribal farmers. Results revealed that the majority of the tribal farmers were aware of Pseudomonas fluorescence (28%) followed by Trichoderma viridi (20%) and Bacillus subtilis (16.67%) before attending the training and cent per cent awareness was found with respect to Trichoderma viridi and Pseudomonas fluorescence due to the training. The majority (55%) of them expressed that high level of effectiveness for the training programme followed by medium level (21.70%) and low level (15 %). Adequate information in a particular area' with weighted a mean score of 3.05 and 'easy understanding' with a weighted mean score 2.95 were the most important aspects where training was found effective. The overall training Effectiveness Index was found to be 64.5 per cent which implies that the training conducted was successful and rated as Good.

Keywords: *Effectiveness, Training, Capacity building, Bio control agents, IPM, Vegetables, Tribal farmers*

Introduction

Training is denoted as imparting a particular skill to the trainees to a desired standard through operating instructions and practice and it is a highly useful tool that will bring desirable changes in the behaviour of trainees. (1). Farmers in the developing countries are mainly depending on the pesticides and chemicals for managing the pests and diseases in majority of the crops (2). The development and promotion of alternative pest control methods is an important component of a wider effort to reduce pesticide risk and to promote a more sustainable form of agricultural production. Such alternatives are usually packaged in the form of integrated pest management (IPM), which aims at a more rational deployment of a variety of pest control methods designed to complement, reduce or replace the application of synthetic pesticides (4). IPM is a method that involves the use of resistant varieties, crop rotation, catch crop/ cover crop, use of bio pesticides and bio control agents, and use of pheromone traps and sticky traps. Evidence for the impact of IPM on pesticide use, crop yields and household well-being remains patchy and there is a lack of sound impact evaluation. (9) reviewed 25 studies of IPM training through farmer field schools and found relatively strong evidence for pesticide reductions, particularly in Asia. (4) reviewed 85 IPM projects from 24 countries in Africa and Asia for their effect on crop yield and pesticide use. They also found relatively strong evidence that IPM projects reduced pesticide use, but concluded that the impact on crop yield is more complex, depending, among other factors, on pest incidence and severity. IPM is an alternative strategy to control pests in less expensive and environment-friendly way. Hence, IPM practices are now being considered as the most appropriate one to control pests Around the world, IPM has been widely adopted as a rational strategy to manage pests in crop cultivation. There are few studies examining the effectiveness of an IPM programme on tomato cultivation. (5) found that IPM farmers reduced the number of pesticide use applications up to 89 percent and at the same yield increased to 10 percent. (6) reported that IPM trained farmers reduced the number of pesticide application up to 88% while at the same yield increased to 9%. To minimize the chemical inputs and save environmental damage, the IPM approach has been globally accepted for achieving sustainability. Further, one of the important mandated activities of the Extension system is to impart training on improved and modern technologies to the farming community. Keeping this point in mind this study was conducted to know the effectiveness of training on IPM practices in Vegetable cultivation in the Dharmapuri district of Tamil Nadu

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Materials and Methods

Methodology

This study was conducted at KVK, Dharmapuri with a sample of 60 active trainees who participated in training of IPM on Vegetables were selected. Two variables namely, respondents socio-economic status and their knowledge levels about the IPM

practices learned in the training programme were measured by a structured interview schedule to study outcome of the training. The impact was evaluated by knowing the adoption status of IPM practices by the trainees, and the problems faced by them in the adoption of this practice.

The present study was conducted in the Pappireddipatty block of Dharmapuri district. Three villages having a maximum number of tribal farmers viz., Saalur, Bothakkadu and Ajjampatty were randomly selected. From these selected villages about tribal farmers were selected to create awareness on IPM technologies and training was given to 60 tribal farmers based on their interest. Data was collected with well- structured pre -tested interview tool and data were analysed using frequency, Percentage and Weighted Mean Score (WMS). The training effectiveness was measured using the following formula

$$\text{Training Effectiveness Index (TEI):} \frac{\text{TS Obtained by Respondents}}{\text{Maximum Possible Score}} \text{ X } 100$$

TEI = Training Effectiveness Index
TS = Training score

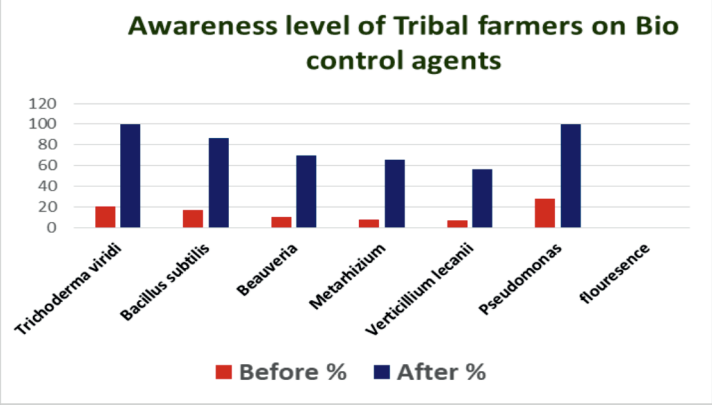
Data was collected by using a well-structured interview schedule and analyzed using SPSS (Statistical Package for Social Sciences) software. Suitable statistical tools like frequency, percentage, weighted mean score (WMS) etc were utilized for analysis of data.

Results and Discussion

Table 1. Extent of Awareness on the IPM Practices by the tribal farmers (n= 60)

Sl. No.	Particulars	Awareness Knowledge level			
		Before training		After training	
		No.	%	No.	%
I	IPM Practices				
1.	Seed treatment (wet and dry)	16	26.67	38	63.33
2.	Intercrop and Border crop	10	16.67	22	36.67
3.	Removing of egg masses and sweeping	6	10.00	32	53.33
4.	Trap crop and poison bait	0	0	25	41.67
5.	Pheromone and Sticky traps	12	20	48	80.00
6.	Light traps and bird perches	15	25	45	75.00
7.	Neem oil & NSKE	21	35	52	86.67
8.	Bt and NPV	8	13.33	32	53.33
9.	Parasites and Predators	6	10.00	28	46.67
II	Application of Bio control agents				
1.	*Trichoderma viridi*	30	50.00	48	80.00
2.	*Bacillus subtilis*	25	41.66	42	70.00
3.	*Beauveria*	15	25.00	35	58.33
4.	*Metarhizium*	12	20.00	30	50.00
5.	*Verticillium lecanii*	10	16.66	31	51.66
6.	*Pseudomonas flouresence*	22	36.66	45	75.00

Awareness knowledge of the trainees was low before the training programme and after the training the awareness knowledge was increased from 36 per cent to 86 per cent. The majority of the tribal farmers were aware about *Trichoderma viridi (50%) followed by Bacillus subtilis (41.66%) and Pseudomonas fluorescence (36.66%).* before attending the training programme as knowledge on these bio inputs was given by KVK, Dharmapuri various pieces of training, and further these bio inputs were supplied to the farmers on subsidy from State Department of Agriculture and Horticulture. A significant awareness knowledge was created due to the training programme. After the training programme significant awareness knowledge was created on Neem oil & NSKE (86.67%) followed by Pheromone and Sticky traps and application of *Trichoderma viridi (80%) followed by* Light traps and bird perches (75%) and these findings are line with the (3) and (7)



Training Effectiveness on IPM technologies

The Effectiveness of the training programmes organized was measured on a five-point continuum ranging from very high to very low effectiveness. Table 2 indicated that a majority (55.0%)of beneficiary farmers reported 'High level' of effectiveness for training programmes while 21.7 per cent of farmers found these training were medium effective. Only 15 per cent of respondents reported 'low level' of training effectiveness.

Table.2. Distribution of respondents based on effectiveness of training programme (n= 60)

Sl. No.	Category for Effectiveness	No	Per cent
1.	Very low (10- 15)	2	3.3
2.	Low (15 - 20)	9	15.0
3.	Medium (20 - 25)	13	21.7
4.	High (25 - 30)	33	55.0
5.	Very High (30- 35)	3	5.0
	Total	**60**	**100**

Mean score obtained : 21.8

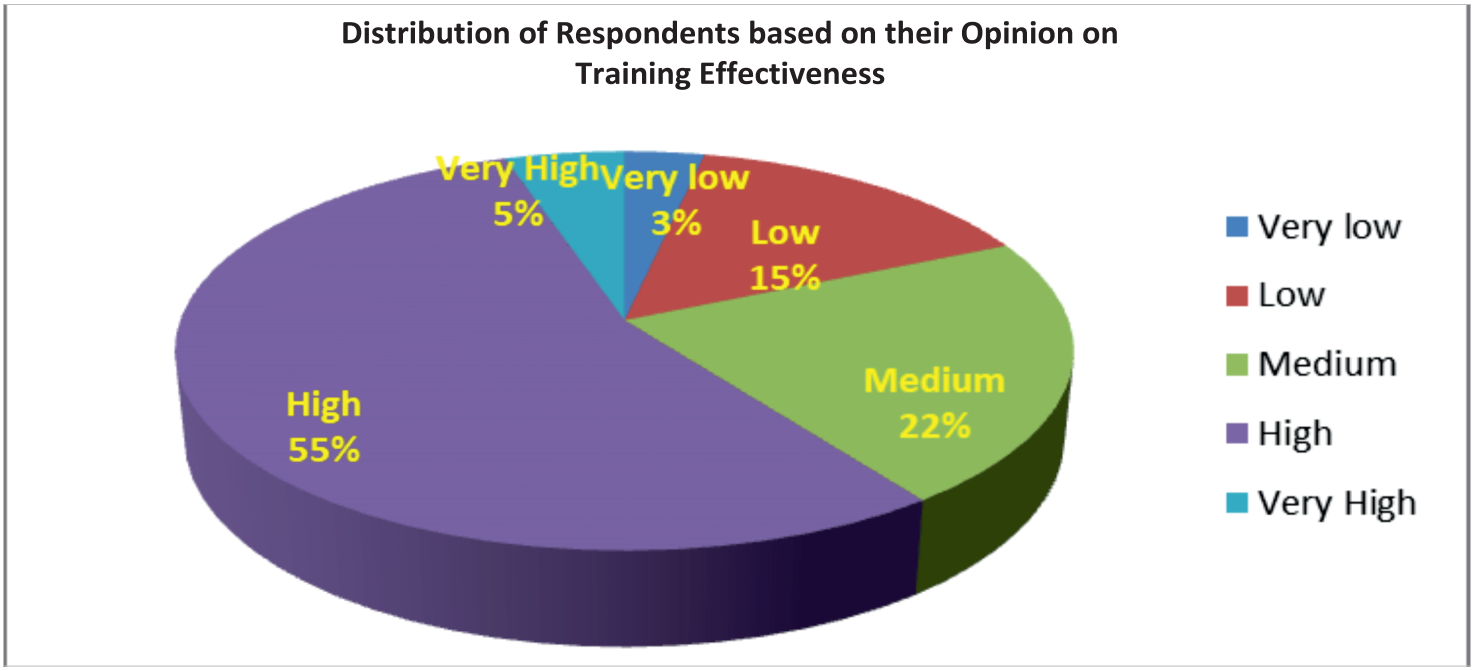


Table.3. Effectiveness of Different aspects of Training programme on IPM Practices (n= 60)

Sl. No	Training aspect	Effectiveness					
		Very low	Low	Medium	High	Very High	WMS
1.	Relevancy of course content	7	27	7	15	4	2.70
2.	Easy understanding	2	25	9	22	2	2.95
3.	Immediate usefulness	6	34	3	15	3	2.61
4.	Timeliness of training	22	28	5	4	1	1.90
5.	Clarification of doubts and querries during training	6	26	2	20	6	2.90
6.	Adequate information in a particular area	4	22	6	23	5	3.05
7.	Overall satisfaction from the training	9	18	5	21	7	2.98
8.	Based on participatory need assessment	9	25	4	17	5	2.73

The effectiveness was further measured based on eight various aspects of training. It can be observed from the Table.3 that 'adequate information in particular area' with a weighted mean score of 3.05 and 'easy understanding' with a weighted mean score 2.95 were the most important aspects where training was found effective. The training also revealed that effectiveness was rated low in terms of 'immediate usefulness', relevancy of the course contents' and timeliness of the training.

The overall training Effectiveness Index was calculated based on Individual score and it was found to be 64.5 per cent which implies that the training conducted was successful and rated as Good. This suggested that this type of training should be conducted for the benefit of farmers periodically.

Table.4. Benefits of training on IPM practices as perceived by the farmers (n= 60)

Sl. No.	Training benefits	Highly	Moderately	Not	WMS
1.	Increase in Knowledge	35 (58.3%)	2 (36.6%)	3 (5%)	2.7
2.	Gain in skills	29 (48.3%)	27 (45%)	4 (6.6%)	2.4
3.	Enhancement in entrepreneurial ability	13 (21.6%)	34 (56.6%)	13 (21.6%)	2.0
4.	Initiation of new enterprise or diversification	9 (15%)	34 (56.6%)	17 (28.3%)	1.8

Regarding the perceived benefits of the training programme it was found that an increase in knowledge and gain in skills were found to be the most important benefits from training. A majority of the farmers (58.3%) perceived that they were highly benefited interms of increase in knowledge followed by a gain in skills (48.3%). Moreover it was found that only 15 percent of farmers were of perception that they would start a new enterprise as a result of training. The result shows that although training increases the knowledge and skills of large no.of farmers, only a few of them are ready to start new enterprise or diversify their farming systems. This may be due to high risk involved in the initiation of new enterprise. If further financial, technical and marketing support will be provided to tribal farmers definitely try new enterprises or go diversification of existing enterprises.

Conclusion

The present study was conducted in the Pappiredipatti block of Dharmapuri district with 150 tribal farmers for awareness creation on bio intensive pest management technologies and training on Bio control technologies and honey bee rearing for 60 farmers. The results revealed that the Awareness knowledge of the trainees was low before the training programme, and after the training, the awareness knowledge was increased from 36 per cent to 86 per cent. The majority of the tribal farmers were aware of *Trichoderma viridi* (50%) followed by *Bacillus subtilis (41.66%) and Pseudomonas flouresence (36.66%)* before attending the training programme as the knowledge on these bio inputs were given by KVK, Dharmapuri various pieces of training and further these bio inputs were supplied to the farmers on subsidy from State Department and Agriculture. A significant awareness knowledge was created due to the training programme. After the training program, significant awareness knowledge was created on neem oil and NSKE (86.67%) followed by Pheromone Sticky traps and application of *Trichoderma viridi* (80%) followed by light traps and Bird perches (75%)

Training and demonstration on IPM technologies viz., type of bio inputs, bio inputs usage, method of application, neem -based bio inputs, its usage, use of solar insect light traps, yellow sticky traps, blue sticky traps etc. to the tribal farmers. Among the tribal farmers who attended the training about 75.00 per cent of the participants started an enterprise on Honey bee rearing and continuing and about 25 per cent of the participants started and did not continue the enterprise due to poor maintenance of bee hives.

Regarding the effectiveness of the training programme majority (55%) of the beneficiary farmers expressed that high level of effectiveness for the training programme while 21.70 per cent of the respondents reported medium level of effectiveness . Only 15 per cent of the farmers found low level of effectiveness. The effectiveness was further measured based on eight various aspects of training. It could be observed from the Table that 'adequate information in a particular area' with a weighted mean score of 3.05 and 'easy understanding' with a weighted mean score 2.95 were the most important aspects where training was found effective. The training also revealed that effectiveness was rated low in terms of 'immediate usefulness', relevancy of the course contents' and timeliness of the training.

The overall training Effectiveness Index was calculated based on Individual scores and it was found to be 64.5 per cent which implies that the training conducted was, successful and rated as Good. This suggests that, this type of training should be conducted for the benefit of farmers periodically. Regarding the perceived benefits of the training programme, it was found that an increase in knowledge and gain in skills were found to be the most important benefits from training. A majority of the farmers (58.3%) perceived that they were highly benefited interms of increase in knowledge followed by gain in skills (48.3%) as some of the bio inputs were supplied to them on subsidy basis from the Department of Horticulture.

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