

IMPACT OF TRAINING ON KNOWLEDGE OF TRAINEE FARMERS ABOUT INTEGRATED PEST MANAGEMENT

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ABSTRACT

A study was conducted in 2018- 2019 on a randomly selected 120 trainee farmers who were trained by the Department of B. A. College of Agriculture, Anand Agricultural University, Anand about the various aspects of IPM. The study depicted that mean knowledge index before training was 21.29 and was increased up to 50.18 after the training programme with a net gain of 28.89 which is statistically significant at a 1 percent level of significance.

Keywords : attitude, effectiveness, integrated pest management, trainee farmers

INTRODUCTION

Integrated Pest Management (IPM) is an environmentally friendly, common sense approach to controlling pests. The IPM principles and benefits described below apply to any type of structure and landscaping. IPM programs take advantage of all appropriate pest management strategies, including the judicious use of pesticides. Preventive pesticide application is limited because the risk of pesticide exposure may outweigh the benefits of control, especially when non-chemical methods provide the same results. IPM is not a single pest control method but rather involves integrating multiple control methods based on site information obtained through: inspection; monitoring; and reports. Consequently, every IPM program is designed based on the pest prevention goals and eradication needs of the situation. Successful IPM programs use this four-tiered implementation approach: Identify pests and monitor progress. Set action thresholds. Prevent and Control. (Retrieved from: <https://www.epa.gov/ipm/introduction-integrated-pest-management>)

Department of Entomology, B. A. College of Agriculture, Anand Agricultural University, Anand is

providing training to the trainee farmers on Integrated Pest Management from various districts of Gujarat State. Training can be useful for the overall development of the farmers and the dissemination of any proven or newer technology among the farming community. Keeping the above facts in mind the study was conducted with the following objectives.

OBJECTIVE

To study the impact of training on the knowledge level of trainee farmers about integrated pest management

METHODOLOGY

Department of Entomology, B. A. College of Agriculture, Anand Agricultural University, Anand is providing training to the trainee farmers on Integrated Pest Management from various districts of Gujarat State and those trainee farmers were selected as respondents. From the training, trainee farmers who were trained about the various aspects of Integrated Pest Management by the Department of Entomology, BACA, AAU, Anand among them 120 trainee farmers were selected by simple random sampling method.

RESULTS AND DISCUSSION

Knowledge of trainee farmers regarding Integrated Pest Management

Table 1 : Distribution of the respondents according to their knowledge level

(n=120)

Sr. No	Particulars	Before Training		After Training	
		Frequency	Percent	Frequency	Percent
1	What is the real meaning of IPM? A) Integrated land management B) Integrated weed management C) Integrated Disease Management D) Integrated pest management	55	45.08	107	87.70
2	Which benefits one can obtain by adopting integrated pest management? A) Decrease in farming costs B) Prevents the environmental pollution A) Lower the cost of chemicals D) All of the above	46	37.70	86	70.49
3	Which are the different methods of integrated pest management? A) Cultural method B) Mechanical- Physical method A) Chemical method D) Biological method E) All of the above	12	09.84	30	24.59
4	Why farmers are advised for deep plowing in the summer season? A) For the control of the Heliothis B) For the control the Spodoptera A) For the control of the fruit fly D) For control of soil-borne insect/pest and disease E) All of the above	14	11.48	83	69.16
5	Paddy cultivators are recommended to use symmetric nitrogenous fertilizers for control of which insect? A) Leaf folder B) Rice skipper C) Spodoptera D) Sucking pest	29	23.77	58	47.54
6	Which methods can be used in cultural methods?? A) Use of resistant varieties B) Crop rotation C) Deep ploughing D) Diversification/change in the time of planting or harvesting E) All the above	10	08.20	27	22.13
7	For controlling the Heliothis, tomato cultivators are recommended to grow which crop as a trap crop? A) China rose B) Periwinkles C) Rose D) Yellow Marigold (African Galgota)	66	54.10	106	86.89
8	While sowing sorghum it is advisable to keep the seed rate high why? A) Stem borer B) Aphid- Jassid A) Stinct bug D) Stem fly	05	04.10	40	32.79

Sr. No	Particulars	Before Training		After Training	
		Frequency	Percent	Frequency	Percent
9	Gram cultivators are recommended to use 40 pheromone trap/ hectare for the control of which pest? A) Spodoptera B) Semilooper C) Spotted pod borer D) Heliothis	43	35.25	85	69.67
10	Which method can be used in the mechanical method? A) Collection and destruction B) Use of various inhibitors A) Use of various traps D) All the above	11	09.02	21	17.21
11	Which method can be used in a physical method? A) Hot water treatment B) Sun drying of infested grain C) Treating the empty godown at 50° C temperature to kill stored grain pest D) Use of the light trap E) All the above	11	09.02	31	25.41
12	Ideal moisture required in stored grain to prevent the infestation of stored grain pest A) 20 to 25 percent b) 5 to 10 percent c) 10 to 12 percent	08	06.56	24	19.67
13	Infestation of which stored grain pests start from the field itself? A) Pulses beetle B) Groundnut beetle C) None of the above D) Both A and B above	25	20.49	71	58.20
14	It is recommended to coat over the sand after storage of pulses filled in the jar, Why? A) Rice moth B) For control of wheat varieties C) Pulse beetle D) None of the above	61	50.00	75	61.48
15	The light trap is used to control which pest? A) Insect/Pests that makes damage in the night B) Insect/Pests that makes damage during the day A) Both (a) and (b) D) None of the above	26	21.31	74	60.66
16	Recommended numbers of pheromone traps in cotton for the control of pink ball worm is..... A) 20 trap / ha B) 30 trap / ha A) 40 trap / ha D) 50 trap / ha	11	09.02	67	54.92
17	Yellow sticky trap is used for the surveillance of which insect/ pest? A) Aphid –Jassid B) Whitefly C) Both (a) and (b) D) None of the above	17	13.93	44	36.07

Sr. No	Particulars	Before Training		After Training	
		Frequency	Percent	Frequency	Percent
18	The Ladybird beetle found in the fields controls which of the following pests? A) Pink ball worm B) Heliothis A) Mite D) Aphid Jassid	28	22.95	47	38.52
19	Which of the following is used as a fungus-based pesticide? A) Metarhizium anisopliae B) Beauveria bassiana C) Verticillium lecanii D) All of the above	05	04.10	26	21.31
20	Which of the following are predators? A) Ladybird beetle B) Spider C) Chrysoperla D) All of the above	20	16.39	47	38.52
21	Which method can be used in the biological control method? A) Safety of natural insects B) Egg parasites C) Larval parasite D) Pupal parasites E) All of the above	06	04.92	41	33.61
22	From the following which is the neem-based pesticide? A) Monocrotophos B) Pendimethalin C) Quinalphos D) Neem seed kernel extract	49	40.16	111	90.98
23	From the following which one is used for the seed treatment in wheat? A) Monocrotophos B) DDVP C) Chlorpyrifos D) None of the above	14	11.48	41	33.61
24	What should be done to prevent pest resistance against pesticides? A) Use of various groups of insecticides simultaneously B) Use the proportionate quantity of pesticides A) Use of pesticides only when needed D) All of the above	07	05.74	19	15.57
25	From the following which can be used to control the termite? A) Monocrotophos B) Quinalphos C) DDVP D) Chlorpyrifos	20	16.39	74	60.66
26	For the control of which pest of maize and sorghum, it is recommended to give carbofuran 3g in buds? A) Hairy caterpillar B) Army worm C) Grass hopper D) Stem borer	23	18.85	50	40.98

From the table 8 it can be concluded that in case of knowledge about the real meaning of IPM was increased from 45.08 percent to 87.70 percent, Knowledge regarding the benefits one can obtain by adopting the integrated pest management was increased from 37.70 percent to 70.49 percent, Knowledge about the different methods of integrated pest management was increased from 9.84 percent to 24.59 percent, knowledge about deep ploughing is advisable in summer before the training was found 11.48 percent and which was increased to 69.16 percent, Knowledge about Paddy cultivators are recommended to use symmetric nitrogenous fertilizers for control of sucking pest was increased from 23.77 percent from 47.54 percent, Knowledge about the various methods used in cultural method was increased from 8.20 percent to 22.13 percent, knowledge regarding the marigold can be used as a trap crop for controlling the heliothis in tomato crop was increased from 54.10 to 86.89 percent, knowledge about while sowing of Sorghum it is advisable to keep seed rate high to minimize the damage caused by stem fly was increased from 4.10 percent to 32.79 percent, knowledge about recommended numbers of pheromone trap / hectare in gram crop for the control of heliothis was increased from 35.25 percent to 69.67 percent, knowledge about the different methods used in mechanical control was increased from 9.02 percent to 17.21 percent, Knowledge regarding the methods used for physical method was increased from 9.02 percent to 25.41 percent, Knowledge about the ideal moisture required in stored grain pest to prevent infestation of stored

grain pest was increased from 6.56 percent to 19.67 percent, knowledge about the infestation of pulse beetle starts from the field itself was increased from 20.49 percent to 58.20 percent, Knowledge to coat over sand after storage of pulses in the jar was increased from 50 percent to 61.48 percent, knowledge about the use of light traps for controlling the pest that makes damage at night increased from 21.31 percent to 60.66 percent, knowledge about recommended numbers of pheromone traps for controlling pink bollworm was increased from 9.02 percent to 54.92 percent, knowledge regarding the use of yellow sticky trap for the surveillance of aphid and jassid was increased from 13.93 percent to 36.07 percent, knowledge that ladybird beetle control the aphid and jassid was increased from 22.95 percent to 38.52 percent, Knowledge regarding the fungus based pesticides was increased from 4.10 percent to 21.31 percent, knowledge about the various predators was increased from 16.39 percent to 38.52 percent, Knowledge about the various methods use the in biological control method was increased from 4.92 percent to 33.61 percent, knowledge about neem based pesticide before training was 40.16 percent which was increased to 90.98 percent, knowledge about the name of a pesticide used for the seed treatment in wheat crop was increased from 11.48 percent to 33.61 percent, Knowledge about the different steps to prevent pest resistance against pesticides was increased from 5.74 percent to 15.57 percent and knowledge about the pesticide for the control of termite increased from 16.39 percent to 60.66 percent

Overall knowledge of trainee farmers regardig integrated pest management

Table 2 : Distribution of the respondents according to their overall knowledge level (n=120)

Sr. No	Knowledge index before training			Sr. No	Knowledge index after training	
	Category	Frequency	Percent		Frequency	Percent
1	Very low (up to 20)	75	62.50	1	06	5.00
2	Low (21 to 40)	32	26.67	2	38	31.67
3	Medium (41 to 60)	11	9.17	3	52	43.33
4	High (61 to 80)	02	1.66	4	24	20.00
5	Very high (81 to 100)	0	0.00	5	0	0.00

From table 2, it can be said that before the training 62.50 percent of the trainee farmers had a very low level of knowledge about IPM, followed by 26.67 had a low, 9.17 had a medium and 1.66 had a high level, respectively. Whereas, none of the trainee farmers was found to have a very high level of knowledge. In case of after the training, slightly more than two fifths (43.33 percent) had a medium

level of knowledge, followed by 31.67 percent had a low, 20 percent had a high and only 5 percent had a very low level of knowledge, respectively. Whereas, none of the trainee farmers was found to have a very high level of knowledge. The results are inline with the Patel *et al.*, (2020), Poshiya *et al.*, (2019), Preethi *et al.*, (2015) and Biradar *et al.*, (2013).

Impact of training in terms of gain in knowledge level**Table 3 : Impact of training in terms of gain in Knowledge level**

(n=120)

Knowledge Index	Frequency	Mean Score	The gain in knowledge index	t- value
Before training	120	50.18	28.89	14.70*
After training	120	21.29		

It is evident from Table 3 that the mean knowledge index before training was 21.29 and was increased up to 50.18 after the training programme. Thus net gain in knowledge index was 28.89 which is statistically significant at a 1 percent level of significance as the t-test found to be significant.

CONCLUSION

In the case of overall knowledge, before the training 62.50 percent of the trainee farmers had a very low level of knowledge about IPM, followed by 26.67 had a low, 9.17 had a medium and 1.66 had a high level, respectively. Whereas, none of the trainee farmers was found to have a very high level of knowledge. In case of after the training, slightly more than two fifths (43.33 percent) had a medium level of knowledge, followed by 31.67 percent had a low, 20 percent had a high and only 5 percent had a very low level of knowledge, respectively. Whereas, none of the trainee farmers was found to have a very high level of knowledge.

Moreover, the knowledge index before training was found at 21.29 and was increased up to 50.18 after the training programme with a net gain in knowledge index was 28.89.

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