Research Article

IMPACT OF KVK TRAINING ON KNOWLEDGE AND ADOPTION LEVELS OF SOYBEAN GROWERS IN MAHARASHTRA STATE

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Abstract: The study was conducted in ten selected villages of Washim District of Maharashtra to study the impact of training programs conducted by KVK, Karda on knowledge and adoption levels of soybean growers. A sample size comprised of 150 trainees and 150 non-trainees from the KVK operated villages. The results of the study revealed that the trainee farmers had greater knowledge and adoption levels on improved soybean cultivation practices than the non-trainee farmers. The knowledge and adoption indices for various soybean cultivation practices were also found to be more for trainee farmers than their counterparts. The impact of training organized by KVK was found to be 48.15 per cent. This indicates that KVK played a significant role in promoting the knowledge and adoption levels of soybean growers.

Keywords: *Impact, Training, Knowledge level, Adoption level and Soybean growers*

Academic Editor / Reviewer: Dr Vipul N Kapadia, B. S. Khadda

Introduction

Soybean (*Glycine max* L. Merril) is the world's most important seed legume, which contributes to 25% of the global edible oil and about two-thirds of the world's protein concentrate for livestock feeding. In India, Soybean is cultivated in an area of 11.00 million ha and the production of 9.30 million tonnes with a productivity of 8.65 q / ha under rainfed crop system in Madhya Pradesh, Rajasthan, Karnataka, Chhattisgarh and Telangana. There persist wide variation in the productivity ranges from 9.5 q / ha in Karnataka and Chhattisgarh to 14.8 q / ha in Telangana. Pricing are to farm level of efficiency. In Maharashtra, soybean is cultivated in an area of 3.73 million ha with production of 3.94 million tonnes and productivity of 10.55 q / ha with second rank in India (SOPA Databank, 2019).

KVK conducts training programs for farmers to update their knowledge and skill on modern technologies. They provide several farm support activities like providing technology dissemination to farmers training, awareness, etc. They also conduct need based training programs for the benefit of farmers and farm women, rural youths. KVK, Karda organizes regular training programs for soybean growers on improved soybean production technology. In order to study the impact of training on knowledge and adoption levels of soybean growers, the present study was undertaken.

Material and Methods

The study was conducted in Washim district of Maharashtra state during 2018-19. A list of farmers attended training on improved soybean cultivation practices was obtained from KVK, Karda. Out of six taluks of Washim district, three taluks namely, Risod, Washim and Malegaon were selected as these taluks had highest number of soybean trainees. Six villages from Risod, two villages from Washim and two villages from Malegaon were selected based on the availability of maximum number of trainees. The selected villages were Bhapur, Tandalwadi, Belkhed, Gobhani, Warud Tofa and Karda from Risod taluk, Shelgaon bagade and Tiwali from Malegaon taluk, Hiwara rohila and Sawargaon jire from Washim taluk.

A sample size of 150 trainee farmers was selected from all these ten villages by following the proportionate random sampling technique and considered as an experimental group. In order to study the impact of training among the trainees, a sample size of 150 non-trainee farmers were also selected to have them as control group. The non-trainees were also selected from the same villages again following the proportionate random sampling method. Thus, a total of 300 farmers were selected for the study.

The improved soybean production technologies imparted during training organized by KVK, Karda were selected to study the knowledge and adoption levels of both the trainees and non-trainees. The data were collected with the help of pre-tested and structured interview schedule by personal interview method. Independent 't' test was applied to test the significant difference between mean knowledge and adoption scores of trainees and non-trainees.

The impact index was worked out with the help of following formula.

Impact Index = [MKI of trainees – MKI of non- trainees] [MAI of trainees – MAI of non- trainees] / 2

Results and Discussion

Knowledge of Trainee and Non-Trainee Farmers on Improved Soybean Cultivation Practices

Knowledge was crucial factor for an adoption of an innovation so the extent of knowledge among trainee and non-trainee farmers was studied and the results are presented in [Table-1].

[Table-1] shows that the mean knowledge score of trainee farmers was more than that of non-trainee farmers. Further, the difference between the means of trainee and non-trainee farmers was highly significant. Based on the mean scores, it may be stated that the trainee farmers possessed higher knowledge than non-trainee farmers. Hence, it may be concluded that the trainee farmers were with more knowledge about improved soybean cultivation practices, while the non-trainee farmers were with low knowledge about the same.

The general hypothesis on difference between the trainee and non-trainee farmers on their knowledge about improved soybean cultivation practices is supported by this finding.

Table-1 *Distribution of respondents on their knowledge about improved soybean cultivation practices.*

SN	Category	Trainee farmers (n=150)		Non-trainee farmers (n=150)	
		Number	Per cent	Number	Per cent
1	Low	-	-	71	47.33
2	Medium	45	30.00	54	36.00
3	High	105	70.00	25	16.67
	Total	150	100.00	150	100.00
Mean			77.60		45.50
Difference between the means			32.1		
't' value			34.49**		
** - Significant at 0.01 level of probability					

It may also be seen from [Table-1] that majority of the trainee farmers (70.00 per cent) were with high level of knowledge, whereas majority of non-trainee farmers (47.33 per cent) were with low level of knowledge. The table further shows that the proportion of respondents found under medium level of knowledge was 30.00 per cent for trainee farmers and 36.00 per cent for non-trainee farmers. No trainee farmer was found to have low level of knowledge.

The trainee farmers have attended training programs organized by Krishi Vigyan Kendra on improved soybean cultivation practices. This would have enabled them to gain more knowledge about soybean cultivation. On the contrary, the non-participation of non-trainee farmers in the training program on soybean cultivation may be the major reason for their lower knowledge.

Extent of Adoption

The adoption level of trainee and non-trainee farmers on improved soybean cultivation practices are presented in [Table-2].

Table-2 *Distribution of respondents on their extent of adoption of improved soybean cultivation practices*

SN	Category	Trainee farmers (n=150)		Non-trainee farmers (n=150)	
		Number	Per cent	Number	Per cent
1.	Low	17	11.33	84	56.00
2.	Medium	39	26.00	43	28.67
3.	High	94	62.67	23	15.33
	Total	150	100.00	150	100.00
Mean			77.30		47.20
Difference between the means			30.10		
't' value			25.31**		
** - Significant at 0.01 level of probability					

It is interesting to see from table that majority of the trainee farmers (62.67 per cent) were found to be the high adopters of improved soybean cultivation practices, whereas majority of the non-trainee farmers (56.00 per cent) were found to be the low adopters. Around 30.00 per cent of the trainee farmers (26.00 per cent) and non-trainee farmers (28.67 per cent) were found in the medium category. Only less than one-fifths of the non-trainee farmers (15.33 per cent) were high adopters and only 11.33 per cent of non-trainee farmers were low adopters. The [Table-2] further shows that the mean score of trainee farmers was more than that of non-trainee farmers. The difference between the means was significant at 5.00 per cent level. Based on the mean scores, it may be concluded that the trainee farmers were high adopters, while the non-trainee farmers were relatively low adopters. This supports the general hypothesis namely there will be difference between the trainee and non-trainee farmers in their adoption levels of improved soybean cultivation practices.

The higher adoption level of trainee farmers compared to their counterparts needs no explanation. The trainee farmers undergone training program on soybean cultivation practices organized by Krishi Vigyan Kendra, they have gained more knowledge from those training programs. The higher knowledge level of respondents coupled with their best extension contact, media exposure, scientific orientation, economic motivation and innovativeness would have enabled the trainee farmers to adopt more practices. On the contrary the non-participation of non-trainee farmers would not have enabled them to acquire knowledge and hence would have led to poor adoption. Similar findings were also reported by Malabasari and Hiremath (2016) [1] and Mankar *et. al*., (2014) [2].

Impact of Training

In order to study the impact of training, the mean knowledge and adoption indices were worked out for all the selected technologies. The mean knowledge and adoption indices were also worked out for both the trainees and non-trainees. The results are presented in [Table-3].

Table-3 Knowledge and adoption indices of trainees and non-trainees for soybean cultivation practices

SN	Soybean cultivation practices	Knowledge Index (%)		Adoption Index (%)	
		Trainees (n=150)	Non-trainees (n=150)	Trainees (n=150)	Non-trainees (n=150)
1.	Recommended varieties	100.00	45.33	100.00	42.67
2.	Seed germination test	94.67	14.00	87.33	0
3.	Chemical seed treatment	98.00	34.67	95.33	22.67
4.	Bio-fertilizer seed treatment	98.67	32.00	95.33	22.67
5.	Seed rate	100.00	48.00	100.00	46.67
6.	Spacing	100.00	46.67	100.00	46.67
7.	Broad bed and furrow system	100.00	80.67	100.00	93.33
8.	Weed management	98.67	43.33	92.67	39.33
9.	Application of FYM	100.00	94.67	100.00	71.33
10.	Application of chemical fertilizer	94.67	82.67	98.00	69.33
11.	Pest management	92.00	39.33	90.00	28.00
12.	Disease management	92.00	36.00	90.00	28.00
13.	Time of harvest	100.00	84.00	100.00	73.33
Mean Index		97.59	52.41	96.05	44.92

Knowledge

The mean knowledge index was found to be higher for the trainee farmers (97.59 per cent) rather than non-trainee farmers (52.41 per cent). The data furnished in [Table-3] reveals that cent per cent of the trainee farmers had knowledge on the practices namely, recommended varieties, seed rate, spacing, broad bed and furrow system, application of FYM and time of harvest, whereas the corresponding knowledge level for the same practices for the non-trainee farmers were 45.33 per cent, 46.67 per cent and 80.67 per cent, 94.67 per cent and 84.00 per cent respectively. [Table-3] further shows that a vast majority of trainee farmers had knowledge on the remaining practices namely, seed germination test (94.67 per cent), chemical seed treatment (98.00 per cent), bio-fertilizer seed treatment (98.67 per cent), weed management (98.67 per cent), application of chemical fertilizer (94.67 per cent), pest management (92.00 per cent) and disease management (92.00 per cent). In case of non-trainee farmers, less than half the proportion of the respondents had knowledge on recommended varieties (45.33 per cent), seed rate (48.00 per cent), spacing (46.67 per cent) and weed management (43.33 per cent). About 40.00 per cent of the respondents had knowledge on pest management. The practices namely, chemical seed treatment (34.67 per cent), bio-fertilizer seed treatment (32.00 per cent) and disease management (36.00 per cent) were found to be known by only less than 40.00 per cent of the respondents. Only a smaller proportion of the respondents had knowledge on seed germination test (14.00 per cent).

Adoption

The mean knowledge index calculated was greater for the trainee farmers (96.05 per cent) compared to the non-trainee farmers (44.92 per cent). In case of adoption, the practices namely, recommended varieties, seed rate, spacing, broad bed and furrow system, application of FYM and time of harvest were adopted by all the trainee farmers, whereas in the case of non-trainee farmers, these practices were found to be adopted by 42.67 per cent, 46.67 per cent, 46.67 per cent, 71.33

per cent and 73.33 per cent of the respondents. Majority of the trainee farmers had adopted the remaining practices namely, seed germination test (87.33 per cent), chemical and bio-fertilizer seed treatment (95.33 per cent), weed management (92.67 per cent), application of chemical fertilizer (98.00 per cent) and pest and disease management (90.00 per cent). In the case of non-trainee farmers, about 70.00 per cent of the farmers adopted application of chemical fertilizer. Only a lesser proportion of the non-trainee respondents had adopted chemical and bio-fertilizer seed treatment (22.67 per cent) and pest and disease management (28.00 per cent). None of them had adopted the seed germination test.

Impact of Training on Knowledge and Adoption of Improved Soybean Cultivation Practices
The mean knowledge and mean adoption indices were calculated for both the trainees and non-trainees and the impact index was also computed. The results are furnished in [Table-4].
Table-4 *Impact of training on knowledge and adoption levels of trainee and non-trainee farmers*

SN	Particulars	Trainees	Non-trainees	Difference
1	Mean Knowledge Index	97.59	52.41	45.18
2	Mean Adoption Index	96.05	44.92	51.13
Total		193.64	97.83	96.31
3	Percentage of Impact = Sum of differences of indices / 2 = 96.31 / 2 = 48.15			

The impact of training program imparted by the KVK as a whole was computed as the sum total of the differences of both the indices namely, Mean Knowledge Index (MKI) and Mean Adoption Index (MAI) divided by two. The data thus obtained have been presented in [Table-5].
Table shows that the mean knowledge index and mean adoption index were found to be 98.59 per cent and 96.05 per cent for the trainee farmers, whereas for the non-trainee farmers the mean knowledge index was 52.41 per cent and mean adoption index was 44.92 per cent. It clearly shows that the trainee farmers had greater knowledge and adoption levels compared to the non-trainee farmers. It could be further observed that there was an impact of KVK training up to 48.15 per cent over the existing knowledge and adoption by the trainee farmers which were found to be substantial over the non-trainee farmers. Therefore it could be stated that there was a remarkable impact of training on those respondents who attended the training program conducted by KVK, Washim in terms of knowledge and adoption of improved soybean cultivation practices as compared to their counterparts. This shows a positive and significant impact of training programs conducted by KVK on knowledge and adoption levels of trainees. Similar findings were also reported by Singhal and Vatta (2017) [3], Sowmya and Bindu (2017) [5] and Deshmukh et.al. (2020) [6].

Conclusion
The study shows that the trainee farmers had greater knowledge and adoption levels with regard to improved soybean cultivation practices compared to the non-trainee farmers who were relatively lesser in their knowledge and adoption levels. The mean knowledge index and mean adoption index were found to be higher for the trainee farmers rather than their counterparts. The impact of KVK training was observed to be 48.15 Per cent.
Hence it may conclude that the Krishi Vigyan Kendra contributed positively in enhancing the knowledge and extent of adoption of improved soybean cultivation practices among the trainee farmers. The knowledge imparted during training by KVK scientists and follow up extension activities would have helped in enhancing the knowledge level of trainee farmers and in turn would have led to higher level of adoption of improved soybean production practices.
Hence it could be suggested that a greater number of training programs on soybean production may be organized for all the non-trainee farmers in the KVK operated villages so as to ensure better knowledge and adoption among all the farmers.

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