

Role of Krishi Vigyan Kendra in promoting the scientific knowledge among the soybean cultivators: A case study of KVK Borgaon

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ABSTRACT

Glycine max(L.) Merr., commonly known as 'soybean' is one of the principal oilseed crops cultivated in India which is protein rich and decent source of both fat and carbohydrates. Low productivity of soybean in India as compared to other countries in the world is the matter of major concern. Lack of technical know-how is one of the important causes of the low productivity of soybean crop in India. Krishi Vigyan Kendras (KVKs) also known as Farm Science Centers are one of the agricultural extension agencies working at grass-root level in India. The present study examines the role of Krishi Vigyan Kendras in enhancing the scientific knowledge of soybean cultivators in India with special reference to the Krishi Vigyan Kendra, Borgaon, Dist. Satara, Maharashtra. The attempt has been made to compare the scientific knowledge of KVK trained and non-trained soybean cultivators about improved soybean cultivation with the help of z-test. The study found that, the interventions of KVK Borgaon contributed significantly to enhance the scientific knowledge of soybean cultivators. The scientific knowledge of the KVK trained soybean cultivators has been found to increase in case of land preparation & tillage, application of farm yard manure, seed rate & spacing, seed treatment, application of bio-fertilizers, integrated pest management, integrated disease management and post-harvest techniques.

Keywords: Scientific knowledge, intervention, impact of KVK.

INTRODUCTION

Glycine max (L. Merrill) commonly known as 'soybean' is one of the principal oilseed crops cultivated in India which is protein rich and decent source of both fat and carbohydrates. In 2020-21, about 28.79 million hectares of area in India was under the oilseed cultivation and the total oilseed production was 36.10 million tonnes. In country's total oilseed production, share of soybean was 36 percent i.e., 12.89 million tonnes (Anonymous, 2021). Madhya Pradesh and Maharashtra are leading states in soybean production in India. However, the productivity of soybean crop in India is low as compared to the countries like Brazil, United States of America, China and Argentina. In last decade, India's imports of edible oil increased by

174 per cent whereas soyabean oil imports soared to 2.95 million tonnes per year (Anonymous, 2022). According to Dupare *et al.* (2010), important constraint identified among soybean cultivators in Madhya Pradesh is lack of knowledge regarding scientific rationality of improved package of practices, seed production techniques, management and identification of pest and diseases on soybean crop, weed management and use of machinery.

Recognizing the need of increasing productivity of soybean crops and making country self-reliant in production of edible oil, Government of India has initiated several training programmes for soybean cultivators. Krishi Vigyan Kendras (also known as Farm Science Centers) are the public sector agriculture extension agencies which deal

with dissemination of latest agricultural technologies and scientific knowledge to farmers through the On Farm Trials (OFTs), Front Line Demonstrations (FLDs), farmers training using method of learning by doing. At present there are total 725 KVKs functioning in India. Maharashtra state has total 50 KVKs working under administration of different host institutions. Several studies found that, knowledge level of farmers has been significantly increased due to interventions of KVK. Meena and Bhati (2010), found that, the knowledge level of cotton producers in Shriganganagar district of Rajasthan state was significantly increased due to training programmes of KVK. Study conducted by Deshmukh *et al.* (2021), reveals that knowledge level of soybean cultivators has improved due to trainings organized by Krishi Vigyan Kendra, Karda in Washim district of Maharashtra. This research paper examines the impact interventions of Krishi Vigyan Kendra, Borgaon on the knowledge level soybean cultivators in Satara district, Maharashtra.

MATERIALS AND METHODS

The present study is conducted in Satara district of Maharashtra as it is one of the leading soybeans producing districts of state. A multi-stage sampling design was used to select soybean cultivators as sample respondents. In first stage, KVK Borgaon was selected randomly from Satara district. In second stage, Satara block was purposively selected from jurisdiction of KVK Borgaon based on total area under soybean cultivation. In third stage, 3 KVK adopted villages were purposively selected based on total number of trained farmers in village. Finally at last stage, a comprehensive list of all soybean cultivators participated in KVK trainings from each selected village was prepared with the help of records of KVK. From each sample village, 20 trained soybean cultivators were selected through random sampling method for present study. Apart from this, in order

to assess the impact of KVK activities on knowledge level of soybean cultivators, 3 non-adopted villages were selected as control villages from same Agro-climatic zone. From each control village, 20 soybean cultivators were selected as non-trained farmers. Thus, total 120 soybean cultivators (60 trained and 60 non-trained) were selected for present study. The primary data required for study was collected from respondents through pre-tested interview schedule. To measure the knowledge level of soybean cultivators, knowledge test covering total 12 dimensions related to improved soybean cultivation practices was prepared with help of agricultural scientists and KVK Subject Matter Specialists. The dimension wise knowledge of respondents about improved soybean cultivation practices was recorded on three continuum Likert scale - 'no knowledge' (0), 'partial knowledge' (1) and 'full knowledge' (2) with respective weightage given. By summing up the response given to each dimension, total score secured by individual respondent was computed. The knowledge index was worked out for each respondent by following quotient.

$$\text{Knowledge Index (KI)} = \frac{\text{Knowledge score secured by the respondent}}{\text{Maximum possible knowledge score}}$$

The knowledge indices assigned to each respondent were summed up and mean of knowledge score (x) and standard deviation (SD) were computed. Knowledge index was categorized into 3 levels i.e., Low level of knowledge (Mean - SD), Moderate level of knowledge (Mean \pm SD), and High level of knowledge (Mean + SD). To compare the mean knowledge scores of KVK trained and non-trained farmers, z-test has been used.

RESULTS AND DISCUSSION

Knowledge level of the respondents about improved soybean cultivation:-

Knowledge level of the respondents about improved soybean cultivation is given in Table 1.

Table 1
Distribution of respondents according to knowledge level of improved soybean cultivation

Sr. No.	Knowledge Level	Respondents		
		Trained farmers (n = 60)	Non-trained farmers (n = 60)	Overall (n = 120)
1	Low level (< 0.399)	0 (0)	16 (26.66)	16 (13.34)
2	Moderate level (0.400 to 0.716)	41 (68.34)	42 (70)	83 (69.16)
3	High level (> 0.716)	19 (31.66)	2 (3.34)	21 (17.5)
Total		60 (100)	60 (100)	120 (100)

(Figures in parentheses indicate the percentage of the total)Source: Field Survey 2021

The data presented in the Table 1 shows that, 31.66 per cent of trained farmers possess high level of knowledge about improved soybean cultivation followed by 68.34 per cent of farmers having moderate level of knowledge about improved soybean cultivation. No trained farmer in study area found to have knowledge index less than 0.399 i.e., low level of knowledge. On other hand, total 16 non-trained farmers in study area are belong to low level of knowledge about improved soybean cultivation having knowledge index less than 0.399. The study found that, 70 per cent of non-trained farmers are having moderate level of knowledge. The percentage of respondents having high level of knowledge about improved soybean cultivation is found low among non-trained farmers (3.34%) as

compared to the trained farmers (31.66%). As far as the performance of overall soybean cultivators selected for the present study is concerned, 69.16 per cent of the respondents are found belong to moderate level of knowledge followed by 17.5 per cent and 13.34 per cent of respondents belong to high and low level of knowledge, respectively. These findings are in conformity with the findings of Rajan *et al.* (2021) and Sikarwar *et al.* (2021).

Dimension wise knowledge of the respondents about improved soybean cultivation:

The dimension wise mean of knowledge scores of trained and non-trained farmers in study area is given in the Table 2. The ranks are given to each dimension according to mean of knowledge score.

Table 2
Dimension wise mean of knowledge scores of the respondents

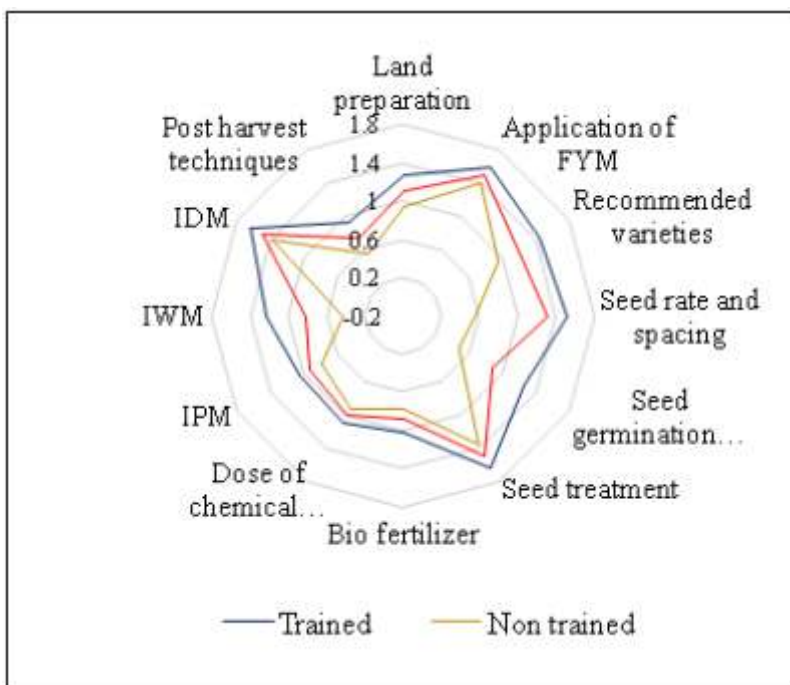
Sr. No.	Knowledge aspect	Knowledge score					
		Trained Farmers		Non- trained farmers		Overall	
		Mean	Rank	Mean	Rank	Mean	Rank
1	Land preparation and tillage	1.28	6	0.95	4	1.11	6
2	Application of farm yard manure	1.60	3	1.40	1	1.50	2
3	Recommended varieties	1.43	5	0.93	5	1.18	5
4	Seed rate and spacing	1.50	4	0.55	9	1.31	4
5	Seed germination test	1.26	7	0.46	11	0.86	10
6	Seed treatment	1.63	2	1.35	3	1.49	3
7	Application of bio fertilizer	1.01	11	0.76	8	0.88	9
8	Recommended dose of chemical fertilizer	1.08	9	0.91	6	0.99	7
9	Integrated pest management	1.06	10	0.80	7	0.93	8
10	Integrated weed management	1.23	8	0.43	12	0.83	11
11	Integrated disease management	1.65	1	1.38	2	1.51	1
12	Post-harvest techniques	0.93	12	0.54	10	0.74	12

Source: Field Survey 2021

The study found that, the knowledge score of the KVK trained farmers is highest in case of integrated disease management followed by the seed treatment, application of farm yard manure, seed rate & spacing and recommended varieties of soybean respectively. The mean of knowledge score of KVK trained farmers in found low in case of post-harvest techniques followed by application of bio fertilizers, integrated pest management and recommended dose of chemical fertilizers respectively. In case of non-trained farmers in study area, the mean of knowledge score is found highest for application of farm yard manure followed by integrated disease management, seed treatment, land preparations & tillage and recommended varieties of soybean, respectively. Whereas, the

mean of knowledge score of non-trained farmers is found least in case of integrated weed management followed by seed germination test, post-harvest techniques, seed rate & spacing and application of bio-fertilizers. The mean knowledge score of overall soybean cultivators selected for the present study is found highest in case of integrated disease management followed by application of farm yard manure, seed treatment, seed rate & spacing and recommended varieties of soybean. The mean knowledge score of overall respondents is found lowest in case of post-harvest techniques followed by integrated weed management, seed germination test, application of bio-fertilizers and integrated pest management. The dimension wise knowledge score of respondents in study area is given in Figure 1.

Figure 1.
Dimension wise knowledge score of respondents in study area



Impact of KVK interventions on the knowledge of soybean cultivators in study area: -

In order to examine the impact of interventions of Krishi Vigyan Kendra, Borgaon on the knowledge of soybean cultivators in study area,

knowledge scores secured by the KVK trained and non-trained farmers have been compared. The knowledge scores of the KVK trained and non-trained farmers in the study area are compared using z-test. The mean difference and z-test statistics is given in Table 3.

Table 3
Mean difference between knowledge scores of KVK trained and non-trained farmers in study area

Sr. No.	Dimension	Knowledge score	
		Mean difference	z score
1	Land preparation and tillage	0.333	3.0960*
2	Application of farm yard manure	0.200	2.0171*
3	Recommended varieties	0.500	4.7965 ^{NS}
4	Seed rate and spacing	0.366	2.9706*
5	Seed germination test	0.800	6.3230 ^{NS}
6	Seed treatment	0.283	2.6142*
7	Application of bio fertilizer	0.250	2.2496*
8	Recommended dose of chemical fertilizer	0.166	1.4438 ^{NS}
9	Integrated pest management	0.266	1.9054*
10	Integrated weed management	0.800	6.5095 ^{NS}
11	Integrated disease management	0.266	2.3435*
12	Post-harvest techniques	0.383	2.7950*

*NS: Non-significant, *Significant at 5% level of probability*

The study found that, there is significant difference between the knowledge scores of KVK trained and non-trained farmers in case of land preparation & tillage, application of farm yard manure, seed rate & spacing, seed treatment, application of bio-fertilizers, integrated pest management, integrated disease management and post-harvest techniques. Whereas, non-significant difference has been found between the knowledge score of KVK trained and non-trained soybean cultivators in case of recommended varieties, seed germination test, recommended dose of chemical fertilizers and integrated weed management.

CONCLUSION

The study concludes that, the interventions of KVK Bargaon viz., On Farm Trials (OFTs), Front Line Demonstrations (FLDs), farmers trainings, extension activities, diagnostic field visits etc. contributed significantly to enhance the scientific

knowledge of soybean cultivators in the Satara district of Maharashtra state. The scientific knowledge of the KVK trained soybean cultivators has been found to increase in case of land preparation & tillage, application of farm yard manure, seed rate & spacing, seed treatment, application of bio-fertilizers, integrated pest management, integrated disease management and post-harvest techniques. Hence, it is concluded that, Krishi Vigyan Kendras in India in general and Satara district in particular play crucial role in promoting scientific farm practices among the farmers. The findings of the present study suggests that, the government should continue to support and strengthen the network of Krishi Vigyan Kendras (KVKs) in India to ensure their effectiveness. As country continues to strive towards attaining the agricultural sustainability, it is important to identify the role of KVKs and invest in their continues growth and development.

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