Constraints faced by cabbage farmers of the Udham Singh Nagar district in the adoption of IPM technology

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ABSTRACT

Present research was conducted in Udham Singh Nagar dstrict of Uttarakhand to study the socio-economic characteristics and constraints faced by cabbage producing farmers. A sample of 120 farmers was selected for the purpose of study. Primary data was collected through online questionnaire. This indicated that majority of respondents were of middle age group having high school level education, 1-5 acre land, low income, medium level of experience in cabbage farming, medium scientific orientation. Majority of respondents were facing various constraints regarding adoption of Integrated Pest Management.

1. Introduction

Cabbage (*Brassica olearaceae* var. *capitata*) is the most important crop in the world. India stands second in the production of cabbage which accounts for 12 per cent of the Global production. (Karthikeyan *et, al.* 2020). Cabbage is a rich source of nutrients comprising all nine essential amino acids. Cabbage is also reported to have antioxidants and anti-carcinogenic properties. Cabbage is cultivated throughout India because of its adaptability to wide range of climatic conditions and soil (Routu, 2016). The total area under cultivation of cabbage in India is 372 thousand hectares with an annual production to the tune of 8534 thousand tonnes (Kumar *et, al.*, 2013). Despite the larger cultivation area for cabbage, the productivity is very low.

Research revealed that majority of cabbage growers were facing various problems due to lack of knowledge, information and education on many aspects. Keeping all these points in mind the present research was designed to study the socio-economic characteristics and constraints faced by cabbage growers.

2. Material and Method

Present investigation was conducted in Rudrapur block of Udham Singh Nagar district of Uttarakhand. Total 120 farmers were selected through the WhatsApp group of *"Krishi Vibhag Rudrapur"*. Data was collected through online

mode. After collection of data on general information and constraints, a media mix approach was implemented to provide the information to cabbage growers. Media mix approach includes audio, video and online lecture also. Message on WhatsApp was sent among the cabbage farmers in the form of audio, video and online lecture. Data was calculated through proper statistical tool.

3. Results and Discussions

General Information of cabbage growers

Age: The data presented in Table 1 revealed that out of 120 cabbage growers, 67.5 per cent respondents belonged to middle age group followed by 20 per cent respondents from young age group and rest 12.5 per cent respondents were found in old age group.

Education: Data regarding the composition of respondents according to education has been presented in Table 1. It is cleared from the Table 1 that the maximum number of respondents (32.50 %) were having high school education followed by those who were educated 8th standard (22.50 %), Up to 5th standard 20.80 percent, 14.18 per cent respondents were educated intermediate, graduate (5%), postgraduate (0.86%) and 4.16 percent of respondents were illiterate. Similar kind of results were reported by Sharma and Hasan (2012).

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Table 1. General Information of cabbage growers (N=120)

S.No.	Category	Category	Per centage
A.	**Age**		
1.	Young age (<42)	24	20.00
2.	Middle age (42-62)	81	67.50
3.	Old age (>62)	15	12.50
B.	**Educational level**		
1.	Illiterate	5	4.16
2.	up to 5th standard	25	20.80
3.	up to 8th standard	27	22.50
4.	High school	39	32.50
C.	**Land holding**		
1.	No land	0	0
2.	Up to 1 acre	38	31.6
3.	1 to 5 acre	64	53.4
5.	5 to 10 acre	16	13.4
6.	More than 10 acre	2	1.6
7.	No land	0	0
D.	**Annual Income**		
1.	Low income	74	61.60
2.	Medium income	30	25.00
3.	High income	16	13.40
E.	**Occupation**		
1.	Major occupation (Cabbage growing)	120	100
2.	Subsidiary occupation (farming)	120	100
F.	**Experience in cabbage farming**		
1.	Less	13	10.80
2.	Medium	86	71.70
3.	High	21	17.50
G.	**Scientific orientation**		
1.	Low (<12.08)	30	25.00
2.	Medium (12.08-16.44)	66	55.00
3.	High (>16.44)	24	20.00

Land holding: The data presented in Table 1 indicates that out of total 120 cabbage growers, majority (53.4%) of the cabbage growers were having landholding between 1 to 5 acres while 31.6 percent cabbage growers were having small size of land holding up to 1 acre, 13.4 percent respondents were having 5 to 10 acres and rest 1.6 percent cabbage growers were having more than 10 acre of landholding.

Annual income: The data presented in Table 1 showed the annual income of the cabbage growers. Out of total 120 cabbage growers, 61.6 percent were found in low income group, whereas 25 percent were found in medium income group and only 13.4 percent were found in high income group.

Experience in cabbage farming: Table 1 clearly showed that majority of the respondents (71.70%) had medium experience in cabbage farming followed by 17.50 per cent of those who had high experience in cabbage farming and only 10.80 per cent of the respondents had less experience in cabbage farming.

Scientific orientation: The data presented in Table 1 indicated that majority (55%) of cabbage growers were having medium level of scientific orientation, while 25 per cent cabbage growers were having low scientific orientation and rest 20 per cent cabbage growers were highly scientifically oriented.

Extent of utilization of information sources

Table 3 clearly showed that vast majority of the respondents (50.8%) had medium utilization of information sources followed by 29.2 per cent of those who had high utilization of information and only 20 per cent of the respondents had low utilization of information sources.

Table 2. Distribution of the respondents on the basis of utilization of information sources   (N=120)

S.No.	Source	Regular		Occasionally		Never	
		No.	%	No.	%	No.	%
1	Radio	0	0	26	21.6	0	0
2	Television	75	62.5	32	26.7	13	10.8
3	Newspaper	21	17.5	65	54.1	34	28.4
4	Magazine	0	0	0	0	0	0
5	Smart phone	117	97.5	0	0	3	2.5
6	Computer	12	10	0	0	0	0

From the Table 2 it can be concluded that with the deep penetration into our society, ICT interventions has become an indispensable part of our life. Smart-phones are the major source of information as majority of respondents uses it for seeking information on regular basis. Apart from smart phones, 62.5 per cent respondents rely on television for obtaining authentic information on regular basis and 26.7 per cent use it occasionally.

Constraints faced by cabbage growers

Total 95.83 per cent of respondents were facing the constraint as lack of information about indigenous pest management followed by lack of knowledge in preparation of botanicals (95 per cent) and lack of awareness about the application of neem oil (94.16 per cent). Majority of respondents (93.33) were facing non-availability of pheromone traps in local market followed by lack of awareness about natural enemies conservation (85.83 per cent). Findings were supported by Sharma and Kandpal (2019).

Total 88.33 per cent respondents were facing the lack of knowledge about spraying time followed by 87.5 per cent respondents were facing the constraint of non-availability of fungicides/ pesticides for seed treatment. These findings were found to partially supported by the reports of earlier investigations (Meena, 2003, Rai *et,al.* 2010).

Table 3. Distribution of the respondents on the basis of utilization of information sources   (N=120)

S. No.	Category	Frequency	Percentage
1	Low (<6.0)	24	20.00
2	Medium (6.0-8.0)	61	50.8
3	High (>8.0)	35	29.2
	Total	120	100

Table 4. Distribution of respondents according to constraints faced by cabbage growers   N=120

S.No.	Category	Category	Per centage
1.	Lack of information about indigenous pest management	115	95.83
2.	Lack of knowledge about planting time	99	82.5
3.	Non-availability of power supply to the field	87	72.5
4.	Lack of knowledge about fertilizers	94	78.33
	Non-availability of fungicides/ pesticides for seed treatment	105	87.5
8.	Lack of knowledge about bund crops	102	85
10.	Lack of knowledge in preparation of botanicals	114	95
11.	Lack of awareness about natural enemies conservation	103	85.83
12.	Non-availability of pheromone traps in local market	112	93.33
14.	Lack of knowledge about spraying time	106	88.33
17.	Lack of awareness about the application of neem oil	113	94.16

18.	Lack of knowledge about crop rotation	101	84.16
19.	Lack of awareness about hazardous and residual effect of chemical pesticides	85	70.83
20.	Lack of skill about biopesticide application	95	79.16

Table 5. Media Mix approach for cabbage growers

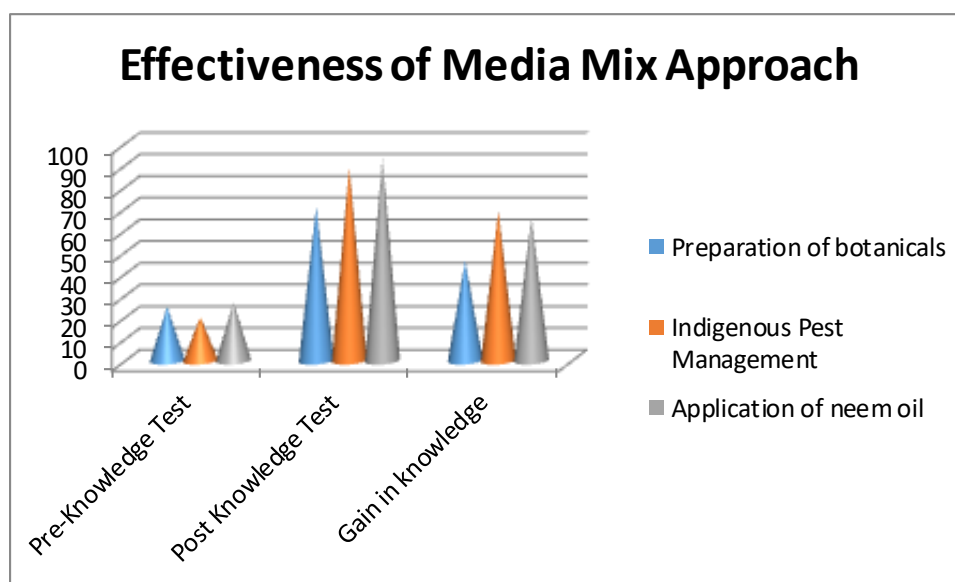| S.No.	Category	Media Mix Approach
1.	Indigenous pest management	Video+Text message
2.	Preparation of botanicals	Audio clip+ Online lecture
3.	Application of neem oil	Video+Audio

Table 6. Effectiveness of Media Mix Approach   (N=120)

S.No.	Category	Pre-Knowledge Test	Post Knowledge Test	Gain in knowledge
1.	Preparation of botanicals	25.00	71.00	46.00
2.	Indigenous pest management	20.00	89.00	69.00
3.	Application of neem oil	27.00	93.00	66.00

On the basis of constraints media mix approach was designed to provide the information and education among cabbage growers. Three constraints viz; Indigenous pest management, Preparation of botanicals, Application of neem oil were selected for providing information's to cabbage farmers. This information were provided to cabbage growers through WhatsApp.

Three areas were selected in which maximum respondents were unaware about the topic. A media mix approach was applied. In Media mix approach, videos, audio, online lecture and WhatsApp message was send among the cabbage growers. Media mix approach is a method of communication in which more than one medium is used to disseminate the message. In present research video, audio, lecture and message were used to aware the cabbage growers on different need based areas. Results revealed that knowledge level was increased after implementation of media mix approach.

Total 69 per cent knowledge level was increased on the topic of indigenous pest management followed by application of neem oil (66 per cent) and preparation of botanicals (46 per cent).

4. Conclusion

From the present study, this can be concluded that majority of respondents were of middle age group having high school level education, 1-5 acre land, low income, medium level of experience in cabbage farming, medium scientific orientation. Majority of respondents were facing various constraints regarding adoption of IPM. Media Mix approach was applied on the cabbage growers. Finding the constraints faced by cabbage growers was also the part of investigation. After that media mix approach was implemented. Information on need based areas was provided to respondents by the use of different mediums viz; video, audio, lecture and message. This media mix approach was effective in term of gain in knowledge.

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