

Original Research Article

Attitude of Vegetable Growers towards mitigating the ill-effects of Agricultural Chemicals

Abstract

This study was conducted in Kolar district of Karnataka state during 2018-19 to ascertain the attitude of vegetable growers towards mitigating the ill-effects of agricultural chemicals. The data was collected from 120 vegetable growers in Kolar and Malur talukas by applying simple random sampling technique and pretested interview schedule. It was found that more than half of the vegetable growers (52.50 %) belonged to highly favourable attitude towards mitigating the ill-effects of agricultural chemicals, more than two third of them (69.16 %) agreed that every farmer should ensure that the pesticide container is always tightly closed to avoid leakage or spillage during transportation and storage. Sixty per cent of the vegetable growers were undecided whether to spray agricultural chemicals in the opposite direction of wind or along the direction of wind, a little more than half of the vegetable growers (51.60 %) disagreed that one should always use protective gloves to mix/stir the agricultural chemicals, more than one third of them (35.83 %) strongly disagreed that one should choose only a calm day for better application of agricultural chemical to avoid any drift. Out of the 14 independent variables chosen for the study education, risk orientation, extension participation, mass media exposure, and extension contact had positive and significant association with attitude at one per cent level. Other variables like age, family size, annual income, size of land holding had no significant association with their attitude towards mitigating the ill-effects of agricultural chemicals.

Key words: Attitude, vegetable growers, ill-effects of agricultural chemicals

Introduction

India is the second largest producer of vegetables in the world. Every year in India 35-45 percent of Agricultural produce is lost due to pests and diseases besides

Comment [B1]: The abstract should be concise and informative. It should briefly describe the purpose of the work, techniques and methods used, major findings with important data and conclusions

Comment [B2]: Please indicate the type of chemicals used ie inorganic fertilizer, insecticides, fungicides, pesticides, herbicides etc.

Comment [B3]: Where are the 14 independent variables? Where is the model used and the tabular presentation of your result?

post-harvest losses. Further, the rising population and decreasing arable land has resulted in potential demand for increasing food production. These conditions necessitate ensuring higher production by applying all available technological options including use of agricultural chemicals.

In the recent past, efforts have been made to increase the production of vegetables by developing large number of high yielding, good quality and disease resistant varieties/hybrids and other required cultivation packages. These high yielding varieties/hybrids are more input responsive. The use of high yielding varieties (HYVs) has promoted the use of fertilizers and pesticides without paying attention to adequate dosage, proper application method and waiting times. However, the haphazard use of fertilizers and pesticides gradually leads to many dangerous environment and human impacts. Pesticides have been carelessly used which has led to the death of humans, livestock, birds and other non-target organisms.

Even with all these ill-effects it is inevitable to use agricultural chemicals to grow the crops to feed the growing population and therefore they can be called as necessary evil. Although there are lot of studies and research papers on the use of these chemicals and their adverse effects, little has been revealed about the understanding of farmers' about the ill-effects of these agricultural chemicals and their attitude towards mitigating the adverse effects of agricultural chemicals. Therefore a research study was undertaken with the following objectives: To ascertain the attitude of vegetable growers towards mitigating the ill-effects of agricultural chemicals.

Material and Methods

The research was conducted during the year 2018-19. Ex-post facto research design was followed to ascertain the attitude of vegetable growers towards mitigating the ill-effects of agricultural chemicals. Kolar district was selected purposively owing to more area and production of vegetables in the State. Kolar district has five taluks, out of which Kolar and Malur taluks were purposively chosen for the study considering the larger area under vegetable crops in the district. Statistical tools like frequency, simple percentage, mean, standard deviation and chi-square test was used

Comment [B4]: Where is the source of your information? No citation in your work. Please indicate the source of your information.

Comment [B5]: Your objectives for the study are too scanty. Infact you have only one objective. The objectives of the present study should include: to identify the various types of agricultural chemicals used, to determine the extent of the use of agrochemicals by farmers, ability to read instructions, exposure to agrochemicals during application and perception of the health effects of exposure to agricultural chemicals .

Comment [B6]: Please indicate all the tools used to achieve the objectives stated.

and the data was collected from the vegetable growers using the pretested interview schedule.

Results and Discussion

1. Overall attitude of vegetable growers towards mitigating the ill-effects of agricultural chemicals

The results presented in Table 1 revealed that, more than half of the respondents (52.50 %) had highly favourable attitude towards mitigating the ill-effects of agricultural chemicals followed by less favourable (29.17 %) and favourable attitude (18.33 %) levels.

This may be due to personal experience of the ill-effects of agricultural chemicals by farmers themselves like skin and eye irritation during application of agricultural chemicals and the other reason may be is the concern of farmers towards protecting their soil, soil microorganisms, groundwater and surface water and the environment as a whole. On the other side 18.33 per cent of the respondents had favourable attitude towards mitigating the ill-effects of agricultural chemicals. One of the main reasons may be is that they do not have sufficient knowledge regarding the ill-effects of agricultural chemicals. It is interesting to note that still more than one fourth of them (29.17%) had less favourable attitude towards mitigating the ill-effects of agricultural chemicals. One of the major reasons may be that the use of agricultural chemicals has become inevitable option for controlling pests and obtaining economic benefits. Other reason might be due to no direct visualization of the ill-effects or their inability to recognize the adverse consequences of agricultural chemicals on soil, water, humans and environment as a whole due to no exposure to scientific background, training on mitigation measures and practices, non-availability of personal protective equipments in the locality *etc.*

Table 1: Overall attitude of vegetable growers towards mitigating the ill-effects of agricultural chemicals

(n=120)

Sl. No	Category	Criteria	Frequency	Percentage
1	Less favourable	Less than (Mean-0.5 SD)	35	29.17

Comment [B7]: Your work is not vivid. You have no data on the socio-economic variables like age, family size, annual income, size of land holding etc

2	Favourable	In between (mean \pm 0.5* SD)	22	18.33
3	Highly favourable	More than (mean + 0.5 *SD)	63	52.50
		Mean=50.72 SD=2.04		

2. Statement wise attitude of vegetable growers towards mitigating the ill-effects of agricultural chemicals

Statement wise attitude of respondents in Table 02 revealed that nearly half of the respondents (47.00 %) strongly agreed that one should mandatorily wash the fruits and vegetables thoroughly before consumption to remove the chemical residues which would affect the health. More than two-third of the respondents (69.16 %) agreed that every farmer should ensure that the pesticide container is always tightly closed to avoid leakage or spillage during transportation and storage. It was found that sixty per cent of the respondents were undecided whether to apply agricultural chemicals in the opposite direction or along the direction of wind. Slightly more than half of the respondents (51.66 %) disagreed that one should always use protective gloves to mix/stir the agricultural chemicals. More than one third of the vegetable growers (35.83 %) strongly disagreed that one should choose only a calm day for better application of agricultural chemicals to avoid any drift.

Conclusion

The study reveals that the vegetable growers are not in a position to recognize the ill-effects associated with the use of agricultural chemicals and even if they do they do not know the preventive mechanisms to be adopted to prevent those ill-effects. This is because they are not exposed to any of the awareness or training programmes regarding the adverse effects of agricultural chemicals. But some of the vegetable growers reported that they used agricultural chemicals excessively despite knowing about its adverse effects as it is inevitable to use them and protect the crops from insects, pests and diseases. Hence, agricultural and horticultural departments in the study area must come out with awareness and training programmes on safe usage, handling and disposal of agricultural chemicals and simultaneously promote the use of personal protective equipments like hand gloves, boots, face masks etc. among the vegetable growers.

Application of research

The findings will be very useful for the government organizations such as Pollution Control Board and other environmental concerned departments. It is a timely study for the Department of Agriculture which is seriously implementing integrated systems of pest control and nutrient application and also thinking of organic farming. It helps the extension personnel in identifying areas for disseminating the information related to the ill-effects of agricultural chemicals and also develop training programmes for the farmers regarding safe usage, handling and application of agricultural chemicals.

Competing interest

Comment [B8]: Competing Interests
Declaration of competing interest is compulsory.

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Comment [B9]: Where are these references in the body of your work? Every reference referred in the text must also present in the reference list and vice versa. In the text, citations should be indicated by the reference number in brackets [3].

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Comment [B10]: Read through the authors guidelines and use the correct format for referencing.

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Table 2: Statement wise vegetable growers' attitude towards mitigating the ill-effects of agricultural chemicals

Sl. No.	Statements	Degree of agreement									
		SA		A		UD		D		SD	
		f	%	f	%	f	%	f	%	f	%
1	Farmers' should always use only scientists' recommended chemicals for controlling pests	23	19.16	57	47.50	0	0.00	27	22.50	13	10.83
2	One should apply only scientifically recommended dosage of agricultural chemicals to prevent any ill-effects	27	22.50	63	52.50	0	0.00	30	25.00	0	0.00
3	Every farmer should ensure that the pesticide container is always tightly closed to avoid leakage or spillage during transportation and storage	37	30.83	83	69.16	0	0.00	0	0.00	0	0.00
4	One should make sure that the equipment used for spraying agricultural chemicals is	22	18.33	43	35.83	16	13.33	9	7.5	30	25.00

	perfect in working order and calibrate every time before using them										
5	One must cover the economic and edible parts of the plant before applying agricultural chemicals	7	5.83	32	26.66	7	5.83	33	27.50	41	34.16
6	One should never use his mouth to siphon the chemical from the container	42	35.00	65	54.16	13	10.83	0	0.00	0	0.00
7	One should always handle the agricultural chemicals container safely without any physical damage	33	27.50	72	60.00	15	12.50	0	0.00	0	0.00
8	One should always use protective gloves to mix/stir the agricultural chemicals	3	2.50	8	6.60	04	3.3	62	51.66	44	36.66
9	One should choose only a calm day for better application of agricultural chemicals to avoid any drift	2	1.66	7	5.83	11	9.16	57	47.50	43	35.83
10	One should always apply agricultural	3	2.50	12	10	72	60.00	23	19.16	10	8.33

	chemicals in the opposite direction of wind										
11	One should apply agricultural chemicals during dawn and dusk as honeybees are inactive at that time	6	5.00	27	22.50	53	44.16	29	24.16	5	4.16
12	One should not smoke or eat anything during application of agricultural chemicals	33	27.50	57	47.50	10	8.33	13	10.83	7	5.83
13	One must take bath with soap and clean water after the application of agricultural chemicals	30	25.00	63	52.50	7	5.83	11	9.16	9	7.5
14	One should compulsorily follow the waiting period for harvesting to avoid residues of agricultural chemicals in produce	3	2.50	16	13.33	47	39.16	37	30.83	17	14.16
15	One should dump the empty pesticide bottle into water body as a best disposal method	19	15.83	27	22.50	48	40.00	17	14.16	9	7.50
16	One should ensure decontamination of agricultural chemical container before	7	5.83	19	15.83	57	47.50	23	19.16	14	11.66

	burying it in the wasteland										
17	One should always puncture empty agricultural chemicals container and never use for domestic purpose	4	3.33	15	12.50	60	50.00	30	25.00	11	9.16
18	One should burn the empty agricultural chemicals container as a safe disposal practice	23	19.16	37	30.83	11	9.16	32	26.66	17	14.16
19	One should not use simple eye drops to address the eyes affected during spraying of agricultural chemicals but consult the doctor immediately	17	14.16	27	22.50	29	24.16	36	30.00	11	9.16
20	Vomiting should be induced immediately by administering two table spoon of salt in a glass of water to a person who has consumed agricultural chemicals as a right first aid	14	11.66	21	17.50	25	20.83	43	35.83	17	14.16
21	One should ensure to read out the	21	17.50	45	37.50	22	18.33	21	17.50	11	9.16

	instructions on the label before using agricultural chemicals										
22	One should mandatorily wash the fruits and vegetables thoroughly before consumption to remove the chemical residues which would affect the health	47	39.16	63	52.50	0	0.00	7	5.83	3	2.5

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