

Extent of Knowledge of Vegetable Growers about the Side Effects of Pesticides

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ABSTRACT

Vegetables being a rich and cheap source of vitamins, minerals and antioxidants, occupy an important place in the food basket of Indian consumers. A majority of people are vegetarian either by choice or due to lack of access. The study was conducted in Varanasi district of Uttar Pradesh. The respondents were selected from the five villages of Araziline block for the study purpose. The total number of respondents was 208, randomly selected from each village. An index was developed for studying the knowledge about the side effects of pesticides. The data were collected and classified into three categories namely low, medium and high levels based on the mean and standard deviation. The findings revealed that the knowledge level of respondents about the side effects of pesticides was low. It is evident from the study that the education and communication behaviour of farmers are to be taken into consideration with full certainty in making sound strategies of development plan. If farmers become more aware of the judicious use of pesticides it will reduce the hazards related to unjudicious pesticide use.

Continued growth of demand for vegetable is considered to have favourable economic impact on small farmers who dominate the Indian Agricultural Scenario. Small holdings comprising 78 per cent of total holdings with an area share of 33 per cent contribute more than half of the production of fruits and vegetables (Singh et.al. 2004). Most vegetables growing in India are small in scale ranging from 0.2 to 5 hectares of land and many of them recognise that the potential income from growing vegetables is higher than growing cereals and pulses. The control of crop diseases and insects is a vital component to safeguard quantity and quality of yield produced from shrinking land resources. The efficient and reliable use of pesticides is essential because, the world population is increasing rapidly. Although pesticides have become an integral part of modern agriculture their excessive and non-judicious use has not only resulted in environmental pollution, but also developed resistance in several pests, caused pest resurgence and adversely affected beneficial organisms like honeybee, pollinators. Continued growth of demand for vegetable is considered to have favourable economic impact on small farmers

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Vegetable crop at times are treated with pesticides close to harvest in order to get pest free healthy produce,

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which may be loaded with pesticide residues at harvest. Since vegetables are consumed afresh, they may carry greater hazards of pesticide residues. Knowledge accrues when an individual or other decision making units is exposed to an innovation's existence and gain some understanding of how it functions (Rogers, 1983). It would be said therefore, that a complete working knowledge is very essential for a proper adoption of new agricultural technology by the farmers.

In the present study an attempt has been made to study the extent of knowledge of vegetable growers about the side effects of the poisonous pesticides with the following objectives.

1. To study the knowledge of farmers about the side effects of pesticides.
2. To study the factors affecting the knowledge of farmers about the side effects of pesticides.

METHODOLOGY

The study was conducted in Varanasi district of U.P. which was selected purposively. Out of 8 blocks one block namely Araziline was selected purposively.

Block consists of 227 villages. Out of these 227 villages 5 villages were selected for the study purpose. From the selected villages 25 per cent farm families were selected as respondents. Hence a total of 208 respondents were finally selected. A knowledge index

was developed for studying the knowledge about the side effects of pesticides. The data were collected and classified into three categories namely low, medium and high levels based on the mean and standard deviation.

RESULTS AND DISCUSSION

1. Extent of knowledge about side effects of pesticides - The distribution of the respondents on the basis of differential knowledge possessed by them was calculated by working out mean and standard deviation. It is clear from the Table no. 1 that the maximum number of respondents had low (62.98 %) level of knowledge followed by medium (21.64 %) level of knowledge and high (15.38 %) level of knowledge about the side effects of pesticide.

The possible reason of the above result may be due to the facts that farmers could not read the literature given with pesticides container regarding dose, time and other operations related to the application methods. Another reason for low knowledge about side effects of pesticides may be due to non readable of instructions about safe waiting period of pesticides and unaware about the self protection from pesticides. While applying or use of pesticides on crops they do not cover the nose, mouth with cloth and hand with gloves. Storing place of pesticides are improper and careless use of pesticides are reflecting some of the result of level of knowledge on safe use of pesticides.

Table 1. Distribution of respondents according to the knowledge about the side effects of pesticides

Sl.No.	Category	Frequency	Percentage
1.	Low (up to 17)	131	62.98
2.	Medium (17 to 27)	45	21.64
3.	High (27 & above)	32	15.38
Total		208	100.00

Mean = 21.62 ; S.D. = 44.92

2. Factors affecting the knowledge about the side effects of pesticides

Factors affecting the knowledge about the side effects of pesticides were worked out by applying correlation test between predictor variables and response variable. The result is presented in Table 2.

A critical examination of the data presented in Table 2 reveals that education, communication behaviour

and farm size were positively and significantly related to knowledge about side effects of pesticides at 1 per cent and 5 per cent level of probability respectively.

This means that these selected predictor variables exert influence significantly on the knowledge about side effects of pesticides. The findings also reveal that caste, occupation, annual income, social participation were not significantly related to knowledge about side effects of pesticides.

Table 2. Relationship of the selected predictor variables with knowledge about side effects of pesticides.

S.N.	Predictor Variables	Correlation ('r' – value)
1.	Education	0.1977**
2.	Caste	0.959NS
3.	Occupation	0.1167NS
4.	Annual income	0.0671NS
5.	Farm size	0.1769*
6.	Communication behaviour	0.2381**
7.	Social participation	0.0499 NS

*Significant at 0.05 level of provability. ** Significant at 0.01 level of provability. NS- Non Significant

Education

It was positively and significantly related with the knowledge of respondent about side effects of pesticides. It means that the farmers with higher education are subjected to acquire knowledge about side effects or pesticides. It depicts that the education is an important and essential factor for an innovative, progressive and knowledgeable farmers. In the present study education in the form of schooling was taken into account to ascertain the level of education of farmers. This may be due to the fact that educated farmers are sensitive to the hazards caused by improper, excessive and careless use of pesticides. They follow the instructions related to the different operations while using pesticides. They also properly read and follow the literature given with pesticides. This may be helpful to gain in knowledge to side effects of pesticides on health as well as plant.

The findings of this study are in the line with Meera and Bahal (2001) where they reported that education was significantly correlated with the farmers' awareness about ill effects of pesticides on the environment. Through regression analysis they found that education had the most significant contribution to farmers' awareness.

Caste

It was not significantly correlated with knowledge about side effects of pesticides. It means that caste is not an important factor for knowledge about side effects of pesticides. It also means that knowledge of side effects is not caste based.

Occupation

It was not significantly related with knowledge about side effect of pesticides. It can be inferred that the

occupation is not an important factor for knowledge of farmers about side effects of pesticides. This might be due to the fact that occupation related to the farming or other profession is not related to the knowledge about side effects of pesticides. It requires special training as well as education for acquiring knowledge about side effects of pesticides.

Annual Income

It was not significantly related to the knowledge about side effects of pesticides. It means that the annual income is not an important factor as far as the knowledge about side effects of pesticides.

Farm Size

It was found to be positive and significant relation with the knowledge about side effects of pesticides. It means that the farm size is an important factor for knowledge about side effects of pesticides. The knowledge increases as the farm size increases. The respondent with larger farm size might be more resourceful, innovative and progressive than those having smaller farm size. The finding is in line with Jirli and Gangadharappa (1997) and Singh (2005) where they found significant association between knowledge and size of land holding. The findings is also in line with Meera and Bahal (2001) where they reported that the operational land holding was significantly correlated with the farmers awareness about ill effects of pesticides on the environment.

Communication behaviour

It was positively and significantly correlated with the knowledge about side effects of pesticides. It means that communication behaviour played an important role

for knowledge about side effects of pesticides. Communication behaviour consists of information input, information processing and information output. This would mean that with an increased communication facilities of the respondents it is expected to raise the level of knowledge about side effects of pesticides.

Social Participation

It was not significantly correlated with the knowledge about side effects of pesticides. It means that social participation is not an important factor. This may be due to the fact that farmer's social participation might have been for other activities than agricultures. The findings is in line with the findings of Singh (2005), where he found that there was no relationship between social participation and knowledge of farmers about beekeeping.

To predict the important predictor variables the technique of multiple regression was used. The technique was used to determine the effects of these selected predictor variables on the response variable namely knowledge about side effect of pesticides.

The following symbols were used to denote the variables:-

Response Variable:- Y= Knowledge about side effects of pesticides

Predictor Variables: X_1 = Education, X_2 = Caste, X_3 = Occupation, X_4 = Annual income, X_5 = Farm size, X_6 = Communication behaviour, X_7 = Social participation.

The Table 3 reveals that all the predictor variables taken together explained the variations in the knowledge

about pesticides to the extent of 32.04%. The respective 'F' value significant at 1 % level of probability of (7,200) degree of freedom was 9.63. Thus the result implied that all the predictor variables would account for a significant amount of variation in the knowledge about side effect of pesticides. 't' test of significance indicates that the regression co-efficient (b-value) were found to be significant only for education (X_1) and communication behaviour (X_6). This finding also depicts that regression co-efficient were non- significant for caste (X_2), occupation (X_3), annual income (X_4), farm size (X_5) and social participation (X_7).

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Table 3. Multiple regression analysis of predictor variables with the knowledge about side effects of pesticides:

S.N.	Predictor Variables	b- value	S.E. of b- value	t- value
1.	Education	2.078341	0.67430	3.082**
2.	Caste	0.034562	0.03415	1.012NS
3.	Occupation	0.063532	0.05543	1.146 NS
4.	Annual income	0.256329	0.40881	0.627 NS
5.	Farm size	1.465320	1.92551	0.761 NS
6.	Communication behaviour	2.831792	1.01826	2.781**
7.	Social participation	0.076325	0.08762	0.871 NS

*Significant at 0.01 level of probability ; Multiple regression (R^2) = 0.3204, F value= 9.63** With d.f. (7,200). a= 18.568, NS= Non significant.

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Therefore education and communication behaviour are important ones to predict the knowledge about side effects pesticides of farmers.

CONCLUSION

The findings revealed that the knowledge level of respondents about the side effects of pesticides was low. It is evident from the study that the education and communication behaviour of farmers are to be taken into consideration with full certainty in making sound strategies of development plan. So there is a need to more emphasis on system of integrated pest management. This may lead to some reduction in spray number and possible doses which will be quite safer for consumption. If farmers become more aware of the judicious use of pesticides it will reduce the hazards related to unjudicious pesticide use. It can only be achieved when the farmers will get the right information about hazards caused by improper, careless, and excessive use of pesticides from the various sources of information.

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