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Socio economic factors affecting the awareness of farmers towards effect of pesticides on human health

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Abstract

The indiscriminate use of pesticides on crops adversely affects both environment and health of people. Many researches were conducted to evolve technical alternatives for ecofriendly agriculture, but very less emphasis was given to the behavioural component of the farmers. Considering the need, present study was conducted to assess the farmers awareness level and socio-economic factors influencing the awareness about effects of the pesticides on the human health. The study was conducted in Nanded district of Marathwada region of Maharashtra state among cotton growing farmers. Ten variables were selected as independent variables and the awareness of farmers as the dependent variable. Selected respondents were personally interviewed with the help of a structured interview schedule by the researchers. The data was analysed using Statistical tools. Out of 10 variables Education, Farming experience, Social participation, Economic motivation, Innovativeness, Mass media exposure, Risk orientation and Scientific orientation were found to be positively significant at 0.01 level of probability with their awareness level. Age was found to be negatively and significantly related with awareness. Farm size had non significant relationship with awareness levels of farmers. It is recommended that there is a great need to initiate the awareness generating programmes by the government. Increased social participation, extension contacts-and mass media exposure could be given due importance by extension agencies to enhance the eco-friendly agriculture in years to come, which is really the need of the new millennium.

Keywords: Socio economic, effect of pesticides, farmers awareness, human health

Introduction

As per the estimates of Central Statistics Office, the Indian agriculture sector remains the backbone of the nation's economy accounting for about 15% of the country's Gross Domestic Product. But it has to be understood that Indian agriculture is highly monsoon dependent and out of the 142 million hectares of net sown area, only 45% or 64 million hectares have access to irrigation facilities. Apart from high dependency on monsoon and irrigation facilities, the situation becomes critical when it is noted that about 15-25% potential crop production is lost due to pests, weeds and diseases. Therefore, in order to meet the growing demand borne out of increasing population, the productivity of the crops and efficient utilization of the arable land become essential factors. Thus in order to enhance productivity, the usage of pesticides plays a vital role (Outlook of Indian Pesticide Industry 2017). The indiscriminate use of pesticides on crops adversely affects the environment. Swaminathan (1968) cautioned that indiscriminate use of pesticides could cause adverse changes in biological balance as well as lead to an increase in the incidence of cancer and other diseases through toxic residues. The overemphasis on the use of chemical pesticides and their indiscriminate use by the farmers lead to excessive chemicalisation of agriculture with multitude of consequences viz., development of resistance to the pesticides in the target pest species, resurgence of pests, secondary pest outbreaks, residues in food, feed, fodder etc. and above all environmental pollution. The growing need to create a consciousness of the environment among all the age groups of farmers were given by Archana (1996). Farah (1994) and Naoroji (1999) stated that the use of chemical pesticides and their impact on the environment have come under close scrutiny, particularly when their use directly affect the human welfare.

With this background, the present study was conducted in order to find out the socio-economic factors influencing the awareness of farmers about ill effects of pesticides on the human health.

Materials and methods

The present study was conducted in Nanded district of the Marathwada Region of Maharashtra state. Out of eight districts of Marathwada region, Nanded was selected purposively for the study due to large area under cotton cultivation.

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The district consists of seventeen talukas from these; three talukas were purposively selected based on the large area under cotton cultivation viz. Mudhked, Himayathnagar and Kinwat for the study. Four villages from each selected talukas were selected randomly by random sampling method. From each selected village 10 respondents were selected by nth number method random sampling. Thus the final sample comprised of 120 respondents for the study. The data were collected through personal interview method with the help of pre - tested structured schedule consisting of various items concern with the objective of study. The farmer was contacted personally at their home during their leisure time. Collected data were analyzed and presented in percentage value. In order to study the nature of relationship between the selected independent variables and the awareness of cotton growers on effect of pesticide on human health, correlation coefficients (r) were computed and the values were presented in Table.

Results and discussion

Table 1: Relationship between selected independent variables and awareness of cotton growers on effect of pesticides on human health.

S.No.	Variable	Independent variables	Correlation Coefficients('r' value)
1.	X ₁	Age	-0.25579**
2.	X ₂	Education	0.616428**
3.	X ₃	Farm size	0.094874NS
4.	X ₄	Farming experience	0.12077**
5.	X ₅	Social participation	0.405459**
6.	X ₆	Economic motivation	0.502682**
7.	X ₇	Innovativeness	0.60282**
8.	X ₈	Mass media exposure	0.436781**
9.	X ₉	Risk orientation	0.245572**
10.	X ₁₀	Scientific orientation	0.420473**

**= Significant at 0.01% level of probability

NS: Non-significant

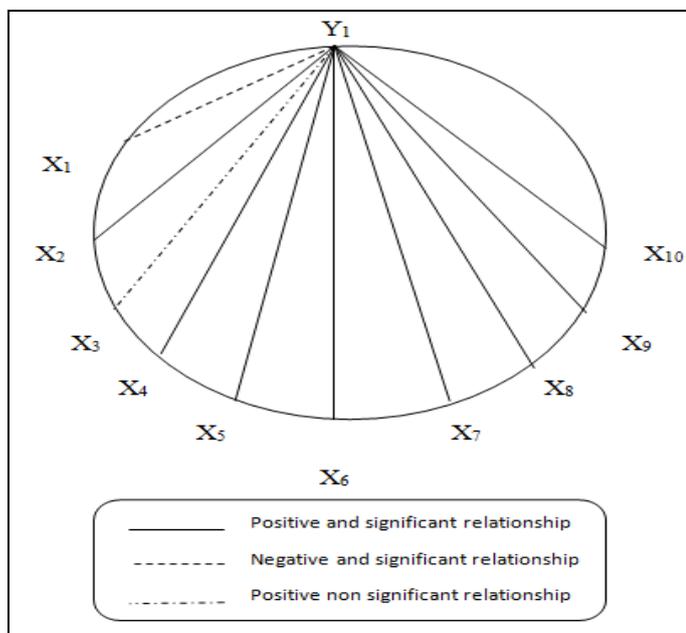


Table 2: Distribution of respondents according to their awareness about effect of pesticides on human health (N=120)

S.No.	Awareness	Frequency	Percentage
1.	Low	15	12.50
2.	Medium	81	67.50
3.	High	24	20.00
	Total	120	100

a. Age vs Awareness: From table 1 it is evident that computed coefficient of correlation value ($r = -0.25579$) was found negative and significant between age and the Awareness level of the cotton growers. Therefore it could be inferred that there is significant negative relationship between age and the awareness of the cotton growers. It was found that age was an important factor to decide the awareness in any practice. As the age increases awareness tends to decrease. It is inferred that young growers possess more awareness about the hazards of pesticide usage.

b. Education vs Awareness: From table 1 it is evident that coefficient of correlation ($r=0.616428$) between education and the awareness level of the cotton growers was positively and significantly related. it was concluded that there is positive and significant relationship between education and the awareness of the cotton growers on effect of pesticides on human health. The possible reason for this trend might be that education widens horizons of the individuals. Educated growers with more information seeking habits had better access to farm information sources such as farm magazines, farm bulletins, books on agriculture etc. and possess better capacity to analyze and interpret them in proper ways which also contributed to their increased awareness.

c. Farm size vs Awareness: From table 1 it could be inferred that the computed correlation coefficient value ($r=0.094874$) between farm size and awareness of cotton growers on health hazards of pesticide usage was non-significantly related. Therefore, it could be inferred that there is a non-significant relationship between farm size and awareness of cotton growers on health hazards of pesticide usage.

d. Farming experience vs Awareness: From table 1 it is found that the correlation coefficient value ($r=0.12077$) between farming experience and awareness of cotton growers is positively and significantly related. Therefore, it could be inferred that there is a positive and significant relationship between farming experience and awareness of cotton growers on health hazards of pesticide usage. This trend may be due to the fact that as farming experience increases the growers tend to gain more awareness about the health hazards due to pesticide usage. Thus, the relationship is positive.

e. Social participation vs Awareness: From table 1 it is evident that the correlation coefficient value ($r=0.405459$) was positively and significantly related with the awareness of the respondents. Therefore, it could be inferred that there is a positive and significant relationship between social participation and awareness of cotton growers on health hazards of pesticide usage. It is a common feature that growers who actively participate in social activities through social organizations come across different types of people, exchange one's views and experiences, seek solutions for their problems and thereby gain more and more new awareness. Hence, the above results were obtained.

f. Economic motivation vs Awareness: From table 1 it is evident that coefficient of correlation value ($r=0.502682$) between economic motivation and the awareness level of the cotton growers was positively and significantly related. It is concluded that there is positive and significant relationship between economic motivation and awareness of the cotton growers. This might be due to the fact that, grower who wants to improve economically will be trying to gain better

awareness, than others do by constantly learning the new practices. Higher the economic motivation greater will be the access to information sources leading to acquisition of new awareness.

g. Innovativeness vs Awareness: From table 1 it is evident that coefficient of correlation value ($r=0.60282$) between innovativeness and the awareness level of the cotton growers was positively and significantly related. It is concluded that there is positive and significant relationship between two variables. This might be due to the fact that an individual having high innovativeness desires to seek changes in farming and introduces in his own operation. He will try to have more awareness of those techniques to decide the pros and cons of them before actually implementing them. Hence, the above relationship was observed.

h. Mass media exposure vs Awareness: From table 1 it is evident that coefficient of correlation value ($r=0.436781$) between mass media exposure and the awareness level of the cotton growers was positively and significantly related. It is concluded that there is positive significant relationship between mass media exposure and awareness level of the respondents. The result supports the general view that high mass media exposure enhances the awareness of the growers on several aspects of farm technology. At present newspapers, farm publications, television, radio, mobile technologies and other mass media channels were considered to be the accelerators of diffusion of agricultural innovation. Growers who keep in touch with mass media are likely to have better awareness on the current advances in agriculture. Hence, the above relationship was observed.

i. Risk orientation vs Awareness: From table 1 it is evident that coefficient of correlation value ($r=0.245572$) between risk orientation and the awareness level of the cotton growers was positively and significantly related. It is concluded that there is positive and significant relationship between risk orientation and awareness level of the cotton growers. The probable reason might be that a farmer who wants to take risk during pesticide spraying will try to develop his awareness with regard to the crop and its operation. Hence, the above results were obtained.

j. Scientific orientation vs Awareness: From table 1 it is evident that coefficient of correlation value ($r=0.420473$) between scientific orientation and the awareness level of the cotton growers was positively and significantly related. It is concluded that there was positive and significant relationship between the above said variables. Growers having more scientific orientation will always search for new and advanced plant protection measures to avoid the health hazards and have keen observation power to find out the cause and effect relationship in any situation. Hence, the above relationship was observed.

Conclusion

The study reveals that majority of respondents were found to have medium level of awareness about the ill-effects of pesticides on human health. Age was found to have negative correlation with the awareness. Socio economic variables like education, farm size, farming experience, social participation, economic motivation, innovativeness, mass media exposure, risk orientation, scientific orientation were found to have positive correlation with the awareness about ill-effects of

pesticides on human health. The findings of the study may be utilized by Extension Agencies, Ministry of Environment, Non Government Agencies, other organizations and policy makers in developing countries, working for minimizing the ill-effects of pesticides on human health. For minimizing the use of pesticides and thereby safeguarding the human health, it is suggested to initiate the awareness generating and enhancement programmes by the government. Special emphasis should be given for older farmers, who were having lower awareness about ill-effects of pesticides on human health. In order, to, increase the level of awareness of farmers about ill-effects of pesticides on human health, increase in social participation, extension contacts and mass media exposure could be given due importance by extension agencies, Government and NGOs. Small and marginal farmers are to be given special emphasis in generating awareness about ill effects of pesticides on human health. Until and unless small and marginal farmers are made aware of the ill-effects, they will not be motivated to reduce the pesticide consumption. Government should initiate some programmes to generate and enhance the awareness of the farmers about ill-effects of pesticides on human health. Healthy pesticide free agriculture is possible only by creating awareness about the ill effects of pesticides on human health.

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