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Profile characteristics of farmers using plant protection chemicals in Ahilyanagar District of Maharashtra

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Abstract

The present study was undertaken with the objective to study the profile characteristics of farmers in Ahmednagar district of Maharashtra state. The study was conducted in Rahata and Sangamner tahsils of Ahilyanagar district. A total of 120 farmers were selected by using random sampling techniques. Ex-post facto research design was used for conducting the study. The data were collected through personal interview method with the help of a pre-tested interview schedule. The collected data were analyzed using frequency, percentage, mean and standard deviation. The findings revealed that majority of the respondents 55.83% per cent belonged to middle age group, 41.66 per cent had higher secondary education, 52.5 per cent had low farming experience, 45.83 per cent had semi medium land holdings, 60.00 per cent had medium annual income, 75.83 per cent had medium source of information, 63.33 per cent had fair cropping pattern, 45.00 per cent had high economic motivation, 61.67 per cent had medium risk orientation and 55.00 per cent had medium knowledge level.

Keywords: Ahilyanagar, farmers, Maharashtra, plant, chemicals

Introduction

Plant protection chemicals are an important component of crop production because they help farmers manage insect pests, diseases and weeds and reduce potential crop losses. At the same time, their use requires care because pesticide residues and chemical movement can affect soil, water, air and non-target organisms. Pesticides may move away from their intended target through processes such as runoff, leaching and volatilisation, thereby contributing to environmental contamination.

The risks associated with plant protection chemicals are not determined only by the chemical itself. The way in which farmers select, handle, apply and dispose of these products is also important. Farmers are directly involved in several stages of pesticide use and may therefore be exposed during mixing, spraying and disposal. Their understanding of pesticide hazards can influence how they respond to these risks and whether they follow recommended safety practices. Farmers differ considerably in their age, educational attainment, farming experience, economic position, access to information and willingness to take risks. These characteristics can provide useful information for understanding the differences observed in farmers' perceptions of pesticide-related hazards. In particular, access to reliable information and knowledge regarding pesticide use may be important for communicating the health and environmental risks associated with improper application. The present study was therefore undertaken in selected areas of Ahilyanagar district of Maharashtra to document the profile characteristics of farmers. The study is based on the aim that understanding the characteristics of the farming population which will be useful for designing extension programmes suited to their information and learning needs.

Objective

To study the profile characteristics farmers in district Ahilyanagar of Maharashtra state.

Material and Methods

The present study was conducted in Ahilyanagar district of Maharashtra state. The Rahata and Sangamner tahsil were purposively selected because of having cultivation of commercial and horticultural crops, which has a higher use of plant protection chemicals for managing pests and diseases. From each tahsil, six villages were selected by random sampling. Twenty farmers from each selected village were randomly selected, constituting a total sample of 120 respondents. Ex-post facto research design was used for the study. The data were collected through personal interviews using a pre-tested interview schedule. The collected data were analysed using frequency, percentage, mean, standard deviation and correlation coefficient.

Result and Discussion

Age

Table 1: Distribution of farmers according to their age

Sr. No.	Category	Age	Frequency	percentage
1	Young age group	Up to 35 years	30	25.00
2	Middle age group	Between 36 to 50 years	67	55.83
3	Old age group	Above 50 years	23	19.17

The result depicted in table 1 revealed that 55.83 per cent of farmers comes under middle age group, followed by young age group having 25.00 per cent of farmers and old age group having 19.17 per cent farmers. It was found that majority of farmers that is 80.83 per cent farmers found in middle to young age groups. The predominance of middle-aged farmers may be associated with their active involvement in agricultural operations and their comparatively longer participation in farm decision-making. The young age group having one fourth respondents out of total also indicated participation of younger farmers in agricultural activities.

Education

Table 2: Distribution of the farmers according to their education

Sr. No.	Qualification	Level of education	Frequency	Percentage
1	Illiterate	Having no formal education	1	0.83
2	Primary school	Up to 4 th standard	7	5.83
3	Secondary	5 th to 10 th std.	18	15.00
4	Higher secondary	11 th to 12 th std.	50	41.66
5	Graduation and above	Above 12 th std.	44	36.66

The distribution of farmers according to their age in table 2. It was observed that 41.66 per cent of the respondents completed higher secondary education, followed by 36.66 per cent attained graduation and above level of education. Further, 15.00 per cent of the respondents had secondary level of education, while 5.83 per cent had primary education up to the fourth standard. Only 0.83 per cent of the respondents were illiterate. The reason for higher secondary level of education among the selected farmers was due to that they understand the importance of education

for their personal development. Due to the scope to establish better economic condition, they might have decided to go for formal education rather than earning money right from childhood.

Farming experience

Table 3: Distribution of the farmers according to their Farming Experience

Sr. No.	Categories	Frequency	Percentage
1.	Low experience (up to 10 years)	35	29.16
2.	Medium experience (10 to 32 years)	63	52.5
3.	High experience (above 32 years)	22	18.33
Mean = 20.9		S.D. = 10.9	

The distribution of the respondents according to their Farming Experience given in table 3 revealed that half of the farmers that is 52.5 per cent have medium level experience. This is followed by 29.16 per cent of farmers had low level of farming experience and 18.33 per cent had high experience level. The probable reason for medium to low experience might be because of majority of farmers are from medium to young age groups.

Land holding

Table 4: Distribution of the farmers according to their total land holding

Sr. No.	Category	Land holding	Frequency	Percentage
1.	Marginal	Up to 1 ha	10	8.33
2.	Small	1.01 to 2.0 ha	30	25.00
3.	Semi-medium	2.01 to 4.0 ha	55	45.83
4.	Medium	4.01 to 10 ha	19	15.83
5.	Large	Above 10 ha	6	5.00

From the table no 4 it was found that nearly half of the respondents that is 45.83 per cent possessed semi medium category of land holding. The 25.00 per cent of farmers had small and 15.83 per cent of farmers had medium type of land holding. While the 8.33 per cent of farmers and 5.00 per cent of farmers belongs to marginal and large land holding categories respectively.

Thus, it is concluded that majority of respondents belongs to semi medium and small type of land holding categories. The probable reason for land holding might be that the ancestral transfer of land holding from generation to generation.

Annual income

Table 5: Distribution of farmers according to their annual income

Sr. No.	Categories	Frequency	Percentage
1.	Low (Up to 1 lakh)	7	5.83
2.	Medium (1 to 10 lakh)	72	60.00
3.	High (Above 10 lakh)	41	34.17
Mean = ₹5.50 lakh		S.D. = ₹4.50 lakh	

Table 5 shows that, more than half 60.00 per cent of the farmers were found with medium annual income i.e. Rs 1 lakh to 10 lakhs/-. followed by 34.17 per cent and 5.83 per cent of them with high and low annual income, respectively. Thus, it is inferred that great majority of the farmers were

found with medium to high annual income category. This may partly reflect the commercial and horticultural nature of farming in the selected areas.

Source of Information

Table 6: Distribution of farmers according to their source of information

Sr. No.	Category	Frequency	Percentage
1.	Low (Below 23.8)	11	9.17
2.	Medium (23.8–31.9)	91	75.83
3.	High (Above 31.9)	18	15.00
Mean= 27.92		S.D.= 4.02	

From table 6 it is observed that, majority of the farmers 75.83 per cent had medium level of source of information, while only 9.17 cent farmers had low level of source of information. Only 15.00 cent of the farmer's had high level of source of information. It could be concluded that majority of the farmers were belonged to the medium level of source of information. The medium overall level of information contact also indicates scope for strengthening regular and technically reliable communication through extension personnel and farmer training programmes.

Cropping pattern

Table 7: Distribution of farmers according to cropping pattern

Sr. No.	Category	Frequency	Percentage
1	Poor cropping pattern (upto 3.70)	18	15.00
2	Fair cropping pattern (3.70–7.80)	76	63.33
3	Good cropping pattern (above 7.80)	26	21.67
Mean = 5.75		S.D. = 2.05	

It is evident from table 7 that, majority of i.e. 63.33 per cent of the respondents had 'fair' cropping pattern, while 21.67 per cent and 15.00 per cent of the respondents had 'good' and 'poor' cropping pattern respectively. The respondents cultivated the crops during different seasons as well as annual and perennial crops. The cropping pattern included crops such as soybean, cotton, maize, wheat, capsicum, onion, cauliflower, tomato and other vegetables and sugarcane, along with perennial fruit crops. The predominance of a fair cropping pattern reflects the diversified nature of farming among the respondents. Such diversification may require farmers to make plant protection decisions for different crops and pest situations during different periods of the year.

Economic motivation

Table 8: Distribution of farmers according to their economic motivation

Sr. No.	Category	Frequency	Percentage
1.	Low (Up to 19.4)	18	15.00
2.	Medium (19.4 to 23.8)	48	40.00
3.	High (above 23.8)	54	45.00
Mean = 21.69		S.D.=2.19	

The data in table 8 revealed that majority 45.0 per cent of the farmers had medium level economic motivation. Whereas, 15.00 per cent and 40.00 per cent of farmers had low and high level of economic motivation, respectively. It can be concluded that majority of farmers had high to medium level of economic motivation. The relatively larger proportion of respondents with high economic motivation indicates that profit-related considerations were important in farm decision-making.

Risk orientation

Table 9: Distribution of farmers according to their risk orientation

Sr. No.	Category	Frequency	Percentage
1.	Low-risk orientation (up to 17.9)	17	14.17
2.	Medium-risk orientation (17.9 to 22.3)	74	61.67
3.	High-risk orientation (Above 22.3)	29	24.17
Mean =20.15		S.D.=2.21	

It is evident from the data reported in table 9 that, majority of i.e. 61.67 per cent of the farmers had medium level of risk orientation followed by high and low risk orientation with 24.17 per cent and 14.17 per cent, respectively. Thus, majority of farmers that is 61.67 per cent and 24.16 per cent had medium to high-risk orientation. This may be relevant to the adoption of new crop protection practices, particularly where farmers have to balance expected benefits with uncertainty regarding their effectiveness or cost.

Knowledge regarding areas of pesticide use

Table 10: Distribution of farmers according to their knowledge regarding areas of plant protection chemicals use

Sr. No.	Knowledge level	Frequency	Percentage
1.	Low (up to 7.1)	29	24.17
2.	Medium (7.1 to 12.4)	66	55.00
3.	High (Above 12.4)	25	20.83
Mean =18.13		S.D.= 1.46	

From the Table 10 it is observed that, more than half of the farmers i.e. 55.00 per cent had medium level of knowledge about different areas of plant protection chemicals use, while 20.83 per cent and 14.17 per cent of farmers had high and low level of knowledge about different areas of pesticide. Thus, it can be concluded that the most of the farmers had medium to high level of knowledge regarding different areas of plant protection chemicals use. Probable reason for above finding may be due to their higher secondary level of education, medium level of source of information. Thus, farmers possessed better knowledge regarding plant protection chemicals use but have few knowledge gaps regards of recommended dose, alternative management of pests. This suggests that extension efforts should give attention not only to general awareness but also to specific recommendations concerning recommended dose, alternative management of pests.

Conclusion

The study showed that the farmers surveyed in Rahata and Sangamner tehsils had varied personal, economic and psychological characteristics. Most respondents were

middle-aged, had higher secondary or graduate-level education, possessed medium farming experience and had semi-medium land holdings. Medium levels were also observed for annual income, source of information, risk orientation and knowledge regarding plant protection chemicals, whereas economic motivation was high among a relatively larger proportion of farmers. Overall, the findings suggest that improving farmers' access to relevant information and strengthening their practical knowledge about plant protection chemicals may be useful for improving their understanding of plant protection chemicals related hazards. Extension programmes should give particular attention to crop-specific recommendations, appropriate pesticide doses, application methods, alternative management of pest population, disposal practices and other aspects of safe pesticide use. Since the study was conducted with 120 farmers from two tehsils, the findings should be interpreted within the context of the selected study area.

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