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Association between characteristics of groundnut growers and their level of knowledge about plant protection measures

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Abstract

Groundnut is an important oilseed crop in India which occupies first position in terms of area and second position in terms of production. The study was conducted in Banaskantha District of Gujarat state during 2018-19. The main focus of the investigation is on adoption of plant protection measures in groundnut crop by the farmers of Banaskantha district. The district was selected purposively as the area of groundnut is increasing day by day. Three talukas viz., Deesa, Lakhani and Dantiwada having higher area under groundnut cultivation were selected purposively (Anonymous 2018). Five villages were selected randomly from the list of groundnuts growing villages of each taluka. Ten groundnut growers were selected, randomly from each selected village. Thus, the final sample was 150 groundnut growers. Ex-post facto research design was used for the study. The data were collected by personal contact method with help of structured interview schedule and data were coded, classified, tabulated and analyzed in the light of objectives. Ten independent and one dependent variable were selected for study. The independent variables viz., education, land holding, annual income, extension participation, source of information and scientific orientation were positively and highly significantly associated with knowledge about plant protection measures. Risk orientation had positive and significant association with knowledge about plant protection measures. The remaining variables namely age and family size had negative and non-significant association, while social participation had positive and non-significant association with knowledge about plant protection measures.

Keywords: Knowledge, association, plant protection, groundnut

Introduction

Groundnut, 'the unpredictable legume' is also known as peanut, earthnut, monkey nut and manilla nut. It is the 6th most important oilseed crop and 13th most important food crop of the world. Its botanical name (*Arachis hypogaea* L.) has been derived from the Greek words, "Arachis" meaning a legume and "hypogaea" meaning below ground referring to geographic nature of pod formation. It is an important food, feed, and oilseed crop. Groundnut is one of the excellent sources of high-quality protein, edible oil and can play an important role in meeting the requirement of both protein and edible oil. Plant protection plays an important role in crop production. Farmers are not adopting the recommendations properly and hence, the importance of systematic use of plant protection measures to control pests and diseases cannot be neglected. Looking to the importance and urgency of the problem, a study was planned with the following objectives:

Objective

1. To study the personal, socio-economic, communication and psychological characteristics of the groundnut growers
2. To ascertain the association between personal, socio-economic, communicational and psychological characteristics of the groundnut growers with their level of knowledge about plant protection measures

Methodology

The present study was undertaken in Banaskantha district as having large areas and production under groundnut in North Gujarat. Three talukas viz., Deesa, Lakhani and Dantiwada were selected purposively having higher areas under groundnut cultivation in the district. Five villages from each selected taluka were selected randomly. Further from each selected village, ten groundnut growers were randomly selected comprising of 150 respondents.

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Ex-post facto research design was adopted for this study. For measurement of selected characteristics, scales developed by past researchers with due modification as well as by developing appropriate schedules were used. The data were collected by personal contact method with the help of structured interview schedule. The collected data were coded, classified, tabulated and analysed in order to make the findings meaningful in light of objectives for drawing meaningful interpretation.

Results and Discussion

Personal, socio-economic, communication and psychological characteristics of the groundnut growers

Keeping in view the objectives of the study, the relevant variables were selected on the basis of an extensive review of literature related to the study, in consultation with experts and members of advisory committee. Only those variables which were found most relevant to the present investigation were finally selected. The result of selected variables were presented in Table 1.

The data presented in Table 1 indicates that nearly half (48.00 percent) of the groundnut farmers were from middle age group, having primary to middle school level of education (60.00 percent), having medium family size (72.67 percent), had 2.01 to 4.00 ha of land (49.33 percent), having annual income up to ₹ 2,50,000.00 to ₹ 10,00,000.00 (58.00 percent), had membership in one organization (49.33 percent), had medium level of extension participation (65.33 percent), had medium to high utilization level of information sources (88.00 percent), had medium scientific orientation (66.00 percent), had medium risk orientation (64.67 percent), had medium level of knowledge (68.00 percent) and having medium level of extent of adoption (66.00 percent).

Association between personal, socio-economic, communicational and psychological characteristics of the groundnut growers with their level of knowledge about plant protection measures

Acceptance of recommended plant protection measures is not a unique act, but complex process involving sequence and thought of action. The action of an individual farmer is governed by personal, socio-economic, psychological and cultural factors involved in given situation. Some farmers adopt recommended plant protection measures more quickly than others because of the differences in personal characteristics. In order to ascertain the association between level of knowledge (dependent variable) of the groundnut growers with their selected characteristics (independent variable), the correlation co-efficient ('r' values) were calculated. Empirical hypothesis was stated for testing the association and its significance. Same was tested using zero order correlation. The results are given in Table 2.

(1) Age and level of knowledge

It is apparent from data presented in Table 2 that the age of the groundnut farmers had negative and not-significant association ('r' = -0.119) with their level of knowledge about recommended plant protection measures. Thus, the null hypothesis was accepted. Hence, it is calculated that there is no association between the age of groundnut farmers and their

level of knowledge. It is inferred, that all groundnut farmers did not have any concern with age and recommended plant protection measures. It means that knowledge level of all groundnut farmers did not relate with their age. The similar findings have been reported by Patel (2014)^[5] and Patel (2017)^[6].

(2) Education and level of knowledge

The data presented in Table 2 reflect that the level of knowledge of the groundnut growers regarding recommended plant protection measures had positive and highly significant ($r = 0.392$) association with their level of education at 0.01 level of significance. It indicates that the education play an important role in influencing the level of knowledge about recommended plant protection measures among the groundnut growers. Thus, the null hypothesis was rejected. The similar findings have been reported by Thippeswamy (2007)^[7], Patel (2014)^[5], Gambhire (2016)^[2] and Patel (2017)^[6].

(3) Family size and level of knowledge

As reveal from data presented in Table 2 there was no association as the 'r' value was recorded ($r = -0.048$) between family size and level of knowledge about recommended plant protection measures of groundnut. Thus the null hypothesis was accepted. Hence, it is inferred that family size had not exerted any effect on knowledge of the groundnut growers. The probable reason might be that the majority of the groundnut growers possess medium family. Hence, the family members might have not supported in farming. The similar finding has been reported by Patel (2014)^[5].

(4) Land holding and level of knowledge

The data presented in Table 2 clearly indicate that land holding of the groundnut growers had positive and highly significant association ($r = 0.574$) with their level of knowledge about recommended plant protection measures of groundnut at 0.01 level of significance. Thus, the null hypothesis was rejected. Thus, it is informed that the land holding had influence on level of knowledge about recommended plant protection measures in groundnut. Majority of the groundnut growers were medium to large size farmers might be the proper reason for highly significant association with level of knowledge. The similar findings have been reported by Patel (2014)^[5] and Gambhire (2016)^[2].

(5) Annual income and level of knowledge

It is apparent from the data presented in the Table 2 that annual income of the groundnut growers had positive and highly significant association ($r = 0.648$) with their level of knowledge about recommended plant protection measures of groundnut at 0.01 level of significance. Thus, the null hypothesis was rejected. The probable reason might be that sufficient income attract for purchasing mass media like T.V., Mobile, Newspapers etc. which might be useful to the farmers as sources of agricultural information. This leads them to new knowledge of technology and recommended plant protection measures. The similar findings have been reported by Thippeswamy (2007)^[7], Jat (2010)^[4], Patel (2014)^[5] and Gambhire (2016)^[2].

Table 1: Profile of groundnut growers

(n = 150)

Sr. No.	Particulars of Variables	Frequency	Percent
Age			
1	Young age (up to 35 years)	38	25.33
	Middle age (36 to 50 years)	72	48.00
	Old age (above 50 years)	40	26.67
Education level			
2	Illiterate	16	10.67
	Functionally literate	11	7.33
	Primary school	32	21.33
	Middle school	58	38.67
	High school	16	10.67
	College/Post graduation	17	11.33
Family size			
3	Small (up to 4 members)	33	22.00
	Medium (5 to 7 members)	109	72.67
	Large (above 7 members)	8	5.33
Land holding			
4	Marginal (up to 1.00 ha)	19	12.67
	Small (1.01 to 2.00 ha)	37	24.67
	Medium (2.01 to 4.00 ha)	74	49.33
	Large (above 4.00 ha)	20	13.33
Annual income			
5	Low (up to ₹ 2,50,000)	27	18.00
	Moderate (₹ 2,50,000.00 to ₹ 5,00,000.00)	40	26.67
	High (₹ 5,00,000.00 to ₹ 10,00,000.00)	47	31.33
	Very high (Above ₹ 10,00,000.00)	36	24.00
Social Participation			
6	No membership	57	38.00
	Membership in one organization	74	49.33
	Membership in more than one organization	13	8.67
	Membership with office bearer	6	4.00
Extension participation			
7	Low participation	19	12.67
	Medium participation	98	65.33
	High participation	33	22.00
	Mean = 26.27 S.D. = 10.46		
Sources of information			
8	Low	18	12.00
	Medium	98	65.33
	High	34	22.67
	Mean = 41.49 S.D. = 15.51		
Scientific Orientation			
9	Low	20	13.33
	Medium	99	66.00
	High	31	20.67
	Mean = 17.87 S.D. = 5.11		
Risk orientation			
10	Low	30	20.00
	Medium	97	64.67
	High	23	15.33
	Mean = 16.49 S.D. = 5.28		
Level of knowledge			
11	Low	17	11.33
	Medium	102	68.00
	High	31	20.67
	Mean = 57.33 S.D. = 18.96		
Extent of adoption			
12	Low	20	12.67
	Medium	98	66.00
	High	32	21.33
	Mean = 54.30 S.D. = 17.93		

Table 2: Association between selected characteristics of groundnut growers with their level of knowledge about recommended plant protection measures

Sr. No.	Independent variables	Correlation coefficient (r value)
I		
Personal characteristics		
1	Age	-0.119 ^{NS}
2	Education	0.392**
II		
Socio-economic characteristics		
3	Family size	-0.048 ^{NS}
4	Land holding	0.574**
5	Annual income	0.648**
6	Social participation	0.088 ^{NS}
III		
Communicational characteristics		
7	Extension participation	0.372**
8	Sources of information	0.664**
IV		
Psychological characteristics		
9	Scientific orientation	0.546**
10	Risk orientation	0.206*
** =	Significant at 0.01 level of significance	
* =	Significant at 0.05 level of significance	
NS =	Non-Significant	

(6) Social participation and level of knowledge

The data presented in Table 2 indicate that social participation of the groundnut growers had no association ($r = 0.088$) with their level of knowledge about recommended plant protection measures of groundnut. Thus, the null hypothesis was accepted. Therefore, it is inferred that social participation had no effect on their knowledge level. This might be because of majority farmers were members of only one organization *i.e.*, milk cooperative society only. The similar finding has been reported by Patel (2014)^[5].

(7) Extension participation and level of knowledge

It is apparent from the data presented in the Table 2 that extension participation of the groundnut growers had positive and highly significant association ($r = 0.372$) with their level of knowledge about recommended plant protection measures of groundnut at 0.01 level of significance. Thus, the null hypothesis was rejected. Participation in various extension activities might have improved practical knowledge of the farmers. Hence, it had significant association with knowledge level. The similar findings have been reported by Thippeswamy (2007)^[7], Jat (2010)^[4] and Patel (2014)^[5].

(8) Sources of information and level of knowledge

Data presented in Table 2 clearly indicate that sources of information of groundnut growers had positive and highly significant association ($r = 0.664$) at 0.01 level with their level of knowledge about recommended plant protection measures of groundnut. Thus, the null hypothesis was rejected. The finding clearly indicates that exposure to various information source and contact with different personnel benefitted to the farmers in increasing the knowledge level of the groundnut growers. The similar findings have been reported by Patel (2014) and Gambhire (2016)^[2].

(9) Scientific orientation and level of knowledge

Data presented in Table 2 clearly indicate that scientific orientation of groundnut growers had positive and highly significant association ($r = 0.546$) at 0.01 level with their level of knowledge about recommended plant protection measures of groundnut. Thus, the null hypothesis was rejected. The finding clearly indicates that scientific orientation opens the mental horizon which increases the level of knowledge of

groundnut growers, which might have resulted in to its significant influence in level of knowledge about recommended plant protection measures of groundnut. The similar finding has been reported by Jat (2010)^[4].

(10) Risk orientation and level of knowledge

It is apparent from the data presented in the Table 2 that risk orientation of the groundnut growers had positive and significant association ($r = 0.206$) with their level of knowledge about recommended plant protection measures in groundnut at 0.05 level of significance. Thus, the null hypothesis was rejected. The probable reason for this result could be that farmers take more risk after they gain more knowledge about recommended plant protection measures in groundnut. Knowledge reduced risk and increased risk-bearing capacity among respondents. The similar finding has been reported by Gambhire (2016)^[2].

Conclusion

The finding related to personal, socio-economic, communication and psychological characteristics of the groundnut growers indicate that nearly half of the groundnut farmers were from middle age group, having primary to middle school level of education, having medium family size, had 2.01 to 4.00 ha of land, having annual income up to ₹ 2,50,000.00 to ₹ 10,00,000.00, had membership in one organization, had medium level of extension participation, had medium to high utilization level of information sources, had medium scientific orientation and have medium risk orientation.

While in case of association, independent variables *viz.*, education, land holding, annual income, extension participation, source of information and scientific orientation were positively and highly significantly associated with knowledge about plant protection measures. Risk orientation had positive and significant association with knowledge about plant protection measures. The remaining variables namely age and family size had negative and non-significant association, while social participation had positive and non-significant association with knowledge about plant protection measures.

Policy Implication

The finding of the study indicated that, the majority of the farmers are still in lack of complete knowledge resulting into medium adoption of recommended plant protection measures. Therefore, the extension agencies should motivate and educate them about the importance and potentialities of recommended plant protection measures.

Conflict of Interest

The authors of the paper declare no conflict of interest

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