Received : 10.09.2022 | Accepted : 16.11.2022 | Online published : 15.12.2022
https://doi.org/10.54986/irjee/2022/dec_spl/214-219
IRJEE SOCIETY OF EXTENSION EDUCATION

RESEARCH ARTICLE

Characteristics of Groundnut Cultivators and Their Adoption Level on Crop Production Technology

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ABSTRACT

Present study on Relationship between Profile Characteristics of Groundnut Cultivators and their Adoption level on Recommended Crop Production Technology was conducted in Suarashtra region of Gujarat state. The ex-post facto research design was using in the study. In order to know the relationship between selected independent variables with adoption level of the groundnut growers about recommended groundnut crop production technology, a sample of 160 groundnut growers, selected on multistage random sampling techniques. The data was collected by personal interview through structured schedule. The results revealed that there was positive and significant association with the extent of adoption about recommended groundnut production technologies and size of land holding, annual income, mass media exposure, extension contact, innovativeness, scientific orientation, risk orientation, economic motivation and yield index in demonstrator farmers. While there was positive and highly significant association with the extent of adoption about recommended groundnut production technologies and education, social participation, extension participation in case of demonstrator farmers. One variable age showed negative and significant relation at five per cent level of probability and only size of family did not show any significant relationship with knowledge level in case of demonstrator farmers.

***Key words**: Front-line demonstration; NMOOP; Groundnut growers; Adoption level.*

Overall groundnut sowing in the country has been reported at 44.59 lh during the current kharif season against 49.44 lh in the last kharif season, a decline of 9.81 per cent, mainly due to shifting of the area to other crops such as cotton and soyabean. Major states producing groundnut are Gujarat (17.09lh), Rajasthan (7.90lh), Andhra Pradesh (5.47lh), Madhya Pradesh (4.50lh), Karnataka (3.73lh), and Tamil Nādu (2.28lh). Groundnut is the most important and most widely cultivated cash crops of Gujarat, mostly in Saurashtra region. With the area under groundnut crop coming down by 10.52 per cent in Gujarat during the 2022-23 kharif season, the crop size is estimated to be lower by 22.18 per cent. Groundnut is one of the major crops in kharif season. (*Anonymous 2022*).

To minimize the adoption gap and increase the productivity, frontline demonstration can play an important role. The general objectives of frontline demonstration are "to demonstrate under farmer's field condition, the superior production, potentials and benefits of the latest improved technologies including new production technologies, high yielding crop varieties and recommendations for different region, agro ecological crop growing situation vis-a-vis traditional practices. Personal characteristics play a major role in adoption of any technologies.

Keeping this fact in mind, present study on "*Relationship between profile characteristics of groundnut cultivators and their adoption level on recommended crop production technology*" was conducted in Suarashtra region of Gujarat state.

METHODOLOGY

The study was conducted under *ex-post facto* research design in Saurashtra region of Gujarat State. A multistage, purposively, proportionate and random sampling technique was used for the study. Out of eleven district of Saurashtra region, total five districts were selected purposively where cluster frontline

demonstration on groundnut crop under NMOOP was conducted by KVKs during last two years. The selected five districts were Jamnagar, Amreli, Bhavnagar, Gir-somnath and Rajkot. Two talukas from each selected districts were selected purposively where cluster frontline demonstrations are conducted by the KVKs during last two years. Thus, total 10 talukas were selected for the study. Villages from each taluka were selected purposively where maximum cluster frontline demonstrations are conducted by KVKs. Thus, total 16 villages were selected for the study. The random sampling technique was used for the selection of the respondents. 80 demonstrator farmers and 80 non demonstrator farmers were selected randomly from selected village. Thus total 160 respondents were selected for this study. Karl Pearson's product movement correlation coefficient (Simple correlation coefficient) was employed as to assess the relationship between the dependent and independent variables. The correlation coefficient was computed by using the following formula. (*Garret, 1967*).

$$\frac{SP(XY)}{\sqrt{SS(x)SS(y)}}$$

Where,

r = Co-efficient of correlation

X and Y = Two variables under study.

SP(XY) = Sum of product of the deviations on x and y from their means.

SS(x) = Sum of squares of deviations due to 'x' variable.

SS(y) = Sum of squares of deviations due to 'y' variable.

RESULTS AND DISCUSSION

Extent of adoption of recommended groundnut production technology : Adoption index was developed and used to measure the adoption of groundnut growers. The respondents were classified into three categories on the basis of mean and standard deviation. These data are presented in Table 1.

The data presented in Table 1, revealed that majority 63.75 per cent of demonstrator farmers was in medium extent of adoption of recommended groundnut production technology, whereas 20.00 per cent had and 16.25 per cent had high and low extent of adoption of recommended groundnut production technology, respectively. In case of non-demonstrator farmers, 56.25 per cent had medium level of adoption, whereas 28.75 per cent and 15.00 per cent had low and high level of adoption of recommended groundnut production technology, respectively.

Table 1. Distribution of respondents according to their extent of adoption of recommended groundnut crop production technology (N = 160)

Extent of adoption	Demonstrator (n=80)		Non-demonstrator (n=80)	
	No.	%	No.	%
Low	13(<64.92)	16.25	23(<55.12)	28.75
Medium	51 (64.92 to 78.12)	63.75	45 (55.12 to 79.07)	56.25
High	16(>78.12)	20.00	12(<79.07)	15.00
Total	80	100	80	100
Mean	71.52	67.09		
S.D.	6.59	11.97		
Z cal	3.24*			
Z tab at 95% los	2.81			

The data in Table 1, it can be observed that the Z calculated is more than Z tab. Therefore, it is inferred that there is significant difference on adoption level of demonstrator and non-demonstrator farmers. The study of Table 1a said that there is a significance difference among the adoption level of respondents. Thus from Table 1 and Table 1a it can be concluded that the demonstrator farmers had statistically significant higher adoption level than non-demonstrator farmers. Therefore, it can be concluded that CFLDs conducted by the KVKs was able to create a significant advantage to adoption level of respondents.

The probable reason might be that the demonstrator respondents were more benefited by different extension activities, input supply and acquired guidance from research scientists. Moreover, demonstrator farmers were educated, having good contact with NGOs, other

Table 1a. Independent sample t- test

	Adoption level	
	Equal variances assumed	Equal variances not assumed
Levene's test forequality of variance		
F	0.189	-
Sig.	0.256	-
t- test for equality of means		
t	2.789	2.789
df	158	157.959
Sig. (2-tailed)	.000	.000
Mean Difference	4.25000	4.25000
Std. Error Difference	1.52368	1.52368
95% Confidence interval of the difference		
Lower	1.24060	7.25940
Upper	1.24060	7.25940

progressive farmers and received farm literature from KVK. While in case of non-demonstrator farmers had less contact with research scientist and less extension participation as compare to demonstrator farmers and their education level was also not good and hence, the extent of adoption of recommended groundnut production technologies was low.

This finding was in conformity with the findings of *Koli (2012), Patoliya (2013), Chanu et al. (2014), Raviya (2017).*

Association between the selected characteristics of groundnut growers and their extent of adoption of groundnut production technology : In order to ascertain the relationship between extent of adoption of the farmers (dependent variable) and their selected characteristics (independent variables) the co-efficient of correlation ('r' value) were calculated. The empirical hypotheses were stated for testing the relationship and their significant on zero order correlation. The results of correlation are given in Table 2.

Age and extent of adoption : From the data presented in Table 2, the calculated correlation coefficient value (r = -0.2321) of demonstrator farmers and calculated correlation coefficient value (r = 0.2254) of non-demonstrator farmers were negative but significant. Therefore, the null hypothesis was rejected. So, it could be concluded that there was negative and significant association between extent of adoption of demonstrator and non-demonstrator farmers and their age. The direction of association was negative and significant which indicated that respondent's adoption level of groundnut crop production technology is increased significantly with decreased in their age.

Table 2. Correlation between selected characteristics of the respondents with their adoption regarding groundnut production technology (N = 160)

Variables	r- value	
	Demonstrator (n= 80)	Non-demonstrator (n= 80)
Age	-0.2321*	-0.2254*
Education	0.3240**	0.2356*
Size of family	0.0198NS	0.0560NS
Social participation	0.2968**	0.2256*
Size of land holding	0.2335*	0.0842NS
Annual income	0.2254*	0.0892NS
Extension participation	0.3156**	0.2125*
Mass media exposure	0.2375*	0.1742NS
Extension contact	0.2456*	0.1698NS
Innovativeness	0.2446*	0.1618NS
Scientific orientation	0.2154*	0.1854NS
Risk orientation	0.2319*	0.1625NS
Economic motivation	0.2461*	0.1452NS
Yield index	0.2280*	0.0854NS

*5% level of significant; **1% level of significant, NS = Non - significant

The probable reason might be due to fact that the young farmers were relatively educated and relatively have more innovativeness to take more risk as compared to older aged farmers.

This finding was in conformity with the finding *Humbal (2012)*, *Patoliya (2013)*, *Lohare (2017), Khandave et al. (2019)* and *Tankodara (2019).*

Education and adoption : It could be observed from Table 2, that the calculated correlation coefficient value (r = 0.3240) of demonstrator farmers was positive and highly significant at 1 per cent level significance. While in case of non-demonstrator farmers calculated correlation coefficient value (r = 0.2356) was positive and significant at 5 per cent level of significance. So, null hypothesis was rejected.

It could be inferred that there was positive and significant association between extent of adoption of demonstrator and non-demonstrator farmers with their education. It was inferred that the level of adoption of respondents increased with an increase in their education.

The probable reason for this might be that education of the demonstrator farmers had greater respective power, were more exposed and had wider horizons. Demonstrator farmers had high extension participation, high innovativeness, and also have progressive outlook and rational thinking than non-demonstrator farmers.

The findings of the study were similar to the findings of *Patoliya (2013)* and *Lohare (2017), Khandave et al. (2019)* and *Meena et al. (2019).*

Size of family and adoption : The Table 2 showed that that the calculated correlation coefficient value (r = 0.0198) of demonstrator farmers and non-demonstrator farmers (r = 0.0560) was positive and non-significant. Hence, the null hypothesis was accepted, and it can be concluded that there was positive and non-significant association between extent of adoption of farmers and their size of family.

It can be concluded that there was non-significant relationship between adoption of the respondents and their size of family. It means adoption of any practices

by respondents was not related with the size of family of the respondents. This result was supported by the findings of *Pagar (2011).*

Social participation and adoption : The data furnished in Table 2 indicated that the calculated correlation coefficient value (r = 0.2968) of demonstrator farmers were positive and highly significant at 1 per cent level of significance`` and calculated correlation coefficient value (r = 0.2256)of non-demonstrator farmers were positive and significant at 5 per cent level of significance.

It could be concluded that there was positive and significant association between extent of adoption of recommended groundnut production technologies and their social participation. It indicated that with increase in social participation the extent of adoption of recommended groundnut production technologies also increased.

This result was supported by the findings of *Humbal (2012), Patoliya (2013), Lohare (2017), Khandave et al. (2019)* and *Meena et al. (2019).*

Size of land holding and adoption : The result depicted in Table 2, revealed that the calculated correlation coefficient value (r = 0.2335) of demonstrator farmers was positive and significant at 5 per cent level of significance. While, in case of non-demonstrator farmers calculated correlation coefficient value (r = 0.0842) was positive but non-significant. So, null hypothesis was accepted.

In demonstrator farmers, it could be concluded that there was significant relationship between adoption of recommended groundnut production technologies and their size of land holding. This finding was supported by the findings of *Patoliya (2013)* and *Lohare (2017).*

Annual income and adoption : The result presented in Table 2, indicated that of the calculated correlation coefficient value (r = 0.2254) of demonstrator farmers was positive and significant at 5 per cent level. While in case of non-demonstrator farmers calculated correlation coefficient value of (r = 0.0892) was positive but non-significant.

This finding was supported by findings of *Humbal (2012)* and *Patoliya (2013).*

Extension participation and adoption : The data furnished in Table 2, indicated that the calculated correlation coefficient value (r=0.3156) of demonstrator farmers were positive and highly significant at 1 per cent level of significance and calculated correlation coefficient value (r = 0.2125) of non-demonstrator farmers were positive and significant at 5 per cent level of significance.

It could be concluded that there was positive and significant association between extent of adoption of recommended groundnut production technologies of the respondents and their extension participation.

It could be inferred that demonstrator farmers' extent of adoption towards groundnut production technologies increased with an increase in extension participation but it was found less in non-demonstrator farmers.

The probable reason might be that due to more participation in extension activities the respondents acquired more knowledge and extension service facilitated and motivated them for higher adoption of groundnut production technology in demonstrator farmers. This finding was in line with the findings of *Humbal (2012), Patoliya (2013)*, *Khandave et al. (2019)* and *Meena et al. (2019).*

Mass media exposure and adoption : The data in Table 2 stated that the calculated correlation coefficient value (r = 0.2375) of demonstrator farmers was positive and significant at 5 per cent level of significance. While in case of non-demonstrator farmers calculated correlation coefficient value (r = 0.1742) was positive but non-significant.

It could be indicated that the mass media exposure of demonstrator farmers was positively and significantly related with their extent of adoption of recommended groundnut production technology. The extent of adoption of recommended groundnut production technologies increased with an increase in mass media exposure. While in case of non-demonstrator farmers there was no association between extent of adoption of groundnut production technologies and their mass media exposure.

The finding was in consonance with the findings of *Humbal (2012), Lohare (2017)* and *Tankodara (2019).*

Extension contacts and adoption : The data furnished in Table 2, indicated that the calculated correlation coefficient value (r = 0.2456) of demonstrator farmers was positive and significant at 5 per cent level of significance. While in case of non-demonstrator farmers calculated correlation coefficient value (r = 0.1698) of non-demonstrator farmers were positive but non-significant. So, the null hypothesis was accepted. This

result might be that the demonstrator farmers having more extension contact so they get more information and also learn different scientific methods while in case of non-demonstrator farmers having not more extension contact. This finding was in conformity with the findings of *Yadav et al. (2010)* and *Sasane (2010).*

Innovativeness and adoption : The data furnished in Table 2, indicated that the calculated correlation coefficient value (r = 0.2446) of demonstrator farmers was positive and significant at 5 per cent level of significance. While in case of non-demonstrator farmers calculated correlation coefficient value (r = 0.1618) was positive but non-significant. It can be inferred that there was positive and significant relationship between adoption level of the demonstrator farmers about groundnut production technology and their innovativeness. It means adoption of respondents increased significantly with an increase in innovativeness.

The probable reason might be that due to more innovative respondents tried out different practices for more yield so it had established positive relationship between innovativeness and adoption in case of demonstrator farmers. While, non-demonstrator farmers were found late majority and they were not directly taking risk for adoption so relationship found non-significance. This finding was in conformity with the findings of *Humbal (2012)* and *Patoliya (2013).*

Scientific orientation and adoption : The data furnished in Table 2, indicated that the calculated correlation coefficient value (r = 0.2154) of demonstrator farmers were positive and significant at 5 per cent level of significance and calculated correlation coefficient value (r = 0.1854) of non-demonstrator farmers were positive and non-significant. It can be inferred that there was positive and significant relationship between adoption level of the demonstrator farmers about groundnut production technology and their scientific orientation. This finding was in conformity with the findings of *Singh (2009)* and *Patidar (2011).*

Risk orientation and adoption : The data presented in Table 2, indicated that the calculated correlation coefficient value (r = 0.2319) of demonstrator farmers was found positive and significant at 5 per cent levelof significance. While in case of non-demonstrator farmers calculated correlation coefficient value (r = 0.1625) was positive and non-significant. It could be indicated that the risk orientation of the demonstrator farmers was significantly associated with their extent of adoption of recommended groundnut production technology. The extent of adoption for recommended groundnut production technologies increased with an increase in risk orientation. The probable reason for this result could be that groundnut growers secure benefits of more production while taking risk in adoption of recommended groundnut production technology. They know that if they take risk, it gives high benefits in their production. While in case of non-demonstrator farmers they may be afraid of failure and having not proper knowledge about benefits of adoption of this recommended technology. So, they have less risk orientation. The finding was in line with the findings of *Humbal (2012)* and *Patoliya (2013).*

Economic motivation and adoption : The data furnished in Table 2, indicated that the calculated correlation coefficient value (r = 0.2461) of demonstrator farmers were positive and significant at 5 per cent level. So, null hypothesis was rejected and calculated correlation coefficient value (r = 0.1452) of non-demonstrator farmers were positive and non-significant. It was concluded that there was significant relationship between economic motivation and adoption of demonstration farmers about groundnut production technology.

The probable reason might be that economic motivation promotes curiosity for search of information about groundnut production technology to increase the yield in demonstrator farmers. This finding was in conformity with the findings of *Patidar (2011).*

Yield index and adoption : The data in Table 2, stated that the calculated correlation coefficient value (r = 0.2280) of demonstrator farmers were positive and significant at 5 per cent level. While in case of non-demonstrator farmers calculated correlation coefficient value (r = 0.0854) were positive but non-significant.

It could be revealed that there was positive and significant association between the yield index and extent of adoption of recommended groundnut production technology in demonstrator farmers. In means with increase in yield the adoption also increased. The probable reason might be that on getting higher yield, more income might be generated which facilitated higher adoption of groundnut production technology as compare to non-demonstrator farmers.

It could be revealed that there was positive but non-significant association between the yield index and extent of adoption of recommended groundnut production technology in non-demonstrator farmers.

Thus, there was no effect observed in extent of adoption of recommended groundnut production technologies and their yield index. This finding was in conformity with the findings of *Gorfad (2012).*

CONCLUSION

The study concluded that the independent variables like, age, education, size of land holding, annual income, mass media exposure, social participation, extension participation, extension contact, innovativeness, scientific orientation, risk orientation, economic motivation and yield index had established significance on adoption level. Therefore, extension agencies should aim at manipulating these variables for promoting adoption of recommended groundnut crop production technology among the farmers.

ONFLICTS OF INTEREST

The authors have no conflicts of interest.

REFERENCES

Anonymous (2022). Businessline. e Paper

Chanu, T. M.; David, J.; Baite, M.; Singh, K. and Rao (2014). Adoption of pineapple cultivation practices by the farmers in Manipur state. *Indian Res. J. Ext. Edu*., **14** (1): 17-20.

David, T. Sun; Monosri Johari; Leema Bora and Sadananda Payeng (2022). adoption level of scientific poultry rearing in Ri-Bhoi District of Meghalaya. *Indian Res. J. Ext. Edu*., **22** (2): 134-138.

Gorfad, P.S. (2012). Farmers perception and adoption of groundnut production technology. Ph.D. Thesis (Unpublished). J.A.U., Junagadh.

Humbal, U. N. (2012). Knowledge and adoption of castor as intercrop with groundnut in south Saurashtra agro climatic zone of Gujarat. M. Sc. (Agri.) Thesis (Unpublished). J.A.U., Junagadh.

Kakki, Ponung; Talukdar, Rajendra K.; Das, Pallabi and Bora, Pallabi (2022). Adoption behaviour of khasi mandarin growers' tribal farmers in Arunachal Pradesh. *Indian Res. J. Ext. Edu.* **22** (2):126-133.

Khandave, Swati; Deshmukh, Jyothi M. and Mahammad Shafi, R. Sk. (2019). Association between

selected attributes of FPO members and their entrepreneurial behaviour. *Indian Res. J. Ext. Edu.* **19** (2&3): 60-62.

Koli, M.A. (2012). Knowledge and adoption of coconut production technology in Junagadh district of Gujarat state. M. Sc. (Agri.) Thesis (Unpublished). J.A.U., Junagadh.

Lohare, R. (2017). A study on knowledge and adoption of chickpea production technology among the farmers in Tirla block of Dhar district. M. Sc. (Agri.) Thesis (Unpublished). R.V.S.K.V.V., Gwalior.

Meena, S.R.; Bangarva, G.S. and Khan, I.M. (2019). Association of independent variables of mustard growers with their level of knowledge, extent of adoption and level of yields regarding mustard production technology *Indian Res. J. Ext. Edu*., **19** (4): 57-65.

Pagar, A.R. (2011). Adoption of clean milk production practices followed by dairy farm women in Junagadh district. M. Sc. (Agri.) Thesis (Unpublished). J.A.U., Junagadh.

Patidar, N. (2011). A study on impact of front-line demonstration in adoption of production technology by pulses growers in Jabalpur District (Madhya Pradesh). M. Sc. (Agri.) Thesis (Unpublished). J.N.K.V.V., Jabalpur.

Patoliya, J. U. (2013). Impact of front-line demonstration of groundnut growers. M. Sc. (Agri.) Thesis (Unpublished). J.A.U., Junagadh.

Raviya, P. B.; Fulmaliya, A.M.; Mavani, D.B. and Kalsariya, B.N. (2016). Constraints faced by farmers in adoption of recommended groundnut production technologies. *Intl. J. Agril Sci.*, **8** (26): 1557-1559.

Sasane, M. S. 2010. Knowledge and adoption of recommended production technology by cauliflower growers. M. Sc. (Agri.) Thesis (Unpublished). M.K.V., Parbhani.

Singh, A.K. 2009. A study on impact of oilseed Front Line Demonstrations in Adoption of Production Technology by Farmers in Tikamgarh District of Madhya Pradesh. M. Sc. (Agri.) Thesis (Unpublished), J.N.K.V.V., Jabalpur.

Tankodara, K.D., (2019). Knowledge and adoption of farmers about chickpea production technology in Junagadh district. B. Sc. (Agri.) Thesis (Unpublished). J.A.U., Junagadh.

Yadav, P.S.; Singh, B.K.; Singh, D.K. and Singh, L.(2010). Adoption behavior of commercial potato growers in district Ghaziabad (Uttar Pradesh). *Indian Res. J. Ext. Edu.*, **10** (3):5-9.

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