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Comparative Analysis of Contact and Non-Contact Sugarcane Growers' Knowledge and Adoption of Sugarcane Production Technology

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ABSTRACT

A sample of 75 contact and 75 non-contact sugarcane growers was drawn to study knowledge and adoption of sugarcane production technology. There was a significant difference between the characteristics such as; age, knowledge index, innovation proneness and extension participation index of contact and non-contact sugarcane growers. Contact and non-contact sugarcane growers possessed medium level of knowledge and adoption of sugarcane production technology. There was positive and significant association between contact sugarcane growers level of knowledge about sugarcane production technology and their characteristics like; education, social participation, innovation proneness, extension participation and localite-cosmopolite value orientation while irrigation potentiality, education, social participation, farm mechanization, adoption, innovation proneness, extension participation and localite-cosmopolite value orientation in case of non-contact sugarcane growers. At the same time, level of adoption of contact sugarcane growers was associated with their characteristics such as; social participation and sugarcane yield index while education, knowledge and extension participation in case of non-contact sugarcane growers.

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INTRODUCTION

Sugarcane is the most thrived age-old cash crop of the Kodinar taluka of Gujarat State. However, majority of the sugarcane growers do not know and adopt the improved sugarcane production technology. Taking this in view, the study, "Comparative Analysis of contact and non-contact sugarcane growers' Knowledge and Adoption of Sugarcane Production Technology" is undertaken in Kodinar taluka of Gujarat State. The knowledge they possessed and the adoption they attained has a bearing on the future progress of T & V System and understanding these behavioural aspects may also help to predict the success and failure of the innovative project aimed at agriculture development in particular and the strategy of transfer of technology in general. The objectives of the study are as under :

(1) To study the characteristics of contact and non-contact sugarcane growers.

(2) To assess the extent of knowledge of contact and non-contact sugarcane growers

about sugarcane production technology.

(3) To assess the extent of adoption of contact and non-contact sugarcane growers about sugarcane production technology.

(4) To ascertain the association of contact and non-contact sugarcane growers' knowledge about sugarcane production technology with their selected characteristics.

(5) To ascertain the association of contact and non-contact sugarcane growers' adoption of sugarcane production technology with their selected characteristics.

METHODOLOGY

In order to realise the above objectives, a sample of 75 contact and 75 non-contact sugarcane growers, representing 12 villages of Kodinar taluka of Amreli district (Gujarat) was drawn by using multistage random sampling technique.

The selection and measurement of characteristics studied are shown in Table 1.

Statistical measures such as percentage, mean score, standard deviation, coefficient of variation, 't' test etc. were used.

FINDINGS

I Characteristics of Contact and Non-Contact Sugarcane Growers

Knowledge of the improved sugarcane production technology is mainly influenced by different characteristics of the sugarcane growers. It was beyond the scope of the present study to include all the characteristics of the sugarcane growers. However, some important factors were selected for the study and the findings have been presented as follows :

The responses obtained from the contact and non-contact sugarcane growers were subjected to statistical tests to find out the significant difference between the two groups of sugarcane growers with respect to 14 variables. For this purpose, 't' test was done. The mean values of two groups of sugarcane growers with respect to 14 variables and their respective 't' values are presented in Table 2.

The data in Table 2 revealed that 't' values were non-significant at 5 per cent level in case of factors like operational size of farm holding, irrigation potentiality, sugarcane crop intensity, education, social participation, sugarcane yield index, farm mechanization index, adoption index, risk orientation and localite-cosmopolite value orientation of contact and non-contact sugarcane growers. Hence, there is no difference between contact and non-contact sugarcane growers with regard to these factors. This might be due to the fact that the contact farmers might be selected by observing the criteria that "They should represent proportionately the main farming conditions, socio-economic conditions etc."

At the same time the 't' value of factors like age, knowledge index and extension participation were significant at 1 per cent level. Hence, it can be concluded that the contact and non- contact sugarcane growers were differed significantly in their above factors. Not only that the mean difference were positive and significantly higher in case of contact farmers than those of non-contact farmers. This might be due to the fact that contact sugarcane growers were in frequent contacts with extension functionaries promoted them to participate more and more in extension activities which facilited to acquire more knowledge too.

TABLE 1

Selection and measurement of characteristics.

Sr. No.	Characteristics	Unit	Emperical Measures
1	2	3	4
(A)	Dependent*		
1	Knowledge	per cent	Knowledge test developed for the study
2	Adoption	per cent	Quotient developed by Chattopadhyay (1974) (with slight modifications)
(B)	Independent		
1	Operational size of farm holding	Hectares	Appropriate schedule prepared for the study
2	Irrigation Potentiality	Per cent	-do-
3	Sugarcane crop intensity	Per cent	-do-
4	Age	Years	-do-
5	Education	Standards	-do-
6	Social participation	Score	-do-
7	Sugarcane Yield Index	Per cent	-do-
8	Farm Mechanization	Scores	Index developed by Singh and Singh (1970)
9	Risk Orientation	Scores	Scale developed by Supe and Singh (1968)
10	Innovation proneness	Scores	Scale developed by Moulik and Rao (1965)
11	Extension Participation	Per cent	Scale developed by Siddaramaiah and Jalihal (1983)
12	Localite-cosmopolite value orientation	Scores	Scale developed by Singh (1967)

* Adoption in case of knowledge and vice-versa was considered as independent variable.

TABLE 2
Test of significance of difference between contact and non-contact sugarcane growers about their selected characteristics.

Sr No.	Situational Variables	Unit	Mean Values		Mean Difference	't' Value
			Contact Sugar-cane Growers (n=75)	Non-Contact Sugarcane Growers (n=75)		
1	2	3	4	5	6	7
1	Operational Size of Farm holding	Hectare	4.11	3.86	0.25	0.54 NS
2	Irrigation potentiality	Per cent	87.57	88.15	-0.58	0.14 NS
3	Sugarcane crop intensity	Per cent	34.21	34.24	-0.03	0.01 NS
4	Age	Years	50.55	43.47	+7.08	2.90 **
5	Education	Standards	4.37	4.93	-0.56	0.54 NS
6	Social participation	Scores	13.85	12.68	+1.17	1.39 NS
7	Sugarcane yield index	Per cent	141.39	124.83	+16.56	1.65 NS
8	Farm mechanization index	Scores	216.36	177.35	+39.01	1.50 NS
9	Adoption index	Per cent	42.79	40.69	+2.10	1.84 NS
10	Knowledge index	Per cent	63.75	56.61	+7.14	2.99 **
11	Risk Orientation	Scores	23.77	24.07	-0.30	0.45 NS
12	Innovation Proneness	Scores	6.04	4.79	+1.25	4.81 **
13	Extension participation index	Per cent	19.49	11.39	+8.10	2.70 **
14	Localite cosmopolite value orientation	Scores	17.15	16.45	+0.70	1.71 NS

NS = Not Significant ** = Significant at 1 per cent level

II Contact and Non-contact Sugarcane Growers' Extent of Knowledge

The knowledge test developed for the study was used to measure sugarcane growers' knowledge about sugarcane production technology. The knowledge scores of the respondents for improved sugarcane production technology were calculated as sum of the correct responses converted into percentage and respondents were classified based on Mean and S.D. as low (Mean - S.D.), medium (Mean ± S.D.) and high (Mean + S.D.). The collected data on sugarcane growers' knowledge on sugarcane production technology are presented in Table 3.

TABLE 3

Sugarcane growers' extent of knowledge about sugarcane production technology.

Sugarcane growers	*Knowledge level*	*No.*	*Per cent*	*Observed index*	*Mean*	*S.D.*	*C.V. (%)*
Contact (75)	Low (< 49)	12	16.00	30 to 96	63.74	14.52	22.78
	Medium (49 to 78)	52	69.34				
	High (> 78)	11	14.66				
Non-contact (75)	Low (< 42)	11	14.66	16 to 61	56.61	14.77	20.09
	Medium (42 to 71)	52	69.34				
	High (> 71)	12	16.00				

N.B.: Expected index for two categories of sugarcane growers ranged between 0 to 100.

It is inferred from the Table 3 that 16 per cent contact sugarcane growers had low, 69.34 per cent medium and 14.66 per cent had high level of knowledge about sugarcane production technology. The expected range of index was 0 to 100, but the minimum and maximum index observed, ranged between 30 to 96, with a mean index of 63.74, standard deviation of 14.52 and coefficient of variation of 22.78 per cent. It shows that mean score of the respondents was found to be more than 50 per cent and maximum score obtained upto 96 and variation within the group was 22.78 per cent. So it can be concluded that contact sugarcane growers had medium level of knowledge.

In case of non-contact sugarcane growers, 14.66, 69.34 and 16.00 per cent had low, medium and high level of knowledge about sugarcane production technology respectively. The observed range of index was 16 to 61, with a mean score of 56.61, standard deviation of 14.77 and C.V. of 20.09 per cent. So it can be concluded that non-contact sugarcane growers had medium level of knowlege. But in comparision to contact sugarcane growers, non-contact sugarcane growers had less observed index, mean index but S.D. and C.V. of contact sugarcane growers were higher than that of non-contact sugarcane growers. So, it can safely be inferred that non-contact sugarcane growers had less knowledge than contact sugarcane growers. This finding was supported as inferred under findings part I (Table 2) that there was a significant difference between the knowledge index of the contact and non-contact sugarcane growers (t=2.99). The probable reason for this may be that the contact sugarcane growers may be trained by the

TABLE 4

Sugarcane growers' extent of adoption about sugarcane production technology.

Sugarcane growers	*Adoption level*	*No.*	*Per cent*	*Observed Score*	*Mean*	*S.D.*	*C.V.%*
Contact (75)	Low (< 35)	10	13.33	29 to 65	42.78	7.69	17.97
	Medium (35 to 50)	58	77.34				
	High (> 50)	7	9.33				
Non-Contact (75)	Low (< 34)	7	9.33	27 to 58	40.69	6.33	15.57
	Medium (34 to 47)	61	81.34				
	High (> 47)	7	9.33				

N.B. : Expected score for two categories of sugarcane growers ranged between 0 to 100.

VLWs during their regular visits and consequently they gained more knowledge about sugarcane production technology.

This finding was in conformity with those of Joshi (1979), Patel (1981), Pandit (1981) and Rabari (1983).

III Contact and Non-contact Sugarcane Growers' Extent of Adoption about Practices of Sugarcane Production Technology

The data on the extent of adoption of improved practices of sugarcane production technology and potentiality of their adoption were collected. As discussed in the methodology, the adoption quotient (AQ) developed by Chatopadhyay (1974) was used with slight modification. Adoption quotient for each sugarcane grower was calculated on the basis of maximum score obtained by him. Sugarcane growers were then classified into three categories namely, low (Mean-S.D.), medium (Mean ± S.D.) and high (Mean + S.D.) adoption. The data regarding this are presented in Table 4.

From the perusal of the Table 4, it is clear that 13.33, 77.34 and 9.33 per cent of the contact sugarcane growers were low, medium and high adopters of sugarcane production technology. The expected range of score was 0 to 100, but the minimum and maximum score observed, ranged between 29 to 65 with a mean score of 42.78, standard deviation of 7.69 and coefficient of variation of 17.97 per cent. It showed that mean score of the respondents was found to be less than 50 per cent and maximum score obtained upto 65 and variation within the group was 17.97 per cent. Though majority of the contact sugracane growers were found to be medium adopters. So, it can be concluded that contact sugarcane growers were medium adopters of sugarcane production technology.

In case of non-contact sugarcane growers, 9.33, 81.34 and 9.33 per cent were low, medium and high adopters of sugarcane production technology. The expected range of score was 0 to 100, but the minimum and

maximum score observed, ranged between 27 to 58 with a mean score of 40.69 with the standard deviation of 6.33 and coefficient of variation of 15.57 per cent. It is quite clear from these data that mean score was found to be less than 50 per cent and maximum score obtained upto 58, variation within the group was 15.57 per cent. Though the majority of the non-contact sugarcane growers were found to be medium adopters. Hence, it can be revealed that non-contact sugarcane growers were medium adopters.

In comparison to contact sugarcane growers, non-contact sugarcane growers had less observed score (7), mean score (1.99), standard deviation (1.36) and coefficient of variation (2.40 per cent), so it can be safely concluded that non-contact sugarcane growers adopted less than contact sugarcane growers but the difference was not significant as inferred earlier that there was no significant difference between the adoption index of the contact and non-contact sugarcane growers (t=1.84 N.S.).

The probable reason for this may be that non-contact sugarcane growers adopted improved practices of sugarcane production technology followed by contact sugarcane growers.

The finding was in conformity with the findings of Sharma and Sanoria (1983), Popat (1984) and Hirevenkanagoudar *et al.* (1984).

IV Association of Contact and Non-contact Sugarcane Growers' Level of Knowledge about Sugarcane Prodcution Technology and their Selected Characteristics

It is obvious from the Table 5 that there was positive and significant association between contact sugarcane growers' level of knowledge about sugarcane production technology and their selected characteristics like education, social participation, innovation proneness, extension participation and localite- cosmopolite value orientation while irrigation potentiality, education, social participation, farm mechanization, adoption, innovation proneness, extension participation and localite- cosmopolite value orientation were associated with the level of knowledge of non-contact sugarcane growers.

This might be due to the fact that those who were very prone to know the innovation might have participated well in extension activities, utilised sources of information outside to their villages, well educated and hence acquired more knowledge.

These findings were in conformity with the findings of Sharma and Singh (1984), Sharma and Sanoria (1983) and Pichori and Tripathi (1983).

V Association of Contact and Non-Contact Sugarcane Growers Level of Adoption about Sugarcane Production Technology and their Selected Characteristics

From the perusal of the Table 5 it is inferred that there was positive and significant association between contact sugarcane growers level of adoption of sugarcane production technology and their characteristics such as; social participation, sugarcane yield index, in case of non-contact sugarcane growers the characteristics like education, knowledge and extension participation index were associated.

This might be due to the fact that those who were well educated, went outside their villages, got technical know-how on sugarcane production technology from competent sources of information to adopt the same.

TABLE 5

Zero order correlation coefficient between sugarcane growers' extent of knowledge and adoption about sugarcane production technology and their characteristics.

Sr. No	Name of the Variables	Sugarcane Growers			
		Knowledge		Adoption	
		Contact (N=75) 'r' values	Non-Contact (N=75) 'r' values	Contact (N=75) 'r' values	Non-contact (N=75) 'r' values
1	2	3	4	5	6
1	Operational size of farm holding	0.10 NS	0.09 NS	-Ve 0.14 NS	-Ve 0.03 NS
2	Irrigation Potentiality	0.03 NS	0.30 *	0.14 NS	0.19 NS
3	Sugarcane crop intensity	0.11 NS	0.09 NS	0.01 NS	0.05 NS
4	Age	-Ve 0.11 NS	-Ve 0.10 NS	-Ve 0.11 NS	-Ve 0.05 NS
5	Education	0.42 **	0.34 **	0.07 NS	0.29 *
6	Social participation	0.39 **	0.40 **	0.28 *	0.14 NS
7	Sugarcane yield index	0.05 Ns	0.19 NS	0.24 *	0.15 NS
8	Farm mechanization index	0.18 NS	0.34 **	0.08 NS	0.07 NS
9	Adoption index	0.15 NS	0.32 **	- 0.15 NS	- 0.32 **
10	Knowledge index	-	-	-Ve 0.20 NS	0.06 NS
11	Risk orientation	-Ve 0.02 Ns	0.11 Ns	0.27 NS	0.04 NS
12	Innovation proneness	0.24 *	0.23 *	0.20 NS	0.24 *
13	Extension participation index	0.40 **	0.52 **	0.14 NS	0.21 NS
14	Localite-cosmo-polite value orientation	0.43 **	0.37 **		

NS. = Not significant

* = Significant at 5 per cent level

** = Significant at 1 per cent level

These findings were in conformity with the findings of Sharma and Sanoria (1983) and Pichori and Tripathi (1983).

IMPLICATIONS

Having discussed the contact and non-contact sugarcane growers knowledge and adoption about sugarcane production technology, some measures could be suggested emerging from the study. While selecting the contact farmers, extension workers should take into consideration the sugarcane growers characteristics such as; age, knowledge index, innovation proneness and extension participation index.

To raise the level of knowledge of contact sugarcane growers about sugarcane production technology, the extension workers should strive to bring up the characteristics such as; education, localite-cosmopolite value orientation, extension participation, social participation and innovation proneness in order of priority.

To raise the level of adoption of contact sugarcane growers about sugarcane production technology the extension workers should emphasis on the characteristics namely, social participation and sugarcane yield index while education, knowledge index and extension participation in case of non-contact sugarcane growers.

In all for transferring total sugarcane production technology to the sugarcane growers, the extension workers should put more emphasis on the characteristics such as; extension participation, localite-cosmopolite value orientation, education, social participation and innovation proneness.

REFERENCES

Chattopadhyay, S.N., 1974. Study of some Psychological Correlates of Adoption of Improved practices. Ph.D. Thesis I.A.R.I., New Delhi.

Hirevenkanagoudar, L.V., Chitambar, J.B. and Chaubey, B.K. 1984. Impact of National Demonstration of Participant and Non- participant Farmers. *Indian J. Ext. Educ.*, **20** (1 & 2): 76- 78.

Joshi, R.G., 1979. Constraints in Transfer of Sugarcane Technology. M.Sc. (Agri.) Thesis. (Unpublished). G.A.U., Sardar Krushinagar.

Moulik, T.K., and Rao, C.S.S. 1965. Self-Rating Scale for Farmers. *Measurement in Extension Research.* Instrument Developed at I.A.R.I., Div. of Agric. Ext., New Delhi compiled by K.N. Singh and others, 1963-72, pp. 49-58.

Pandit, V.K., 1981. The Constraints in Transfer of Wheat Technology in Barwani Tribal Development Block of West Nimar Dirstrict in Madhaya Pradesh. M.Sc. (Agri.) Thesis (Unpublished). G.A.U., Sardar Krushinagar.

Patel, B.B., 1981. Constraints in Transfer of Paddy Technology in Duscroi Taluka of Ahmedabad district of Gujarat State. M.Sc. (Agri.) Thesis (Unpublished). G.A.U., Sardar Krushinagar.

Pichori, R.S. and Tripathi S.G. 1983. Impact of Intensive Agricultural Extension and Research Programme on the Farmers' knowledge of Technology. *Indian J.Ext. Educ.*, **14** (3 & 4): 72- 73.

Popat, R.K. 1984. Adoption of Improved Groundnut Cultivation Technology by the Farmers in Junagadh district. M.Sc. (Agri.) Thesis (Unpublished). G.A.U., Sardar Krushinagar.

Rabari, B.M. 1983. Constraints Experienced by the Maize Growers in Adoption Hybrid Maize Technology. M.Sc. (Agri.) Thesis (Unpublished). G.A.U., Sardar Krushinagar.

Sharma, D.K. and Sanoria Y.C. 1983. Comparative Analysis of Knowledge and Adoption of Contact and Non-Contact Farmers of T & V system. *Workshop on Management of Transfer of Farm Technology Under the Training and Visit System, February 1-8, 1983. Background papers,* N.I.R.D., Rajendranagar, Hyderabad.

Sharma, S. and Singh T.R. 1984. Rural Women's Level of Knowledge and Perception for the Acceptance of Solar Cooker Device. *Indian J. Ext. Educ.,* **20** (3 & 4): 47-51.

Siddaramaiah, B.S. and Jalihal K.A. 1983. A Scale to Measure Extension Participation of Farmers. *Indian J.Ext. Educ.,* **19** (3 & 4): 74-76.

Singh, S.N. 1967. Value Orientation and Adoption Behaviour of Indian Cultivators. Ph.D. Thesis (Unpublished). Iowa State University of Science and Technology, Ames, Iowa.

--and Singh, K.N. 1970. Farm Mechanization Index. *Measurements in Extension Research.* Instruments Developed at I.A.R.I., Div. of Agril. Ext., New Delhi-Compiled by K.N. Singh and others, 1963- 72, pp. 178-181.

Supe, S.V. and Singh, S.N. 1968. Dynamics of Rational Behaviour of Indian Farmers, New Delhi : New Heights.