

## Relational Analysis of Knowledge and Adoption of Organic Farming Practices in Gujarat State

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### ABSTRACT

*Organic agriculture may be considered as a development vehicle for developing countries like India, in particular with this context research study was undertaken for 180 farmers in capacity building of farmers through training on organic farming practices in Surendranagar, Jamnagar and Rajkot district of Gujarat state. The close observation of the results shows that majority of train and untrained farmers had medium level of knowledge and medium level of adoption about organic farming practices. Among all the variable education, extension participation, organic farming experience, localite cosmopolite value orientation, risk orientation, scientific orientation had positive and significant association with the knowledge and adoption of organic farming practices in both trained and untrained farmers. While in addition to this trained farmers' had also positive and significant association with social participation, innovativeness and mass media exposure, market of organic produce and herd size.*

**Key words:** Capacity building; Adoption; Organic farming practices;

“Organic agriculture is an ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on minimum use of off-farm inputs and on management practices that restore, maintain and enhance ecological harmony.” The concept of “organic farming” is almost as old as the human civilization. The importance of organic manure is known since ancient times and finds mention in Rig Veda (1, 161, 10-2500-1500 BC) and Atharva Veda (11 8.3). Holy Quran also mentioned that at least one-third of what you take out of soil must be returned to it. However, due to unprecedented growth in demand of agricultural produce followed by the need to achieve higher yield in shorter period, organic farming fell redundant.

Organic agriculture has grown from 15.8 million hectares to 37.2 million hectares worldwide and India rates fifth in the world for speed of uptake and this has occurred with some support from the Indian government. India ranks seventh in the world with 1.2 million hectares

of certified organic agriculture, which constitutes about 0.6 per cent of India's total cultivable area. Total geographical area of Gujarat State has an about 189.3 thousand sq.km. Land under organic management is only 0.5 per cent found in Gujarat state. In Gujarat state, organic farming is practicing by many farmers. Fruits and vegetables belt of South Gujarat and groundnut and sesame belt of Saurashtra can easily be brought under organic farming as these all crops have experts potential. The resource poor areas of Surendranagar and Kutch districts also have good opportunities in organic farming and these both districts cover major parts with certification and accreditation standards in organic farming.

More and more area increased under organic farming which is becoming demand of present and coming era. All are eager to know how to improve the organic farming practices. One way is exists and that is Training. Farmers follow many organic farming practices for their crops, health consciousness and increasing crop yield. On the basis of this question arise

on mind that, why they have to follow organic farming, what is covered under training and what is about training method and level of knowledge of organic farming practices followed by respondents. Keeping in view the above facts present study was planned to carried out with the following specific objectives:

- i. To study the selected characteristics of respondents.
- ii. To ascertain the association of characteristics of trained and untrained farmers and their level of knowledge of organic farming practices.
- iii. To ascertain the association of characteristics of trained and untrained farmers and their level of adoption of organic farming practices

## METHODOLOGY

The study was under taken in Surendranagar, Rajkot and Jamnagar district of Gujarat State which are having major dominance over organic farming practices. Six talukas were selected from each district and three villages from each taluka were selected randomly. Thus total eighteen villages from three districts were considered for the study. Five trained and five untrained respondents were selected randomly from each selected village. Total one hundred eighty respondents were selected from the selected villages by random sampling method.

To measure the trained and untrained farmers' knowledge about organic farming practices, the teacher made knowledge test was developed. The pretesting was done to find out whether the questions were clear to respondents or not. Before finalizing the schedule, it was pretested by interviewing 20 non sampled trained and equal numbers of untrained farmers from selected area. After pretesting the questions and statements those were not clear then they were corrected and modified in the final format of the schedule. For measuring the adoption of recommended Organic Farming Practices, the adoption index was developed using adoption quotient developed by *Chattopadhyay (1974)* with slight modification. In light of the objectives set forth, the interview schedule was prepared. The data were collected by personal interview of the respondents. They were analyzed and interpreted in view of the objectives.

## RESULTS AND DISCUSSIONS

It can be concluded (Table 1) that majority of the trained farmers 61.11 per cent had medium level of

social participation. Whereas 16.67 per cent trained farmers had low social participation and remaining 22.22 per cent trained farmers had high level of social participation. In untrained farmers' situation they were found majority with low social participation with 43.33 per cent. Majority (58.89%) of the trained farmers were found to have 3 to 4 years of experience in organic farming while, 23.33 per cent possessed less i.e. 1 to 2 years' experience. Only 17.78 per cent of them had high experience. Similar conditions were found in case of untrained respondents. 58.89 per cent of trained farmers had medium level of extension participation followed by 22.22 per cent and 18.89 per cent of them had high and low level of extension participation, respectively. In terms of untrained farmers also having 55.45 per cent medium level of extension participation but in low and high level extension participation were found 26.67 per cent and 17.78 per cent respectively. it is clear that 62.22 per cent of the respondents had medium level of mass media exposure, whereas 14.45 and 23.33 per cent of them had high and low level of mass media exposure, respectively while in case of untrained farmer had 42.22 per cent and 38.89 per cent low and medium level of mass media exposure remaining 18.89 per cent were found with high mass media exposure. It is apparent from the Table 1 that about 42.22 per cent of the trained farmers were found to have high innovativeness whereas, 32.22 and 25.56 per cent of them medium and low innovativeness, respectively while as far as untrained farmer concerned 71.11 per cent were found with medium innovativeness whereas, 21.11 per cent and 07.78 per cent of them low and high innovativeness respectively. It is observed from the data in table that slightly more than two third (62.22%) of trained farmers had medium level of market of organic produce, while 22.22 per cent and 15.56 per cent of them had high and low level of market of organic produce, respectively.

*Level of knowledge* : A critical perusal of the Table 1 indicated that more than one half (58.89%) of the trained farmers possess moderate knowledge about organic farming practices whereas, 16.67 per cent had low and 24.44 per cent had high level of knowledge about organic farming practices, while in case of untrained farmers from Table 2 it is clear that 43.33 per cent farmers had medium level of knowledge about organic farming practices followed by 35.56 per cent and 21.11 per cent had low level and high level of knowledge respectively.

**Table 1: Distribution of respondents according to their characteristics (N = 180, (n<sub>1</sub>=90) (n<sub>2</sub>=90)**

Characteristics	Trained (n <sub>1</sub> )		Untrained (n <sub>2</sub> )	
	No.	%	No.	%
<i>Social participation</i>				
Low	15	16.67	39	43.33
< Mean – S.D	(<0.43)		(<0.01)	
Medium	55	61.11	37	41.11
Mean ± S.D	(0.43 to 1.67)		(0.01 to 1.43)	
High>Mean + S.D	20(>1.67)	22.22	14(>1.43)	15.56
Mean	1.05		0.72	
S.D	0.62		0.71	
<i>Org. Farming exp.</i>				
Low	21	23.33	20	22.22
< Mean – S.D	(<1.30)		(<1.32)	
Medium	53	58.89	56	62.22
Mean ± S.D	(1.30 to 2.58)		(1.32 to 2.54)	
High	16	17.78	14	15.56
>Mean + S.D	(>2.58)		(>2.54)	
Mean	1.94		1.93	
S.D	0.64		0.61	
<i>Ext. participation</i>				
Low	17	18.89	24	26.67
< Mean – S.D	(<4.52)		(<4.04)	
Medium	53	58.89	50	55.45
Mean ± S.D	(4.52 to 8.76)		(4.04 to 8.60)	
High	20	22.22	16	17.78
>Mean + S.D	(>8.76)		(>8.60)	
Mean	6.64		6.32	
S.D	2.12		2.28	
<i>Mass Media Expo.</i>				
Low	21	23.33	38	42.22
< Mean – S.D	(<2.37)		(<1.03)	
Medium	56	62.22	35	38.89
Mean ± S.D	(2.37 to 10.03)		(1.03 to 12.03)	
High	13	14.45	17	18.89
>Mean + S.D	(>10.03)		(>12.03)	

**Table 2A. Distribution of Trained farmer based on their knowledge about organic farming practices (N=90)**

Category	Knowledge score	No.	%	Mean	SD
Low	>25.07	15	16.67		
Medium	25.07 to 45.59	53	58.89	35.33	10.26
High	<45.59	22	24.44		
Total	90	100			

This might be due to the fact that knowledge of organic practices is obtained mainly as an ancestral property. Other reasons might be that the respondents had medium extension participation and high

Mean	6.20		6.53	
S.D	3.83		5.50	
<i>Innovativeness</i>				
Low	23	25.56	19	21.11
< Mean – S.D	(<1.35)		(<1.34)	
Medium	Mean ± S.D 29(1.35 to 2.97)		32.22	6 4
	(1.34 to 2.38)		71.11	
High	38	42.22	07	7.78
>Mean + S.D	(>2.97)		(>2.38)	
Mean	2.16		1.86	
S.D	0.81		0.52	
<i>Localite-cosmopolite value orientation</i>				
Low	20	22.22	18	20.00
< Mean – S.D	(<8.25)		(<8.37)	
Medium	57	63.33	56	62.22
Mean ± S.D	(8.25 to 21.05)		(8.37 to 20.27)	
High>Mean + S.D	13(>21.05)	14.45	16(>20.27)	17.78
Mean	14.65		14.32	
S.D	6.40		5.95	
<i>Market of Org. Produce</i>				
Low	14	15.56	37	41.11
< Mean – S.D	(<1.75)		(<1.01)	
Medium	56	62.22	31	34.45
Mean ± S.D	(1.75 to 5.35)		(1.01 to 4.81)	
High	20	22.22	22	24.44
>Mean + S.D	(>5.35)		(>4.81)	
Mean	3.55		2.91	
S.D	1.80		1.90	
<i>Herd Size</i>				
Low	13	14.44	39	43.33
< Mean – S.D	(<1.47)		(<1.01)	
Medium	58	64.45	55	41.11
Mean ± S.D	(1.47 to 2.65)		(1.01 to 2.43)	
High	19	21.11	14	15.56
>Mean + S.D	(>2.65)		(>2.43)	
Mean	2.06		1.72	
S.D	0.59		0.71	

**Table 2B: Distribution of Untrained farmer based on their knowledge about organic farming practices (N=90)**

Knowledge score	No.	%	Mean	SD
Below 20.31	32	35.56		
Between 20.31 to 39.21	39	43.33	29.76	09.45
Above 39.21	19	21.11		
Total	90	100		

innovativeness. These facts may be helped to trained farmers in acquiring medium knowledge about organic farming practices, lacking of above aspects were found in case of untrained farmers.

This finding was in conformity with the findings of *Thippeswamy et al. (2008)*, *Munir et al. (2009)*, *Sidram et al. (2009)*, *Jaitawat et al. (2010)*, *Oyesola et al. (2011)* and *Rekha et al. (2012)*.

**Level of adoption :** The data in Table 1 revealed that 71.11 per cent of the trained farmers had medium level adoption. Remaining 18.89 per cent and 10.00 per cent of them had high and low extent of adoption, respectively. In case of untrained farmers result indicated in Table 2 that 58.89 per cent were found with medium level of adoption, where as 26.67 per cent and 14.44 per cent had low and high level of adoption of organic farming practices.

**Table 3A: Extent of adoption of organic farming practices by trained farmers (N=90)**

Extent of adoption	No.	%	Mean	S.D.
Low (Below 45.57 score)	09	10.00		
Medium (45.57 to 85.35 score)	64	71.11	65.46	19.89
High (Above 85.35 score)	17	18.89		
Total	90	100.00		

**Table 3B: Extent of adoption of organic farming practices by Untrained farmers (N=90)**

Extent of adoption	No.	%	Mean	S.D.
Low (Below 36.08 score)	24	26.67		
Medium (36.08 to 75.56 score)	53	58.89	55.82	19.74
High (Above 75.56 score)	13	14.44		
Total	140	100.00		

Hence, it can be concluded that majority (71.11%) of trained farmers possess medium extent of adoption of organic farming practices. Such a high adoption has been observed may be in trained farmers towards organic farming. Moreover they all were found educated, having good contact with NGOs, other progressive farmers and were receiver of farm literature too. With untrained farmer point of view in adoption level some impede were found illiterate, low extension participation and low contact with Govt. and Non Govt. Organizations. Similar findings were reported by those of *Kamani (2007)*, *Thippeswamy et al. (2008)*, *Dhandhalaya et al. (2010)*, *Singh et al. (2010)* and *Pramod Mandavkar &Manoj Talathi (2013)*.

**Relationship of selected characteristics with knowledge:** It was evident from table 3 that out of 14 variables, size of land holding and annual income were non significant association with the knowledge of trained as well as untrained farmers' about organic farming

practices. It can be inferred that there was no relationship between knowledge of organic farming practices of trained as well as untrained farmers and their size of land holding and annual income. This might be due to the fact that, irrespective size of land holding; any farmers need to acquire the technical know-how of organic farming practices equally. In case of annual income, respondents irrespective of annual income were going for recommended technologies to ensure higher production and they did not have any concern about the organic farming. In this way they were aware of different recommended technologies.

**Table 4: Correlation between knowledge about organic farming practices followed by the farmers and the independent variables**

Independent variables	r- Value	
	Trained	Untrained
Age	-0.2493*	-0.2113*
Education	0.3326**	0.2275*
Size of land holding	0.0869 <sup>NS</sup>	0.0524 <sup>NS</sup>
Social participation	0.2055*	0.1255 <sup>NS</sup>
Annual income	-0.1019 <sup>NS</sup>	-0.0893 <sup>NS</sup>
Organic Farm Experience	0.2188*	0.2070*
Extension participation	0.3233**	0.2014*
Mass Media Exposure	0.2237*	0.0715 <sup>NS</sup>
Innovativeness	0.2335*	0.0950 <sup>NS</sup>
Risk orientation	0.3001**	0.2245*
Value orientation	0.3102**	0.2008*
Market of Organic Produce	0.2146*	0.1427 <sup>NS</sup>
Scientific Orientation	0.2952**	0.2206*
Herd Size	0.2048*	0.1214 <sup>NS</sup>

\* Significant at 0.05 level  $r = 0.2071$

\*\* Significant at 0.01 level  $r = 0.2690$

NS = Non significant

There was a significant association of the knowledge of trained farmers' about organic farming practices with their social participation, mass media exposure, innovativeness, market of organic produce and herd size while in untrained farmers all five variables were non significantly associated with their knowledge of organic farming practices.

This might be due to higher social participation in various village organizations, lead to close contact with voluntary and cooperative organizations might have motivated them to adopt the organic farming, which resulted in increasing the knowledge of organic farming practices. The trained respondents having higher

exposure to mass media including farm magazine could get more useful information for their farming. They could get more benefits of the mass media. Therefore, they might have positively opined about various components under the knowledge of organic farming practices. Innovativeness of the respondents increased their level of knowledge about organic farming might be due the frequent contact with extension functionaries and had training regarding organic farming practices in their jurisdiction while no such type of task were found in case of untrained farmers condition. It can be concluded that trained farmer had more interest and awareness towards organic market and information about organic produce like selling cost etc. while in case of untrained farmers' lower level of awareness towards organic market .Trained farmer had possessed more livestock, like bullock, buffaloes, sheep etc as useful in organic farming purpose, while in case of untrained farmers' case lower level of herd size.

Age was negatively and significantly associated with the knowledge of organic farming practices in trained as well as untrained respondents. The remaining characters like education, extension participation, organic farm experience, localite-cosmopolite value orientation and risk orientation had positive and significant relationship with both trained and untrained farmers. In addition to this trained farmers' had positive and significant association with the social participation, innovativeness, mass media exposure, scientific orientation, market of organic produce and herd size.

*Relationship of selected characteristics with adoption:* It was evident from Table 3 that out of 14 variables, size of land holding and annual income were non significant association with the extent of adoption of trained as well as untrained farmers' about organic farming practices. It can be inferred that there was no relationship between adoption of organic farming practices of trained as well as untrained farmers and their size of land holding and annual income. It can be said that there was no association between farmers' level of adoption towards organic framings practices on their annual income. This might be due to the fact that the farmers are not adopting majority of the organic farming practices on their farm, so they believe that the variation in income is not due to the organic farming practices.

There was a significant association of the adoption of trained farmers' about organic farming practices with

**Table 5: Correlation between adoptions about organic farming practices followed by the farmers and the independent variables**

Independent variables	r- Value	
	Trained	Untrained
Age	-0.2457*	-0.2389*
Education	0.3278**	0.2362*
Size of land holding	0.0802 <sup>NS</sup>	0.0145 <sup>NS</sup>
Social participation	0.2031*	0.1032 <sup>NS</sup>
Annual income	-0.0955 <sup>NS</sup>	-0.1059 <sup>NS</sup>
Organic Farm Experience	0.2086*	0.2027*
Extension participation	0.3441**	0.2371*
Mass Media Exposure	0.2288*	0.0992 <sup>NS</sup>
Innovativeness	0.2389*	0.1193 <sup>NS</sup>
Risk orientation	0.3037**	0.2153*
Value orientation	0.3161**	0.2012*
Market of Organic Produce	0.2122*	0.1058 <sup>NS</sup>
Scientific Orientation	0.2952**	0.2206*
Herd Size	0.2048*	0.1214 <sup>NS</sup>

\* Significant at 0.05 level r = 0.2071

\*\* Significant at 0.01 level r = 0.2690

NS = Non significant

their social participation, mass media exposure, innovativeness, market of organic produce and herd size while in untrained farmers all five variables were non significantly associated with their adoption of organic farming practices.

It can be concluded that rural level institutions and other government and non government institutions' participation play vital role in trained farmers condition but village level institutions might have little role in promotion of organic farming in untrained farmers cases. Organic farming being the new concept, most of the social organizations in which farmers were enrolled as members/officer bearers may not be involved in promotion of organic farming hence the technology of organic farming might not be reached to the common farmers through these organizations most probably in untrained respondents' case. The trained farmer had more contact with different mass media viz, magazine, bulletins, leaf lets and television and radio, while in case of untrained farmers' case lower level of extension participation and less connected with different mass media tools. Innovative farmers generally have wider contact with scientists, extension workers, progressive farmers etc. Thus they have an opportunity to learn and exchange new ideas with others

Age was negatively and significantly associated with the adoption of organic farming practices in trained as well as untrained respondents. The remaining characters like education, extension participation, organic farm experience, localite-cosmopolite value orientation and risk orientation had positive and significant relationship with both trained and untrained farmers. In addition to this trained farmers' had positive and significant association with the social participation, innovativeness, mass media exposure, scientific orientation, market of organic produce and herd size.

## CONCLUSION

It can be concluded from the results that majority of trained and untrained farmers had medium level of knowledge but second most majority fall in high and low level knowledge about organic farming practices of trained

and untrained farmers respectively. In case of adoption, majority of the farmers had medium level of adoption about organic farming practices. It was also found that almost all the independent variables of trained farmers except size of land holding and annual income had significantly relationship with knowledge and adoption of organic farming practices. While in case of untrained farmers all the independent variables except social participation, mass media exposure, innovativeness, market of organic produce and herd size had significantly relationship with knowledge and of organic farming practices. With a view to promote organic farming practices, it is essential to increase level of knowledge and adoption of train as well as untrained farmers. The independent variables which had significant relationship with knowledge and adoption should be considered during dissemination of organic farming practices.

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