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## Profile characteristics of the tomato growers with respect to different information and communication technology (ICT) gadgets in Karnataka

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**Abstract**

The different information and communication technology (ICT) gadgets like television, e-Krishi Agri-portal and multimedia DVDs are used for the intervention/ treatment for dissemination of knowledge on tomato crop production practices. ICT provides an avenue to reach more farmers provided they are e-literate. Today's buzz word is "e" / electronic. So it is inevitable to practice e- Agriculture. The "Before and After" research design was employed for conducting the study. The present study was conducted in Bangalore rural district of Karnataka state. Hoskote taluk was purposively selected for the study where tomato is extensively cultivated. The total sample constitute to 90 from three villages. The study reveals that the farmers of young aged group (45.6%) were enthusiastic and have more work efficiency. It is found that a considerable percentage (46.7%) of the tomato growers were medium cosmopolite in nature. Nearly half (42.2%) of the respondents had medium scientific orientation towards farming. The farmers were found to have a medium level (46.7%) of achievement motivation because of their risk-taking capability, field visits, demonstrations and guidance by field officers. This is reflected in their practices to achieve higher economic performance and obtain a sustainable yield. All we need to do is exploit the resources of ICT and intertwine it with yield of crops, thereby enhancing quality and quantity of crops in India. The extension organizations all over the country are engaged in designing new methods of communication and information dissemination to reach the farmer at a faster rate.

**Keywords:** Information and communication technology (ICT), tomato crop, television, e-krishi Agri-portal, DVD

**Introduction**

The tomato is one of the popular vegetable in the tropics and sub-tropics grown all over the world. Tomato is being grown under diverse climatic conditions except under extreme weather conditions and waterlogged soils. The advantages of growing tomato are relatively short duration vegetable crop, can be grown as an uncovered field crop and in protected cultivation, fits easily into different cropping systems, has high micronutrient content and the fruits can be processed, dried and canned. The tomato is one of the most important 'protective foods' both because of its special nutritive value and also because of its widespread production. The tomato is said to be the native of tropical America. From tropical America it spreads to other parts of the world in the 16<sup>th</sup> century and it became popular in India in the last six decades.

It is the field of agriculture that knowledge networking through ICT is going to make a big difference in the life of people in the developing world. ICT could provide farmers, farm related information such as package of practices, weather forecasting, access to credit, prices and availability of farm inputs, market information, etc., the unrestricted flow of information through the ICT process opens an avenue for the people to view other from a different perspective. Advancement in scientific research has given rise to the most sophisticated new technology in information and communication fields that are now drastically changing the concept of a large size, diversified world to a global village. Internet plays a vital role in exchanging the information through e-mail, chat, etc. Farmers can get the improved information services through the creative use of the information technology. Agricultural issues are being covered by national media like Radio, TV and Newspapers only at macro level due to time constraint. But the internet can go an extra mile by providing the information round the clock in local language, too.

Our government should focus on internet, which can provide agricultural information through portals. Thus, by providing information through the rural portal, farmers can get answers about cropping strategies appropriate to their fields, based on integrated information on soil, weather,

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fertilizer and management of pests. They can also be informed where to get the proper seeds or nursery plants. There are some of the Agri- portals, which are providing information about these free of cost. These portals provide information on commodity prices in various national and international markets, details about the freight markets, agricultural commodity, new varieties and their agronomic operations, news about pests and diseases and remedial measures, weather news etc. The agricultural production in India increased due to factors like bringing additional area under cultivation, extension of irrigation facilities, use of better quality seeds, advanced techniques, water management and plant protection. Now imagine a scene where every aspect of yielding crops, right from the selection of quality seeds to threshing of the crop is aided by updated and improved technology. All we need to do is exploit the resources of ICT and intertwine it with yield of crops, thereby enhancing quality and quantity of crops in India. The extension organizations all over the country are engaged in designing new methods of communication and information dissemination to reach the farmer at a faster rate.

### Methodology

**Research design:** The “Before and After” research design was employed for conducting the study.

**Locale of the study:** The present study was conducted in Bangalore rural district of Karnataka state. Hoskote taluk was purposively selected for the study where tomato is extensively cultivated. Three villages namely Doddadenahalli, Alugondanahalli and Chikkathagalli were selected for the study.

**Sample size:** From each village 30 tomato growers were selected constituting a total sample size of 90 [(30 farmers for television treatment (T<sub>1</sub>) + 30 farmers for e-krisshi Agri-portal (T<sub>2</sub>) + 30 farmers for DVD treatment (T<sub>3</sub>)]. Before and after experimental research design was employed to know the relative effectiveness of television (T<sub>1</sub>), e- krisshi Agri-portal (T<sub>2</sub>) and DVD (T<sub>3</sub>) on tomato crop production practices among farmers.

**Interventions/ treatments:** Before and after experimental research design was employed to know the relative effectiveness of television (T<sub>1</sub>), e- krisshi Agri-portal (T<sub>2</sub>) and DVD (T<sub>3</sub>) on tomato crop production practices among farmers.

**Data collection:** Data was collected by using a detailed interview schedule by employing personal interview method. The data was collected two times for each treatment, once before the treatment and again after the treatment.

**Data analysis:** The statistical tests like percentage, mean, standard deviation and chi-square test were employed for analysis and interpretation of data.

### Results and discussion

#### Profile characteristics of the tomato growers.

The data in the Table 1 and 2 depicts the personal and socio-economic characteristics of the tomato growers. The results are presented under the following paragraphs.

**Table 1:** Association of personal and socio-economic characteristics of tomato growers with different ICT treatments.

Characteristics	Category	Television (n <sub>1</sub> =30)		e-Krisshi Agri-portal (n <sub>2</sub> =30)		DVD (n <sub>3</sub> =30)		Overall Respondents (n=90)		x <sup>2</sup> Value
		NO.	%	NO.	%	NO.	%	NO.	%	
Age (years)	Young	16	53.3	11	36.6	14	46.6	41	45.6	1.972 <sup>NS</sup>
	Middle	10	33.3	13	43.4	10	33.4	33	36.6	
	Old	4	13.4	6	20.0	6	20.0	16	17.7	
Education	Low	3	10.0	7	23.3	9	30.1	19	21.1	9.307**
	Medium	14	46.6	7	23.3	7	23.3	28	31.1	
	High	13	43.4	16	53.4	14	46.6	43	47.7	
Family size (members)	Small	3	10.0	6	20.1	5	16.6	14	15.6	1.571 <sup>NS</sup>
	Medium	18	60.0	14	46.6	16	53.3	48	53.3	
	Big	9	30.0	10	33.3	9	30.1	28	31.1	
Type of family	Nuclear	9	30.0	16	53.4	11	36.6	36	40.0	3.772 <sup>NS</sup>
	Joint	18	60.0	12	40.0	17	56.6	47	52.2	
	Extended	3	10.0	2	6.6	2	6.6	7	7.7	
Land holding	Marginal	10	33.3	14	46.7	15	50.0	39	43.3	2.547 <sup>NS</sup>
	Small	16	53.3	11	36.6	11	36.6	38	42.2	
	Large	4	13.4	5	16.7	4	13.3	13	14.4	
Farming experience (years)	Low	9	30.0	8	26.6	6	20.1	23	25.6	4.416 <sup>NS</sup>
	Medium	14	46.6	14	46.6	10	33.3	38	42.2	
	High	7	23.4	8	26.6	14	46.6	29	32.2	

\*\* Significant at 1% level

NS: Non-Significant

### Age

Table 1 reveals with respect to television treatment more than half (53.33%) of the respondents belongs to young age followed by middle age (33.33%) and old age (13.34%). With respect to e-krisshi Agri-portal treatment 43.34 per cent of the respondents belong to middle age, followed by young age (36.66%) and old age (20.00%) and with respect to DVD treatment (46.66%) belongs to young age followed by middle age (33.34%) and old age (20.00%). The chi square value was 1.972 which is found to have a non-significant association between the treatments. In general, the farmers of young aged group were enthusiastic and have more work efficiency. Moreover, these people have more family responsibility and sensibility. They work with commitment and involvement. They are ready to take risks. These might be the probable reasons for more number of the respondents to be found in the young aged group followed by middle and old age. This finding was in line with the findings of Senthilkumar (2003) [15].

### Education

Table 1 reveals with respect to television treatment nearly half (46.66%) of the respondents belongs to medium level of education followed by high level (43.33%) and low level (10.00%). With respect to e-krisshi Agri-portal treatment 53.34 per cent of the respondents belong to high level, followed by equal percentage in medium and low level (23.33%). With respect to DVD treatment (46.66%) belongs to high level followed by low level (30.01%) and medium level of education (23.33%). The chi square value was 9.307 which was found to have a significant association at 1 per cent level between the treatments.

The importance of formal and higher education for one's development in today's competitive world is realized by the parents of farm youth. Many educational programs are implemented by government to create awareness about need of education in life. The parents might have influenced to send their children to schools and colleges. And also the presence of the good schools and colleges in their vicinity and availability of good transportation facility might have encouraged the youth to pursue education. Similar findings were reported by Karunakaran (2004) [9].

### Family size

Table 1 reveals with respect to television treatment majority (60.00%) of the respondents belongs to medium family size which ranges from five to seven members followed by big family size (30.00%) and small size (10.00%). With respect to e-krisshi Agri-portal treatment 46.66 per cent of the respondents belong to medium size, followed by big size (33.33%) and small size (20.01%). With respect to DVD treatment (53.33%) belongs to medium size followed by big size (30.01%) and small family size (26.66%).

The chi square value was 1.571 which is found to have a non-significant association between the treatments. This might be due to their awareness, education and greater exposure to mass media with regard to family planning. Further, as the cost of living increasing day by day they might have found it beneficial and convenient to have medium families to lead a

better and comfortable life. This result is in conformity with the results obtained by Hiremath Vishwanath (2007) [7].

### Type of family

Table 1 reveals with respect to television treatment, majority (60.00%) of the respondents belongs to joint family followed by nuclear family (30.00%) and extended family (10.00%). With respect to e-krisshi Agri-portal treatment 53.34 per cent of the respondents belong to nuclear family, followed by joint family (40.00%) and extended family (6.66%) with respect to DVD treatment (56.66%) belongs to joint family followed by nuclear family (36.67%) and extended family (6.67%).

The chi square value was 3.772 which are found to have a non-significant association between the treatments. The reason for this is that in villages there is still attachment to each other in the family and there still remains a sense of bonding and we feeling within them. This result is in conformity with the results obtained by Lavanya (2010) [11].

### Land holding

Table 1 reveals that among the farmers exposed to television treatment, more than half (53.33%) of the respondents belongs to small farm size followed by marginal farm size (33.33%) and small farm size (13.34%). With respect to the farmers exposed to e-krisshi Agri-portal treatment, 46.67 per cent of the respondents belong to marginal farm size, followed by small farm size (36.66%) and large farm size (13.34%). With respect to DVD treatment half of the respondents belong to marginal farm size followed by small farm size (36.66%) and large farm size (13.34%).

The chi square value was 2.547 which are found to have a non-significant association between the treatments. It is because of land fragmentation which resulted from accommodating the family members under one roof. The urbanization also facilitated the division of land holdings, which leads to marginal holdings. The results are in conformity with the results obtained by Vanitha Chethan (2002) [16].

### Farming experience

Table 1 reveals with respect to television treatment (46.66%) of the respondents belongs to medium category followed by low (30.01%) and high category (23.33%). With respect to e-krisshi Agri-portal treatment 46.67 per cent of the respondents belong to medium category followed by equal percentage (26.66%) of the respondents belong to low and high category of farming experience. with respect to DVD treatment (46.66%) belongs to high category followed by medium category (33.33%) and low category (20.01%) of farming experience.

The chi square value was 4.416 which was found to be non-significant between the treatments. This might be due to the fact that a majority of the farmers belongs to young age category, thus the majority of the young farmers in their early age itself might have been fully engaged in farming. So, due to early involvement in tomato cultivation they possess medium to high farming experience. The results are in conformity with the results obtained by Bhuvanewari (2002) [4] and Bharath Kumar (2010) [3].

**Table 2:** Association of communication and psychological characteristics of the tomato growers with different ICT treatments.

S. No.	Variables	Treatments								x <sup>2</sup> Value
		Television (n <sub>1</sub> =30)		e-krishi Agri-portal (n <sub>2</sub> =30)		DVD (n <sub>3</sub> =30)		Overall respondents		
		No.	%	No.	%	No.	%	No.	%	
1	<b>Cosmopoliteness</b>									6.190*
	Low	10	33.3	10	33.3	10	33.3	30	33.3	
	Medium	15	50.0	17	56.7	10	33.3	42	46.7	
	High	5	16.7	3	10.0	10	33.3	18	20.0	
2	<b>Mass media exposure</b>									7.866*
	Low	9	30.0	12	40.0	16	53.3	37	41.1	
	Medium	11	36.7	9	30.0	12	40.0	32	35.6	
	High	10	33.3	9	30.0	2	6.7	21	23.3	
3	<b>Extension contact</b>									22.512**
	Low	8	26.7	2	6.7	13	43.3	23	25.6	
	Medium	7	23.3	5	16.6	12	40.0	24	26.7	
	High	15	50.0	23	76.7	5	16.7	43	47.8	
4	<b>Extension participation</b>									18.843**
	Low	12	40.0	8	26.7	21	70.0	41	45.6	
	Medium	8	26.7	5	16.7	7	23.3	20	22.2	
	High	10	33.3	17	56.6	2	6.7	29	32.2	
5	<b>Economic motivation</b>									2.283 <sup>NS</sup>
	Low	12	40.0	11	36.7	12	40.0	35	38.9	
	Medium	10	33.3	13	43.3	8	26.7	31	34.4	
	High	8	26.7	6	20.0	10	33.3	24	26.7	
6	<b>Scientific orientation</b>									7.215*
	Low	12	40.0	8	26.7	9	30.0	29	32.2	
	Medium	12	40.0	17	56.7	9	30.0	38	42.2	
	High	6	20.0	5	16.7	12	40.0	23	25.6	
7	<b>Achievement motivation</b>									4.150 <sup>NS</sup>
	Low	11	36.7	9	30.0	6	20.0	26	28.9	
	Medium	15	50.0	13	43.3	14	46.7	42	46.7	
	High	4	13.3	8	26.7	10	33.3	22	24.4	
8	<b>Deferred gratification</b>									10.018**
	Low	13	43.3	7	23.3	12	40.0	32	35.6	
	Medium	15	50.0	16	53.3	8	26.7	39	43.3	
	High	2	6.7	7	23.3	10	33.3	19	21.1	
9	<b>Risk orientation</b>									2.764 <sup>NS</sup>
	Low	8	26.7	6	20.0	8	26.7	22	24.4	
	Medium	20	66.7	24	80.0	21	70.0	65	72.2	
	High	2	6.6	0	0.00	1	3.3	3	3.3	
10	<b>Management orientation</b>									6.503*
	Low	13	43.3	6	20.0	12	40.0	31	34.4	
	Medium	6	20.0	4	13.3	3	10.0	13	14.4	
	High	11	36.7	20	66.7	15	50.0	46	51.1	
11	<b>Innovative proneness</b>									2.644 <sup>NS</sup>
	Low	12	40.0	9	30.0	7	23.3	28	31.1	
	Medium	11	36.7	15	50.0	14	46.7	40	44.4	
	High	7	23.3	6	20.0	9	30.0	22	24.4	

\* Significant at 5% level

\*\* Significant at 1% level

NS: Non-Significant

**Cosmopoliteness**

From table 2, it is observed that with respect to television treatment half of the respondents belongs to a medium level of cosmopoliteness followed by one third (33.3%) and 16.70 per cent belongs to low and high cosmopoliteness levels respectively. With respect to e-Krishi Agri-portal treatment 56.70 per cent of the respondents possessed a medium level, followed by low (33.30%) and high (10.00%) level of cosmopoliteness. With respect to DVD treatment that equal number of respondents (33.33%) belongs to low, medium and high levels of cosmopoliteness respectively.

The chi square value was 6.910 which are found to have a significant association between the treatments at 5 per cent level. It can be concluded that a considerable percentage of the tomato growers were medium cosmopolite in nature. This

might be due to their good economic conditions, their regular participation in extension activities like field visits, demonstrations, also due to more extension contact and also because most of them were found to visit nearby towns or cities to obtain general information, personal work and also sometimes in agriculture and horticulture. The findings of the study are in consonance with the findings of Mahatab Ali (2010) [13].

**Mass media exposure**

With respect to mass media exposure it can be observed that the respondents exposed to television treatment, 36.70 per cent of the them belonged to medium level of mass media exposure followed by one third (33.30%) had high level and 30.00 per cent had low level of mass media exposure. With

respect to e-Krishi Agri-portal treatment, 40.00 percent of the respondents belonged to low level followed by equal percentage (30.00%) of respondents belonging to medium and high level of mass media exposure. With respect to DVD treatment 53.33 per cent of the respondents belonged to low level followed by medium (40.00%) and high (6.7%) level of mass media exposure.

The chi square value was 7.866 which is found to have a significant association between the treatments at 5 per cent level. This may be due to their lack of education, lack of interest in learning and lack of time. Cost factor also had prevented them from bringing mass media. The habit of viewing television mostly depends on individual interest, but not on the availability of leisure time. The e- illiteracy had also contributed to the low mass media exposure as they cannot use the internets. The results are in conformity with the results obtained by Veda Murthy (2002)<sup>[17]</sup> and Vinay Kumar (2005)<sup>[18]</sup>.

#### **Extension contact**

The data shown in the table 2 revealed that under television treatment half of the respondents had possessed high levels of extension contact, followed by low (26.70%) and medium (23.30%) level of extension contact. With respect to e-Krishi Agri-portal treatment majority (76.70%) of the respondents belonged to high level, followed by medium (16.60%) and low (6.70%) level of extension contact. With respect to DVD treatment 43.30 per cent of the respondents belong to low level, followed by medium (40.00%) and high (16.70%) level of extension contact.

The chi square value was 22.512 which were found to have a high significant association between the treatments at 1 per cent level. Different sources of information influence the knowledge and symbolic adoption of the tomato growers. Extension contact results in purposeful action which is largely contingent upon an individual's belief in his ability to perform the action correctly and effectively and thus he frequent contact various departmental officials to seek more information and to clarify the doubts pertaining to the current crop production practices on tomato. The other reasons for this could be the fact that respondents have interest in collecting new information through extension personnel. The reported results are in line with the conclusions of Gopala (2010)<sup>[6]</sup>.

#### **Extension participation**

The data shown in the table 2 revealed that under television treatment 40.00 per cent of the respondents had low levels of extension participation, followed by high (33.30%) and medium (26.70%) level of extension participation. With respect to e-Krishi Agri-portal treatment little more than half 56.60 per cent of the respondents belonged to high level, followed by low (26.70%) and medium (16.70%) level of extension participation. With respect to DVD treatment majority (70.00%) of the respondents belong to low level, followed by medium (23.30%) and high (6.70%) level of extension participation.

The chi square value was 18.843 which is found to have a high significant association between the treatments at 1 per cent level. The possible reason might be that extension activities conducted often may not be according to the needs and interest of most of the farmers. It may also due to lack of motivation and interest. The findings of the study are in agreement with the findings reported by Vanitha Chethan (2002)<sup>[16]</sup> and Gopala (2010)<sup>[6]</sup>.

#### **Economic motivation**

The data shown in table 2 reveals that the respondents who exposed to television treatment, 40.00 per cent of the respondents had low level of economic motivation, followed by medium (33.30%) and high (26.70%) levels of economic motivation. With respect to e-Krishi Agri-portal treatment, 43.30 percent of the respondents belonged to the medium level, followed by low (36.70%) and high (20.00%) level of economic motivation. With respect to DVD treatment 40.00 per cent of the respondents belong to low level, followed by high (33.30%) and medium (26.70%) levels of economic motivation.

The chi square value was 2.283 which was found to have a non- significant association between the treatments. The probable reason might be that, the majority of the farmers who exhibit economic motivation will have an urge to increase his farming efficiency in terms of cost – benefit ratio. Thus the farmers have strived more towards achieving and maintaining excellence economically in whatever do and those attached greater importance to profit maximization in farming. The findings of the study are in agreement with the findings reported by Sandesh (2004)<sup>[14]</sup>.

#### **Scientific orientation**

From table 2 it was observed that in case of television treatment equal number (40.00%) of respondents belonged to low and medium level of scientific orientation. Whereas 20.00 per cent belonged to high level of scientific orientation. With respect to e-krishi Agri- portal treatment 56.70 per cent of the respondents belonged to medium level, followed by low (26.70%) and high (16.70%) level of scientific orientation. With respect to DVD treatment 40.00 per cent of the respondents had high level, followed by equal (30.00%) number of the respondents had low and medium level of scientific orientation, respectively.

The chi square value was 7.215 which is found to have a significant association between the treatments at 5 per cent level. A majority of the respondents had medium to high scientific orientation towards farming. This indicates that they are having a higher degree of acceptance of the risks involved in farming and tries to use various scientific management practices, including planning, use a systematic approaches in crop production and efficient management of farm produce. The findings of the study are in agreement with the findings reported by Karpagam (2000)<sup>[8]</sup>.

#### **Achievement motivation**

The data presented in table 2 reveals that under television treatment half (50.00%) of the respondents had a medium level of achievement motivation, whereas, 36.70 and 13.30 per cent of them had low and high level of achievement motivation, respectively. With respect to e-Krishi Agri-portal 43.30 per cent of the respondents had medium level, followed by low (30.00%) and high (26.70%) level of achievement motivation. With respect to DVD treatment, 46.70 per cent of the respondents had medium level, whereas, 33.30 and 20.00 per cent had high and low level of achievement motivation, respectively.

The chi square value was 4.150 which is found to have a non-significant association between the treatments. Achievement motivation is the value associated with an individual, which drives him to excel or do well in a task he undertakes. Achievement motivation helps an individual to decide and complete the tasks in a certain direction, which in turn helps in achieving the desired results. Tomato growers in the study

were found to have a medium level of achievement motivation because of their risk taking capability, field visits, demonstrations and guidance by field officers. This is reflected in their practices to achieve higher economic performance and obtain a sustainable yield. The findings are in conformity with the results of the study conducted by Chandrani Saha (2008) [5] who found that the majority of the farmers had a medium level of achievement motivation.

### Deferred gratification

A critical analysis of table 2 reveals that under television treatment half of the respondents belonged to medium level of deferred gratification, whereas, 43.30 and 6.70 per cent of respondents belonged to low and high level of deferred gratification, respectively. With respect to e-Krishi Agri-portal treatment 53.30 per cent of the respondents had a medium level of deferred gratification, whereas, equal 23.30 per cent of respondents had low and high level of deferred gratification. With respect to DVD treatment, 40.00 percent of the respondents had low deferred gratification, followed by 33.30 and 26.70 per cent of the respondents belonged to high and medium level of deferred gratification respectively.

The chi square value was 10.018 which were found to have a significant association between the treatments at 1 per cent level. Higher level of education and regular saving habit and investment pattern of the farmers might be the reason for them to be in medium deferred gratification. Postponement of immediate pleasure for benefits in the future is appeared to inculcate in the farmers. The similar results were also reported by Maraddi (2006) [12].

### Risk orientation

The data in table 2 reveal that with respect to television treatment majority (66.70%) of the respondents belonged to medium level of risk orientation, whereas, 26.70 and 6.60 per cent of the respondents belonged to low and high level of risk orientation, respectively. With respect to e-Krishi Agri-portal majority (80.00%) of the respondents belonged to the medium level, whereas 20.00 per cent of the respondents belonged to lower level of risk orientation. None of the respondents belonged to high level of risk orientation. With respect to DVD treatment majority (70.00%) of the respondents belonged to the medium level, whereas 26.70 and 3.30 per cent of the respondents belonged to low and high level of risk orientation, respectively.

The chi square value was 2.764 which is found to have a non-significant association between the different treatments. The reason for this kind of result might be that risk bearing capacity of an individual depends upon the personal, psychological, social and economic condition of farmers. The individual with better education, more farming experience and medium to high land holding and more income might have exhibited high to medium level of risk orientation. The similar results were also reported by Lakshmi Narayani (2009) [10].

### Management orientation

The data in the table 2 revealed that with respect to television treatment, 43.30 per cent of the respondents were having low level of management orientation, followed by 36.70 per cent and 20.00 per cent were having high and medium level of risk orientation respectively. With respect to e-Krishi Agri-portal majority (66.70%) of the respondents were having high level, whereas 20.00 and 13.30 per cent had low and medium level of management orientation respectively. With respect to DVD treatment half of the respondents were having high level, whereas, 40.00 and 10.00 per cent of the respondents were having low and medium level of management orientation respectively.

The chi square value was 6.503 which were found to have a significant association between the different treatments at 5 per cent level. The probable reason to fall under the medium level of management orientation was that in the field many private companies are working with many progressive farmers in different areas and the interactions with them might have helped the farmers to reorient their management orientation. The personal exposure of farmers to various professional situations like extension meeting, exhibitions, field days, Krishimela etc., also might have contributed to develop a medium level of management orientation as compared to other farmers. The findings were in accordance with the studies conducted by Lavanya (2010) [11].

### Innovative proneness

The data in the table 2 revealed that with respect to television treatment, 40.00 percent of the respondents were having low level of innovative proneness, followed by 36.70 per cent and 23.30 per cent were having medium and high level of innovative proneness respectively. With respect to e-Krishi Agri-portal half (50.00%) of the respondents were having medium level, whereas 30.00 and 20.00 per cent of them had low and high level of innovative proneness and with respect to DVD treatment, 46.70 per cent of the respondents were having medium level, whereas, 30.00 and 23.30 per cent of the respondents were having high and low level of innovative proneness respectively. The chi square value was 2.644 which is found to have a non-significant association between the treatments. The majority of the respondents belonged to medium and high level of innovativeness. Elsewhere in the study it is revealed that two third of the respondents were young and middle aged, i.e., below fifty years and enough literates had higher zeal and enthusiasm to accept the recommended practices. Further, respondents had medium and small land holdings with medium to high extension contact and social participation which might have influenced them to project moderate innovative characteristics. The findings were in accordance with the studies conducted by Babanna (2001) [1] and Bhanu (2006) [2].

### Mean response of communication and psychological variables on different treatments of the tomato growers.

**Table 3:** Mean response of communication and psychological variables on different ICT treatments of the tomato growers.

S. No.	Variables	scores	Treatments						F - value
			Television (n <sub>1</sub> =30)		e-krishi Agri-portal (n <sub>2</sub> =30)		DVD (n <sub>3</sub> =30)		
			Mean	SD	Mean	SD	Mean	SD	
1	Cosmopolitaness	24	17.17	2.67	17.20	1.86	17.90	2.58	0.90 <sup>NS</sup>
2	Mass media exposure	8	4.73	2.27	4.20	2.04	3.40	1.50	3.50*
3	Extension contact	20	6.70	4.15	8.17	3.21	3.73	2.35	13.89**
4	Extension participation	14	6.33	4.03	6.93	2.69	3.73	2.95	8.10**
5	Economic motivation	24	19.10	2.12	19.27	1.62	19.27	2.43	0.06 <sup>NS</sup>

6	Scientific orientation	20	15.77	2.47	16.23	1.91	16.60	2.39	1.02 <sup>NS</sup>
7	Achievement motivation	24	16.50	2.91	17.97	2.30	18.23	2.69	3.74*
8	Deferred gratification	36	25.13	4.68	27.50	3.08	27.83	3.98	4.13**
9	Risk orientation	6	10.73	0.74	10.77	0.50	10.63	0.76	0.31 <sup>NS</sup>
10	Management orientation	18	16.37	1.67	17.10	1.65	16.43	2.16	1.45 <sup>NS</sup>
11	Innovative proneness	26	31.10	4.31	31.90	3.58	32.20	3.56	0.66 <sup>NS</sup>

\* Significant at 5% level

\*\* Significant at 1% level

NS: Non-Significant

The data in the table 3 was subjected to ANOVA to find out the changes in the independent variables due to different treatments.

The F – value for cosmopolitanism was 0.90 which was found to have a non- significant difference between the treatments. Mass media exposure had 3.50 which was found to be a significant difference between the treatments at 5 per cent level. Extension contact had an F- value of 13.89 which was found to be highly significant between the treatments at 1 per cent level. Extension participation had 8.10 which was found to be significantly between the treatments at 1 per cent level. Economic motivation has which is found in non- significant between the treatments. Scientific orientation had 1.02 which is found to be non – significant between the treatments. Achievement motivation had an F- value of 3.74 which was found to be significant between the treatments at 5 per cent level. Deferred gratification had 4.13 which was found to be significant between the treatment at 1 per cent level. The F-value of risk management is 0.31, management orientation is 1.45 and innovative proneness is 0.66 which is found to be non- significant between the treatments.

### Conclusion

Our government should focus on internet, which can provide agricultural information through portals. Thus, by providing information through the rural portal, farmers can get answers about cropping strategies appropriate to their fields, based on integrated information on soil, weather, fertilizer and management of pests. They can also be informed where to get the proper seeds or nursery plants. There are some of the Agri- portals, which are providing information about these free of cost. These portals provide information on commodity prices in various national and international markets, details about the freight markets, agricultural commodity, new varieties and their agronomic operations, news about pests and diseases and remedial measures, weather news etc. The agricultural production in India increased due to factors like bringing additional area under cultivation, extension of irrigation facilities, use of better quality seeds, advanced techniques, water management and plant protection. Now imagine a scene where every aspect of yielding crops, right from the selection of quality seeds to threshing of the crop is aided by updated and improved technology. All we need to do is exploit the resources of ICT and intertwine it with yield of crops, thereby enhancing quality and quantity of crops in India. The extension organizations all over the country are engaged in designing new methods of communication and information dissemination to reach the farmer at a faster rate.

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