

## Role of Co-Operative Societies in Adoption of Improved Production Technology by Sapota Growers

B.M. Mehta<sup>1</sup>, Madhuri Sonawane<sup>2</sup> and R.F. Thakor<sup>3</sup>

1. SMS, 3. Programme coordinator, K.V. K, Gujarat Vidyapith, Ta.Kaparada, Dist.Valsad(Gujarat) At. AMBHETI;

2. Assitt. Prof. & P.G.R Coordinator, School of Agricultural Sciences, YCMOU, Nashik;

Corresponding author e-mail: bmehta\_61@rediffmail.com

### ABSTRACT

*This study aim to analyze the role of leading co-operative societies and their services with respect to adoption of improved production technologies by the sapota growers of Navsari district of Gujarat state. Two categories of respondents viz, members of the selected co-operative societies and non members selected randomly. From both the category 120 farmers were selected. Thus the total sample for the study comprised of 240 farmers. In order to explore the knowledge and adoption of improved package of practices for sapota production ,statistical tools such as mean, SD and ' Z' test were employed. Majority of the respondents of member growers (70.80%) and non-member growers (69.20%) had moderate level of knowledge about the Sapota production technologies. In case of practice wise knowledge index, except knowledge regarding method and time of irrigation, knowledge of all other practices was highly significant. Regarding adoption of technology majority of the member growers falls in medium categories of adoption towards improved package of practice of sapota production. Same trend was also observed in case of non-membesr. There was a highly significant difference observed in over all adoption index of member and non-member sapota growers. The comparison of practice wise adoption of member and non-member sapota growers shows that except method and time of irrigation all other 14 practices were highly significant.*

**Key words:** Co-operative societies; Member sapota growers;

Co-operatives occupy an important place in India's rural economy in terms of their membership, business turnover, and contribution to the economic welfare of their members. In some areas and in some sectors, the co-operative societies are serving the masses and playing a vital role in the development of small and marginal farmers and their income while, in some areas their performances are not up to the mark. The co-operative sector in Gujarat has emerged as one of the largest in India with 58459 societies of various sectors. South Gujarat is the mother land of co-operative sectors with 17 societies in sugar sector and 2278 societies in dairy sector, 271 societies in agricultural sector and out of them 59 societies are working in Fruits and vegetable production and marketing. Fruit crops are the important horticultural crops grown in Gujarat state. The major fruit crops grown in Gujarat are Mango, Banana, Citrus and Sapota. Gujarat produces 20% of sapota production at national level. The co-operatives have to play an important role in the economy of the

country to ensure fair treatment to our farmers in the market. Co-operative societies of Navsari district, specially working in sapota are providing variety of services such as supply of agricultural inputs, post harvest handling and marketing of perishable sapota fruits, credit facilities, and extension and welfare services to the members. This study aim to analyze the role of promising co-operative societies in relation to knowledge and adoption of improved production technologies of sapota.

### METHODOLOGY

The study was conducted in Navsari district of South Gujarat region, which was selected purposively owing to the following reasons. The co-operatives had developed well infrastructure in South Gujarat. Navsari is one of the leading sapota growing district of Gujarat and is also one of the leading regions in co-operative network in the country. Ex-post-facto research design was used for this study. Co-operatives involved in the

procuring and marketing of sapota in Navsari district of Gujarat were selected purposively for the study (Varshney *et.al* 2005). Total sixteen co-operatives are working in Navsari district of Gujarat, out of them ten societies were working in the production and marketing of sapota in Navsari district. From this ten, four co-operative societies were having more than 75 per cent of market share in the marketing of sapota fruits and based on the performance these were selected for the study.

Two categories of respondents were selected for the study. The first category was of the members of the selected co-operative societies who had completed the five years of membership and selected proportionately. Total 120 member respondents were selected. The second category was non member, who are not the members of co-operative societies and selected randomly. From the list obtained from Talati cum mantri.120 sapota growers respondents were selected as non members.

## RESULTS AND DISCUSSION

*Over all knowledge of production technology of members and non member's sapota growers:* Overall knowledge index of the member and non-members about various improved production technologies of sapota was estimated by using Z- test. The significance of knowledge of member and non-member sapota growers helped to know the role of the co-operative societies in imparting the knowledge among member sapota growers. The information in

this respect is presented in Table 1.

The knowledge index of member sapota growers was 86.66 per cent, whereas for non-member it was 74.33 per cent. The difference is 12.33 per cent. The statistical "Z" test (large sample test) was applied to know the significance of knowledge of member and non-members. The calculated value was 11.694 which are statistically significant in knowledge of member and non-member sapota growers. Thus the role of co-operative societies was significant in imparting knowledge to members as compared to non-members.

The data pertaining to knowledge about Sapota production technologies of the respondents have been presented in Table 2

The data presented in Table 2 showed that majority of the respondents of member growers (70.80%) and non-member growers (69.20%) had moderate level of knowledge about the Sapota production technologies, followed by poor level in member and non-member growers with 18.30 per cent and 16.70 per cent, respectively, whereas, in member growers, 10.80 per cent and non-member growers 14.20 per cent of the respondents had sound knowledge about the Sapota production technologies. The similar findings were observed by Deshmukh *et al* (2007).

The mean value of member growers was 86.66 per cent which was higher as compared to non-member growers 74.33 per cent, same trends observed in poor, moderate and sound level of knowledge categories. In moderate level of categories the member and non-member had 70.00 per cent frequency; however the

**Table 1: Testing significance of overall knowledge of members and non members sapota growers by Z- test**

Character	Categories	Mean knowledge index	Differences in mean	Standard Error (SE) of difference	Calculated Z-value
Over all Knowledge	Members of Co-operative	86.66	12.33	1.06	11.694**
	Non-members	74.33			

\*\*: Statistically significant at 1% level of probability

**Table 2: Distribution of respondents according to their knowledge about the improve package of practices of sapota (N=120)**

Member categories	No.	%	Non-member categories	No.	%
Poor level (<82.09)	22	18.30	Poor level (<67.40)	20	16.70
Moderate level (82.09 to 91.23 )	85	70.80	Moderate level (67.40 to 81.26 )	83	69.20
Sound level (>91.23)	13	10.80	Sound level (>81.26)	17	14.20
Total	120	100.00	Total	120	100.00

$\bar{X}_1=86.66$

S.D=4.57

$\bar{X}_2=74.33$

S.D=6.93

**Table 3: Testing Significance of knowledge about package of practices of sapota among members and non member sapota growers by Z-test.**

Character	Categories	Mean	Differences in mean	Standard Error of difference	Calculated Z-value
Selection of Varieties	Member of Co-operative	1.9167	0.30	0.0421	7.14**
	Non-member	1.6167			
Selection of planting materials	Member of Co-operative	1.7917	0.2416	0.04099	5.89**
	Non-member	1.5500			
Planting distance	Member of Co-operative	1.8083	0.1833	0.04097	4.47**
	Non-member	1.6250			
Intercultural operation	Member of Co-operative	1.6083	0.1583	0.0392	4.03**
	Non-member	1.4500			
Use of Organic Manure	Member of Co-operative	1.8417	0.3667	0.0514	7.12**
	Non-member	1.4750			
Use of Chemical Fertilizers	Member of Co-operative	1.8417	0.2750	0.04874	5.642**
	Non-member	1.5667			
Time of Application of fertilizers and manures	Member of Co-operative	1.6300	0.1666	0.0463	3.596**
	Non-members	1.4833			
Integrated Pest Management	Members of Co-operative	1.5917	0.2000	0.0574	3.479**
	Non-members	1.3910			
Integrated Disease Management	Members of Co-operative	1.6083	0.2250	0.05643	4.011**
	Non-members	1.3833			
Method and time of Irrigation	Members of Co-operative	1.3917	0.06667	0.0564	1.181
	Non-members	1.3250			
Stage of harvesting of sapota fruits	Members of Co-operative	1.9000	0.3146	0.0515	6.14**
	Non-members	1.5833			
Grading and packing of sapota	Members of Co-operative	1.7500	0.3333	0.0583	5.71**
	Non-members	1.4167			
Post harvesting of sapota fruits	Members of Co-operative	1.7750	0.3083	0.0522	5.58**
	Non-members	1.4167			
Yield of Sapota fruits	Members of Co-operative	1.7250	0.2500	0.0570	4.38**
	Non-members	1.4750			
Marketing of Sapota	Members of Co-operative	1.8083	0.3250	0.0557	5.83**
	Non-members	1.4833			

range in member growers was between 82.09 to 91.23 which were higher than the non-member 67.40 to 81.26. This result showed the significant difference between two categories. This indicates that both the group i.e. member and non-member sapota growers having different level of knowledge of improved package of practices, the member growers had high knowledge as compared to non-member growers. This is because of the higher extension contact, higher utilization of information sources and the higher participation in extension activities through co-operative societies.

In case of practice wise knowledge index, except knowledge regarding method and time of irrigation, knowledge of all other practices were highly significant. Therefore both the group is differing in relation to their knowledge.

*Overall adoption of technology by members and non-members sapota growers:* Overall adoption index of the member and non-member of various improved package of practices of sapota were estimated by the formula explain in research methodology and result presented in Table 4. The significance of adoption of member sapota growers and non-member sapota growers helped to know the role of the co-operative societies in imparting the adoption of member sapota growers. The adoption index of member sapota growers was 77.99 per cent, whereas for non-member it was 65.53 per cent. The difference is 12.46 per cent. The statistical “Z” test (Large sample test) was applied to know the significance of adoption of member and non-members. The calculated value was 15.90 which is statistically significance in adoption of member and non-

**Table 4. Testing Significance of overall adoption of members of co-operative societies and Non members by Z- test.**

Character	Categories	Mean knowledge index	Differences in mean	Standard Error (SE) of difference	Calculated Z-value
Adoption	Member of Co-operative	77.99	12.46	0.7793	15.90**
	Non-member	65.53			

\*\* : Statistically Significant at 1% level of Probability

**Table- 5. Distribution of respondents according to their adoption about the production technologies of sapota (N=120)**

Member categories	No.	%	Non-member categories	No.	%
Low (< 71.50 %)	19	15.8	Low (< 58.60%)	22	18.3
Medium (71.50 to 84.48 %)	85	70.8	Medium (58.60 to 72.46 % )	86	71.7
Higher (>84.48 %)	16	13.3	Higher (>72.46 %)	12	10.0
Total	120	100.0	Total	120	100.0

$\bar{X}_1 = 77.99$  S.D=6.49       $\bar{X}_2 = 65.53$  S.D=6.93

**Table-6. Testing Significance of Adoption about package of practices of sapota among members and non member sapota growers by Z-test .**

Character	Categories	Mean	Differences in mean	Standard Error of difference	Calculated Z-value
Selection of Varieties	Member of Co-operative	1.7667	0.2917	0.0584	4.99**
	Non-member	1.4750			
Selection of planting materials	Member of Co-operative	1.7000	0.3333	0.0559	5.96**
	Non-member	1.3667			
Planting distance	Member of Co-operative	1.7417	0.2250	0.0631	3.56**
	Non-member	1.5167			
Intercultural operation	Member of Co-operative	1.4417	0.2834	0.0582	4.88**
	Non-member	1.1583			
Use of Organic Manure	Member of Co-operative	1.5417	0.2417	0.0648	3.279**
	Non-member	1.3000			
Use of Chemical Fertilizers	Member of Co-operative	1.5667	0.1834	0.0637	2.878**
	Non-member	1.3833			
Time of Application of fertilizers and manures	Member of Co-operative	1.5583	0.2083	0.0636	3.275**
	Non-members	1.3500			
Integrated Pest Management	Members of Co-operative	1.3833	0.1750	0.0587	2.978**
	Non-members	1.2083			
Integrated Disease Management	Members of Co-operative	1.5083	0.2333	0.0645	3.616**
	Non-members	1.2750			
Method and time of Irrigation	Members of Co-operative	1.2417	0.0584	0.0379	1.122
	Non-members	1.1833			
Stage of harvesting of sapota fruits	Members of Co-operative	1.6750	0.2000	0.0675	2.96**
	Non-members	1.4750			
Grading and packing of sapota fruits	Members of Co-operative	1.5750	0.2750	0.0636	4.138**
	Non-members	1.3000			
Post harvesting of sapota fruits	Members of Co-operative	1.5000	0.2250	0.0620	3.628**
	Non-members	1.2750			
Yield of Sapota fruits	Members of Co-operative	1.6750	0.3083	0.0577	5.44**
	Non-members	1.3667			
Marketing of Sapota fruits	Members of Co-operative	1.7000	0.3917	0.0583	6.71**
	Non-members	1.3083			

member sapota growers. Thus the role of co-operative societies in imparting adoption of member as compared to non-member is proved by the significance.

The mean value of member growers was 77.99 per cent which is higher compared to 65.53 per cent non-member growers. The same trends observed in low, medium and high level of adoption categories. In medium level categories the member and non-member were 70.80 and 71.70 per cent respectively; however the range in member growers was between 71.50 to 84.48 which is higher than the non-members (58.60 to 72.46). This result shows the significant difference between two categories. i.e. member and non-member sapota growers having different level of adoption of sapota production technologies, the member growers had high adoption as compared to non-member growers. This is because of the higher knowledge, higher extension contact, higher utilization of information sources and the higher participation in extension activities through co-operative societies. The score obtained by the member group is quite higher than that of non-member and thus it can be concluded that member farmers are better in terms of adoption about sapota production technologies. The similar findings were observed by *Mahadik et al (2008)* and *Raghuvanshi Reema (2009)*.

The comparison of practice wise adoption of member and non-member sapota growers, except method and time of irrigation all other 14 practices were highly significant.

## CONCLUSION

The mean value of knowledge index of member growers was 86.66 per cent which was higher as compared to non-member growers 74.33 per cent, same trends observed in poor, moderate and sound level of

knowledge categories. In moderate level of categories the member and non-member had 70.00 per cent frequency; however the range in member growers was between 82.09 to 91.23 which were higher than the non-member 67.40 to 81.26. This result showed the significant difference between two categories. This indicates that both the group i.e. member and non-member sapota growers having different level of knowledge of improved package of practices, the member growers had high knowledge as compared to non-member growers. This is because of the higher extension contact, higher utilization of information sources and the higher participation in extension activities through co-operative societies. In case of practice wise knowledge index, except knowledge regarding method and time of irrigation, knowledge of all other practices were highly significant. Therefore both the group is differing in relation to their knowledge.

Whereas, majority of the respondents of member growers (70.83 per cent) had medium categories of adoption towards improved package of practice of sapota production. Same trend was also observed in case of non-member (71.70 per cent) respondents had medium categories of adoption. The mean value of the adoption index was 77.99 per cent in case of member growers whereas it was 65.53 per cent in non-member growers, there was a highly significant difference in over all adoption index of member and non-member sapota growers. The comparison of practice wise adoption of member and non-member sapota growers, except method and time of irrigation all other 14 practices were highly significant. Therefore; concluded that there are differences in adoption pattern of member and non-member sapota growers.

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