CHAPTER IV

FINDINGS

AND

DISCUSSIONS

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The main objective of investigation was to assess organic food in terms of quality and satisfaction gained by its consumers. The consumers were existing consumers of organic food since last one year. To assess food quality, laboratory tests were carried out for different items among different food group. Samples were selected directly from the farms where organic farming has been carried out and same items was selected from the neighbouring farm where chemical fertilizers were used to grow crops.

The consumers were selected directly from the shops selling organic food and they were asked to reflect on their extent of use, their problems and satisfaction they experienced with the use of organic food. Thus an in-depth study was carried out regarding various aspects of organic food. Results of investigations are described in the present chapter under the following sections.

Section I. Shopkeepers selling organic food

- 1.1 Background information of the shop
- 1.2 Organic food items available in shops in various seasons
- 1.3 Sources for obtaining organic food by the shopkeepers.
- 1.3 The reasons for selling organic food
- 1.4 Problems faced while selling organic food.
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Section II. Consumers buying organic food.

- 2.1 Background information of the consumers
- 2.2 Reasons for buying organic food.
- 2.3 Extent of utilization of organic food.
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Section- I. Shopkeepers selling organic food

In Vadodara city 7 retail outlets were selling organic food varieties situated in different areas at the time of data collection in the year 2007. There was an organic food "dhaba" which served ready meals made by organic ingredients. Information from all the shops was collected about the organic food that they sold in different season, the reason that influenced them to sell organic food, the problems that they faced while selling organic food and suggestions given by them to the government, farmers, consumers, manufacturers and NGOs with reference to organic food.

1.1 Background information regarding shops selling organic food

There were 7 shops selling organic food and one organic food "dhaba" which served organic meal like Alu Paratha, Khichadi, Roti and Sabzi. to the people of Vadodara city. In this section information collected regarding shops, their owner, type of shop and year in which the shop was started is reported.

Table: 1: Information about shops selling organic food in Vadodara city

Sr. No.	Name of Shop	Address of Shop	Type	In which year started	Name of owner/Manager/ Managing Trustee
1.	Amidhara	Pashabhai Park, Race Course	Trust (NGO)	2001	Kapil Shah
2.	Oasis	Harmony, Alkapuri	Trust	2004	Sheeba Nair
3.	Herbal Concept	Opp. Akota Stadium	Proprietor	2004	Sunil Rachani
4.	Taza Maza I	Indra Prasth Ellora Park	Proprietor	2004	Alpesh Patel
5.	Taza Maza II	Manisha Chokadi, O. P. Road	Proprietor	2006	Alpesh Patel

Sr. No.	Name of Shop	Address of Shop	Type	In which year started	Name of owner/Manager/ Managing Trustee
6.	Eco World	3, Manuj Smruti Complex, Near Navrachna Schoo, Sama Road, Vadodara	Proprietor	Nov. 2006	Sumit Dabka
7.	Fab India	Akota, Cross Road, Akota	Chain Store	2007	Preeti Agarwal
8.	Apana Dhaba	Near INOX, Ellora Park, NGO	Ready to eat/ cooked Food Outlet	2004	Kiritbhai

The oldest shop in Vadodara city was "Amidhara" which was situated at Pashabhai park, Race course. It was a shop run by Jatan trust since 2001 and Mr. Kapil Shah was a managing trustee of this shop. "Amidhara" sold only organic food.

Another shop which was situated at Alkapuri and which was also run by a trust called "OASIS" started in 2004 and Ms. Preeti Agarwal was the manager of this shop at the time of data collection. Oasis sold organic food items and other healthy food items. The main objective of "Oasis" was to provide healthy living to all the human beings and therefore they sold some spiritual books and CDs and some other eco friendly products other than food products as well.

"Taza Maza" which was situated in Ellora Park was started in the year 2004. Mr. Alpesh Patel was a proprietor of this shop. "Taza Maza" also had an another shop at Manisha Chokadi, Old Padra Road which was started in 2006. They sold organic food items along with some non organic food items.

"Herbal Concept" was a shop started in 2004 and it was situated near Akota Stadium. This shop kept all organic food items and in another section of the

shop they sold some household chemicals and detergents. Mr.Sunil Rachani was the proprietor of this shop.

Plate 5: AMIDHARA, Pashabhai Park, Race Course

"Eco world", was started in 2006 by Mr. Sunit Dabke who had done his Ph D on solid waste management. It was situated at Sama road and they had started a new concept of giving dustbin to consumers to collect their kitchen waste. A special discount on organic food items was given to those consumers who were member of this kitchen waste segregation programme.

Plate- 6 : OASIS, Harmony Complex, Alkapuri

Plate-7: HERBAL CONCEPT, Near Akota Stadium

"FabIndia" was a chain store which was started in the year 2007. They kept many varieties of organic cereals, pulses and other ready to eat items like jam, pickle, sauce etc. They did not sell vegetables but kept some clothing items, furniture and furnishings items in their shop.

Plate – 8: ECO WORLD, Sama Road

Plate – 9: TAZA MAZA, ELORA PARK

Plate – 10: TAZA MAZA, OLD PADRA ROAD

Plate 11: APANA DHABA, Elora Park

Table: 2: Distribution of Shops according to the type of food sold in them

Food sold in Shop	Shops (n = 8)	
	f	%
Only Organic Food	3	37.5
Organic food along with other items	5	62.5

Results indicated that there were three shops which sold only organic food items and remaining five shops sold organic food items along with conventional food items (Table-2).

Fig: 1 Percentage distribution of shops according to the type of food sold in them

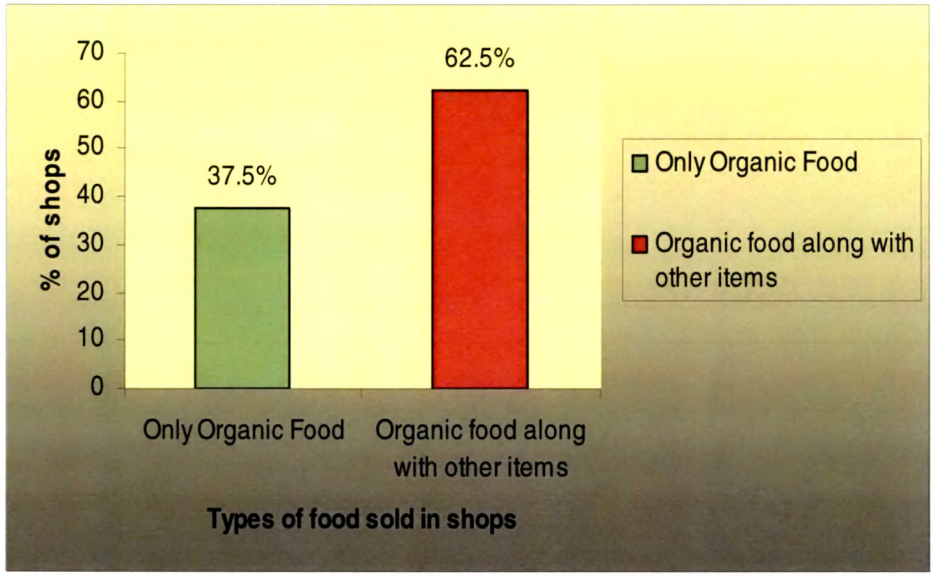


Table: 3: Distribution of Shops according to certified organic food sold in them

Food items sold in shop	Shops (n = 8)	
	f	%
Only certified organic food	1	12.5
Organic food without certification	1	12.5
Few items with certificate and few without certificate	6	75

Data revealed that 75 per cent of the shops sold few items with certificates and few without certificates whereas one shop (Apana Dhaba) sold only organic food items without any certificate. Fabindia sold only certified organic food items (Table-3).

Table: 4: Distribution of shopkeepers according to their knowledge about any organization working for certification of organic food

Knowledge about any organization working for certification of Organic Food	Shopkeepers (n = 8)	
	f	%
Know	3	37.5
Do not know	5	62.5

It was found that 62.5 per cent of shopkeepers did not know about any organization working for certification of organic food whereas 37.5 per cent of respondents knew about such organization (Table-4).

Table: 5: Distribution of shopkeepers according to their knowledge about name of organizations working for certification of organic food

Name of the Organization for certification of organic food	Shopkeepers (n = 5)	
	f	%
Skal International	2	25
Indocert	2	25
Ecocert	2	25
OFAI	1	12.5
NOCA	1	12.5

Those who knew about organizations were asked to give names of certifying agencies working for organic food. One-fourth of the shopkeepers knew about

"Skal International", "Indocert" and "Ecocert" organizations working for certification of organic farm. Less than one-fourth were aware about NOCA and OFAI as a certification agency for organic farm. Thus it was revealed that majority of them were not aware about many other organizations working for certification of organic farm and food products.

Table: 6: Distribution of shopkeepers according to their opinion whether certification is necessary for organic food or not

Certification	Shopkeepers(n = 8)	
	f	%
Necessary	7	87.5
Not necessary	1	12.5

The result indicates that majority of shop owners (87.5%) opined that certification is not necessary for organic food whereas less than one-fourth of respondents felt that certification is necessary for organic food.

Table: 7: Distribution of shopkeepers according to the agency on which they rely for certification process of organic food

Agency for certification of organic food	Shopkeepers (n = 8)	
	f	%
Government Organization	2	25
Non Government Organization	4	50
Private sector	3	37.5
Agricultural Universities	1	12.5
Corporate Sector	1	12.5

It was found that half of the respondents relied on Non Government Organization for giving certification whereas only one-fourth relied on government for giving certification to organic farm. Little more than one-third

of shopkeepers relied on private sector for giving certification to organic farm and very few (12.5%) relied on agricultural universities and corporate sectors for giving certification (Table-7). **Naik and Sharma (1997)** reported that Ahmedabad consumers suggested that certification for organic food should be carried out by reputed agency

1.2 Organic food items available in their shop in different seasons

The information regarding various food items available in the 7 shops selling organic food during different seasons was collected and is reported in this section. Only for this section "Apana dhaba" was omitted, as it served meals made up of organic food ingredients. The entire year was divided in to three seasons viz. July to October, November to February and March to June. The shopkeepers were asked to provide information as to which of the food groups like cereals, pulses, oil, sugar, vegetables, spics etc were sold in these seasons.

In Vadodara city organic food items were available at seven outlet situated in different locality. It was observed from the results that fruits and vegetables available were not certified organic food. Some of them reported that the farm from which they bring vegetables were under process of certification. As certification was an expensive process, it was not possible to go for certification formality for poor farmers. It was found that certain vegetables and fruits were available only in particular seasons. The supply of these food items was not constant (Appendix - I).

In case of cereals and pulses, it was found that majority of the shops kept all certified organic items in their shops. It was found that majority of them brought these items from Sardar Pael Farm, Jatan, and Bhaikaka Krishi Kendra. Only Taza Maza and Oasis Kept some non-organic food items(Cereals and pulses) along with the organic food items.

In case of milk products, two shops kept non organic cow "ghee" in their shops whereas one shop kept non certified cow milk. However the supply was not constant for this cow milk (Appendix - I).

The results indicated that two shops kept certified "groundnuts", and one shop kept non certified "til oil". It was found from the result that during November to February, three shops kept "groundnut oil" which was not certified and two shops kept certified "white til" throughout the year (Appendix - I).

Nearly half of the shops kept all common certified condiments and spices in their shop through all the seasons. Only one shop kept some varieties like yellow chilly powder, special masala, "tej patta" (Bay leaf) etc.

More than half of the shops kept organic sugar and jaggery for the entire year. The sugarcane used to make this jaggery was not grown organically but the process of making the jaggery was done without using chemicals. One shop kept certified organic honey whereas others kept non certified organic honey (Appendix - I).

One shop kept organic eggs which were not certified. Three shops kept different flavoured jam in their shop but was not organic. Four shops kept certified organic "chiku" powder and "Amla" Powder in their shops throughout the year. One shop kept certified organic fruit squash. It was also found that one shop kept some snacks varieties which was not organic but were healthy (Low fat, home made) food items. Two shops kept certified organic Tea/Coffee for the entire year in their shops. There was one shop which kept many varieties of certified organic food items like "chutney" mix, butter, jam, pickles, macaroni, pasta etc (Appendix - I).

1.3 Sources of obtaining organic food by the shopkeepers

In this section shopkeepers were asked to give name and addresses of those manufacturers, producers, farmers and food processors from whom they get organic food for their shop.

Table: 8: Sources to obtain organic food for selling

Sr. No	Address	Shops (n=8)	
		F	%
	Farmers		
1.	Alpanik Farm Vasad	2	25
2.	Sardar Patel Farm Ahmedabad	2	25
3.	Sarvadanan Patel Bhaikaka Krushi Kendra, Sojitra Road, Anand	1	12.5
4.	Popatbhai Vaghani Pipardi, Ta. Shihor, Di. Bhavnagar 364230	1	12.5
5.	Narsinh Patel Anandpura Depo, Ta. Modasa, Di. Sabarkantha	1	12.5
6.	Anuj Patel 103, Shrinath Heights, Nr. Iskon Temple Harinagar, Gotri Road, Vadodara	1	12.5
7.	Mehul Panchal Oasis Valley, Chanod	1	12.5
8.	L. N. Shah Padra	1	12.5
	Food Processor		
1.	Sardar Patel Farm Kathwada naroda, Ahmedabad	2	25
2.	Sonalben Apana Products, Sevasi, Di. Vadodara	1	12.5
3.	Dhirendra Smita Mu. Sakhari, Po. Samria Ta. Rajpipla, Di. Narmada	1	12.5
4.	Virji Sushila "Saptada" Po-Indravarna, Ta-Rajpipla, Dist-Narmada	1	12.5
5.	Madhav Agrotools, Maharashtra	1	12.5
	Manufacturer		
1.	Samantbhai Dharai Ta. Chotila, Di. Surendranagar 363430	1	12.5

Sr. No	Address	Shops (n=8)	
		F	%
2.	Vijay Shah NewTech Farm, Rayan. Kutchchh 370463	2	25
3.	Dr. Dinesh Patel Sardar Patel Farm, Kathvada, Naroda Di. Ahmedabad	4	50
4.	Organic and Natural Pune	1	12.5
5.	Fab India Ltd. (Head office Delhi)	1	12.5
	Traders	**F**	**%**
1.	Nehal Bhatt Origin, B-10, Abhishek Complex, B/h. Takhteshwar Temple, Vaghavai Road, Bhavnagar.	1	11.25
2.	Eklay Organic Pvt. Ltd. L-11, Anmol Complex, Nr. Sargam Centre, Dummas Airport Road, Parle Point, Surat	2	25
3.	Kutchh Sajiv Kheti Manch Ground floor, Arihant Darshan Apt. Opp. Tele Exchange, Lal Tekari, Bhuj 1	1	12.5
4.	Oasis Shop 10-11, Harmony Complex, 28, Nutan Bharat Soc., Alkapuri, Vadodara	1	12.5
5.	Amidhara, Jatan Race Course Tower, Vadodara	1	12.5
6.	Sanskruti, Surat	1	12.5
7.	Organic Natural, Pune	1	12.5

Table-8 gives information about the farmers, manufacturers, producers and traders from where they bought organic food items for their use. Majority of the farmers were from Gujarat, mainly from nearby areas of Vadodara. Other items were from far off places even from other states.

1.4 Reasons for selling organic food

This section deals with various reasons that influenced shopkeepers to start selling organic food. Various reasons were listed and shopkeepers were

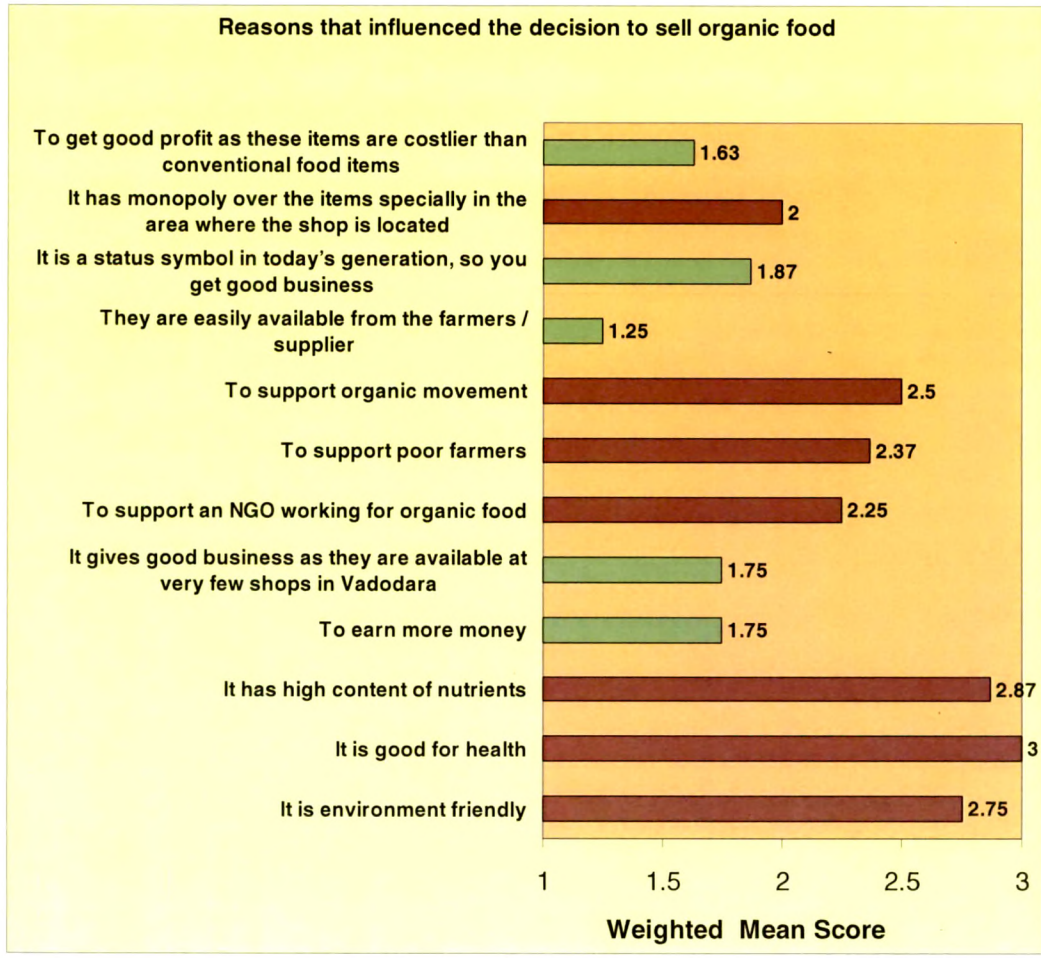
asked to indicate the extent to which the reasons influenced them to start selling organic food. Mean weighted score were calculated for each statement by summating scores of all the respondents and dividing the sum by the total number of respondents. The range of continuum was from 1to 3.

Table: 9: Distribution of shopkeepers according to the reasons that influenced the decision to sell organic food

Sr. No.	Reasons	Shopkeepers (n=8)						Weighted Mean Value 1 – 3
		To Great Extent		To Some Extent		To Low Extent		
		f	%	f	%	f	%	
1.	Organic food is environment friendly.	7	87.5	-		1	12.5	2.75
2.	Organic food is good for health.	8	100	-		-		3
3.	Organic food has high content of nutrients.	7	87.5	1	12.5	-		2.87
4.	To earn more money	2	25	2	25	4	50	1.75
5.	It gives good business as they are available at very few shops in Vadodara.	2	25	2	25	4	50	1.75
6.	To support an NGO working for organic food.	4	50	2	25	2	25	2.25
7.	To support poor farmers.	3	37.5	5	62.5	-		2.37
8.	To support organic movement.	6	75	-		2	25	2.5
9.	Organic food items are easily available from the farmers / supplier.	1	12.5	-		7	87.5	1.25
10.	Organic food is a status symbol in today's generation, so you get good business.	2	25	3	37.5	3	37.5	1.87
11.	Organic food has monopoly over the items specially in the area where the shop is located.	2	25	4	50	2	25	2
12.	To get good profit as these items are costlier than conventional food items.	2	25	1	12.5	5	62.5	1.63

All the shopkeepers were influenced to a great extent to sell organic food by the reason that "Organic food is good for health" (Table-9) the mean weighted score was 3.00 out of 3.00. A wide majority of the shopkeepers (87.5%) said that since "Organic food has high nutrient content" and "Organic food is environment friendly", they were influenced to a great extent to sell organic food. The weighted mean scores supported this(2.87 and 2.75 out of 3.00 respectively). A wide majority (87.5%) of respondents were least influenced by the reason that "Organic food is easily available from the farmers/suppliers". Mean weighted score supported this which was the least (1.25 out of 3.00) for this reason. Three-fourth of the respondents started selling organic food as they wanted to support organic movement (Mean weighted score 2.25/3.00) (Table- 9).

Fig. 2 Mean score of reasons that influenced the decision of shopkeepers to sell organic food



1.4.1 Extent of Influence of Reasons for selling organic food: An overall view

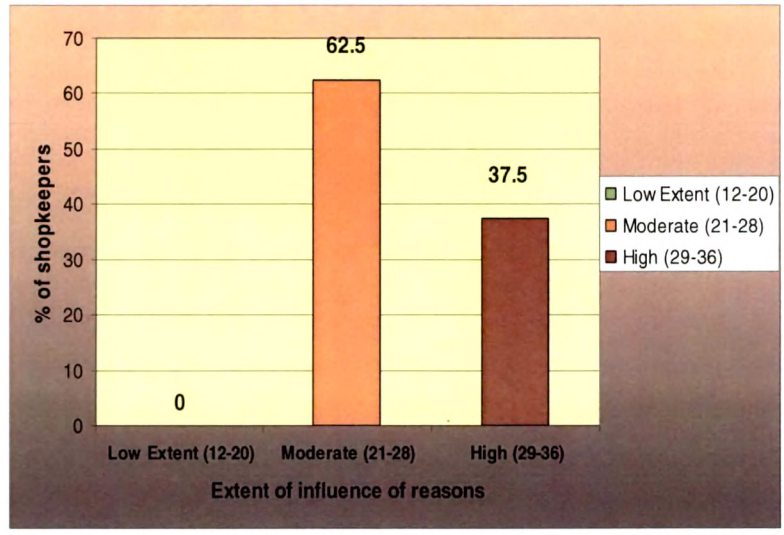
The responses of influence of reasons for buying organic food items (To great extent, To some extent, To low extent) were given scores of 3 through 1 respectively. The possible range of maximum and minimum scores was divided in to 3 categories having equal interval (Table-10). Higher scores indicated high extent of influence.

Table: 10: Distribution of shopkeepers according to the extent of influence of reason while deciding to sell organic food

Extent of influence of reason while deciding to sell organic food	Shopkeepers (n = 8)	
	f	%
Low Extent (12-20)	0	-
Moderate (21-28)	5	62.5
High (29-36)	3	37.5

It was observed from table-11 that more than half of the respondents were influenced by various reasons for selling organic food at moderate extent whereas little more than one-third of respondents were influenced to a high extent by various reasons for selling organic food.

Fig. 3 Extent of influence of reasons while deciding to sell organic food



1.5 Problems faced by the Shopkeepers while selling organic food.

While selling organic food, shopkeepers faced certain problems like supply, storage, its high price, less profit margin etc. This section dealt with such various problems that the shopkeepers faced while selling organic food in their shop. Various areas were identified and statements were listed in each area and the respondents were requested to indicate whether they faced the problem "always", "Sometimes" or "Never". The score of 3 through 1 were ascribed respectively. This was a summated rating scale. Their score were summated for each statement. The possible score range was divided into three categories i.e. low, Moderate and high which indicated the extent of problem that the shopkeepers faced while selling organic food in their shop. Mean weighted scores were calculated for each problem statements listed among various areas like supply, storage, its high price, less profit margin etc by summating scores of all the respondents and dividing the sum by the total number of respondents. The range of continuum was from 1 to 3.

Table: 11: Distribution of shopkeepers according to frequency of facing problems with reference to bulk purchase of organic food

Sr. No.	Problems	Shopkeepers (n=8)						Weighted Mean Scores 1 – 3
		Always		Sometimes		Never		
		f	%	f	%	f	%	
	Organic food can't be purchased in bulk because,							
a)	Organic food requires special storage conditions.	6	75	1	12.5	1	12.5	2.62
b)	There is not enough storage space in shop.	1	12.5	2	25	5	62.5	1.50
c)	There is not enough finance to purchase these costly items.	1	12.5	1	12.5	6	75	1.37
d)	Organic food deteriorates fast.	2	25	4	50	2	25	2
e)	Supply of organic food is	5	62.5	3	37.5	0	0	2.62

Sr. No.	Problems	Shopkeepers (n=8)						Weighted Mean Scores 1 – 3
		Always		Sometimes		Never		
		f	%	f	%	f	%	
	as such less.							
f)	Consumers do not buy organic food regularly.	5	62.5	2	25	1	12.5	2.50

The shopkeepers faced the problem that the organic food could not be purchased in bulk because organic food required special storage conditions. Weighted mean score was 2.62 out of 3.00 (Table-11). One-fourth of shop-keepers "sometimes" faced problem of storage space. Nearly, three- fourth of the shopkeepers "never" faced the problem of finance to purchase this food items in bulk. Half of the shopkeepers reported that they "sometimes" faced problem as organic food deteriorate fast. More than half of the shopkeepers reported that they "always" faced problem of less of supply of organic food and the demand from consumer side was also not constant i.e. consumers do not buy organic food regularly. Hence the shopkeepers could not buy them in bulk (Table-11).Consumers of organic food also reported their problem that the supply of organic food was not constant. The whole range of organic food was not available in the market and therefore it was not possible to shift on completely organic food (Wide table-48/ Section- 2.4.1). Consumers were also not satisfied with the availability of organic food items in the shop (Wide table - 51 / Section- 2.5.1). **Mukharjee (2004)** supported this and stated that marketing of organic produce remains a hindrance for its spread and propagation. He further added that the producers are scattered and accumulation of marketable surplus needs extra efforts. Most of the producers have very small holding and all the producers tend to produce similar items so that the output is limited and variety is lacking.

Fig. 4 Percentage distribution of shopkeeper's problem with reference to bulk purchase of organic food

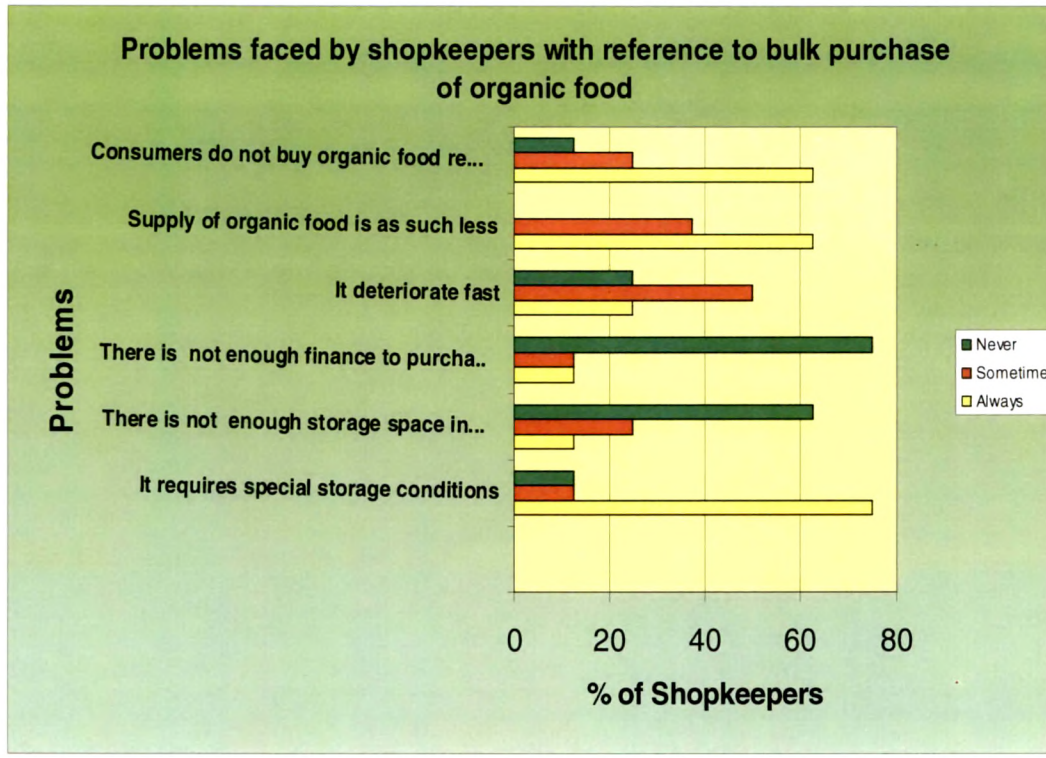


Table: 11.1: Distribution of shopkeepers according to frequency of facing problems with reference to consumers

Sr. No.	Consumer related problems	Shopkeepers (n=8)						Weighted Mean Scores 1 – 3
		Always		Sometimes		Never		
		f	%	f	%	f	%	
	Consumer do not buy organic food regularly as							
a)	Whole range of organic food items is not available.	6	75	2	25	0	0	2.75
b)	Organic food products are not available as per consumers demand.	4	50	4	50	0	0	2.50
c)	Organic food is not attractive in appearance.	1	12.5	2	25	5	62.5	1.50
d)	Organic food is expensive as compared	3	37.5	3	37.5	2	25	2.12

Sr. No.	Consumer related problems	Shopkeepers (n=8)						Weighted Mean Scores 1 – 3
		Always		Sometimes		Never		
		f	%	f	%	f	%	
	to conventional food.							
e)	Taste of organic food is different than the conventional food.	5	62.5	2	25	1	12.5	2.50
f)	Organic food products are small in size as compared to conventional food.	2	25	4	50	2	25	2.00
g)	The supply of organic food is not constant.	5	62.5	3	37.5	0	0	2.62
h)	People are not aware about the concept of organic food.	3	37.5	5	62.5	0	0	2.37
i)	Consumers are not aware about the organic food outlet.	5	62.5	3	37.5	0	0	2.62

The results of the present study indicated that three-fourth of the shopkeepers "always" faced problems that consumers didn't buy organic food regularly as the whole range of organic food items were not available in market. The weighted mean was 2.75 out of 3.00, which supported the observation. Half of the shopkeepers "always" faced but half faced "sometimes" the problem that "organic items are not available as per consumers demand, hence consumers did not buy organic food". More than half (62.5%) of the shopkeepers "never" faced problem of consumers not buying organic food as "it was not attractive in appearance like conventional food". It was found that little more than one-third of respondents "always" faced problem that since organic food is expensive compared to conventional food, consumers did not buy it (Table-11.1). It was reported in the present research while expressing the problem, that 69.3 per cent of consumers found that the price of organic food was higher than the conventional (non organic) food (wide table-48/Section – 2.4.2) More than one-third (37.5%) of the shopkeepers reported that they always faced problem as "people were not aware about the concept of organic food, hence they did not buy organic food". More than half

(62.5%) of the respondents reported that they always face problems as consumers are not aware about the organic food outlet. Mean weighted score supported the observation (2.12, 2.37, 2.62 out of 3.00 respectively).

Fig 5 Percentage distribution of shopkeeper's problem with reference to consumers' purchase pattern

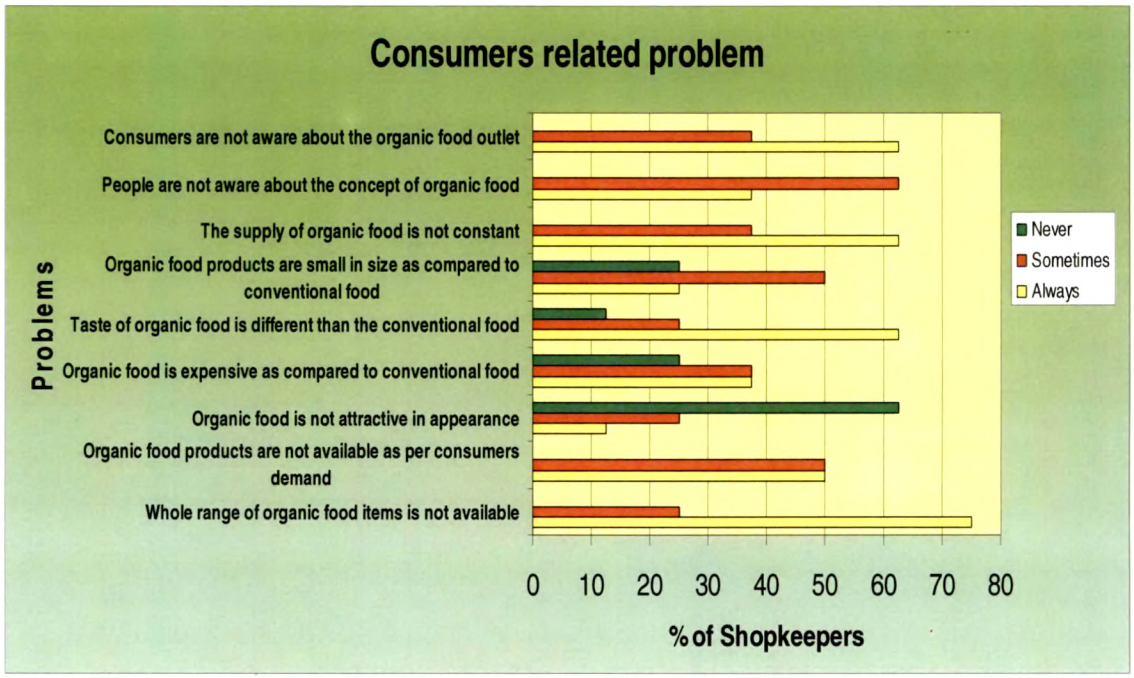


Table: 11.2: Distribution of shopkeepers according to frequency of facing problems with reference to price of organic food

Sr. No.	Problems	Shopkeepers (n=8)						Weighted Mean Scores 1 - 3
		Always		Sometimes		Never		
		f	%	f	%	f	%	
	The price of organic food has to be kept high because							
a)	Production of organic food is as such less.	6	75	2	25	0	0	2.75
b)	Production process of organic food is expensive.	4	50	4	50	0	0	2.50
c)	Organic food requires	4	50	3	37.5	1	12.5	2.37

Sr. No.	Problems	Shopkeepers (n=8)						Weighted Mean Scores 1 - 3
		Always		Sometimes		Never		
		f	%	f	%	f	%	
	special storage condition which is expensive.							
d)	Organic food is considered as environment friendly.	3	37.5	1	12.5	4	50	1.87
e)	Organic food has to be having better quality than conventional food.	7	87.5	1	12.5			2.87
f)	Organic food is a specialty good.	4	50	-		4	50	2.00
g)	Generally organic food is purchased by those who can afford to pay high price.	3	37.5	3	37.5	2	25	2.12
h)	Generally organic food is purchased by those who do not mind paying more for such products.	3	37.5	2	25	3	3.75	2.00
i)	Organic food is good for health.	8	100	0	0	0	0	3.00

Three-fourth of the shopkeepers always faced the problem that "the price of organic food had to be kept high because the production was less". Whereas half of the shopkeepers "always" and half of them "sometimes" faced the problem of high price as the production process was expensive and therefore price had to be kept high. More than three-fourth of the shopkeepers reported that always being of better quality than conventional food, the price had to be kept high than conventional food items which was always a problem for them. Shopkeepers reported that always the price of the organic food had to be kept high because it was purchased by those who can afford to pay high price and who do not mind paying more for such products. Above one-third of shopkeepers felt "always" and same percentage felt it "sometimes" this as the problem. It was found that all the shopkeepers "always" faced problem that the price of organic food had to be kept high as organic food was good for health. The mean weighted score was 3.00 out of 3.00 (Table-11.2).

Fig 6 Percentage distribution of shopkeeper's problem with reference to price of organic food

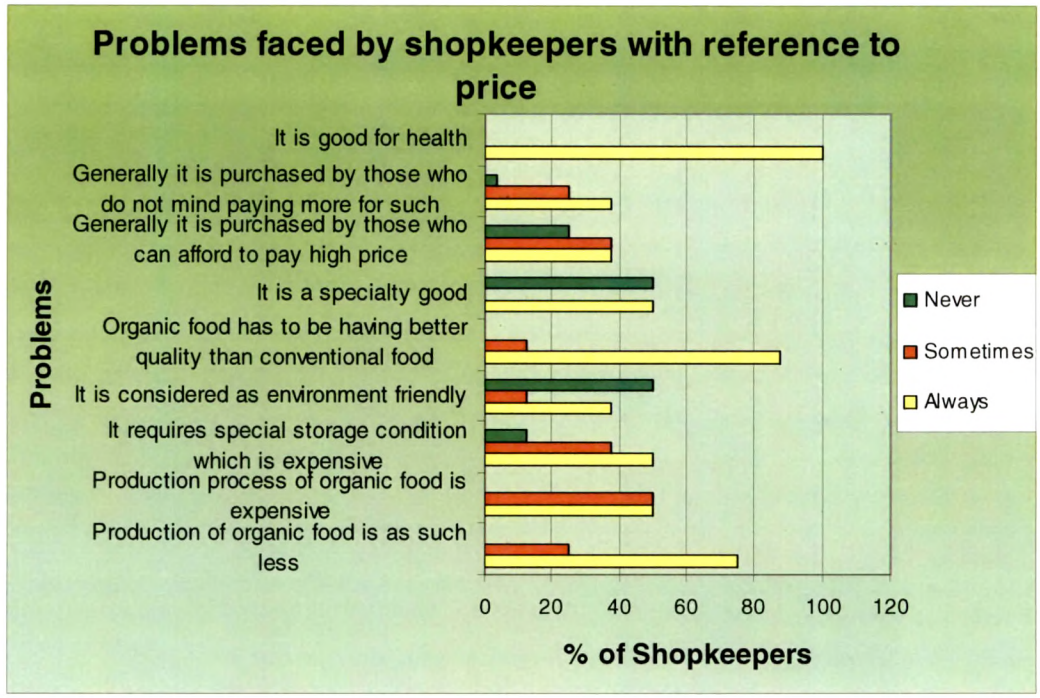


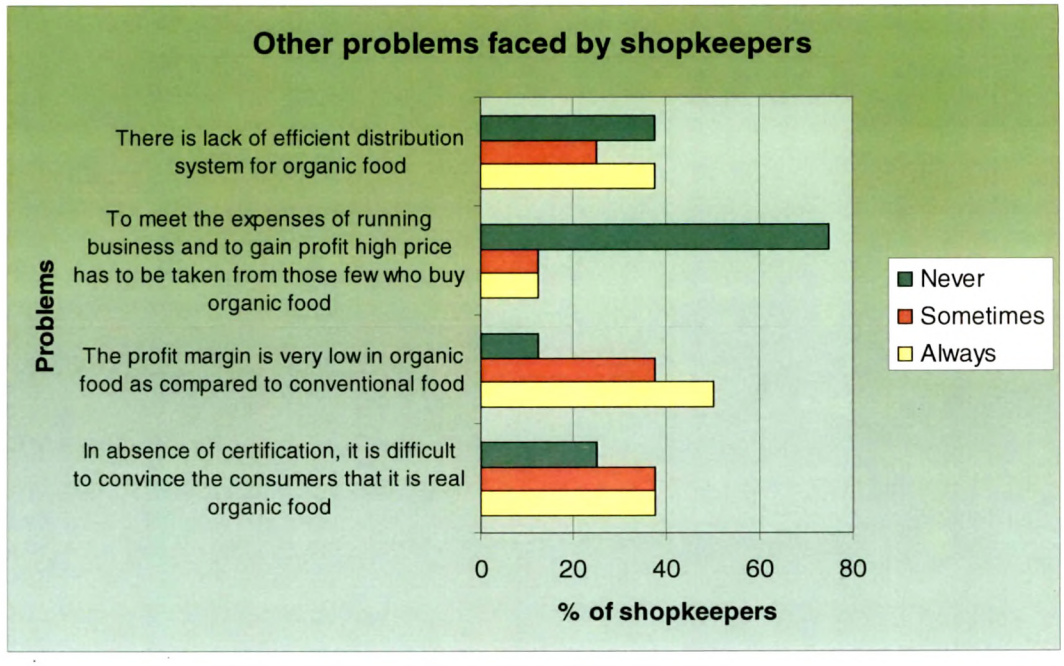
Table: 11.3: Distribution of shopkeepers according to frequency of facing other problems while selling organic food

Sr. No.	Problems	Shopkeepers (n=8)						Weighted Mean Scores 1 – 3
		Always		Sometimes		Never		
		f	%	f	%	f	%	
a.	In absence of certification, it is difficult to convince the consumers that it is real organic food.	3	37.5	3	37.5	2	25	2.12
b.	The profit margin is very low in organic food as compared to conventional food.	4	50	3	37.5	1	12.5	2.37
c.	To meet the expenses of running business and to gain profit high price has to be taken from those few who buy organic food.	1	12.5	1	12.5	6	75	1.37

Sr. No.	Problems	Shopkeepers (n=8)						Weighted Mean Scores 1 – 3
		Always		Sometimes		Never		
		f	%	f	%	f	%	
d.	There is lack of efficient distribution system for organic food.	3	37.5	2	25	3	37.5	2.00

It was also observed that more than one-third (37.5%) of shopkeepers "always" faced problem that due to absence of certificate, it became difficult to convince the consumers that the product is really organic food. Half of the shopkeepers always faced problem that the profit margin was very low in organic food as compared to conventional food (Table-11.3). More than two-third of respondents reported that they faced problem in knowing genuine organic products in absence of any certification (wide table-48 / Section-2.4.6). One-fourth of the shopkeepers "sometimes" faced problem of "proper distribution channel of organic food". It was reported by the farmers that "they needed some support from government to transport their product to the shops" (Section III).

Fig 7 Percentage distribution of shopkeeper's other problems related to organic food



1.5.1 Extent of problems faced by shopkeepers while selling organic food: An overall view

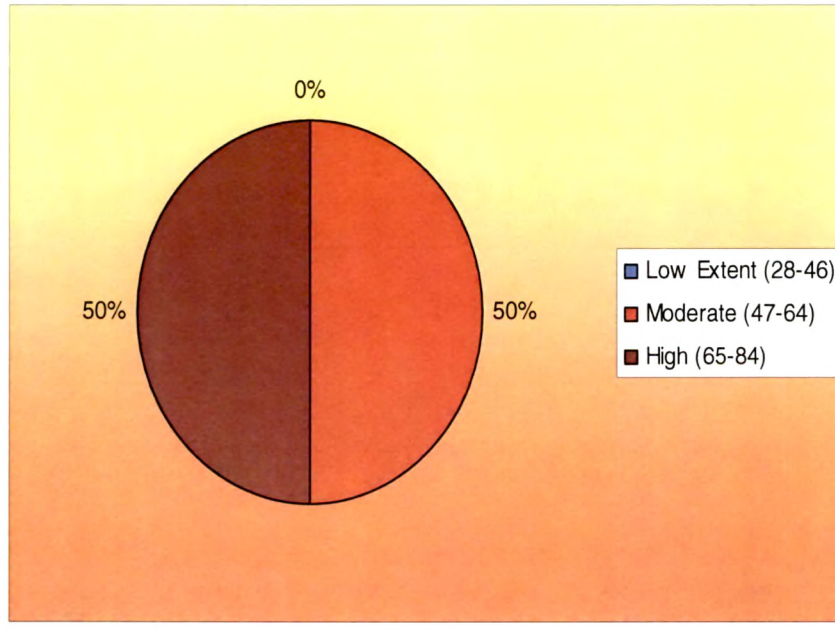
The responses of frequency of facing problems (always, sometimes, never) were given scores of 3 through 1 respectively. The possible range of maximum and minimum scores was divided in to 3 categories having equal interval (Table-13) Higher scores indicated high extent of facing problems.

Table: 12: Distribution of shopkeepers according to extent of problem they faced while selling organic food

Extent of facing Problems	Shopkeepers (n = 8)	
	f	%
Low Extent (28-46)	0	-
Moderate (47-64)	4	50
High (65-84)	4	50

It was found that half of the shopkeepers faced problems at moderate extent (table-12) and half of the shopkeepers faced problems at high extent while selling organic food.

Fig. 8 Extent of problem the shopkeepers faced while selling organic Food



1.6 Suggestions given by shopkeepers

Shopkeepers had given various suggestions for government, farmers, manufacturers, consumers and non government organizations. The suggestions given by them were listed in table-13.

Table: 13: Suggestions given by the Shopkeepers to Government, Farmers, manufacturers, Consumers and Non-government Organization

	Suggestions	Shopkeepers (n=8)	
		f	%
	For the Government		
1.	Keep Certification Compulsory	2	25
2.	Encourage farmers by giving various incentives	2	25
3.	Special place should be provided for selling organic food	1	12.5
4.	Awareness about organic food should be created	3	37.5
5.	Remove subsidy on urea	1	12.5
6.	Promote organic input supply genuinely	1	12.5
	For Farmers		
1.	They should be competitive with conventional food in terms of quality, packing, grading etc.	2	25
2.	They Should try to increase organic production	1	12.5
	For Manufacturer		
1.	Take all necessary certification	2	25
2.	They should provide wide range of organic processed products available in market.	3	37.5
	For Consumers		
1.	Consumers must be aware and willing to invest for health by buying organic food.	1	12.5
2.	Consumer must increase health awareness through organic food.	3	37.5
3.	Check quality of Organic food and purchase more of organic food.	1	12.5
	For Non Govt. Organization		
1.	Create awareness among people about organic food.	4	50

	Suggestions	Shopkeepers (n=8)	
		f	%
2.	They should start more and more outlets selling organic food.	2	25
3.	Should take up joint projects with farmers to increase organic farming.	1	12.5

It was found that one-fourth of the shopkeepers had given suggestions to government to make certification compulsory and to encourage farmers for organic farming by giving various incentives. Less than one- fourth of them had given suggestion to the government to remove subsidy on urea and promote organic input supply genuinely.

One-fourth of shopkeepers had given suggestions to farmers to be competitive with conventional food items in terms of packaging, quality and grading. Little more than one-third (37.5%) of shopkeepers had given suggestions to manufacturer to provide a wide range of organic processed products available in the market. Less than one-fourth suggested to consumers to check quality before buying and learn to make investment for health through buying organic food. Half of the shopkeepers had given suggestions to NGO's to create awareness among consumers about organic food and one-fourth suggested to start more and more outlets selling organic food in the city for the benefit of people. Very few (12.5%) suggested NGO's to take up joint projects with farmers to increase organic farming.

1.6 Conclusion

This section gave information about the shopkeepers selling organic food in Vadodara city. It was found that there were seven shops selling organic food in Vadodara city and one organic food dhaba which serve organic meal like Alu Paratha, Khichadi, Roti and Sabzi to the people of Vadodara city. The oldest shop in the city was "Ami dhara" which was situated at Pashabhai Park, Race Course. Among all these 7 shops selling organic food, 3 shops were selling only organic food whereas remaining 5 shops sold organic food items

along with the conventional food items. Majority of the shops sold few items with certificates and few without certificates. Nearly three-fourth of the shopkeepers did not know about any certification agency and majority of the shopkeepers felt that certification is not necessary. For giving certification of organic food, half of the shopkeepers relied on non government organizations and little more than one-third relied on private sector.

It was observed that fruits and vegetables were available almost entire year at six shops of Vadodara city. More than half of the shops kept organic sugar and jaggery. Four shops kept certified organic "Chiku" powder and "Amla" powder in their shop almost entire year. One shop kept certified organic fruit squash and many varieties of organically processed food items like jam, pickle, butter, macroni, pasta, etc. One shop kept some varieties of snacks which were not organic but healthy (Low fat, home made).

It was found that all the shopkeepers were influenced to a great extent to sell organic food by the reason that "organic food is good for health". A wide majority of the shopkeepers said that since organic food has high nutrient content, they were influenced to great extent to sell organic food. Three-fourth of the shopkeepers started selling organic food as they wanted to support organic movement.

The shopkeepers faced problems that the organic food could not be purchased in bulk because it required special storage conditions. Three-fourth of the shopkeepers always faced problem that consumers did not buy organic food regularly as the whole range of organic food items were not available in the market. Three-fourth of the shopkeepers always faced problem that the price of organic food items had to be kept high because the production was less whereas half of the shopkeepers always faced problem of high price as the production process was expensive. One-fourth of the shopkeepers sometimes faced problem of proper distribution channel of organic food. More than one-third of the shopkeepers always faced problem that due to absence of certificate, it became difficult to convince the consumers that the product was really organic.

Section II. Consumers buying organic food

For the present research the consumers were selected directly from the shops selling organic food. From the 7 shops selling organic food in Vadodara city, six shops(Amidhara, Tazamaza- I, Oasis, Eco world and Herbal Concepts, Taza Maza-II) were selected. Only those consumers were selected who were buying some or the other organic food product minimum four times in a month since last one year from the time of data collection i.e February 2007. The consumer for the present research was women. The researcher herself visited the shop at various times in a week so as to select the sample.

2.1 Background Information of the consumers buying organic food

The information regarding age, education, occupation, family size, number of children, family income, family type, their knowledge regarding shops selling organic food and NGOs working for organic food etc are described in this section.

2.1.1 Age , education and occupation of consumers

The mean age of consumers was 45.79 years. A little more than half (52%) of the respondents belonged to the age group of 36-50 years and little less than one-fourth were in the age group of less than 35 years.

Information regarding education level of consumers shows that more than half of the respondents (58%) were graduates and little more than one-fourth of them were post graduate. Very few consumers (3.3%) had done diploma courses and special certificate courses. (Table-14/ Fig -9).

It was observed that little more than half (54%) of the consumers were employed and little less than half (46%) were not employed (Fig-9/Table-14).

Table: 14: Distribution of the consumers according to their personal variables

	Personal Variables	Consumers (n=150)	
		f	%
1.	**Age**		
	<=35 years	32	21.3
	36-50 years	78	52.0
	51 or ore years	40	26.7
	Mean	**45.79**	
	SD	**10.15**	
2.	**Education**		
	S.S.C	16	10.7
	Graduate	87	58.0
	Post Graduate	42	28.0
	Others	5	3.3
3.	**Employment**		
	Non-Employed	69	46.0
	Employed	81	54.0

2.1.2 Type, Size and Income of the family of consumers

The total monthly income of family ranged from less than Rs.20,000 to 40,001 and more, with a mean income of Rs. 33,998. Half of the respondents had monthly income ranging from Rs.20,001 to Rs.40,000 and little less than one-fourth had monthly income more than Rs. 40,001 (Table- 15/ Fig .7).

Table 15: Distribution of the consumers according to their familial variables

	Familial Variables	Consumers (n=150)	
		f	%
1.	**Family Income**		
	Less than Rs.20,000	39	26.0
	Rs. 20,001 to Rs. 40,000	75	50
	Rs. 40,001 and more	36	24
	Mean	**33,998**	
	SD	**18,052**	
2.	**Family type**		
	Joint	45	30.0
	Nuclear	105	70.0
3.	**Family Size**		
	1 or 2 members	31	20.7
	3 or 4 members	80	53.3
	5 or more	39	26.0
	Mean	**3.95**	
	SD	**1.93**	

The mean number of family members was found to be 3.9. Little more than half (53.3%) of the families had 3 to 4 members in the family and little more than one-fourth had 5 and more than five members in their family. Majority (70%) of the respondents belonged to nuclear family and little less than one-third belonged to joint family (Fig- 10/Table-15).

Fig.9 Percentage distribution of consumers according to their personal variables

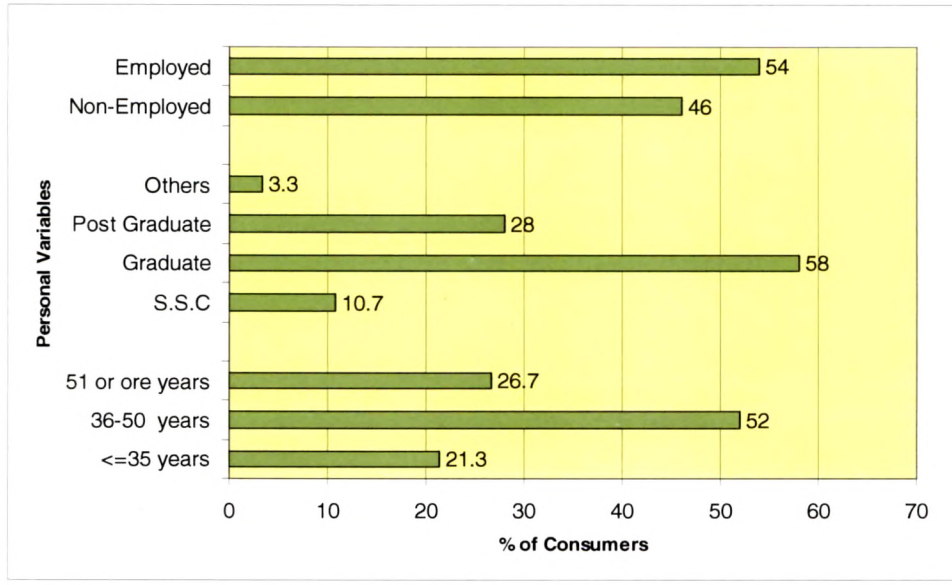
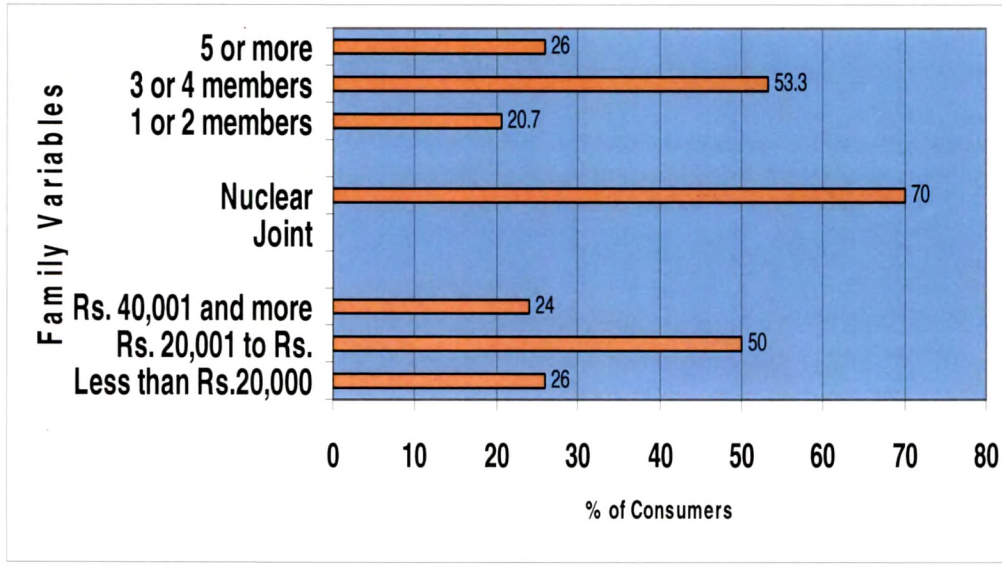


Fig.10 Percentage distribution of consumers according to their family Variables



2.1.3 Age of Children

The results indicated that two-third of the respondents (66.7%) did not have children below 12 years and 29.3 per cent of families had 1 to 2 children below 12 years (Table-16).

Table: 16: Distribution of the consumers according to the number of children and their age group

	Age of children	Consumers (n=150)	
		f	%
1.	**Below 12 years**		
	0	100	66.7
	1 to 2	44	29.3
	3 to 5	6	4.0
2.	**12 to 19 years**		
	0	104	69.3
	1 to 2`	45	30.0
	3 to 5	1	0.7
3.	**Above 19 years**		
	0	119	79.3
	1 to 2`	28	18.7
	3 to 5	3	2.0

2.1.4 Accessibility to shops selling organic food.

In this section the respondents were asked to indicate the accessibility to the shops selling organic food from their residence or office.

Results indicated that 80.7 per cent of the respondents had shop selling organic food near to their residence or office whereas 19.3 per cent had shops selling organic food far from their residence or office. This indicated that less than one fourth of the consumers came specially to buy organic food even if the shop was far from their residence or office (Table-17).

Table:17: Distribution of consumers according to their accessibility to shop selling organic food

Accessibility from Residence/office to shops selling organic food	Consumers (n=150)	
	f	%
Near to residence/office	121	80.7
Far from residence/office	29	19.3
Distance of shop selling organic food from residence /office	**Consumers (n=121)**	
Within 1 km of residence/office	114	77.1
Beyond 1 km of residence/office	7	4.8

Out of those who said that the shop selling organic food were near to their office or residence, it was found that 77.1 per cent of respondents had shop within 1 km of their residence/office and very few (4.8%) reported that the shops were beyond 1 km from their residence/office (Table-17).

2.1.5 Different shops selling organic food in Vadodara city

In this section respondents were asked to give name of the shop selling organic food from where they generally purchased organic food.

Table:18: Distribution of consumers according to the shop selling organic food from which they generally bought organic food

Sr.No.	Name of shops selling organic food	Consumers (n=150)	
		f	%
1.	Herbal Concept (Akota Stadium)	30	20.0
2.	Taza Maza I (Ellora Park)	32	21.33
3.	Taza Maza II (Old Padra Road)	30	20.0
4.	Oasis (Alkapuri)	14	9.33
5.	Eco world (Sama Road)	6	4.0
6.	Amidhara (Race Course)	38	25.33

Investigator tried to take approximately equal number of consumers from each shop but during the data collection time "Eco World" was closed for renovation purpose and therefore very few (4%) of consumers of the shop "Eco World" were contacted which was situated at Sama Road. "Oasis" was a shop which had less number of consumers and therefore only 9.3 per cent of respondents could be contacted. Whereas "Amidhara", "Taza Maza" and "Herbal Concept" were the shops which dealt with only organic food items and therefore constant flow of consumers were found in these shops. Results indicated that 20 per cent of consumers were from Taza Maza I and II and Herbal Concept, whereas 25.3% of respondents were from Amidhara (Table-18).

Table: 19: Distribution of consumers according to their knowledge about the shop selling organic food other than the one from which they generally bought organic food

Sr.No.	Knowledge about the shops selling organic food in Vadodara	Consumers (n-150)	
		f	%
1.	Herbal Concept (Akota Stadium)	1	0.7
2.	Taza Maza	45	30.0
3.	Oasis (Alkapuri)	11	7.3
4.	Eco world (Sama Road)	1	0.7
5.	Amidhara (Race Course)	40	26.7
6.	Fab India	7	4.7
	Total	**105**	**70.1**

Table-19 indicated the knowledge of consumers about the different shops selling organic food other than the one from which they bought organic food regularly. It was found that majority of the consumers were not aware about the shops selling organic food other than the one from which they generally buy. It was observed that little less than one-third (30%) of consumers knew about "Taza Maza" shop and little more than one-fourth (26.7%) knew about the shop "Amidhara". Very few consumers knew about herbal concept (0.7%), Eco World (0.7%) and FabIndia (4.7%). Probably these shops were

started recently, only those who were living in that locality knew about these shops.

2.1.6 Sources of information for knowing about organic food for the first time

The consumers were asked about the different sources of information through which they came to know about organic food for the first time. Different sources were print media, Audio-visual media, word of mouth etc.

Table:20: Distribution of consumers according to the sources of information through which they came to know about the organic food for the first time

Sr.No.	Sources of Information	Consumer (n-150)*	
		f	%
1.	**Print Media**		
	News Paper	30	20.0
	Magazines	10	6.7
	Posters	38	25.3
2.	**Audio-Visual media**		
	Television	-	-
	Video	1	0.7
	Internet	5	3.3
	Cinema	-	-
	Radio	1	0.7
3.	**Word of mouth**		
	Friend	32	21.3
	Relatives	23	15.3
	Colleague	7	4.7
	Fellow club members	2	1.3
	Neighbours	30	20.0
4.	**Others**		
	Camp or exhibition Organized by NGO	26	17.4

(Total exceeds due to multiple answers)*

While asking about the sources of information from which they came to know about the organic food for the first time, it was found that one- fourth (25.3%) of the respondents came to knew about organic food through the posters kept by the shops, whereas 17.4% of consumers came to know about organic food through some camp organized by Non government Organization (Table-20). About 20 per cent consumers got information about organic food from

neighbours and through news papers. Internet was the source which gave information about organic food to only 3.3% of consumers and very few (0.7%) consumers got information about organic food through video through some documentary CD on global warming and radio through Krishi programmes.

The word of mouth was a source of gaining information about organic food for many consumers. Approximately 60 per cent all together came to knew abut organic food through word of mouth. About 21 per cent got it from friends. **Naik and Sharma (1997)** conducted a study on consumers awareness, attitude and preferences. They found that consumers gained knowledge about organic food products mainly through their prior experience in village life, visit to their relatives in village, friends, and recommendation from doctor, naturopathy courses and from media.

Table: 21: Distribution of consumers according to the frequency of using sources of information for gathering information regarding organic food currently

Sr.No.	Sources of Information	Consumers (n=150)*					
		Always		Sometimes		Never	
		f	%	f	%	f	%
1.	**Print Media**						
	News Paper	21	40	63	42.0	66	44.0
	Magazines	14	9.3	39	26.0	97	64.7
	Leaflet/Pamphlet	8	5.3	35	23.3	107	71.3
	Posters/Hoardings	7	4.7	21	14.0	122	81.3
2.	**Audio-Visual Media**						
	Television	4	2.7	8	5.3	138	92
	Video	2	1.3	2	1.3	146	97.3
	Internet	14	9.3	31	20.7	105	70
	Cinema	2	1.3	1	0.7	147	98
	Radio	1	0.7	7	4.7	142	94.7

Sr.No.	Sources of Information	Consumers (n=150)*					
		Always		Sometimes		Never	
		f	%	f	%	f	%
3.	**Word of mouth**						
	Friend	12	8.0	58	38.7	80	53.3
	Relatives	14	9.3	52	34.7	84	56.0
	Colleague	12	8.0	37	24.7	101	67.3
	Fellow club members	1	0.7	11	7.3	138	92.0
	Neighbours	9	6.0	39	26	102	68.0
4.	**Others**						
	Camp or exhibition Organized by NGO	6	4.0	12	8.0	132	88.0

(Total exceeds due to multiple answers)*

Different sources of information were identified by the researcher. The consumers were asked that which sources of information they used currently to collect more information about organic food. It was observed that 42 per cent of consumers, "sometimes" read newspapers to collect information about organic food (Table-21) and little more than one-third consumers "sometimes" got information from their friends (38.7%) and relatives (34.7%). It was also found that little more than one-fourth read magazines(26%) and talked to their neighbours to gain information about organic food. Very few (4%) of consumers watched television to collect information about organic food. When consumers got information first time about organic food, Television, Video, Cinema and Radio did not give much information but gradually these media also provided some information about organic food on different agriculture based programmes, and therefore, eventually, few people started using it (Table-21).

2.1.7 Extent of use of sources of information by consumers currently for gathering information regarding organic food

The responses of extent of use of sources of information (always, sometimes, never) were given scores of 3 through 1 respectively. The possible range of maximum and minimum scores was divided in to 3 categories having equal interval (Table-22) Higher scores indicated high extent of use.

Table :22: Distribution of consumers according to extent of use of sources of information for gathering information regarding organic food currently

Sr.No.	Extent of use of sources of information gathering information regarding organic food currently	Consumers (n=150)	
		f	%
1.	Low extent (15- 24)	133	88.7
2.	Moderate extent (25-34)	16	10.7
3.	High extent (35-45)	1	0.7

The result indicated that 88.7% of consumers had low extent of use of various sources to collect information about organic food currently, whereas only 0.7% of respondents had high extent of use of sources of information to collect information about organic food till the time of data collection.

2.1.8 Time period of using organic food

In this section consumers were asked to indicate since how long they were using organic food.

Table :23: Distribution of consumers according to the time period of using organic food

Sr.No.	Time period of using organic food	Consumers (n=150)	
		f	%
1.	Less than 1 year	10	6.7
2.	1 to 2 years	25	16.7
3.	2 to 3 years	53	35.3
4.	3 to 5 years	28	18.7
5.	More than 5 years	34	22.7

Results indicated that a little more than one-third (35.3%) of consumers had been using organic food since last 2 to 3 years. Whereas, only 6.7% of consumers using organic food since one year. However little less than one-fourth (22.7%) consumers were consuming organic food since last more than 5 years (Table-23).

2.1.9 Knowledge about Non Government Organizations working for promotion of organic food

In this section consumers were asked about their knowledge about the Non Government Organizations working for promotion of organic food in Vadodara city.

Table :24: Distribution of consumers according to their knowledge of Non Government Organizations working for promotion of organic food

Sr.No.	Knowledge of Non Government Organizations working for promotion of organic food	Consumers (n=150)	
		f	%
1.	Knew about NGO working for Organic food	19	12.7
2.	Did not know about NGO working for Organic food.	131	87.3

Though the consumers were using organic food since last many years, majority (87.3%) of them were not aware of any organization which is working to promote organic food and farming. Whereas only 12.7% of them knew about an organization working for organic food. "Jatan" was a non profit charitable trust whose sole goal is to promote poor farmers for organic farming and supporting them by providing proper training and resources for organic farming. Only 12.7% of respondents were aware about "Jatan" and its activities in Vadodara city.

Table :25: Distribution of consumers according to their membership with organizations working for organic food.

Sr.No.	Membership with the organizations working for organic food.	Consumers (n=150)	
		f	%
1.	Membership with NGO	3	2.0
2.	No membership with NGO	147	98.3

Even after having knowledge of NGO working for organic food, only 2% of consumers had membership with such NGO which shows their less interest in such activities. They were using organic food as they considered it as healthy food but not very keen to promote such activities through some NGO.

2.2 Reasons for buying organic food

This section deals with various reasons which influenced the consumers to buy organic food. The researcher considered it important to find out the reasons which influenced them to buy the organic food. A list of 17 statements showing reasons for buying organic food was made by investigator and asked consumers to what extent those reasons had influenced them to buy organic food. The responses were sought in terms of "To a great extent", "To some extent" and "To less extent", which were ascribed scores of 3 through 1. They were summated and the extent of influence was found out. The weighted mean score of each reason were also computed.

The weighted mean scores reflected that the most influencing reason was that the consumers considered that "Organic food is good for health". More than 92 per cent consumers said that this influenced them to a great extent for buying organic food (Table-26). **Bordeleau et al (2002)** supported this and stated that the second most common reason for purchasing organic food was health by the consumers of Canada, Denmark and Poland. Almost all responses to the question about the term "healthier" are associated with toxicity of chemical contamination. **Naik and Sharma (1997)** studied consumer's preferences, awareness and attitude regarding organic food. They found that the reason organic food was good for health led consumers to buy organic fruits and vegetables. **Jolly et al (1989)** also conducted a study in US to analyse various reasons concerned with organic food. They found that all the key factors like nutrition, health, environment and safety ranked equally while selecting organic food by the consumers.

Table:26: Distribution of consumers according to the reasons which influenced them to buy organic food

Sr. No	Reasons to buy organic food	Extent of influence (n=150)*						Weighted Mean Value 1 – 3
		To great extent		To some extent		To low extent		
		f	%	f	%	f	%	
1	Organic food is good for health.	139	92.7	11	7.3	0	0	2.93
2	Organic food is considered to be nutritious.	133	88.7	10	6.7	7	4.7	2.84
3	The shop of organic food is near to my home hence it is convenient to buy these products than conventional.	100	66.7	31	20.7	19	12.7	2.54
4	The shop of organic food is near to the office.	31	20.7	28	18.7	91	60.7	1.60
5	The shop of organic food is on the way of the office.	34	22.7	21	14.0	95	63.3	1.59
6	Using organic food is a status symbol.	14	9.3	12	8.0	124	82.7	1.27
7	A friend uses organic food.	30	20	58	38.7	62	41.3	1.79
8	Consumption of organic food is current fashion.	7	4.7	12	8.0	131	87.31	1.17
9	Taste of organic food is better than conventional food.	129	86.0	16	10.7	5	3.3	2.83
10	The satiety value of organic food is more hence even on eating less quantity of organic food, ore satisfaction is obtained.	101	67.3	21	14.0	28	18.7	2.49
11	Organic food does not deteriorate as quickly as conventional food.	45	30.0	20	13.3	85	56.7	1.73
12	Organic food does not have chemical fertilizers.	82	54.7	4	2.7	64	42.7	2.12
13	Organic food contains less amount of Pesticides.	78	52.0	4	2.7	68	45.3	2.07
14	Have a membership of NGO doing activities of organic food.	9	6.0	16	10.7	125	83.3	1.23
15	Organic food is Eco friendly.	94	62.7	28	18.7	28	18.7	2.44

Sr. No	Reasons to buy organic food	Extent of influence (n=150)*						Weighted Mean Value 1 – 3
		To great extent		To some extent		To low extent		
		f	%	f	%	f	%	
16	To support organic farming movement.	93	62.0	27	18.0	30	20.0	2.42
17	Influenced by the qualities of shop selling organic food in Vadodara such as hygienic condition, proper display, packaging and customer care etc.	125	83.3	12	8.0	13	8.7	2.75

(Total exceeds due to multiple answers)*

More than 88 per cent respondents were influenced "to a great extent" by the reason that "Organic food is considered to be nutritious". About 86 percent of respondents were influenced to a great extent by the reason that "the taste of organic food is better than conventional food" (Weighted mean 2.83 out of 3.00). There were about 83 percent respondents who were influenced to a great extent by the "qualities of the shops selling organic food" (Weighted mean 2.54 out of 3.00, Table- 26). **Naik and Sharma (1997)** supported this and found in their study that consumer buy organic food as it was considered good for health, high on nutritional value, better tasting, safe for the environment. They were emphatic about easy and faster cooking, more flavour and good taste offered by the organic food.

Only a little more than half of consumers were influenced to a great extent by the reasons that "Organic food does not have chemical fertilizers" and "have less amount of pesticides" (Table-26).

A little less than two third (62%) of consumers were influenced to a great extent by the reasons that " Organic food is eco-friendly" and "to support organic farming movement" (weighted mean score 2.44 and 2.42/3.00 respectively). **Bordeleau et al (2002)** also reported that the most common reason for purchasing organic food was environment concern by the consumers of Canada, Denmark and Poland

Though a wide majority of the consumers were influenced "to a low extent", but there were about 13 per cent of consumers who were influenced "to a great extent" or "to some extent" by the reason that "consumption of organic food is current fashion (Weighted mean 1.17/3.00) and about 10 per cent were influenced to a great extent and 8 percent to some extent by the reason that "Using organic food is a status symbol (Weighted mean 1.27/3.00, Table-26).

2.2.1 Overall view of extent of influence of various reasons

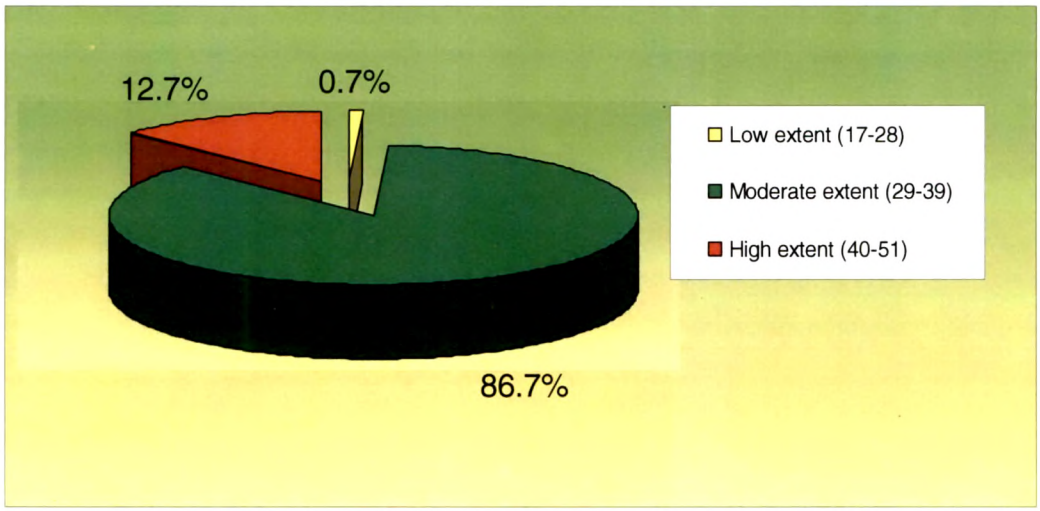
The responses of consumers about the extent of influence of reasons (To a great extent, To some extent, To low extent) were given scores of 3 through 1 respectively. The possible range of maximum and minimum scores was divided in to 3 categories having equal interval (Table-27). Higher scores indicated high extent of influence.

Table:27: Distribution of consumers according to extent of influencing reasons while buying organic food

Sr No	Extent of influencing reason	Consumers (n=150)	
		f	%
1	Low extent (17-28)	1	0.7
2	Moderate extent (29-39)	130	86.7
3	High extent (40-51)	19	12.7

It was found that majority (86.7%) of consumers were influenced to a moderate extent by the given reasons for buying organic food.

Fig.11 Percentage distribution of consumers according to extent of influencing reasons while buying organic food



2.3 Extent of utilization of organic food.

After a preliminary survey of various shops selling organic food in Vadodara city, investigator made a list of food items which were normally available in various seasons. This section deals with consumers' use of various organic food items available in shops selling organic food. Food items were divided under various food groups viz. vegetables, fruits, oil, Nuts, cereals, pulses, sugar and jaggery, condiments and spices, and ready to eat items. Total 93 items were listed by the investigator and asked consumers which items they purchased "only organic whenever available","Sometimes organic-sometimes conventional, and "Only conventional food items". These were later given scores of 3 through 1 so as to find out the extent of utilization of organic food. Higher scores obtained by consumers indicated higher extent of utilization of organic food. For convenience, findings regarding each food group are presented separately.

2.3.1 Use of organically grown vegetables:

Commonly used vegetables were listed for this purpose.

Table:28: Distribution of consumers according to their utilization of organically grown vegetables

Sr No	Food item	Use of Organically grown vegetables (n=150)						
		Only Organic		Sometimes organic – Sometimes Conventional		Only Conventio-nal		Weighted Mean Value 1 - 3
		f	%	f	%	F	%	
I	**Vegetables**							
1.	Cabbage	36	24.0	114	76.0	0	0	2.24
2	Cauliflower	35	23.3	115	76.7	0	0	2.23
3	Coriander leaves	36	24.0	114	76.0	0	0	2.24
4.	Curry leaves	35	23.3	115	76.7	0	0	2.23
5.	Drumstick	36	24.0	112	74.7	2	1.3	2.23
6.	Fenu greek leaves	37	24.7	113	75.3	0	0	2.25
7	Mint	37	24.7	113	75.3	0	0	2.25
8	Beet root	34	22.7	116	77.3	0	0	2.23
9	Carrot	33	22.0	116	77.3	1	0.7	2.21
10	Onion	35	23.3	114	76.0	1	0.7	2.23
11	Potato	35	23.3	113	75.3	2	1.3	2.22
12	Radish	33	22.0	115	76.7	2	1.3	2.21
13	Sweet Potato	33	22.0	115	76.7	2	1.3	2.21
14	Yam Elephant	33	22.0	114	76.0	3	2.0	2.20
15	Bitter Gourd	33	22.0	116	77.3	1	0.7	2.21
16	Bottle gourd	33	22.0	116	77.3	1	0.7	2.21
17	Brinjal	33	22.0	117	78.0	0	0	2.22
18	Cluster Beans	35	23.3	115	76.7	0	0	2.23
19	Cucumber	33	22.0	114	76.0	3	2.0	2.20
20	French Beans	32	21.3	115	76.7	3	2.0	2.19
21	Ghosala	34	22.7	113	75.3	3	2.0	2.21
22	Capsicum	33	22.0	112	74.7	5	3.3	2.19
23	Lady's Finger	34	22.7	115	76.7	1	0.7	2.22
24	Parwar	32	21.3	115	76.7	3	2.0	2.19
25	Pink Beans	33	22.0	115	76.7	2	1.3	2.21
26	Pumpkin	32	21.3	113	75.3	5	3.3	2.18
27	Tinda	33	22.0	117	78.0	0	0	2.22
28	Tomato	32	21.3	113	75.3	5	3.3	2.18
29	Garlic	32	21.3	113	75.3	5	3.3	2.18
30	Ginger	31	20.7	112	74.7	7	4.7	2.16
							Total	**2.21**

It was observed that about three- fourth of the consumers bought almost all vegetable "sometimes organic and sometimes conventional", as per their availability (Table-28). If a particular organic vegetable was not in stock in the

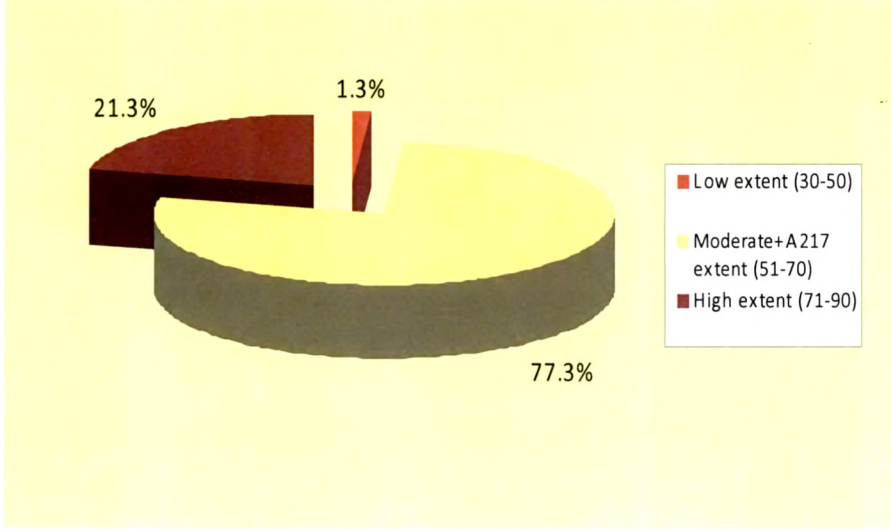
shop selling organic food, they used to buy the same vegetable which was not grown organically from the local market. Whereas ranging from 20 to 25 per cent of consumers used only those organic vegetables which were available in the shops selling organic food. They would change their particular preference for vegetable but they would not buy conventional vegetables from the market as revealed through informal talks (Table-28). **Ritcher et al (2000)** conducted a study on consumers of Switzerland, Germany and France. The study revealed that in all 3 regions, fruits, vegetables and milk/milk products were the most frequently purchased organic food products by the consumers.

Table: 29 : Distribution of consumer according to extent of utilization of organically grown vegetables

Sr No	Extent of utilization of Organically grown vegetables	Consumers (n=150)	
		f	%
1	Low extent (30-50)	2	1.3
2	Moderate extent (51-70)	116	77.3
3	High extent (71-90)	32	21.3

It was observed from the result that little more than three-fourth (77.3%) of consumers had Moderate extent of utilization of organic vegetables and 21.3% of consumers had high extent of utilization of organic vegetables (Table-29).

Fig.12 Percentage distribution of consumers according to extent of utilization of organically grown vegetables



2.3.2 Use of Organically grown fruits

Commonly available fruits (dry and fresh) were listed for this purpose

In case of fruits, it was found that nearly three-fourth of consumers sometimes bought organic fruit and sometimes conventional i.e. sometimes they buy fruits from local market and fruit vendors. Very few consumers purchased only organic fruits whereas about one-fifth of the consumers preferred to buy conventional fruits from local market or fruit vendors as they

Table:30: Distribution of consumers according to their utilization of organically grown fruits

	Food Item	Use of organically grown fruits (n=150)						
		Only Organic		Sometimes organic – Sometimes Conventional		Only Conventional		Weighted Mean Value 1 – 3
		f	%	f	%	F	%	
II	Fruits							
1	Banana	9	6.0	113	75.3	28	18.7	1.87
2	Grapes	8	5.3	113	75.3	29	19.3	1.86
3	Guava	8	5.3	111	74.0	31	20.7	1.85
4	Chiku	10	6.7	119	79.3	21	14.0	1.93
5	Lemon	10	6.7	117	78.0	23	15.3	1.91
6	Sweet Lime	7	4.7	11	74.0	32	21.3	1.83
7	Mango	11	7.3	119	79.3	20	13.3	1.94
8	Mulberry	10	6.7	119	79.3	21	14.0	1.93
9	Orange	7	4.7	112	74.7	31	20.7	1.84
10	Papaya ripe	10	6.7	119	79.3	21	14.0	1.93
11	Peaches	7	4.7	112	74.7	31	20.7	1.84
12	Pear	7	4.7	112	74.7	31	20.7	1.84
13	Custard apple	10	6.7	116	77.3	24	16.0	1.91
14	Wood Apple	8	5.3	110	73.3	32	21.3	1.84
							Total	**1.86**

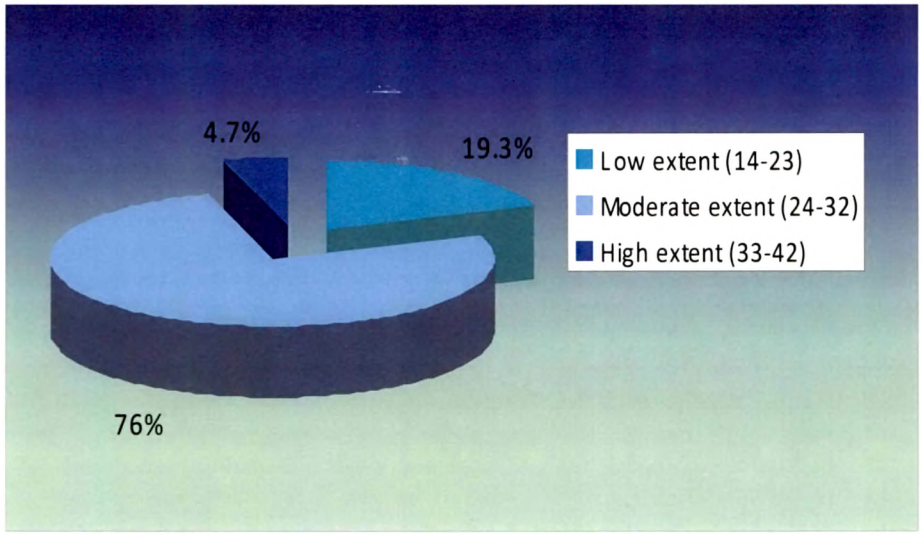
kept all variety of fruits throughout the year whereas organically grown fruits were available in particular seasons only (Table-30).

Table: 31: Distribution of consumers according to extent of utilization of organically grown fruits

Sr No	Extent of utilization of Organically grown fruits	Consumer (n=150)	
		F	%
1	Low extent (14-23)	29	19.3
2	Moderate extent (24-32)	114	76.0
3	High extent (33-42)	7	4.7

It was observed that little more than three-fourth (76%) of consumers had moderate extent of utilization of organically grown fruits whereas 19.3% of consumers had low extent of utilization of organically grown fruits(Table-31).

Fig.13 Percentage distribution of consumers according to extent of utilization of organically grown fruits



2.3.3 Use of organically grown nuts

Some Nuts were found to be grown organically. The respondents were asked about it.

Table: 32: Distribution of consumers according to their utilization of organically grown nuts

		Use of organically grown Nuts (n=150)						
		Only Organic		Sometimes organic – Sometimes Conventional		Only Conventional		Weighted Mean Value 1 – 3
		f	%	f	%	F	%	
III	**Nuts**							
1	Almond	2	1.3	19	12.7	129	86.0	1.15
2	Cashew nut	3	2.0	19	12.7	128	85.3	1.17
3	Coconut	1	0.7	16	10.7	133	88.7	1.12
4	Walnut	3	2.0	17	11.3	130	86.7	1.15
							Total	**1.14**

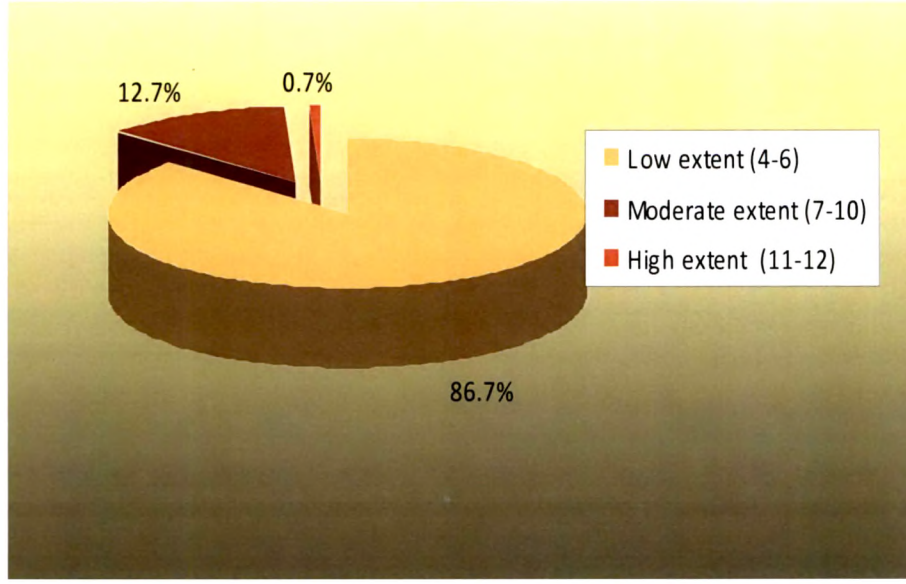
Results indicated that more than three-fourth of consumers used various conventional nuts and very few consumers bought nuts grown organically (Table-32)

Table: 33: Distribution of consumers according to extent of utilization of organically grown nuts

Sr No	Extent of utilization of organically grown Nuts	Consumers (n=150)	
		f	%
1	Low extent (4-6)	130	86.7
2	Moderate extent (7-10)	19	12.7
3	High extent (11-12)	1	0.7

It was observed from the result that 86.7% of consumers had low extent of utilization of Nuts which were grown organically whereas, only 0.7% of the consumers had high extent of utilization of nuts grown organically (Table-33). This is may be because the shops selling organic food do not always keep all variety of nuts in their shops and therefore consumers purchased it from the shop where the nuts were available which was not organically grown.

Fig.14 Percentage distribution of consumers according to extent of utilization of organically grown nuts



2.3.4 Use of organically grown cereals

In the shop selling organic food, many cereals which were grown organically were found. The consumers were asked to indicate whether they purchased only organic, only conventional or sometimes organic-sometimes conventional food items.

Table: 34: Distribution of consumers according to their utilization of organically grown cereals

		Use of organically grown cereals (n=150)						
		Only Organic		Sometimes organic – Sometimes Conventional		Only Conventional		Weighted Mean Value 1 – 3
		f	%	f	%	f	%	
IV	Cereals							
1	Bajara	71	47.3	39	26.0	40	26.7	2.21
2	Barley	69	46.0	38	25.3	43	28.7	2.17
3	Jowar	72	48.0	37	24.7	41	27.3	2.21
4	Maize	73	48.7	37	24.7	40	26.7	2.22
5	Ragi	78	52.0	38	25.3	34	22.7	2.29

		Use of organically grown cereals (n=150)						
		Only Organic		Sometimes organic – Sometimes Conventional		Only Conventional		Weighted Mean Value 1 – 3
		f	%	f	%	f	%	
6	Rice	90	60.0	35	23.3	25	16.7	2.43
7	Rice Flakes	86	57.3	38	25.3	26	17.3	2.40
8	Rice Puffed	86	57.3	37	24.7	27	18.0	2.39
9	Wheat	85	56.7	37	24.7	28	18.7	2.38
10	Wheat Flour whole	73	48.7	33	22.0	44	29.3	2.19
11	Maida	57	38.0	31	20.7	62	41.3	1.97
12	Semolina	56	37.3	29	19.3	65	43.3	1.94
							Total	**2.23**

In case of cereals, it was found that 60 per cent of consumers bought only organically grown rice whereas 23.3% of consumers bought sometimes organic and sometimes conventional rice. It was found in the food quality assessment done by the researcher that the aroma and taste of organic rice was better than the non organic rice (wide section-3 / table-68). Probably, therefore consumers preferred to purchase rice grown organically. It was observed that nearly half of consumers bought only organically grown cereals almost all of the listed ones, in their daily use whereas, nearly one-fourth of the consumers bought cereals from shop selling organic food as per its availability i.e. "buying sometimes organic and sometimes conventional". In case on non availability, they shifted their choice and bought from local grocery shop as revealed through informal talks. Among all cereals, utilization of organic wheat flour and semolina was lower than the other items. Only 38% of consumers bought organic refined wheat flour (Maida) and Semolina (Sooji/Rava). Whereas 41.3 per cent of consumers used conventional refined wheat flour and 43.3 per cent of consumers used conventional semolina (Table-34). This might have been due to non availability of organic wheat flour

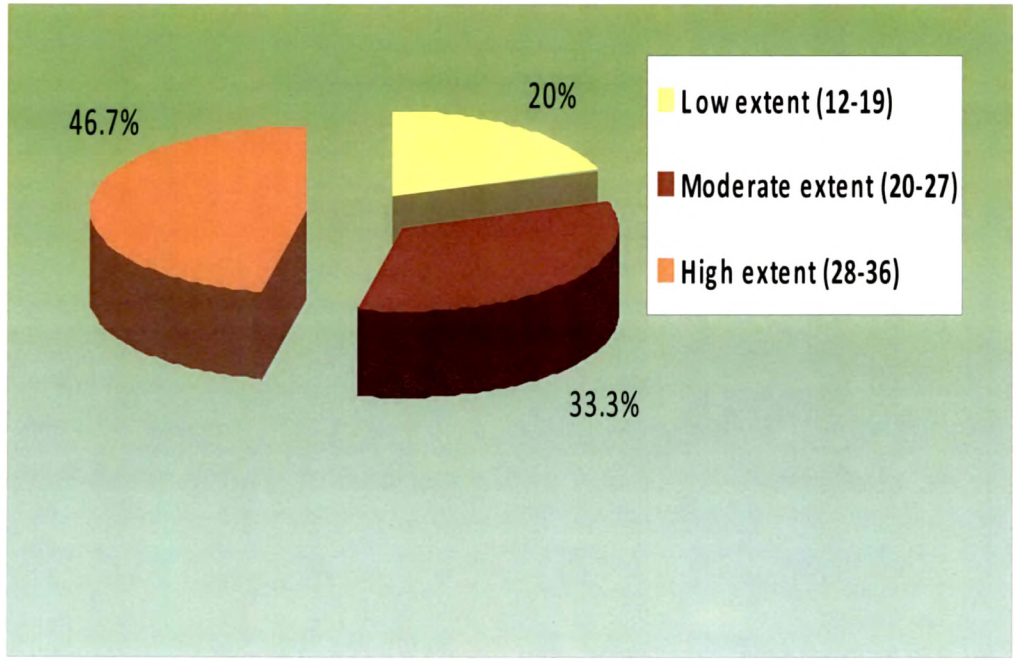
in some of the shops selling organic food as mentioned by the shopkeepers in the present study (Wide section- 1.2 / Table-8).

Table: 35: Distribution of consumers according to extent of utilization of organically grown cereals

Sr No	Extent of utilization of Organically grown Cereals	Consumers (n=150)	
		f	%
1	Low extent (12-19)	30	20.0
2	Moderate extent (20-27)	50	33.3
3	High extent (28-36)	70	46.7

It was observed that little less than half (46.7%) of consumers had high extent of utilization of organically grown cereals whereas one-third of consumers had Moderate extent of utilization of organically grown cereals (Table-35).

Fig.15 Percentage distribution of consumers according to extent of utilization of organically grown cereals



2.3.5 Use of organically grown pulses and legumes

Many varieties of pulses and legumes were available in the market which were grown organically. The consumers were asked about their use.

Table: 36: Distribution of consumers according to their utilization of organically grown pulses and legumes

	Food items	Use of organically grown pulses and legumes (n=150)						
		Only Organic		Sometimes organic – Sometimes Conventional		Only Conventional		Weighted Mean Value 1 – 3
		f	%	f	%	f	%	
V	**Pulses and Legumes**							
1	Bengal Gram (Whole)	84	56.0	42	28.0	24	16.0	2.40
2	Black Gram Dal	85	56.7	41	27.3	24	16.0	2.41
3	Bengal Gram Dal	85	56.7	40	26.7	25	16.7	2.40
4	Lentil	84	56.0	39	26.0	27	18.0	2.38
5	Moth beans	84	56.0	39	26.0	27	18.0	2.38
6	Peas	86	57.3	36	24.0	28	18.7	2.39
7	Rajmah	87	58.0	38	25.3	25	16.7	2.41
8	Red Gram Dal	87	58.0	38	25.3	25	16.7	2.41
9	Soya bean	87	58.0	39	26.0	24	16.0	2.42
10	Green Gram dal	87	58.0	39	26.0	24	16.0	2.42
11	Green gram whole	87	58.0	38	25.3	25	16.7	2.41
							Total	**2.40**

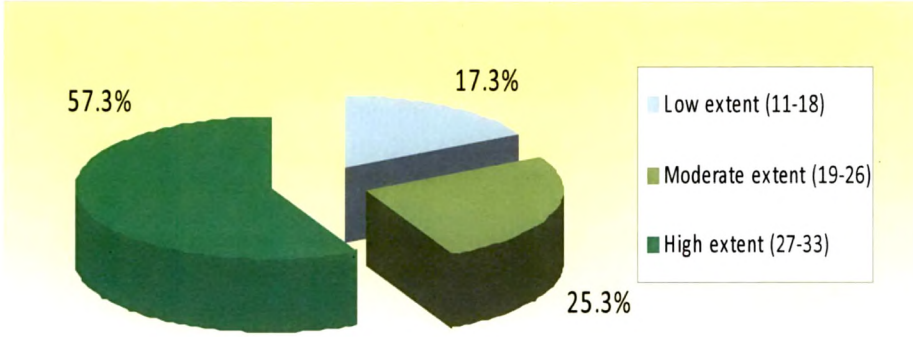
It was observed from the table-36 that more than half of consumers used only organically grown pulses whereas less than one-fourth of the consumers bought conventional pulses and legumes almost all of the listed ones. It was also observed that little more than one-fourth of consumers sometimes bought organically grown pulses and legumes and sometimes bought conventional pulses and legumes.

Table: 37: Distribution of consumers according to extent of utilization of organically grown pulses and legumes

Sr No	Extent of utilization of Organically grown Pulses and legumes	Consumers (n=150)	
		f	%
1	Low extent (11-18)	26	17.3
2	Moderate extent (19-26)	38	25.3
3	High extent (27-33)	86	57.3

Results indicated that only 53.3 per cent of consumers had high extent of utilization of organic pulses and legumes whereas one-fourth (25.3%) of consumers had moderate extent of utilization of organic pulses and legumes (Table-37) probably due the taste of organically grown pulses. It was found in the sensory evaluation test that the taste of organically grown Red gram dal was better than the non organic red gram dal (wide Section- / Table-68). Consumers were also satisfied with the taste, appearance and price of pulses and legumes (wide section- / Table-52).

Fig.16 Percentage distribution of consumers according to extent of utilization of organically grown pulses and legumes



2.3.6 Use of oil of organically grown nuts and seeds

Ground nut oil was available in the shops selling organic food in certain season. The consumers were asked to indicate whether they purchased this oil or not.

It was observed from the table- 38 that more than three-fourth of consumers bought conventional oil. Only 10 per cent of consumers purchased organic Ground Nut oil whereas 12 per cent of consumers bought oil and oil-seeds sometimes organically grown and sometimes conventional (Table-38).

Table: 38 Distribution of consumers according to their utilization of oil of organically grown nuts and seeds

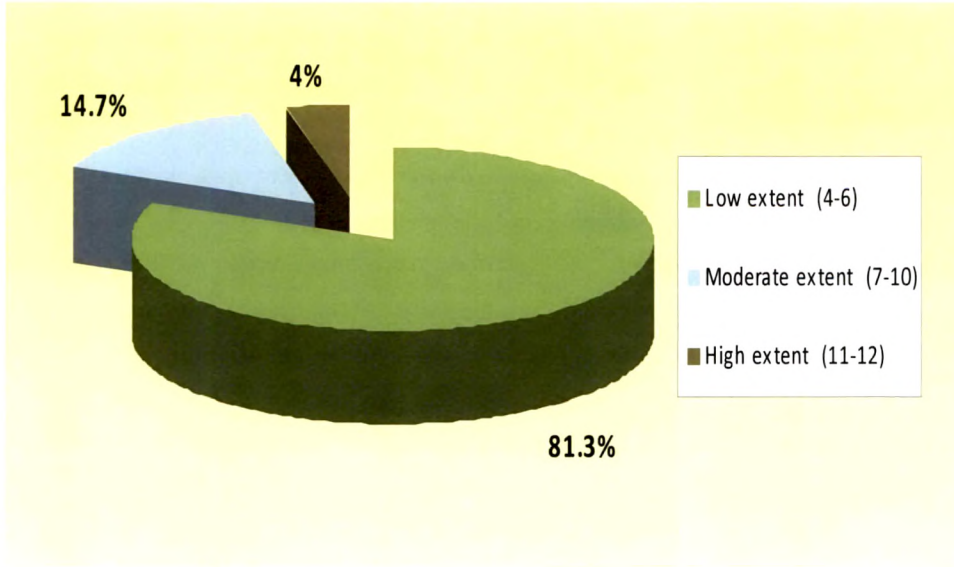
	Food items	Use of organic Oil (n=150)						
		Only Organic		Sometimes organic – Sometimes Conventional		Only Conventional		Weighted Mean Value 1 – 3
		f	%	f	%	f	%	
VI	**Oil and Oil seeds**							
1	Groundnut	8	5.3	18	12.0	124	82.7	1.23
2	Mustard seed	9	6.0	19	12.7	122	81.3	1.25
3	Sesame seed	11	7.3	19	12.7	120	80.0	1.27
4	Groundnut oil	15	10.0	18	12.0	117	78.0	1.32
							Total	**1.26**

It was found that 81.3 per cent of consumers had low extent of utilization of organically grown oil and oil seeds and 4 % of consumers had high extent of utilization for the same (Table-39). The reason may be that the organically grown oil were not available in the shop throughout the year as stated in section-1.2/ table-8 and therefore consumers purchased oil which were not organically grown and processed.

Table:39 Distribution of Consumers according to extent of utilization of Oil of organically grown nuts and seeds

Sr No	Extent of utilization of Oil of organically grown nuts and seeds	Consumers (n=150)	
		f	%
1	Low extent (4-6)	122	81.3
2	Moderate extent (7-10)	22	14.7
3	High extent (11-12)	6	4.0

Fig.17 Percentage distribution of consumers according to extent of utilization of oil of organically grown nuts and seeds



2.3.7 Use of organically grown condiments and spices

It was found that the shop selling organic food kept certain variety of condiments and spices which were grown organically. The consumers were asked to mention whether they purchased only organic, only conventional or sometimes organic-sometimes conventional food items.

Table: 40: Distribution of consumers according to their utilization of organically grown condiments and spices

	Food item	Use of organically grown condiments and spices (n=150)						
		Only Organic		Sometimes organic – Sometimes Conventional		Only Conventional		Weighted Mean Value 1 – 3
		f	%	f	%	f	%	
VII	**Condiments and Spices**							
1	Aniseed	6	4.0	17	11.3	127	84.7	1.19
2	Cardamom	6	4.0	18	12.0	126	84.0	1.20
3	Chilies	8	5.3	19	12.7	123	82.0	1.23
4	Cinnamon	6	4.0	18	12.0	126	84.0	1.20
5	Cloves	6	4.0	18	12.0	126	84.0	1.20
6	Coriander	8	5.3	19	12.7	123	82.0	1.23
7	Cumin seeds	10	6.7	23	15.3	117	78.0	1.29
8	Fenugreek	10	6.7	23	15.3	117	78.0	1.29

	Food item	Use of organically grown condiments and spices (n=150)						
		Only Organic		Sometimes organic – Sometimes Conventional		Only Conventional		Weighted Mean Value 1 – 3
		f	%	f	%	f	%	
	seed							
9	Pepper	10	6.7	22	14.7	118	78.7	1.28
10	Turmeric	9	6.0	22	14.7	119	79.3	1.27
							Total	**1.23**

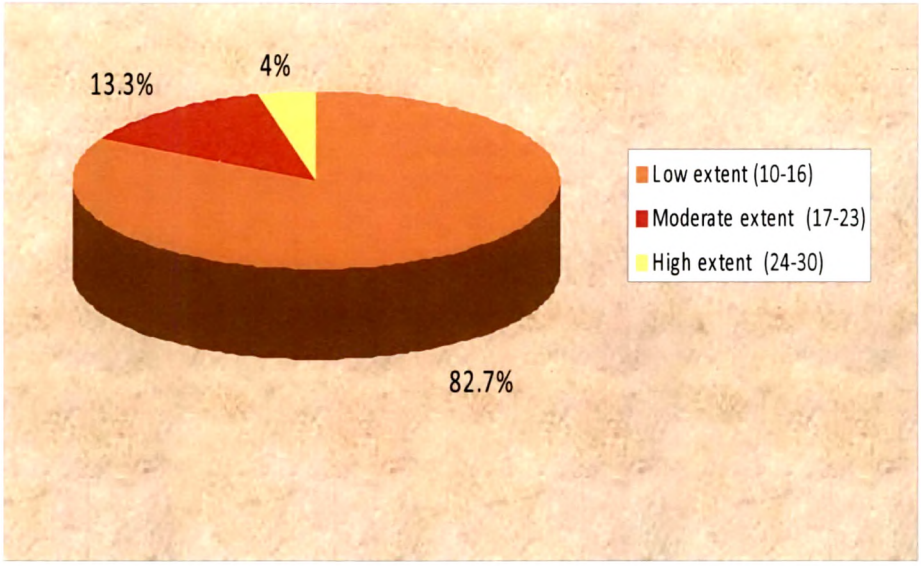
All the variety of organically grown spices were not available in the market and therefore more than three-fourth of the consumers purchased conventional condiments and spices whereas very few (4 to 6%) consumers bought only organically grown condiments and spices(Table-40).

Table: 41: Distribution of consumers according to extent of utilization of organically grown condiments and spices

Sr No	Extent of utilization of organically grown condiments and spices	Consumers (n=150)	
		f	%
1	Low extent (10-16)	124	82.7
2	Moderate extent (17-23)	20	13.3
3	High extent (24-30)	6	4.0

It was observed that 82.7% of consumers had low extent of utilization of organically grown condiments and spices whereas 13.3% of consumers had Moderate extent of utilization of organically grown condiments and spices (Table-41).

Fig.18 Percentage distribution of consumers according to extent of utilization of organically grown condiments and spices



2.3.8 Use of Sugar, Jaggery and Honey

Sugar, jaggery and honey which were processed organically were found in majority of the shops. For making organic honey, UK standard covers not only the origin of bees, but also the sitting of the apiaries. These must be on land that is certified as organic, and within a radius of 4 miles from the apiary site, nectar and pollen sources must consist essentially of organic crops or uncultivated areas **(www.wikipedia.com).** The consumers were asked about their purchase.

Table: 42: Distribution of consumers according to their utilization of organically processed Sugar, Jaggery and Honey

	Food item	Use of Organically processed Sugar, Jaggery and Honey (n=150)						
		Only Organic		Sometimes organic – Sometimes Conventional		Only Conventional		Weighted Mean Value 1 – 3
		f	%	f	%	f	%	
VIII	**Sugar, Jaggery and Honey**							
1	Sugar	13	8.7	21	14.0	116	77.3	1.31
2	Honey	14	9.3	23	15.3	113	75.3	1.34
3	Jaggery	133	88.7	14	9.3	3	2.0	2.87
							Total	**1.84**

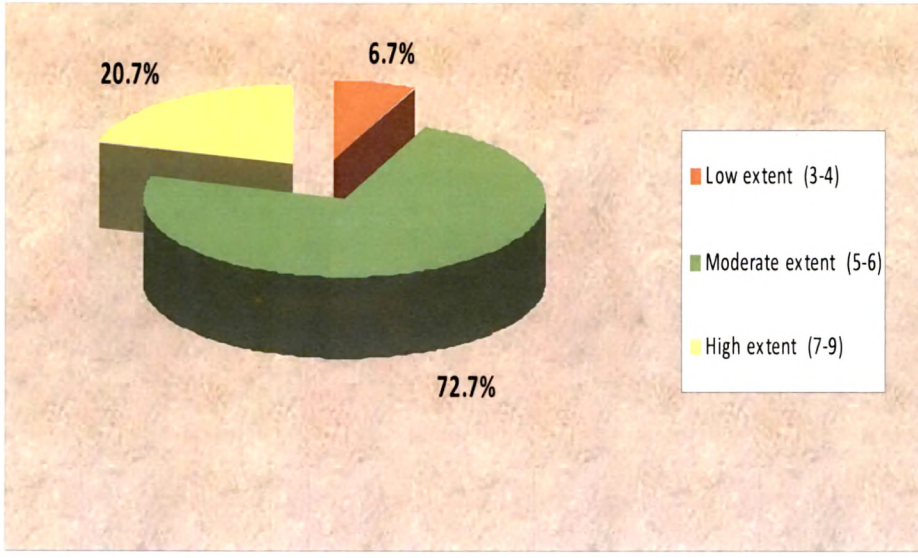
It was observed that 88.7 per cent of consumers used only organically processed jaggery whereas nearly three- fourth of the consumers bought only conventional sugar and honey.

Table: 43 Distribution of consumers according to extent of utilization of organically processed Sugar, Jaggery and Honey

Sr No	Extent of utilization of Organically processed sugar, jaggery and honey	Consumers (n=150)	
		f	%
1	Low extent (3-4)	10	6.7
2	Moderate extent (5-6)	109	72.7
3	High extent (7-9)	31	20.7

It was found that 72.7 per cent of consumers had Moderate extent of utilization of organically processed sugar, jaggery and honey and 20.7per cent of consumers had high extent of utilization of organically processed sugar, jaggery and honey. (Table-43)

Fig.19 Percentage distribution of consumers according to extent of utilization of organically processed sugar, jaggery and honey



2.3.9 Use of Ready to eat organic food items

Few ready to eat organic food items were found in the shops selling organic food items. Consumers were asked whether they used them always organic or sometimes organic - sometimes conventional.

Table: 44: Distribution of consumers according to their utilization of ready to eat organic food items

	Food Item	Use of Ready to eat organic food items (n=150)						
		Only Organic		Sometimes organic – Sometimes Conventional		Only Conventional		Weighted Mean Value 1 – 3
		f	%	f	%	f	%	
IX	Ready to eat organic food items							
1	Jam	2	1.3	11	7.3	137	91.3	1.10
2	Sauce	2	1.3	11	7.3	137	91.3	1.10
3	Pickle	3	2.0	11	7.3	136	90.7	1.11
4	Amla Powder	10	6.7	18	12.0	122	81.3	1.25
5	Chiku Powder	10	6.7	17	11.3	123	82.0	1.25
							Total	**1.16**

Very few ready to eat items were available which were grown and/or processed organically. It was found that nearly 90 per cent of consumers used conventional ready to eat items like jam, sauce, pickle etc. Whereas 6.7 per cent of consumers bought only organic "amla" powder and "chiku" powder (Table-44).

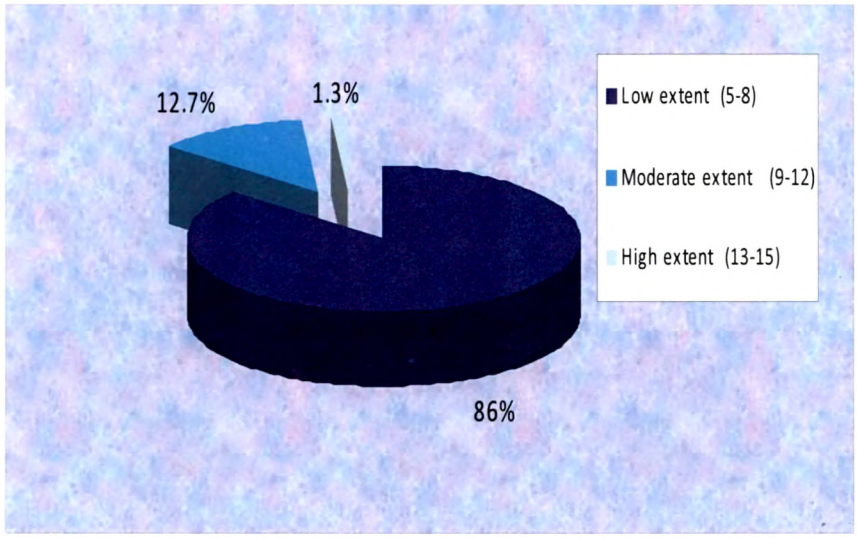
Table: 45: Distribution of consumers according to extent of utilization of Ready to eat organic food items

Sr No	Extent of utilization of Organic Ready to eat organic food items	Consumers (n=150)	
		f	%
1	Low extent (5-8)	129	86.0
2	Moderate extent (9-12)	19	12.7
3	High extent (13-15)	2	1.3

It was found that 86 percent of consumers had low extent of utilization of ready to eat organic food items whereas only 1.3 per cent of consumers had high extent of utilization of ready to eat organic food items (Table-45). This was probably due to non avalability of ready to eat items in all the shops

selling organic food. Only two shops kept varieties of ready to eat items which were grown and processed organically. (Wide section 1.2/ table-8)

Fig.20 Percentage distribution of consumers according to extent of utilization of Ready to eat Organic food items



2.3.10 Overall Extent of utilization of organic food items

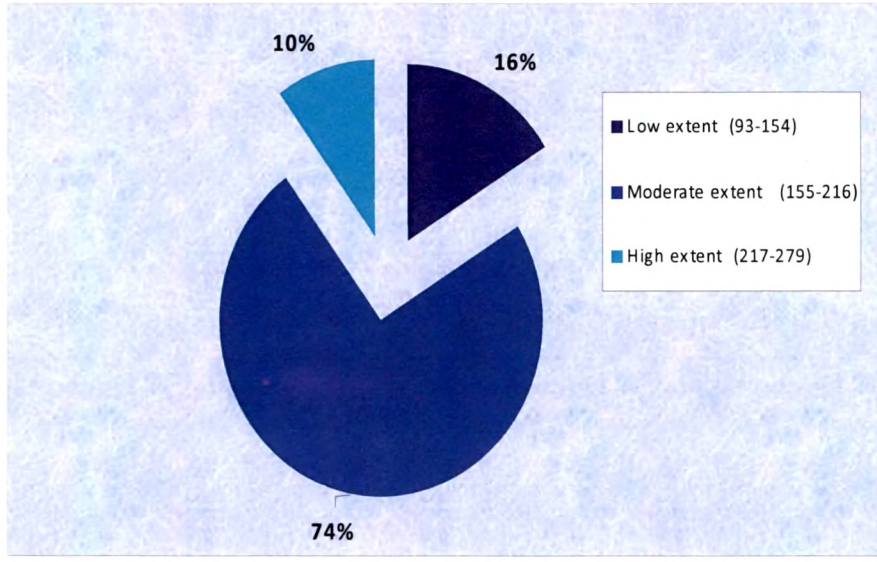
The responses of extent of utilization of organic food items (only organic whenever available, Sometimes organic – sometimes conventional, Only conventional) were given scores of 3 through 1 respectively. The possible range of maximum and minimum scores were divided in to 3 categories having equal interval (Table-46). Higher scores indicated high extent of utilization. In this the all the food items were included to find out the extent of utilization of organic food items.

Table: 46: Distribution of consumers according to the extent of utilization of overall organic food items

Sr No	Extent of utilization of all organic food items	Consumers (n=150)	
		F	%
1	Low extent (93-154)	24	16.0
2	Moderate extent (155-216)	111	74.0
3	High extent (217-279)	15	10.0

For overall extent of utilization of organic food items, it was observed that 74 per cent of consumers had moderate extent of utilization of organic food items whereas 16% of consumers had low extent of utilization of organic food items available in Vadodara city (Table- 46). Majority of the consumers experienced problems with the use of organic food to a Moderate extent as revealed in the present study (Table-49, fig-18). The extent of utilization might have been affected by the problems of availability of organic food which was faced by the consumers to a high extent (Table-50). This could be further supported by the fact that about one third of respondents experienced low level of satisfaction regarding availability of organic food products in the present research.(Table-52, fig- 19)

Fig.21 Percentage distribution of consumers according to extent of utilization of all organic food items



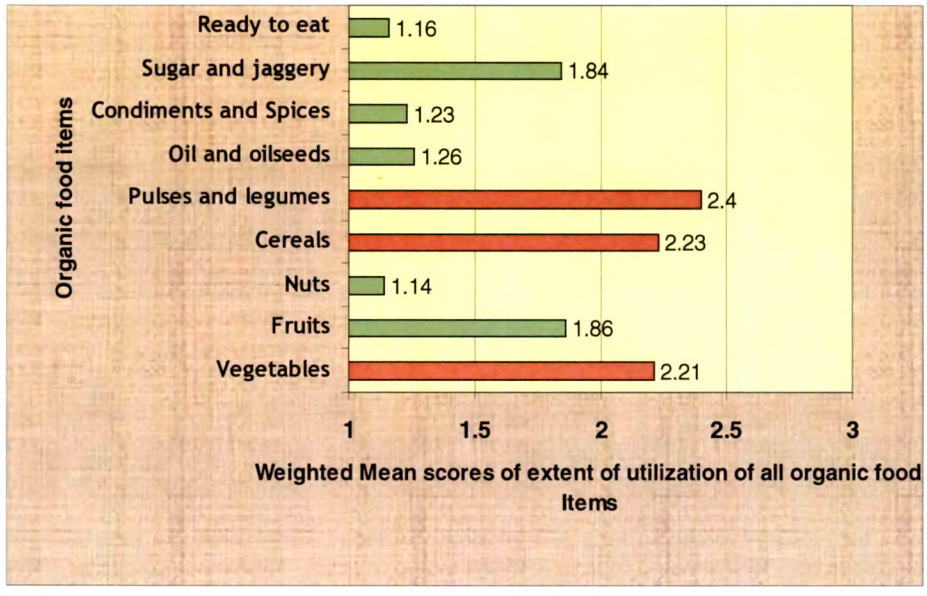
Weighted Mean Score (Intensity Index): Mean weighted score were calculated for each food items listed among different food groups. The range of continuum was from 1 – 3. The range of mean weighted score was divided into two categories (i) 1-1.9 as low and (ii) 2 – 3 as high.

Table:47 Weighted mean score(Intensity Index) for the extent of utilization of organic food for different food groups

Sr. No	Food Group	Mean Weighted Score (Range 1 to 3)
1.	Vegetables	2.21 High
2.	Fruits	1.86 Low
3.	Nuts	1.14 Low
4.	Cereals	2.23 High
5.	Pulses and legumes	2.40 High
6.	Nuts and nut seeds	1.26 Low
7.	Condiments and Spices	1.23 Low
8.	Sugar and jaggery	1.84 Low
9.	Ready to eat	1.16 Low

It was observed that the extent of utilization were found to be low for fruits, nuts, oil, condiments and spices, sugar and jaggery and ready to eat items. Further it was found that for vegetables, cereals, pulses and legumes the score were found to be high. So it can be concluded that for all these food group they had higher extent of utilization (Table-47). This is supported by the study conducted in the year 2005 by Food Marketing Institutions (FMI) which indicated that consumers purchased fruits and vegetables more than any other food items.

Fig.22 Weighted mean scores for extent of utilization of all organic food Items



2.4 Problems faced by consumers while using organic food

While using organic food, consumers faced various problems. This section was included in the questionnaire to know such problems that consumers were facing with regular use of organic food. In this section various areas of problems were identified like availability, price, accessibility, taste and certification of organic food. Among each area problems were listed and the consumers were requested to indicate whether they faced problem or not. This was a summated rating scale. Their scores were summated for each statement. The range of possible scores was divided into three categories reflecting low extent, moderate extent and high extent of facing problems that consumers faced with the use of organic food.

Mean weighted scores were calculated for each statement of the problem among various area like availability, accessibility, price, taste etc. The scores of all the consumers were summated and the sum was divided by total number of consumers. The range of continuum was from 1-2

2.4.1 Problem with availability of organic food

On asking about problem regarding availability of organic food (Table-48) it was found that 90 per cent of consumers reported that organic food was available in particular season only (Weighted mean 1.91/2). They also reported that it was not possible to shift on completely organic food as the whole range of organically grown food products were not available in the market (weighted mean 1.91/2). Nearly three-fourth (76.7%) reported that they faced problem as the vegetables were supplied in less quantity. A little more than half of consumers reported that organic products with certification mark were not available and therefore they faced problem in identifying genuine organic products in the shop (Table-48). This is probably due to the less supply of organic food reported by the shopkeepers (Wide Section- 1.5/ table-12). Therefore it was found that the consumers were not satisfied with the supply and availability of the organic food. (Wide table - 51 / Section-2.5.1). **Naik and Sharma (1997)** also reported that Ahmedabad consumers wanted all the variety of organic food items to be supplied. Whereas

consumers in Baroda wanted all the items including oils to be produced organically and supplied.

Table:48 Distribution of consumers according to the problems they faced while using organic food

Sr. No	Problems	Consumers (n=150)				
		Face Problem		Do not face problem		Weighted Mean Value
		f	%	f	%	1-2
I	**Availability of organic food in the market.**					
1.	Organic food available only in particular season.	136	90.7	14	9.3	1.91
2.	Vegetables are supplied in less quantity.	115	76.7	35	23.3	1.77
3.	There is no surety to get items as per required quantity.	105	70.0	45	30.0	1.70
4.	Many variety of organically grown vegetables are not available.	92	61.3	58	38.7	1.61
5.	Products with certification mark are not available in the market.	82	54.7	68	45.3	1.55
6.	More varieties are not available in organic food as compared in conventional food as per consumers demand.	103	68.7	47	31.3	1.69
7.	It is not possible to shift on completely to organic food as whole range of organically grown food products are not available in the market.	136	90.7	14	9.3	1.91
					Total	**1.73**
II	**Price of Organic food.**					
1.	The price of organic food is higher than the conventional food.	104	69.3	46	30.7	1.69
2.	The shopkeeper increases the price of organically grown vegetables as per his wish.	19	12.7	131	87.3	1.13
3.	Processed organic food is costlier than processed conventional food.	116	77.3	34	22.7	1.77
4.	Organic food is costlier due to its monopoly.	84	56.0	66	44.0	1.56
5.	Considerable variation in price amongst the shop selling organic food in Vadodara	40	26.7	110	73.3	1.27

Sr. No	Problems	Consumers (n=150)				
		Face Problem		Do not face problem		Weighted Mean Value
		f	%	f	%	1-2
6.	Since the shop selling Organic food is not near to home/office, the transport cost is added to the cost of Organic food.	64	42.7	86	57.3	1.43
					Total	**1.47**
III	**Accessibility to the shop selling Organic food.**					
1.	There was no shop selling organic food within one km area from respondent's house/residence.	48	32.0	102	68.0	1.32
2.	The shop from which the respondents buy organic food did not keep organic food in sufficient quantity.	82	54.7	68	45.3	1.55
3.	There is no shop selling organic food on the way to the office.	24	16.0	126	84.0	1.16
4.	The timings on which the shop remained open were not convenient.	41	27.3	109	72.7	1.27
5.	Have to go far away to purchase organic food.	39	26.0	111	74.0	1.26
					Total	**1.31**
IV	**Taste of organic food.**					
1.	Children do not like taste of organic vegetables and fruits.	37	24.7	113	75.3	1.25
2.	Taste of most of the organic food is different than the conventional food.	121	80.7	29	19.3	1.81
					Total	1.53
V	**Appearance of organic food.**					
1.	All organically grown items look smaller in size than their conventional counterparts, hence they have to be purchased more in number (quantity)	36	24.0	114	76.0	1.24
2.	Organic fruits and vegetables looks pale after sometime, hence their acceptability in the family is less.	12	8.0	138	92.0	1.08
					Total	**1.16**
VI	**Certification**					
1.	There is no way to know a genuine organic food product as no certification mark has been given by the government.	104	69.3	46	30.7	1.69

Sr. No	Problems	Consumers (n=150)				
		Face Problem		Do not face problem		Weighted Mean Value
		f	%	f	%	1-2
2.	Shopkeepers cheat by using name of organic food.	42	28.0	108	72.0	1.28
3.	It is difficult to know the genuineness of the product which claims to be "Organic" by a private manufacturer.	101	67.3	49	32.7	1.67
					Total	**1.54**
VII	**Other problems**					
1.	Organic food takes more time to cook.	7	4.7	143	95.3	1.05
2.	Persons do not get satisfaction after eating organic food.	13	8.7	137	91.3	1.09
					Total	**1.07**

2.4.2 Problems about price of organic food

Price was another area where consumers faced problem. It was observed (Table-48) that 69.3% of consumers found that price of organic food was higher than conventional food items (Weighted mean score 1.69/2.00) and more than half of consumers reported that "Organic food was costlier due to its monopoly". Thus price of organic food played major role as they were costlier than conventional food and more than half of consumers faced problems of its high price. Nearly 87% of the consumers reported that they did not face problem with shopkeeper of shops selling organic food as they never found "Shopkeepers increased price of organically grown food as per their wish (Table-48). This was probably due to the less production and expensive production process of organic food as reported by the shopkeepers. (wide section 1,5 / Table-12) This was supported by **Rab and Grobe(2005)** who studied consumers knowledge and perception about organic food and they found that consumers perceived organic food as costly food. **Naik and Sharma (1997)** reported that the average premium the Ahmedabad consumers were ready to pay for vegetables was 25 per cent and consumers in Baroda were ready to pay on an average 15 per cent premium for organic food. **Thakur and Sharma (2005)** stated that due to the rising preferences and demand for organic food in India and abroad, organic

produce fetches 3 to 4 times higher prices than those paid for conventional (non organic) produce.

2.4.3 Problem of accessibility

Location of shop was another area of problem. As only few shops were there in Vadodara city and majority of them remained closed on Sunday, it was difficult for consumers to go and purchase the things at particular timings. Nearly one-third of consumers reported that they faced problem as "the shop was not located near their residence"(Table-48) and little more than one-fourth of consumers faced problem with the timing of shop and they reported that "timings were not convenient to them" and "they had to go far to purchase the items".

2.4.4 Taste of Organic food

Three-fourth of consumers reported that they did not face any problem with the taste of organic food. The children in their family also liked the taste of organic food. About 80.7 per cent reported that taste of organic food was different than the conventional food (Table-48). In the present study it was reported by the consumers that they were satisfied with the taste of organic food (wide section-2.5.3 / Table-51). Majority of the consumers in the present investigation reported that they were influenced to a great extent by the reason that " the taste of organic food is better than the conventional food" to buy organic food (wide section 2.2/ Table-26). **Naik and Sharma (1997)** reported that the organic food is considered having more flavour and better taste by the consumers.

2.4.5 Appearance of organic food

More than three-fourth of consumers reported that they did not face problem with the smaller size of organic food items. A wide majority (92 per cent) of consumers reported that they did not face problems about paleness of fruits and vegetables after some time and probably therefore there was no problem with the acceptability of organic food in the family. (Table-48). The shelf life of organically grown fruits and vegetables was more than the non-organic fruits and vegetable as was found in the present research (wide section 4.4). **Naik and Sharma (1997)** reported that for fruits and vegetables – freshness, taste, nutrition, health aspect was important for consumers.

2.4.6 Certification

Certification was another area of problem as no certification were given to organic products which created problems for the consumers in identifying genuine organic products. More than two-third of consumers faced problems in "knowing genuine organic products in absence of any certification" and "it was difficult for them to identify genuine organic products with local or private manufacturer". It was also found that little less than three-fourth did not find that the shopkeeper cheated them with the "name of organic". This is supported by the observation that nearly half of the consumers were undecided about the nutritional content and certification of the organic food. But they were satisfied with the genuinity of the organic food product. (wide section – 2.5.6/ Table-51).

2.4.7 Other problems

Consumers did not face any problem with cooking time of organic food. Nearly 90% of consumers reported that organic food did not take more time to cook and they got satisfaction after eating organic food. In the present research it was reported by the consumers that they were satisfied with the cooking time of organic food as organic food cook faster than the conventional food. (wide Section- 2.5.5 / Table-51)This was supported by the observation that organic food took less time to cook than the conventional food. (Wide section 4.3/ Table-68)

2.4.8 Extent of facing problem: An overall view

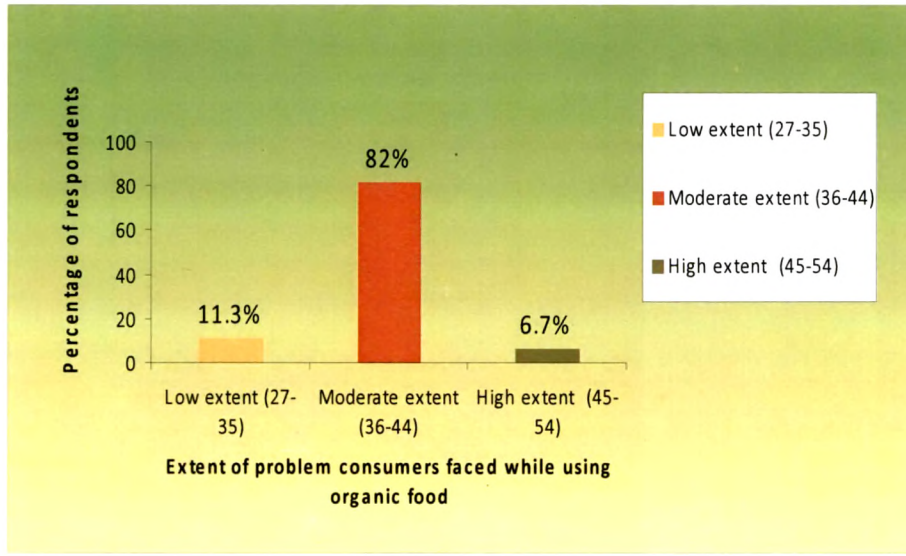
The responses of consumer's problem while using organic food (Face, do not face) were given scores of 2 through 1 respectively. The possible range of maximum and minimum scores was divided in to 3 categories having equal interval (Table-49). Higher scores indicated high extent of problem.

Table:49: Distribution of consumers according to the extent of problem they faced while using organic food

Sr No	Extent of Problem	Consumers (n=150)	
		F	%
1	Low extent (27-35)	17	11.3
2	Moderate extent (36-44)	123	82.0
3	High extent (45-54)	10	6.7

It was found from the table-49 that majority of the consumers (82%) faced problems at Moderate extent while using organic food whereas only 6.7 per cent faced problems at higher extent with the use of organic food.

Fig.23 Percentage distribution of consumers according to extent of problems they faced while using organic food.



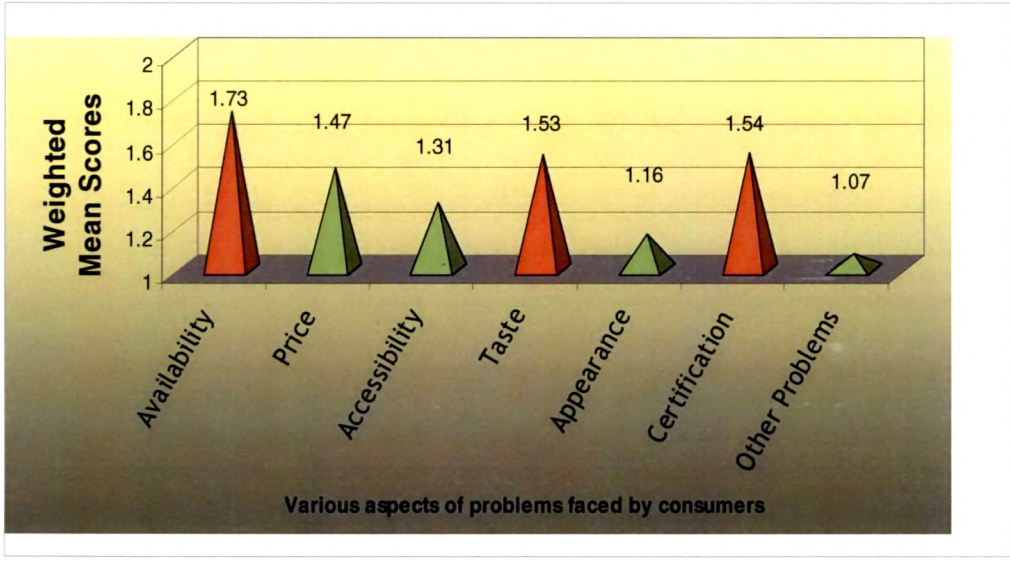
Weighted Mean Score (Intensity Index): Mean weighted score were calculated for each problem statement listed among different area. The range of continuum was from 1 – 2. The range of mean weighted score was divided into two categories (i) 1.00-1.50 as low and (ii) 1.51 – 2.00 as high.

Table:50: Weighted mean score (Intensity Index) for the extent of problems faced while using organic food.

Sr. No	Problems	Mean Weighted Score (Range 1 to 2)
1.	Availability	1.73 High
2.	Price	1.47 Low
3.	Accessibility	1.31 Low
4.	Taste	1.53 High
5.	Appearance	1.16 Low
6.	Certification	1.54 High
7.	Other Problems	1.07 Low

It was observed that for availability, taste and certification of organic food the extent of problem that the consumer faced were found to be high so it can be concluded that for all these areas they had more extent of problem. Further it was found that for price, accessibility, and appearance of organic food the score were found to be low. So it can be concluded that consumers had less extent of problem for appearance of organic food, location of shop selling organic food and its high prices.

Fig.24 Weighted mean scores for the extent of problems faced while using organic food.



2.5 Satisfaction felt on using organic food

This section deals with the satisfaction experienced by the consumers on using organic food in various form. It includes various aspects related to organic food. Viz. Availability of organic food, Price, Taste, Appearance, Cooking time, Quality and Supply in the shop selling organic food. The consumers were requested to indicate their extent of satisfaction for different food groups. This was a summated rating scale having three point continuums for the responses to each item. The respondents were asked to say whether they were satisfied, not satisfied or were undecided about various aspects listed for the organic food. The scores of 3 through 1 were given respectively to these responses. The possible range of score was divided into 3 categories having equal interval to show the extent of

satisfaction experienced by the consumers on various aspects like availability of organic food, price, taste, appearance, cooking time, quality and supply in the shop selling organic food. In this section the frequency and percentage of each aspects of satisfaction for different food group is reported.

Table: 51: Distribution of consumers according to the satisfaction felt on using organic food

	Aspects of satisfaction felt on using organic food	Consumers(n=150)						
		Satisfied		Undecided		Not Satisfied		Weighted mean Value Range (1 to 3)
		f	%	f	%	f	%	
1.	**Availability of the following organic food throughout the year**							
	a) Vegetables	43	28.7	57	38.0	50	33.3	1.95
	b) Fruits	43	28.7	57	38.0	50	33.3	1.95
	c) Cereals and grain	43	28.7	61	40.7	46	30.7	1.98
	d) Pulses and legumes	43	28.7	61	40.7	46	30.7	1.98
	e) Organic groundnut oil	45	30.0	61	40.7	47	31.3	1.97
	f) Condiments and spices	43	28.7	61	40.7	46	30.7	1.98
	g) Sugar and Jaggery	44	29.3	60	40.0	46	30.7	1.99
	h) Processed food	42	28.0	63	42.0	45	30.0	1.98
						Total		**1.97**
2.	**Price of organic food**							
	a) Vegetables	92	61.3	34	22.7	24	16.0	2.45
	b) Fruits	92	61.3	34	22.7	24	16.0	2.45
	c) Cereals and grain	89	59.3	36	24.0	25	16.7	2.43
	d) Pulses and legumes	91	60.7	34	22.7	25	16.7	2.44
	e) Organic groundnut oil	89	59.3	37	24.7	24	16.0	2.43
	f) Condiments and spices	90	60.0	36	24.0	24	16.0	2.44
	g) Sugar and Jaggery	92	61.3	33	22.0	25	16.7	2.45
	h) Processed food	85	56.7	41	27.3	24	16.0	2.41
						Total		**2.43**

	Aspects of satisfaction felt on using organic food	Consumers(n=150)						
		Satisfied		Undecided		Not Satisfied		Weighted mean Value Range (1 to 3)
		f	%	f	%	f	%	
3.	**Taste of Organic food**							
	a) Vegetables	125	83.3	21	14.0	4	2.7	2.81
	b) Fruits	125	83.3	21	14.0	4	2.7	2.81
	c) Cereals and grain	123	82.0	23	15.3	4	2.7	2.79
	d) Pulses and legumes	124	82.7	22	14.7	4	2.7	2.80
	e) Organic groundnut oil	121	80.7	25	16.7	4	2.7	2.78
	f) Condiments and spices	122	81.3	24	16.0	4	2.7	2.79
	g) Sugar and Jaggery	125	83.3	21	14.0	4	2.7	2.81
	h) Processed food	118	78.7	27	18.0	5	3.3	2.75
						Total		**2.79**
4.	**Appearance of organic food**							
a)	Colour of organic food							
	a) Vegetables	127	84.7	18	12.0	5	3.3	2.81
	b) Fruits	128	85.3	17	11.3	5	3.3	2.82
	c) Cereals and grain	127	84.7	17	11.3	6	4.0	2.81
	d) Pulses and legumes	127	84.7	17	11.3	6	4.0	2.81
	e) Organic groundnut oil	126	84.0	20	13.3	4	2.7	2.81
	f) Condiments and spices	125	83.3	21	14.0	4	2.7	2.81
	g) Sugar and Jaggery	128	85.3	17	11.3	5	3.3	2.82
	h) Processed food	122	81.3	23	15.3	5	3.3	2.78
						Total		**2.80**
b)	Texture of organic food							
	a) Vegetables	122	81.3	27	18.0	1	0.7	2.81
	b) Fruits	122	81.3	27	18.0	1	0.7	2.81
	c) Cereals and grain	122	81.3	26	17.3	2	1.3	2.80
	d) Pulses and legumes	122	81.3	26	17.3	2	1.3	2.80
	e) Organic groundnut oil	121	80.7	28	18.7	1	0.7	2.80
	f) Condiments and spices	120	80.0	29	19.3	1	0.7	2.79

	Aspects of satisfaction felt on using organic food	Consumers(n=150)						
		Satisfied		Undecided		Not Satisfied		Weighted mean Value Range (1 to 3)
		f	%	f	%	f	%	
	g) Sugar and Jaggery	121	80.7	27	18.0	2	1.3	2.79
	h) Processed food	120	80.0	29	19.3	1	0.7	2.79
						Total		**2.79**
c)	Size of organic food							
	a) Vegetables	131	87.3	16	10.7	3	2.0	2.85
	b) Fruits	131	87.3	16	10.7	3	2.0	2.85
	c) Cereals and grain	129	86.0	18	12.0	3	2.0	2.84
	d) Pulses and legumes	129	86.0	18	12.0	3	2.0	2.84
	e) Condiments and spices	126	84.0	21	14.0	3	2.0	2.82
	f) Sugar and Jaggery	129	86.0	18	12.0	3	2.0	2.84
	g) Processed food	126	84.0	21	14.0	3	2.0	2.82
						Total		**2.83**
d)	Freshness of organic food							
	a) Vegetables	134	89.3	13	8.7	3	2.0	2.87
	b) Fruits	133	88.7	14	9.3	3	2.0	2.87
	c) Cereals and grain	131	87.3	16	10.7	3	2.0	2.85
	d) Pulses and legumes	131	87.3	16	10.7	3	2.0	2.85
	e) Organic groundnut oil	126	84.0	22	14.7	2	1.3	2.83
	f) Condiments and spices	126	84.0	21	14.0	3	2.0	2.82
	g) Sugar and Jaggery	132	88.0	15	10.0	3	2.0	2.86
	h) Processed food	126	84.0	22	14.7	2	1.3	2.83
						Total		**2.84**
5.	**Accessibility to the source of organic food**							
	Location of shop	123	82.0	22	14.7	5	3.3	2.79
6.	**Cooking time**	132	88.0	17	11.3	1	0.7	2.87
7.	**Quality of organic food**							
a)	Nutritional content	79	52.7	68	45.3	3	2.0	2.51
b)	Certification	70	46.7	76	50.7	4	2.7	2.44

	Aspects of satisfaction felt on using organic food	Consumers(n=150)						
		Satisfied		Undecided		Not Satisfied		Weighted mean Value Range (1 to 3)
		f	%	f	%	f	%	
c)	Genuineness of food items not having standardization mark	37	24.7	103	68.7	10	6.7	2.18
						Total		**2.37**
8.	**Quantity / supply of organic food available in shop / market**							
	a) Vegetables	6	4.0	30	20.0	114	76	1.28
	b) Fruits	6	4.0	28	18.7	116	77.3	1.27
	c) Cereals and grain	6	4.0	28	18.7	116	77.3	1.27
	d) Pulses and legumes	6	4.0	29	19.3	115	76.7	1.27
	e) Organic groundnut oil	6	4.0	28	18.7	116	77.3	1.27
	f) Condiments and spices	6	4.0	28	18.7	116	77.3	1.27
	g) Sugar and Jaggery	6	4.0	26	17.3	118	78.7	1.25
	h) Processed food	6	4.0	29	19.3	115	76.7	1.27
						Total		**1.26**

2.5.1 Availability of organic food

It was observed that by and large about one-third of consumers or a little less than that were not satisfied with the availability of listed items of organic food throughout the year. Amongst various groups of food items listed, nearly three-fourth of the consumers were not satisfied with the supply of the organic food items. This is supported by the observation made in the present research that three-fourth of the consumers faced problem that the "vegetables were supplied in less quantity (Table-48). Majority said that many varieties and items with certification mark were not available (Table-48). This might be due to the less supply of organic food and special storage condition required for the organic food as reported by the shopkeepers in the present study. More than half of the shopkeepers reported that they could not purchase organic food in bulk as the demand from consumer side was also not constant (Wide section- 1.5/ table

-12). **Mukharjee (2004)** supported this and stated that marketing of organic produce remains a hindrance for its spread and propagation. He further added that the producers are scattered and accumulation of marketable surplus needs extra efforts. Most of the producers have very small holding and all the producers tend to produce similar items so that the output is limited and variety is lacking.

2.5.2 Price of organic food:

Nearly 60 per cent of consumers reported that they were satisfied with the price of organic food. Though high price was a major problem reported by consumers among all the problems faced by the consumers, (wide section – 2.4.2 / Table-48) majority of them were satisfied with the price of organic food. Only 16 per cent reported that they were not satisfied with the price of organic food. This might be due to their high income as three-fourth of the consumers of the present research belonged to middle to high income group (Fig- 7). **Naik and Sharma (1997**) reported that Ahmedabad consumers and Baroda consumers were ready to pay an average premium of 25 percent and 15 per cent respectively for the vegetables. Thompson (1998) found in a study conducted in US that higher income households were more likely to purchase organic produce and some segment of lower income were more frequent buyers of organic food. **Ritcher et al (2000)** conducted a study on consumers of Switzerland, Germany and France and they found that regular buyers of organic food were less price conscious.

2.5.3 Taste of organic food

Results clearly indicated that consumers preferred the taste of organic food. Approximately 80 per cent of consumers were satisfied with the taste of organic food and only 2.7 per cent reported that they were not satisfied with the taste of organic food. In the present research three-fourth of the consumers did not face any problem with the taste of organic food (Wide Section 2.4.4/ Table-48). Sensory evaluation test was conducted in the present study and it was found that the taste of the organic food was better than the conventional food. They were more juicy, sweet and had better aroma (wide section 4.2/Table -66)

2.5.4 Appearance of organic food

With reference to appearance, consumers were asked their views for different aspects like colour, texture, size and freshness of organic food. It was observed that more than three-fourth of the consumers were satisfied for all aspects of appearance of organic food. Only 1-2 % of consumers were not satisfied with the appearance of organic food (Table-51). This was supported with the observation that more than three-fourth of the respondents did not face any problem with its smaller size and freshness. A wide majority of the consumers reported that they did not face problem about paleness of organic fruits and vegetables (Wide Section-2.4.5 Table-48/ fig-23).

2.5.5 Accessibility to the source of organic food

Eighty two per cent of consumers were satisfied with the location of the shop. This might be because majority of the consumers were from the nearby areas of that particular shop and therefore they were satisfied with the location of the shop. A wide majority (88 per cent) of consumers was satisfied with the cooking time of organic food and they reported that organic food cooked fast than the regular conventional food (Table-51). This was supported by the observation that 90 per cent of consumers reported that "organic food did not take more time to cook" and "got satisfaction after eating organic food" (Wide section- 2.4.7/ Table-48). In the present research it was found in the laboratory condition that organic food took less time to cook than the conventional food (Wide section 4.3/ Table-68).

2.5.6 Quality of organic food

In case of quality of organic food, 45.3 per cent of consumers were undecided about the nutritional content and 50.3 per cent of consumers were undecided about the certification of organic food. This is supported by the observation made in the present research that more than two-third of the consumers faced problem in knowing "genuine organic product" with local manufacturer in absence of certification (wide section 2.4.6/Table- 48) But it was found that about one-fourth (24.7%) consumers were satisfied with the genuineness of organic food items. This indicated that though the consumers were not sure about nutritional content and certification, they were satisfied for its genuinity without any certification mark(Table-51). This was supported by the observation that more than half of the consumers did not find that the

shopkeeper cheated them with the name of "Organic" (Wide section- 2.4.6/ Table-48).

2.5.7 Supply of organic food

Regarding supply it was found that more than three-fourth of consumers were not satisfied with the supply of food items in the organic food shop and less than one fourth were undecided with the supply of organic food items in the shop(Table-51). **Naik and Sharma (1997)** reported that all the food items supplied organically including oil at convenient location at reasonable price.

2.5.8 Extent of satisfaction felt on using organic food.

The responses of satisfaction felt on using organic food (Satisfied, Not satisfied and Undecided) were given scores of 3 through 1 respectively. The possible range of maximum and minimum scores was divided in to 3 categories having equal interval (Table-52). Higher scores indicated high extent of satisfaction.

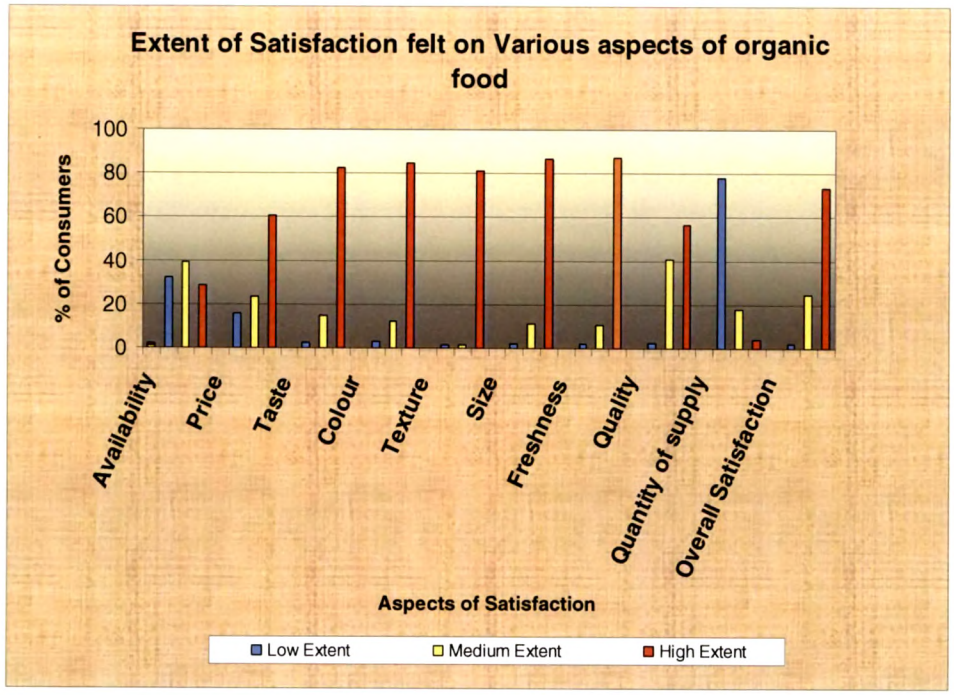
Table: 52: Distribution of consumers according to extent of satisfaction felt on using organic food for various aspects.

Sr No	Extent of satisfaction	Consumers (n=150)	
		f	%
	Availability		
1	Low extent (8-13)	48	32.0
2	Moderate extent (14-19)	59	39.3
3	High extent (20-24)	43	28.7
II	**Price**		
1	Low extent (8-13)	24	16.0
2	Moderate extent (14-19)	35	23.3
3	High extent (20-24)	91	60.7
III	**Taste**		
1	Low extent (8-13)	4	2.7
2	Moderate extent (14-19)	22	14.7
3	High extent (20-24)	124	82.7
IV	**Colour**		
1	Low extent (8-13)	5	3.3
2	Moderate extent (14-19)	18	12.0
3	High extent (20-24)	127	84.7
V	**Texture**		
1	Low extent (8-13)	2	1.3
2	Moderate extent (14-19)	26	1.3
3	High extent (20-24)	122	81.3
VI	**Size**		

Sr No	Extent of satisfaction	Consumers (n=150)	
		f	%
1	Low extent (7-11)	3	2.0
2	Moderate extent (12-16)	17	11.3
3	High extent (17-21)	130	86.7
VII	**Freshness**		
1	Low extent (8-13)	3	2.0
2	Moderate extent (14-19)	16	10.7
3	High extent (20-24)	131	87.3
VIII	**Quality**		
1	Low extent (3-4)	4	2.7
2	Moderate extent (5-6)	61	40.7
3	High extent (7-8)	85	56.7
IX	**Quantity of supply**		
1	Low extent (8-13)	117	78.0
2	Moderate extent (14-19)	27	18.0
3	High extent (20-24)	6	4.0
X	**Overall Satisfaction**		
1	Low extent (68-113)	3	2.0
2	Moderate extent (114-158)	37	24.7
3	High extent (159-204)	110	73.3

It was observed that 39.3 per cent of consumers had Moderate extent of satisfaction regarding availability of organic food, whereas 60.7 per cent of consumers had high extent of satisfaction with the price of organic food which indicates that more than half of the consumers were satisfied with the price of organic food. It was also found that more than three-fourth of the consumers had high extent of satisfaction regarding taste and various aspects of appearance like colour, texture, size and freshness, whereas 78 per cent of consumers had low extent of satisfaction regarding the quantity and supply of organic food in the shop. Overall it was found that little less than three-fourth of the consumers had high extent of satisfaction regarding organic food and only 2 per cent of consumers had low extent of satisfaction regarding organic food (Table-52).

Fig.25 Percentage distribution of consumers according to extent of satisfaction felt on various aspects of organic food.

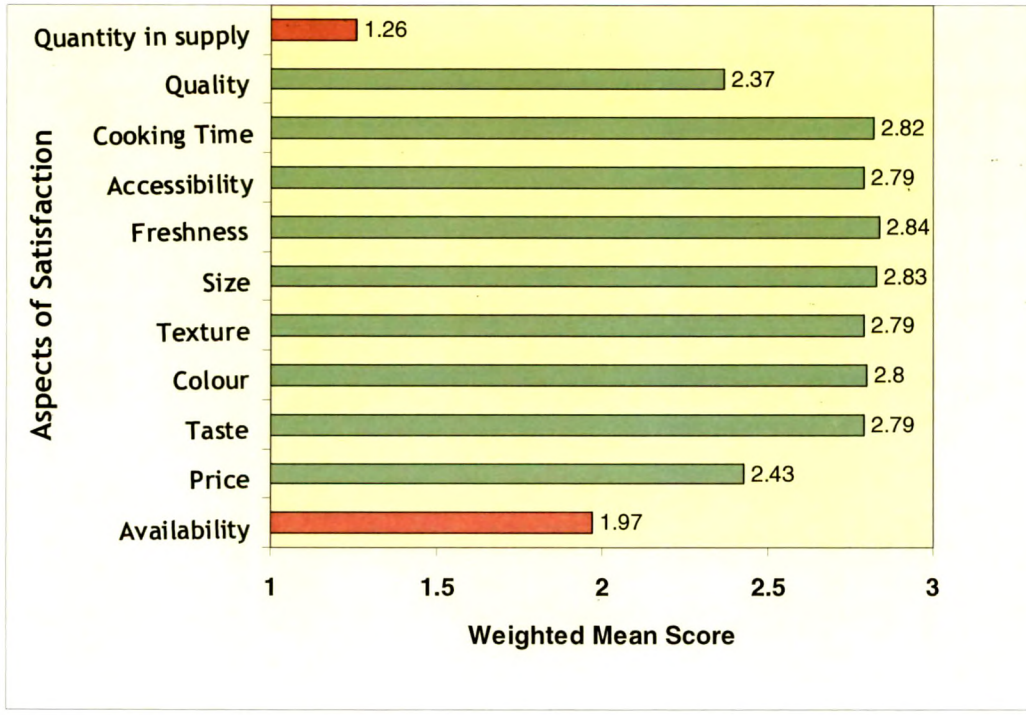


Weighted Mean Scores(Intensity index) : Mean weighted score were calculated for the satisfaction felt on using organic food for each aspect . The range of continuum was from 1 – 3. The range of mean weighted score was divided into two categories (i) 1-1.9 as low and (ii) 2 – 3 as high satisfaction. It was observed that the extent of satisfaction that the consumer felt were found to be low only for the quantity supplied of organic food in the shop. Further it was found that for availability, price, accessibility, appearance of organic food, taste, cooking time and quality of organic food, the score were found to be high. So it could be concluded that for all these areas they had more extent of satisfaction (Table-53).

Table: 53: Weighted mean score (intensity Index) for the extent of satisfaction felt on using organic food

Sr. No	Satisfaction	Mean Weighted Score
1.	Availability	1.97 Low
2.	Price	2.43 High
3.	Taste	2.79 High
4.	Appearance	
	a) Colour	2.80 High
	b) Texture	2.79 High
	c) Size	2.83 High
	d) Freshness	2.84 High
5.	Accessibility	2.79 High
6.	Cooking Time	2.82 High
7.	Quality	2.37 High
8.	Quantity in supply	1.26 Low

Fig.26 Weighted mean scores to extent of satisfaction felt on using organic food on various aspects



2.6 Conclusion:

For the present research the consumers were selected directly from the shops selling organic food. The mean age of consumers was 45.79 years and more than half of the consumers belonged to the age group 36-50 years. More than half of the consumers were graduate. A little more than half of the consumers were employed. Mean income of consumers was Rs.33,998 and majority of the respondents belonged to nuclear family. It was found that majority of the consumers had shops selling organic food near to their residence.

A wide majority of consumers said that the reason "organic food is good for health" and "Organic food is considered to be nutritious" and "the taste of organic food is better than conventional food" influenced them to great extent for buying organic food. More than three- fourth of consumers were influenced to a great extent by the "qualities of the shops selling organic food". A little less than two third (62%) of consumers were influenced to a great extent by the reasons that " Organic food is eco-friendly" and "to support organic farming movement". Overall view of the reasons which influenced consumers to buy organic food showed that majority (86.7%) of consumers were influenced to moderate extent by the given reasons for buying organic food.

It was observed that little more than three-fourth of consumers had moderate extent of use of organically grown vegetables, fruits and organically processed sugar, jaggery and honey. Majority of the consumers had low extent of utilization of Nuts which were grown organically as well as organic ready to eat items. Nearly 80 percent of consumers bought conventional cooking oil. For overall extent of utilization of organic food items, it was observed that three-fourth of consumers had medium extent of utilization of organic food items whereas 16 per cent of consumers had low extent of utilization of organic food items available in Vadodara city.

A wide majority of consumers reported that organic food was available in particular season only hence that created problem. Nearly three-fourth of consumers reported that they faced problem as the vegetables were supplied

in less quantity whereas little more than half of consumers reported that organic products with certification mark were not available. It was observed that more than half of consumers found that price of organic food was higher than conventional food items. Majority of consumers reported that they did not face any problem with the taste of organic food, smaller size of organic food and freshness of organic food. An overall view showed that majority of the consumers faced problems at medium extent with the use of organic food whereas very few faced problems at higher extent while using organic food.

About one-third of consumers or a little less than that were not satisfied with the availability of various organic food items. Little more than half of consumers reported that they were satisfied with the price of organic food. Majority of consumers were satisfied for all aspects of appearance of organic food, though they were small in size, location of shop, taste and price of organic food. In case of quality of organic food little less than half of consumers were undecided about the nutritional content and half of consumers were not sure about the certification of organic food but it was found that one-fourth of consumers were satisfied with the genuineness of organic food items available in the market. An overall view of the extent of satisfaction of consumers felt on use of organic food showed that the extent of satisfaction that the consumers felt were found high for the price, accessibility, appearance of organic food, taste, cooking time and quality of organic food.

Testing of Hypotheses

A number of hypotheses were formulated on the basis of objectives of the study. For the purpose of statistical analysis, the hypotheses were formulated in the null form. The results are presented in this section.

HO 1: **There exists no variation in the extent of influence of various reasons, extent of utilization of organic food, extent of problems faced while using organic food and extent of satisfaction felt on using organic food with personal, family and situational variables of the consumers.**

For the purpose of statistical analysis, sub hypotheses were framed.

$HO_{1.1}$ There exists no variation in the extent of influence of various reasons for buying organic food with personal, family and situational variables of consumers.

The selected variables were as follows.

Personal variables: Age, education, occupation

Family Variables: Family type, Family size and Family income

Situational Variable: Time period of using Organic food

Analysis of Variance was computed to find out the variation in the extent of influence of various reasons for buying organic food due to age, family size and family income. Whereas, to study the difference in extent of influence of various reasons for buying organic food due to education, employment, family type and time period of using organic food of consumers, t test were computed. The results are reported here.

Table: 54: Analysis of Variance showing variation in extent of influence of reasons by age, family size and family income of the consumers

Sr. No	Source of Variation	Df	Sum of squares	Mean Squares	F value	Level of significance
1	**Age**					
	Between Group	2	29.5029	14.7515	1.23	N.S.
	Within Group	147	1761.09	11.9802		
2	**Family Size**					
	Between Group	2	57.8685	28.9332	2.45	N.S.
	Within Group	147	1732.72	11.7873		
3	**Family Income**					
	Between Group	2	132.57	66.28	5.87	0.05
	Within Group	147	1658.01	11.27		

N.S- Not Significant

F values were not found to be significant for the variation in extent of influence of various reasons for buying organic food for age and family size, whereas it was found to be significant for family income at 0.05 level. Hence, It can be concluded that the extent of influence of reason for buying organic food varied with the family income of the respondents (Table-55). A difference was found in the mean scores for the extent of influence of reasons between those respondents who had income ranging from Rs.20001 to Rs.40000 (35.51) and Rs. 40001 and more (37.44).

Table: 55: t- test showing difference in the extent of influence of various reasons by education, employment, family type, and exposure to organic food of consumers

Sr No	Variable	Mean Score	t value	df	Level of Significance
1	**Education**				
	Graduate and Below Graduate	36.0097	1.13	148	N.S.
	Post graduate and above	35.3191			
2	**Occupation**				
	Non-employed	35.7246	0.22	148	N.S.
	Employed	35.8519			

Sr No	Variable	Mean Score	t value	df	Level of Significance
3	**Family Type**				
	Joint	35.2889	1.17	148	N.S.
	Nuclear	36.0095			
4	**Time period of using organic food**				
	2 years or less	36.6286	1.64	148	N.S.
	More than 2 years	35.5391			

N.S- Not Significant

The t value were not found to be significant for the difference in extent of influence of reason for buying organic food by education, employment, type of family of consumers and time period of using organic food by consumers. Hence the null hypotheses was accepted. It could be concluded that there existed no variation in the extent of influence of various reasons for buying organic food with personal, family and situational variables of consumers except family income.

HO $_{1.2}$ There exists no variation in the extent of utilization of organic food due to personal, family and situational variables of consumers.

Analysis of Variance were computed to test the variation in the extent of utilization of organic food by age, family size and family income.

Table: 56: Analysis of Variance showing variation in Extent of utilization of organic food by age, family size and family income of consumers

Sr. No	Source of Variation	df	Sum of squares	Mean Squares	F value	Level of significance
1	**Age**					
	Between Group	2	1259.8455	629.9228	0.7623	N.S.
	Within Group	147	121473.65	826.3514		
2	**Family Size**					
	Between Group	2	1965.0443	982.5221	1.1959	N.S.
	Within Group	147	120768.45	821.5541		
3	**Family**					

Sr. No	Source of Variation	df	Sum of squares	Mean Squares	F value	Level of significance
	Income					
	Between Group	2	1338.8952	669.4476	0.8107	N.S.
	Within Group	147	121394.60	825.8136		

N.S.- Not Significant

The results did not show any significant variation in the extent of utilization of organic food due to age, family size and family income (Table-56). **Thompson (1998)** reported that higher income households were more likely to purchase organic purchase in US. However some segment with lower income were more frequent buyers of organic food in US.

Table: 57: t test showing difference in Extent of utilization of Organic food by Education, Employment, Family type and time period of using organic food.

Sr No	Variable	Mean Score	t value	df	Level of Significance
1	**Education**				
	Graduate and Below Graduate	173.2718	3.99	148	0.01
	Post graduate and above	192.5106			
2	**Employment**				
	Non-employed	178.8841	0.16	148	N.S.
	Employed	179.6543			
3	**Family Type**				
	Joint	177.7111	0.44	148	N.S.
	Nuclear	179.9810			
4	**Exposure to organic food**				
	2 years or less	171.6286	1.82	148	NS.
	More than 2 years	181.6348			

N.S. – Not Significant

The results of t test did not show any significant difference in the extent of utilization of organic food due to employment, family type and time period of using organic food. Whereas it was found significant for education of respondent. Hence, it can be concluded that extent of utilization of organic food was affected by education of consumers (table-57). The null hypothesis

was partially rejected. It could be concluded that there existed no variation in the extent of utilization of organic food due to personal, family and situational variables of consumers except their education.

The mean score of extent of utilization of organic food for the two education groups reflected that mean score was higher for higher education group. i.e. those who had education of post graduation and above had a higher score for extent of utilization than those who had education of graduation and below.

HO $_{1.3}$ There exists no variation in the extent of problems faced while using organic food due to personal, family and situational variable of consumers.

Analysis of Variance was computed to test the variation in the extent of problem faced while using organic food by age, family size and family income

Table:58 Analysis of Variance showing variation in problems faced by consumers while using organic food by Age, Family Size and Family Income of consumer

Sr. No	Source of Variation	df	Sum of squares	Mean Squares	F value	Level of significance
1	**Age**					
	Between Group	2	48.5804	24.2902	2.1360	N.S.
	Within Group	147	1671.6929	11.3721		
2	**Family Size**					
	Between Group	2	2.1104	1.0552	0.0903	N.S.
	Within Group	147	1718.1629	11.6882		
3	**Family Income**					
	Between Group	2	47.2959	23.6479	2.0779	N.S.
	Within Group	147	1672.9774	11.3808		

N.S. – Not Significant

F values were not found to be significant for the variation in extent of problems faced while using organic food by age and family size, and family income. Hence the null hypothesis was accepted (Table-58).

Table: 59: t test showing differences in problems faced by consumers while using organic food by education, employment, family type of consumer and time period of using organic food by consumers

Sr No	Variable	Mean Score	t value	df	Level of Significance
1	**Education**				
	Graduate and Below Graduate	39.6311	0.30	148	N.S
	Post graduate and above	39.8085			
2	**Employment**				
	Non-employed	39.2319	1.52	148	N.S
	Employed	40.0741			
3	**Family Type**				
	Joint	38.8889	1.90	148	N.S
	Nuclear	40.0286			
4	**Time period of using organic food**				
	2 years or less	39.1143	1.14	148	N.S
	More than 2 years	39.8609			

N.S. – Not Significant

The computation of t value did not show any significant difference in the extent of problems faced while using organic food due to education, occupation, family type and time period of using organic food of consumer. Hence, the null hypothesis was accepted (table-59).

Thus, it could be concluded that there existed no variation in the extent of problem faced while using organic food due to personal, family and situational variables.

$HO_{1.4}$ There exists no variation in the extent of satisfaction felt on using organic food due to personal, family and situational variable of consumers.

Analysis of Variance were computed to test the variation in the extent of satisfaction felt by consumers on use of organic food by age, family size and family income

Table: 60: Analysis of Variance showing variation in satisfaction felt by consumers on use of organic food by Age, Family Size and Family Income of respondent

Sr. No	Source of Variation	df	Sum of squares	Mean Squares	F value	Level of significance
1	**Age**					
	Between Group	2	1069.38	534.6904	1.5754	N.S.
	Within Group	147	49890.19	339.3891		
2	**Family Size**					
	Between Group	2	2263.2864	1131.64	3.4161	N.S.
	Within Group	147	48696.28	331.2673		
3	**Family Income**					
	Between Group	2	863.4544	431.7272	1.2668	N.S.
	Within Group	147	50096.11	340.78		

N.S.- Not Significant

F value were not found to be significant for the variation in extent of satisfaction experienced with the use of organic food for age and family size, and family income (Table-60).

Table:61: t test showing difference in satisfaction experienced by the consumption of Organic food by Education, Employment, Family type of consumers and time period of using Organic food.

Sr. No	Variable	Mean Score	t value	df	Level of Significance
1	**Education**				
	Graduate and Below Graduate	168.3786	0.32	148	N.S
	Post graduate and above	167.3404			
2	**Employment**				
	Non-employed	169.7681	1.05	148	N.S
	Employed	166.5926			
3	**Family Type**				
	Joint	172.9556	2.15	148	0.05
	Nuclear	165.9524			
4	**Time period of using organic food**				
	2 years or less	171.8857	1.40	148	N.S
	More than 2 years	166.8870			

N.S.- Not Significant

The computation of t-value did not show any significant difference in the extent of satisfaction felt on use of organic food due to education, occupation, and time period of using organic food by consumer. But it was found significant for the type of family. Hence, it could be concluded that the extent of satisfaction felt on use of organic food was affected by type of family (Table-61). Hence the null hypothesis was partially accepted and it could be concluded that there exist no variation in the extent of satisfaction felt on use of organic food due to personal, family and situational variable except type of family.

HO 2 **There exists no relationship between extent of influence of reasons for buying organic food and extent of utilization of organic food, extent of problems faced while using organic food and extent of satisfaction felt on use of organic food by the consumers.**

Coefficient of correlation was computed to test this hypothesis.

Table: 62: Co-efficient of correlation showing relationship between influence of reasons for buying organic food and extent of utilization of organic food, problems faced while using organic food and satisfaction felt on use of organic food

		Selected Variable	r Value	Level of Significance
Influence of reasons for buying organic food	1	Extent of utilization of Organic food	0.2353	0.05
		a)Organic Vegetables	0.2146	0.05
		b)Organic Fruits	0.2457	0.05
		c)Organic Nuts	0.1191	N.S.
		d)Organic Cereals	0.1583	N.S.
		e)Organic Pulses	-0.0399	N.S.
		f) Organic Oil	0.1788	N.S.
		g)Organic Condiments and Spices	0.0914	N.S.
		h) Organic Sugar and Jaggery	0.1796	N.S.
		i) Organic Ready to eat	0.1616	N.S.
	2	Problems faced while using Organic food	-0.0910	N.S.
	3	Satisfaction felt on use of Organic food	0.1022	N.S.

N.S.- Not Significant

The results of revealed a significant relationship between extent of influence of reasons for buying organic food and extent of utilization of organic food (Table-62). A positive relationship was found in case of the extent of utilization of organically grown vegetables and fruits and the influence of reasons for buying organic food. It was found that problems faced while using organic food and satisfaction felt on use of organic food were not related with the extent of influence of reasons for buying organic food. Hence the null hypothesis was rejected and it could be concluded that extent of utilization of organic food had a positive relationship with the extent of influence of reasons for buying organic food (Table-62).

HO 3 There exists no relationship between extent of utilization of organic food and extent of problems faced while using organic food and satisfaction felt on use of organic food by the consumers.

Coefficient of correlation was computed to test this hypothesis.

Table: 63: Co-efficient of correlation showing relationship between extent of utilization of organic food and problems faced while using organic food and satisfaction felt on use of organic food.

	Selected Variable	r Value	Level of Significance
Extent of utilization or organic food	Problems faced while using organic food	-0.1295	NS
	Satisfaction felt on use of Organic food	0.3027	0.01

N.S.- Not Significant

The result revealed a significant relationship between extent of utilization of organic food and satisfaction felt on use of organic food. It was found that extent of problem faced while using organic food was not related with the extent of utilization of organic food. Hence the null hypothesis was partially rejected and it could be concluded that satisfaction felt on use of organic food had positive relationship with extent of utilization of organic food (Table-63).

HO 4 **There exists no relationship between extent of problems faced while using organic food and satisfaction felt on use of organic food.**

Coefficient of correlation was computed to see the relationship between the extent of problems faced while using organic food and satisfaction felt on use of organic food.

Table: 64: Co-efficient of correlation showing relationship between problems faced while using organic food and satisfaction felt on use of organic food.

	Selected Variable	**r Value**	**Level of Significance**
Problems faced while using organic food	Satisfaction felt on use of organic food	-0.2534	0.01
	A)satisfaction for availability	-0.2154	0.05
	B)Satisfaction with Price	-0.1165	N.S.
	C)Satisfaction with Taste	-0.2032	0.05
	D)Satisfaction with Colour	-0.0986	N.S.
	E)Satisfaction with Texture	-0.1233	N.S.
	F)Satisfaction with Size	-0.0728	N.S.
	G)Satisfaction with Freshness	-0.2059	0.05
	H) Satisfaction with Certification	-0.2329	0.05
	I) Satisfaction with Supply of Organic food	0.0104	N.S.

The results revealed a significant negative relationship between the problem faced and the extent of satisfaction felt on use of organic food (r=-0.2534 table-64). Further, considering various aspects of satisfaction a negative relationship was found between problems faced while using organic food and

satisfaction for availability of organic food (r = -0.215), satisfaction with the taste (r = -0.203), satisfaction with the freshness (r = -0.205)and satisfaction with the certification (r = -0.232). The intensity index for the problems faced while using organic food in the present study revealed a high extent of problems with availability, taste and certification mark for organic food (Table-50) . Hence the null hypothesis was rejected and it could be concluded that the extent of satisfaction was influenced by the extent of problems faced while using organic food (Table-64). Negative relationship indicated that higher the extent of problems faced, lower was the extent of satisfaction experienced.

Ho 5 There exists no difference in the extent of knowledge of respondents regarding organic food before and after the exposure to educational programme on organic food

Paired t test was computed to find out whether there was any difference in the extent of knowledge of youth (female) regarding organic food before and after the administration of organic food. Paired t test were also computed to see whether there was any difference in knowledge of second year students and third year students regarding organic food before and after the administration of educational programme.

Table: 64.1 Paired t test showing difference in extent of knowledge of respondents regarding organic food in pre test and post test.

Sr No	Variable	Mean Score	t value	df	Level of Significance
1	**Undergraduates**				
	Pre test	62.8400	6.38	74	0.01
	Post test	66.9067			
2	**Second year**				
	Pre test	62.7949	4.74	38	0.01
	Post test	67.2821			
3	**Third Year**				
	Pre test	62.8889	4.24	35	0.01
	Post test	66.5000			

Results of paired t test indicated that there was a difference in the knowledge of the respondents before and after the administration of educational

programme. Paired t test was found to be highly significant at 0.01 level for all the aspects of organic food.

It was also found highly significant for the knowledge of second year students and third year students regarding organic food (Table-74). Thus the null hypothesis was rejected and it could be concluded that there was a difference in the extent of knowledge of young females regarding organic food before and after exposure to educational programme.

Conclusion:

- There existed no variation in the extent of influence of various reasons for buying organic food with personal, family and situational variables of consumers except family income.
- There existed no variation in the extent of utilization of organic food due to personal, family and situational variables of consumers except their education.
- There existed no variation in the extent of problem faced while using organic food due to personal, family and situational variables.
- There existed no variation in the extent of satisfaction felt on using organic food due to personal, family and situational variables of consumers except their type of family.
- A positive relationship was found in case of the extent of utilization of organically grown vegetables and fruits and the influence of reasons for buying organic food.
- A positive relationship was found in case of extent of utilization of organic food and extent of satisfaction felt on using organic food.
- The negative relationship was found in case of the extent of problem faced while using organic food and extent of satisfaction felt on using organic food. Negative relationship indicated that higher the extent of problems faced, lower was the extent of satisfaction experienced.
- There existed a difference in the extent of knowledge of young women regarding organic food before and after the exposure to educational programme.

Section III. Case Studies of farmers doing Organic Farming

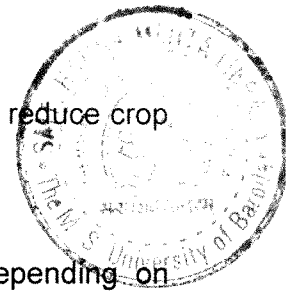
Organic foods are produced without the use of synthetic chemicals unlike food grown through conventional methods. They contain no added preservatives, artificial ingredients or irradiation. Fresh organic produce has more vitamins, minerals, enzymes and other micro-nutrients than intensively farmed food. It is what hasn't been added to organic food that makes it good for people; it is the most natural way of growing food and rearing animals. Nowadays, more and more evidence is emerging of the effect the chemicals in the food have on the health of the children. Children are particularly susceptible to additives in food, as all the safety levels of chemicals in food are set at an adult level. Children, due to their smaller size are commonly consuming a larger percentage of chemicals proportionately. The rise in ailments like asthma, eczema, allergies and hyperactivity have all been linked to additives and chemicals in the food. Cancer patients are also advised by doctors to eat organic food.

The main reasons for the farmers to grow organic crops are the concerns about the effects of chemicals on health and the effects of conventional farming on soil quality and conservation. Organic farming is seen as a steady growth market with many opportunities. Farmers are concerned about the environment. They are also concerned about the amount of energy used in agriculture, since, many farm chemicals have energy intensive manufacturing processes that rely heavily on fossil fuels.

Some farmers view organic farming as a part of the solution to meeting the challenges of modern day agriculture. Organic farmers find their method of farming to be profitable and personally rewarding.

Organic farming is never easy. In organic farming, farmers choose not to use some of the convenient chemical tools available to other farmers. Management and design of the production system become even more critical to the success of the farm. They select enterprises that complement each

other and set up the crop rotation and tillage practices to avoid or reduce crop problems.



Organic farming is either really expensive or really cheap, depending on where the farmer live and whether or not the farm is certified. India's farmers are still mostly practicing organic methods, passed down for millennia. Organic fertilizer and natural pest control are the only tools available to most of these farmers, who have always lacked the financial resources to explore chemical solutions. But these farmers, whose produce is as organic as they come, cannot afford to pay the fees required to gain official certification. The farmers doing organic farming face number of problems, yet they continue such farming.

The present research considered it necessary and interesting to conduct an in-depth survey of the farmers who do organic farming. Hence the farms from which the organic food products were coming to vadodara for selling were selected for the purpose of in depth analysis. An attempt was made to identify the reasons that motivated them to start organic farming and what problems they faced with organic farming. An effort was made to convey the consumers' and shopkeepers' problem to improve the production and sell of organic food in the market of Vadodara city.

These farmers were contacted personally by the researcher and time was fixed with prior appointment. Researcher visited their farm personally and conducted their interview. About 3 to 4 hours were spent in visiting one farm. These case studies are presented in this section describing the background information of farmer and farm, major crops during different seasons, details of certification for their farm, training they have received before starting organic farming and their profit or loss they gain after starting organic farming in their farm. An attempt was also made to analyze their problems faced while doing organic farming. The support from different agencies they have received before starting organic farming was also reported. The name mentioned in the case studies have been changed for the purpose of anonymity.

3.1 Case No.1 Devesh Patel's farm.

Background information:

Devesh patel was 25 years old and was a student of computer science. His farm was at Boriavi village, near Anand district. There were 4 members in the family. He had a younger brother who was studying in college. His father was also involved in the farming. Farming was their more than three generation occupation. His mother also helped in farming activities. They also had their own cold storage to store vegetables like potatoes, Yam elephant and ginger. Other than farming, cold storage was another source of income as they gave it on rent to other farmers to store vegetables in their cold storage. Their house was on the highway in the same land where they had cold storage. Other than their farm, they also had small piece of land surrounding to cold storage which also they used for farming purpose. Total area of farm was 15 "Vigha" (8.57 acres). This was their own land.

Details of Crops and irrigation system:

They mainly grew roots in their farm such as potatoes, yam elephant, ginger and turmeric regularly. They had developed their own seeds and started selling their seeds also. They generally grew these crops from September to March. After that they stored the products in their cold storage and sold it to the market for the entire year. They sold Potatoes and Yam elephant in the market. But they sold some amount of Ginger and Turmeric in the market and rest of the product was dried and sold in powder form i.e Ginger powder and Turmeric powder. They sent these powder to the shops of Vadodara city. They had their own well in their farm for irrigation and other use. The type of soil in their farm was Goradu.

Motivation for organic farming:

Mr. Devesh Patel mentioned that, he had started organic farming since last 10 years. It was not very common at that time. His entire family was actively involved in "Swadhyay Parivar" activities and from those activities they were inspired not to kill any one and protect the earth by not giving any pesticides.

Thus, they started Organic farming (Sajiv Kheti) At least 40-50 people were involved in farming activities

Plate 12: Interview with Devesh Patel

Certification of Organic farming:

It was found that though Devesh Patel's family had started organic farming since last 10 years, they did not get any certificates for their farms as "organic farm". According to him, the certification process was very complicated and very expensive. Moreover, they were not aware of any local agency who gave certificates for organic farming. They also reported that they would apply soon for certification to "Jatan" once Jatan would get recognition as a certifying agency. "Jatan" was a Non Government Organization promoting and supporting organic farming and having retail outlet to sell organic food product at Vadodara. Devesh Patel mentioned, "It is good to give to some local agency like "Jatan" for certification who is aware of the local climate, economic condition, crop and other related factors". Devesh Patel's family did not get any laboratory test done for their crops as they did not have any knowledge about it but they were interested for such test to be conducted. They were also interested in branding their products specially Turmeric powder and Ginger powder.

Support system for organic farming:

With reference to the support system, Devesh Patel reported that he had not received any support system from government till date but they had attended

Plate 13: Devesh Patel's Potato farm

many training and information camp organized by Jatan (NGO based at Vadodara) and Srishti (NGO based at Ahmedabad). Other than that, they had not received any financial, psychological or social support from any other organization.

Pesticides/ Fertilizers and Organic Manure used in their farm:

Earlier they were using Urea and DAP in their farm but they had stopped using them since last 10 years. They were using Vermi compost, Farm waste and 'Gaumutra' (Urine of cow) as an organic manure for their farm at the time of data collection of present research. They also followed some grouping of vegetables so that their crop remains protected from the insects. They also had made 'Panchgavya' (all the items originating from cow), which is made of buttermilk, Cow milk, Gaumutra(Urine of Cow), Ghee and Gobar(Cow dung). They mixed all these and kept it in a closed container for 2 to 3 months. They kept rotating these in between. This solution was sprayed on the crops as it was considered very good for crops. According to him, for organic farming, cow was necessity as one needed Gobar(cow dung) everyday in large amount. Sometimes it was expensive to get it from outside. Organic manure

were cheap only if it is made at one's own farm otherwise, it is expensive to get all Panchgavya and Vermi compost,. They also sold cow milk in nearby houses and to Amul cooperative. This milk could be considered as organic milk as they gave only organic grass and farm waste to cow as food.

Plate 14: Panchgavya

Plate 15: Cow shed in the farm

Advantages of Organic farming:

Devesh Patel expressed that, after starting organic farming they had started gaining profit and increased production. The quality of land also improved and they had psychological satisfaction with the feeling of not harming the earth through farming. They had gained lot of knowledge about various methods of making organic manures through the camps organized by "Jatan" and "Srishti". They had also gained knowledge about the harmful impact of pesticides on health and on land. Their social circle also had increased and knew about various things related to organic farming. Because of organic farming, their financial condition also improved. For them, the decision to change to organic farming was the "right decision".

Plate 16: **Ginger seeds**

Plate 17:**Yam Elephant seeds**

Problems Faced while doing organic farming:

Devesh Patel said "government is not providing any support to create awareness regarding organic farming and to promote organic farming. Also no financial support is given to the farmers who is willing to start organic farming. Another problem was with the distribution channel". It was observed that there is a need of proper distribution channel for organic products. Though they were having products at farm, they didn't know about the consumers' need for that particular product. The poor farmers could not afford vehicle and transportation cost everyday to supply their product to the city. Thus, proper marketing and distribution channel was required to promote organic farming. Initially one or two years the production decreased but after that the production and quality of crop as well as soil improved.

3.2 Case No.2 Naresh Patel's farm.

Background information:

Nareshbhai's farm was also situated at Boriavi village near Anand district. They had their house at the farm itself. The whole family was involved in farming activities. Farming was their main occupation. Total area of farm was 2 "vigha" (1.14 acres). This was their own land.

Details of Crops and irrigation system:

They grew mainly roots in their farm eg. potatoes, and ginger. They had started organic farming since last 3 years only and therefore they got seeds from other farms They were going to start developing their own seeds very soon. They generally grew these crops from September to March. After that they stored the product in the cold storage on rent. They sold Potatoes in the market as and when required. They also had their own well in the farm for the water facility and irrigation. The type of soil in their farm was Goradu.

Plate 18: Children digging out potatoes from farm

Motivation for organic farming:

After inspired by others, they started with small part of their land for organic farming. Being a small farmer they could not take risk as this was the only source of income for the entire year. Initially they had started in just a small part of their land and after 2 years when they were satisfied they converted the whole farm in to organic farm. They were also inspired by "Swadhyay Pariwar" activities. They also had attended some of the camps organized by Jatan and thus they were motivated to start the organic farming in their farm. His whole family was staying together they all were involved in the farming activities. They didn't have any labour for farming work.

Plate 19: Ginger Plant

Plate 20: Ginger Protected with other crop

Certification of Organic farming:

As they had stared organic farming since last 3 years only (from the date of data collection) they were not much aware about the certification process and also they could not afford the fees of certification. Therefore their farm was not a certified organic farm. But they were interested if someone provided them the proper knowledge about certification. They also reported that they would register with "Jatan" when that organization would start giving certification to organic products. They had not conducted any laboratory test for their crops. They were interested for such test to be conducted as they did not have any knowledge about it.

Support system for organic farming:

Nareshbhai reported that he did not receive any support from government till date. However they had attended many training and information camps organized by Jatan (NGO based at Vadodara) and Srishti (NGO based at Ahmedabad). They had not received any financial, psychological or social support from any other organization. He had good support from the family to start organic farming and also he had received very good support with

reference to get organic manure from the farmers who were doing organic farming.

Pesticides/ Fertilizers and Organic Manure used in their farm:

Urea, Sulphate and DAP were used as fertilizers in their farm prior to starting organic farming. Initially they stopped using them in small part of land and eventually they had completely stopped using those chemical fertilizers since last 3 years in the whole farm. They were using vermicompost, and farm waste as an organic manure for their farm at the time of data collection. They had only 2 cows in their farm and therefore when they needed compost and other organic manure, they brought it from other farmers. They felt it was expensive to get it from other farms but at the same time to buy cow was also expensive. as this was their beginning with organic farming, eventually they would buy more cows for their farm.

Advantages of Organic farming:

After starting organic farming they had found good profit in terms of production and income. The quality of land also improved and hence he felt himself secured with reference to quality of land. They felt no burden of due debts for the chemical fertilizers. They had also gained lot of knowledge about various methods of making organic manures and harmful impacts of fertilizers and pesticides through the camps organized by Jatan and Srishti. They had observed no changes in social circle For them the decision to change to organic farming was the right decision as the financial condition had improved a lot after starting organic farming.

Problems Faced while doing organic farming:

Mr Naresh Patel said that "he didn't face any problem. Initially he had less production after starting organic farming. He was not very happy with the support and help provided by government. "As government gave subsidy to buy fertilizers", he said " they should provide some support to the poor farmers who were interested to start organic farming. He also reported that if proper organic manure was not used in the farm, the crop might get affected by the insects sometimes and therefore proper knowledge was required

regarding organic manure and its use. Lack of proper distribution channel was another problem for poor farmers He said that sometimes, though they had sufficient amount of crops at farm but had no transportation facility to send it to the city for sell. Thus many times the crops got deteriorated if not sold on time. Poor farmers can not afford vehicle and transportation cost everyday to supply their product to the city. "Thus proper marketing and distribution channel was required to promote organic farming", he strongly believed.

3.3 Case No.3 Anuj Patel's farm.

Background information:

Anuj Patel was working in a company and he had two farms. His main focus was on farming only. One farm was at Sindh Road and the other farm was at Makarpura. Total area of his Sindh Road farm was 7 "vigha" (4 acres) and Makarpura farm was 250 vigha (142.85 acre). He was doing organic farming since 1990. Main product in his Makarpura farm was all varieties of legumes and at Sindh road farm he grew many varieties of citrus fruits, vegetables and roots. His farm was protected with Bamboo, Bougainville and Drumstick trees.

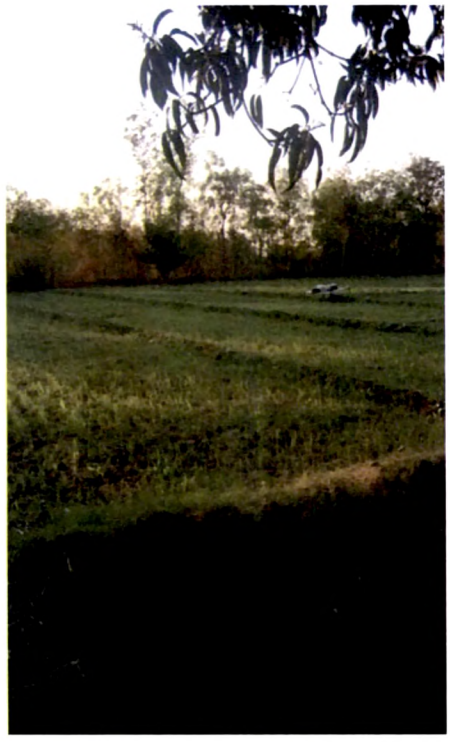


Plate 21: Anuj Patel's Farm

Plate 22: Yam Elephant at farm

Details of Crops and irrigation system:

Mr.Anuj Patel grew some fruits and vegetable varieties like bajra, Brinjal, Cabbage, lady's finger, Yam elephant, all types of beans and many citrus fruits in his Sindh Road farm. But in Makarpura farm he grew all legumes like Chick peas, Beans, Rajma, whole green gram (Moong), etc. He had developed his own seeds for all these crops and had collected many new varieties from different parts of India. He kept on rotating the fruits and vegetables in different seasons. According to him crop rotation would give the best result in organic farming. Different vegetables took different time to grow. All leafy vegetable took 1 to 1.5 months and all types of beans took 8 to 9 months. He never repeated the same crop on same place. He also followed bio dynamic methods for farming. He had his own borewell for the water in his farm. The type of soil was Retal (Sandy). He had Tubewell method for irrigation and he also stored rain water for farming purpose.

Motivation for organic farming:

When he started organic farming, it was not very common. It was his own hobby to keep experimenting new methods of farming and self inspiration to do organic farming. He had employed one family to take care of his farm and that family maintained the whole farm. According to him "less number of people are required in organic farming as the earth takes its own care". He had not taken any training but got brief idea from Kapilbhai from Jatan. Initially he started organic farming in small area of his farm and eventually he converted the whole area in organic farming. His own hobby and interest for organic farming motivated him for organic farming

Certification of Organic farming:

Anuj Patel did not feel certification is necessary for organic farming. But according to him "genuinity of a person is important". Even after getting certificate, if a person (farmer) is not genuine, he would start using chemicals in the farm. He also reported that people come with trust to buy his products and they had faith in the products. He did not want to apply to any outside agency for certificates and therefore he was waiting for "Jatan" to start working for certification of organic farm. His products were not subjected to any laboratory test for his crops

Plate 23: Interview with Anuj Patel

Plate 24: Calf at Cow shed

Support system for organic farming:

Anuj Patel reported that it was sad but till date government had not provided any support to farmers who were willing to start organic farming. A Group of farmers who does organic farming meet frequently and exchange their experience. Every year, NGOs like "Jatan" and "Shrishti" organize many camp and food exhibition to promote organic farming and support farmers who are doing organic farming. He had not received any financial and social support from any other organization. He got very good support from his family and friends to start and continue organic farming.

Plate 25: Turmeric seeds

Plate 26: Boundaries with Bamboos

Pesticides/ Fertilizers and Organic Manure used in their farm:

Prior to adopting organic farming he was using Urea and DAP in his farm but they had stopped using them since last 12 years. At the time of data collection he was using all farm waste like leaf, mud and cow dung for his farm. Also he followed some grouping of vegetables so that their crop remains protected from the insects. He used to make manure on his own in his farm only.

Advantages of Organic farming:

After starting organic farming he had gained profit and increased production. The quality of land also improved. When he bought his farm, the cost of his farm was Rs. 2,30,000 and now the cost of his farm was Rs. 80,00,000. He had gained good knowledge about various methods of making organic manures through the camps organized by Jatan and by sharing experience with farmers. Their social circle also had increased and knew about various things related to organic farming. Anuj Patel said that farming was considered as his hobby over and above other sources of income. But still this organic farming helped him to improve his financial condition. Yearly expense was Rs. 49,000 and Yearly income was Rs. 63,000. Thus, he got Rs.14,000 profit every month and the cost of land also increased. For him the decision to change to organic farming was the right decision.

Problems Faced while doing organic farming:

Anuj Patel had reported some outside problems which he faced everyday. The main problem that he faced was with the quality of water. The water in that area was saline which was not good for farming activities. Other than that their crops needed to be protected from monkeys and 'Neel' cow (Type of Wild cow). They entered in the farm and ate crops. Monkeys ate all fruits. He had also reported that the production decreased initially when he started or converted to organic farming. He said "But if one takes proper care of crops, they will not be affected by insects". He didn't find any problem in making organic manure as everyone made manure in one's own style with cow dung and farm waste. He further reported that government was not

providing any support to farmers who were doing organic farming. He also reported that people did not have knowledge and awareness abut organic farming and therefore there was not constant demand of organic products in the market. Otherwise according to him "there is a good profit in growing organic food items".

3.4 Case No.4 Kiritbhai Patel's farm.

Background information:

Kiritbhai Patel was doing organic farming since last 10 years. His farm was situated at Mobha Village, Near Padra. Total area of his farm was 250 "vigha" (142.85 acres) The whole family was involved in farming. His house was also near to his farm. This was his own land.

Plate 27: Kiritbhai's farm

Details of Crops and irrigation system:

The main crops included Moong, Udad dal, Cotton, Wheat and Toor dal. Other than that he also grew some vegetables like Lady's finger, bottle guard and Green Bengal gram(Chana). The soil of his farm was a combination of 'Goradu', 'Besar', and 'Black'. Total 25 people were working in his farm. He had a big problem regarding water as he relied completely on rain water. The ground water was salty and which was not good for agriculture. He got water

through Narmada Canal during the rains. Therefore during summer they could not grow anything in the farm.

Plate 28: Interview with Kirit Patel

Plate 29: Lady's finger farm

Motivation for organic farming:

He had attended one programme at Anand Krishi University which was organized by Jatan. Afterwards also he attended many other programme related to organic farming and its advantages. he also visited Rajasthan and Maharashtra state to learn about different farming methods used by them for growing spices. He gained detailed information about the crops which could be grown in less water. These all trainings and camps motivated him to start organic farming.

Certification of Organic farming:

Kiritbhai stated that certification process is very expensive process and he could not afford. He reported that whenever some local and less expensive certification process would start he would take certificate for his farm. He had not conducted any laboratory test for his crops as he did not have any knowledge about it but he was interested for such test to be conducted and therefore he had given samples of Toor dal from his farm for laboratory test for the present study.

Support system for organic farming:

He reported that NGOs provided financial support to some extent and training, information and psychological support to great extent. Also agriculture universities provided some information and training regarding organic farming to some extent. But he had not received any support from government with reference to finance, training, information and psychological support. From family he got great extent of psychological and social support. Friends and relatives also provided financial support to some extent.

Plate 30: Storage of green gram in sand

Plate 31: Dried neem fruit as manure

Pesticides/ Fertilizers and Organic Manure used in their farm:

Nitrogen and Potash based chemical fertilizers were being used by Kiritbhai in his farm. But he observed that the quality of land deteriorated with the use of chemicals. The soil became hard with the use of chemicals. It increased expenses and decreased production. He stopped using all chemical since last 8- 9 years and started using Neem oil, Neem leaves, and other organic manures in his farm.

Advantages of Organic farming:

After starting organic farming, he had not achieved much profit but he was satisfied and he believed that the production increased after few years. His main limitation was shortage of water. The quality of land had improved. He

gained good knowledge about farming methods and harmful impact of chemicals on health and land. Initially he got only 40% of production but he was getting 100% of production from his farm at the time of data collection. His social circle had also increased as he had attended many training programmes and camps related to organic farming. For him the decision to change to organic farming was the right decision.

Problems Faced while doing organic farming:

According to Kiritbhai, initially the production decreased but eventually it increased upto 100%. He also reported that one had to take care of the crop as due to absence of pesticides the crop was affected by insects very soon. To start organic farming proper knowledge and training was also required. Another problem which he reported was about distribution channel. There was no proper channel to supply organic food items from farms to market and government was not providing any support for this. Also poor farmers could not afford vehicle and transportation cost everyday to supply their product to the city. Thus proper marketing and distribution channel was required to promote organic farming.

3.5 Case No.5 L.N. Shah's farm.

Background information:

Mr. L.N.shah had farm near Padra. The total area of his farm was 5 "vigha" (2.85 acres). Mohan took care of his farm. He stayed at farm only. He had his own business. Farming was just for hobby. He grew varieties of fruits and supply it to Vadodara market. This was his own farm.

Plate 32:Cow shade in the farm

Plate 33: Coconut tree

Details of Crops and irrigation system:

The main crops were fruits and they had good variety of Pomegranate, guava, lemon, Amla, Sweet lime etc. Few vegetable varieties were also there. They had all trees of fruits and which gave fruits during different seasons. They grew ladies finger, bottle guard, beans etc. and kept rotating these vegetables. The type of soil in their farm was 'Black' and 'Gorat'. They had Tubewell system for irrigation.

Motivation for organic farming:

Organic farming was just done with the passion. He had started organic farming since 5 years. Around 6 people were working in his farm.

Certification of Organic farming:

He did not take any certificate for his farm. He thought it was not necessary to take certificate also. He was doing organic farming and supplying products to Vadodara market. He did not want to do it professionally and therefore he was not much keen to take certificate. But in future if some local agency would start giving certification, he would apply for it. He had not given his products for any laboratory testing.

Plate 34: (Orange tree) Citrus fruits in the farm

Support system for organic farming:

Farming was passion for him. As a hobby he had started organic farming. He knew about 'Jatan' organization and from them, he gained additional knowledge regarding organic farming whenever required. He had not received any support system from government till the time of data collection. Other than that, they had not received any financial, psychological or social support from any other organization but got it from friend, family and relatives

Plate 35: Getting familiar with the crop

Plate 36: Grown vegetables in the farm

Pesticides/ Fertilizers and Organic Manure used in their farm:

Earlier they were using Urea and DAP in their farm but they had stopped using them since last 5 years. Now they were using vermicompost, and made their own manure from the farm waste. Also he followed some grouping of vegetables so that their crop remained protected from the insects. He also did crop rotation.

Advantages of Organic farming:

After starting organic farming he had not gained much profit as the farm was small comparatively. The quality of land improved. He did farming for use of his friends and family. After being used by family whatever left was sent to the market. Knowledge had increased regarding various farming activities. He thought that doing organic farming was a good decision.

Plate 37: Bottle guard in the farm

Problems Faced while doing organic farming:

According to him Initially less profit was there in organic farming as the production decreased. The support from government was lacking and therefore there was not much awareness about the organic farming among the people. As farming is not the only source of income, and he was doing farming just as a hobby. Not much problems were identified related to distribution channel, less income, less production, expensive certification process etc.

3.6 Conclusion:

The in depth case study of selected farmers engaged in organic farming revealed that motivational factors for starting organic farming were training programmes organized by JATAN, camp organized by NGO and Swadhyay activities. Farmers faced difficulty in marketing of food products grown organically. All the farmers were making their own organic manure. Farmers felt that certification process for organic farm was expensive. They were waiting for some local agency to start giving certificate. Farmers were satisfied with the quantity of crop after starting organic farming and they found that the

quality of soil had improved. They had psychological satisfaction with the feeling of not harming the earth through organic farming and they had gained lot of knowledge about various methods of making organic manure. It was found that farmers were not satisfied with the government as it was not providing any support to the poor farmers who had started organic farming. They also gained profit as the production increased eventually.

Section IV Food Quality Assessment

An attempt was made in present study to assess food quality of organic food. To find out whether there was any difference between organically grown food items and those grown with non-organic farming methods. An attempt was made to obtain selected food items from adjoining/neighbouring farms, so that soil quality could be controlled to some extent. The food quality was assessed on the following parameters

4.1 Biochemical parameters:

(a)Presence of chemical residues (Urea, Lead Cadmium and organochlorine pesticides)

(b) Microbial content : Presence of E.coli

(c) Nutrient content : Presence of Fat, Protein, Carbohydrates and Calories

(d)Moisture content

4.2 Sensory Evaluation test

4.3 Cooking time

4.4 Shelf Life/ Appearance test

4.1 Biochemical parameters

One sample from each food group (cereals, pulses, vegetables, fruits, roots and jaggery) was selected directly from the organic and conventional (non organic) farm. Samples selected were Rice, Red Gram Dal, Cabbage, Chiku, Yam Elephant and Jaggery. All the samples were labeled and given to Foods and Drugs Laboratory, (Government laboratory) Vadodara for the testing. The parameters were biochemical parameters, microbial content, nutrient content and moisture content. All the test were conducted with the use of GC (Gas chromatograph) and AAC (Automic Absorption Spectrometer). These tests were carried out at government laboratory. There was no replication done for this tests. Also no statistical tests were performed with the result of the test.

(a) Presence of chemical residues (Urea, Lead Cadmium and organochlorine pesticides

(i) Fertilizer content: In case of organically and conventionally(non-organically) grown red gram dal, chiku, yam elephant and jaggery no fertilizer content was found. But in case of non organic rice and cabbage Urea was found as a physical mixture. It is possible at the time of packaging Urea fertilizer might have been mixed with the rice and cabbage.

(ii) Pesticides content and heavy metals : In case of organically and non organically grown rice and red gram dal no organochlorine pesticides and heavy metals were found. They were not found in chiku and even in jaggery. However in cabbage traces of chlorpyriphos were detected in both organically grown and non organically grown crops. Similarly in case of Yam elephant traces of lindane were found (Table-65). This is supported by Rupera(2009) reported a survey conducted by Anand Agriculture University in Anand, Surat, Vadodara, Padra, Nadiad and Bharuch city. It was revealed that cabbage, Lady's finger and cauliflower were more exposed to pesticide contamination in the state Gujarat.

Generally in organic farming the use of chemical pesticides is not done. But in the present study, the pesticides were found in organically grown cabbage and yam elephant as well. The reason could be that the crops were selected from the adjoining farms. There might have been possibility of use of pesticides by the farmers growing cabbage and yam elephant non organically. These pesticides and fertilizers might had been flew with the rainy water during rainy season. Hence, the unknown effect of chemicals might come in organic crop. These might have been the reasons for finding some traces of chemicals in organically grown food items included as sample in the present study.

Another reason of finding residues in the samples of organic food could be that the chemical residues might have already been present in the soil even

though the farmers have changed their cultivation from conventional to organic. **Agarwal (1997)** mentioned that pesticide residues can remain in ecosystem for 20-25 years. They accumulate in the human body without further transformation or excretion.

Kumpulainen(2001) studied the presence of heavy metals in potatoes and carrot and Jorhem and Slanina (2000) studied the cadmium and other heavy metals contents of organic and conventional potatoes and carrot in Sweeden. They reported that no differences were detected in Cd, Pb, Cr, Mercury and Zn between organically and conventionally

Wooes et al (1997) stated that such as study to compare impact of organic and non organic products would need to be carried out under very carefully controlled conditions over long period of time. All the factors that could influence would have to be kept constant for the test in order to be able to identify the effects. The present study accepts its limitation of not been able to control several other factors influencing organic and conventional (non organic) food.

(b) Microbial content : Presence of E.coli was found in organic and conventional yam elephant.

(c) Moisture content: Results indicated that no difference was found in organically grown and non organically grown food items(Table-65).

(d) Nutrient content: For all the samples nutrients like fat, protein, carbohydrates and calories were tested. The data in table – 65 indicated the nutrient content in organically grown and non-organically grown food items. No statistics were implied for the results.

Table: 65 Food quality Assessment of organic and conventional food: Biochemical parameters

	Presence of Chemical residues				Microbial Content	Moisture content	Nutrient Content			
Product	Organo chlorine pesticides by GC	Urea fertilizer	Lead by AAS	Cadmium by AAS	E coli	Moisture Content(%)	Fat (%)	Protein (%)	Carbohydrates (%)	Calories (KCal)
Rice										
Organic	Not detected	Not detected	Not detected	Not detected	Absent	13%	0.5%	6.8%	79%	346
Conventi-onal	Not detected	Detected in traces	Not detected	Not detected	Absent	13.8%	0.5%	6.5%	80 %	345
Red gram Dal										
Organic	Not detected	Not detected	Not detected	Not detected	Absent	13.4%	1.0%	24.1%	54.5 %	323
Conventi-onal	Not detected	Not detected	Not detected	Not detected	Absent	13.6%	0.9%	24.0%	55 %	322
Cabbage										
Organic	Trace level Chlorpyriphos Detected	Not detected	Not detected	Not detected	Absent	91%	0.6%	1.9%	4.6%	27
Conventi-onal	Trace level Chlorpyriphos Detected	Detected in traces	Not detected	Not detected	Absent	91.5%	0.5%	1.8%	4.7%	26.5
Chiku										
Organic	Not detected	Not detected	Not detected	Not detected	Absent	74%	1.1%	0.7%	21.8%	98

	Presence of Chemical residues				Microbial Content	Moisture content	Nutrient Content			
Product	**Organo chlorine pesticides by GC**	**Urea fertilizer**	**Lead by AAS**	**Cadmium by AAS**	**E coli**	**Moisture Content(%)**	**Fat (%)**	**Protein (%)**	**Carbohydrates (%)**	**Calories (KCal)**
Conventi-onal	Not detected	Not detected	Not detected	Not detected	Absent	73.7%	1.0%	0.6%	21%	97
Yam elephant										
Organic	Trace level Lindane Detected	Not detected	Not detected	Not detected	present	69.0%	0.1%	1.4%	26%	111
Conventi-onal	Trace level Lindane Detected	Detected in traces	Not detected	Not detected	present	70.0%	0.09%	1.3%	25%	110
Jaggery										
Organic	Not detected	Not detected	Not detected	Not detected	Absent	3.9%	0.1%	0.4%	95%	383
Conventi-onal	Not detected	Not detected	Not detected	Not detected	Absent	4.2%	0.1%	0.3%	94.5%	382

4.2 Sensory Evaluation Test

Another way to assess food quality was to find out whether there was any difference between organic and non-organic food items for its sensory parameters like taste, smell, Aroma Appearance and such other parameters. The food items selected for this test were Rice, Red gram dal, Yam elephant and Chiku. The raw organic and non-organic food items were given in two different bowls to the judges and they were requested to find out the differences between these two bowl with respect to given criteria viz. Size, Shape, Aroma, Colour, Healthy appearance, Feeling on touch and Taste. Judges were asked to indicate whether they found No difference, Some difference or they were Completely different.

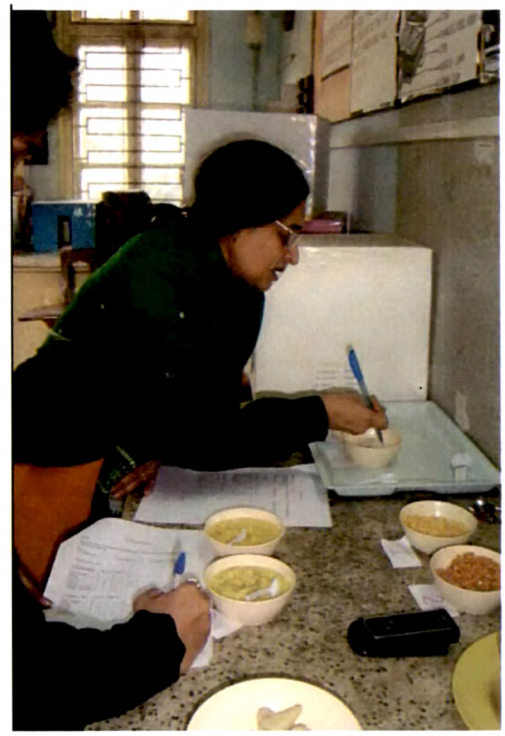


Plate 38: Judges assessing food

Rice:

It was observed from the result that in case of rice, two-third of the judges found some differences in size of grain and shape (table-66). It was reported that the size of organic rice was small and shape was uneven. Two-third of the judges found that the Aroma was completely different in both the rice. It

was also reported that the aroma of organic rice was better than the non organic rice. All the judges had reported that the colour was completely different of both the rice i.e. non-organic rice was more white and polished whereas organic rice was non polished and off white in colour.

Table:66 : Distribution of judges according to their opinion regarding sensory evaluation test for raw (uncooked) organic and conventional food items.

Sr. No	Product	Judges (n=3)					
		No Difference		Some Difference		Completely Different	
(I)	**Uncooked Rice**	f	%	f	%	F	%
1.	Size of Grain	-	-	2	66.6	1	33.3
2.	Shape	-	-	2	66.6	1	33.3
3.	Aroma	-	-	1	33.3	2	66.6
4.	Colour	-	-	-	-	3	100
5.	Feeling on touch	-	-	1	33.3	2	66.6
6.	Healthy Appearance	-	-	3	100	-	-
(II)	**Uncooked Dal**						
1.	Size of Grain	-	-	2	66.6	1	33.3
2.	Shape	-	-	-	-	3	100
3.	Aroma	-	-	3	100	-	-
4.	Colour	-	-	-	-	3	100
5.	Feeling on touch	-	-	-	-	3	100
6.	Healthy Appearance	-	-	-	-	3	100
(III)	**Yam Elephant(Uncooked)**						
1.	Firmness	-	-	2	66.6	1	33.3
2.	Visual Texture	-	-	3	100	-	-
3.	Aroma	-	-	3	100	-	-
4.	Healthy Appearance	-	-	3	100	-	-

Sr. No	Product	Judges (n=3)					
		No Difference		Some Difference		Completely Different	
5.	Colour	-	-	3	100	-	-
(IV)	**Chiku (Whole)**						
1.	Firmness	-	-	1	33.3	2	66.6
2.	Visual Texture	-	-	1	33.3	2	66.6
3.	Aroma	-	-	1	33.3	2	66.6
4.	Healthy Appearance	1	33.3	2	66.6	-	-
5.	Colour	-	-	2	66.6	1	33.3

Red Gram Dal:

In Case of Red gram dal it was observed that all the judges found both the samples completely different and they reported that the shape, colour, healthy appearance. Feeling on touch was better in non organic dal. But they also found some difference in aroma and reported that the aroma of organic dal was better than non organic dal.

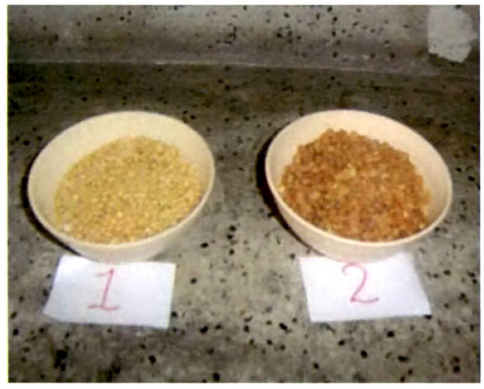


Plate 39: Uncooked Red Gram dal

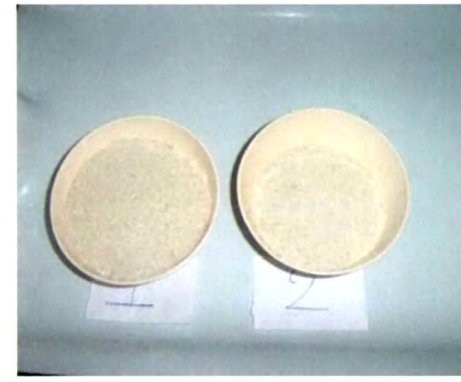


Plate 40: Uncooked Rice

Yam Elephant:

All the judges reported that there was some difference in both the samples of yam elephant. They found that the visual texture, aroma and healthy appearance and colour was better in organic yam elephant compared to non organic yam elephant.

Plate 41: Chiku

Plate 42: Uncooked Yam Elephant

Chiku:

Two-third of the judges found complete difference in firmness, texture and aroma among both the samples of chiku. Organic chiku had better aroma, firmness and texture. They also reported some difference in the colour of both the samples of chiku.

Table: 67: Distribution of judges according to their opinion regarding sensory evaluation test for Boiled (cooked) organic and conventional food items.

		Judges (n=3)					
Sr. No	**Product**	**No Difference**		**Some Difference**		**Completely Different**	
(I)	**Boiled Rice**	f	%	f	%	f	%
1.	Size of Grain	3	100	-	-	-	-
2.	Shape	2	66.6	1	33.3	-	-
3.	Aroma	-	-	-	-	3	100
4.	Colour	-	-	2	66.6	1	33.3
5.	Feeling on touch	3	100	-	-	-	-
6.	Healthy Appearance	2	66.6	1	33.3	-	-
7.	Taste	1	33.3	2	66.6	-	-
(II)	**Boiled Dal**						
1.	Size of Grain	3	100	-	-	-	-
2.	Shape	1	33.3	2	66.6	-	-

		Judges (n=3)					
Sr. No	**Product**	**No Difference**		**Some Difference**		**Completely Different**	
3.	Aroma	1	33.3	2	66.6	-	-
4.	Colour	-	-	2	66.6	1	33.3
5.	Feeling on touch	1	33.3	2	66.6	-	-
6.	Healthy Appearance	-	-	3	100	-	-
7.	Taste	1	33.3	2	66.6	-	-
(III)	**Boiled Yam Elephant**						
1.	Firmness	-	-	1	33.3	2	66.6
2.	Visual Texture	-	-	1	33.3	2	66.6
3.	Aroma	2	66.6	-	-	1	33.3
4.	Healthy Appearance	-	-	2	66.6	1	33.3
5.	Colour	2	66.6	-	66.6	1	33.3
6.	Taste	-	-	2	66.6	1	33.3
(IV)	**Chiku (cut)**						
1.	Firmness	-	-	2	66.6	1	33.3
2.	Visual Texture	-	-	1	33.3	2	66.6
3.	Aroma	-	-	2	66.6	1	33.3
4.	Healthy Appearance	-	-	1	33.3	2	66.6
5.	Colour	-	-	2	66.6	1	33.3
6.	Taste	-	-	-	-	3	100

Plate 43: Cooked Red gram Dal

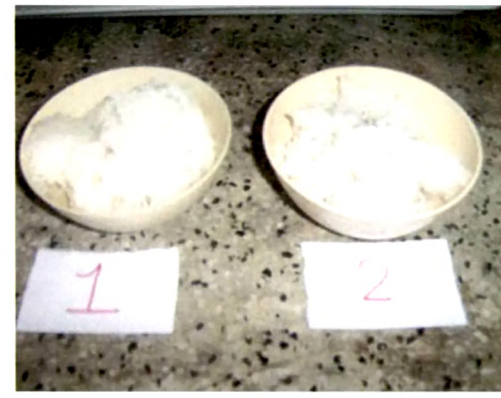


Plate 44: Cooked Rice

Cooked Rice:

All the judges reported that no difference was found in size of grain of cooked rice. This indicated that after cooking organic and non organic rice looked the same. Two-third of the judges reported that some difference was there in both the samples with respect of shape, aroma, colour, feeling on touch, taste and healthy appearance. They reported that organic rice was better in taste, aroma, colour and healthy appearance. It was more soft than the non organic rice.

Cooked Red gram Dal:

Similar to rice no difference was found in size of grain of dal after cooking between organic and non-organic the samples of Dal. Two-third of the judges reported that some difference was there between both the samples of dal with respect to aroma, shape, colour feeling on touch and taste. They reported that organic dal was cooked properly and aroma was also better in organic dal.

Plate 45: Cooked Yam elephant

Boiled Yam Elephant:

No difference was found in aroma and colour in both the samples of yam elephant. But two-third of the judges reported that both the samples of yam elephant were completely different in firmness and visual texture. Organic yam elephant was more juicy and soft than non organic yam elephant. They also reported that the taste of organic yam elephant was sweet and juicier.

Chiku:

The chiku were cut and presented for judging various parameters. The results indicated that two-third of the judges reported that some difference was there in both the samples of chiku. The non-organic chiku seemed more firm than non organic chiku. They reported that the aroma was also better in organic chiku than the non-organic chiku. All the judges reported that taste was completely different of both the samples i.e organic chiku taste better (Sweet) than non organic chiku.

This is supported by Naik and Sharma(1997) who reported that consumers are emphatic about easy and faster cooking, more flavour and good taste offered by the organic food whereas, some consumers expressed concern about poor appearance of the organically grown food.

4.3 . Cooking Time

All the items (Rice, Red gram dal and Yam elephant) were cooked separately at same temperature, and in the same equipment. Quantity of food item and amount of water were kept standard and the cooked product was assessed.

Plate 46:Judge assessing food

Table:68 Cooking time required for different food items

Item		Total time required
Rice	Organic	15 min
	Non organic	13 min
Red Gram Dal	Organic	10 min
	Non organic	11 min
Yam Elephant	Organic	11 min
	Non organic	13 min

It was found that non organic rice took less time to cook. That is probably due to the unpolished characteristics of organic rice. Organic rice had one layer extra which is removed in case of non-organic rice during the process of polishing. Because of that organic rice might take more time to cook. Whereas in case of Dal and yam elephant, it was observed that non organic items took more time to cook. It was reported that after cooking the texture was found softer in case of organic rice and red gram dal than the non organic sample. In case of Yam elephant, the texture was found smooth of organic yam elephant than the non organic yam elephant.

4.4. Shelf life

Green leafy vegetables and fruits organically and non organically grown were selected for the assessment of shelf life. Samples were selected from adjoining farms and kept for the observation at room temperature. Results were recorded after 72, 144 and 192 hours for leafy vegetables and fruits.

Coriander leaves

Plate 47: Day One

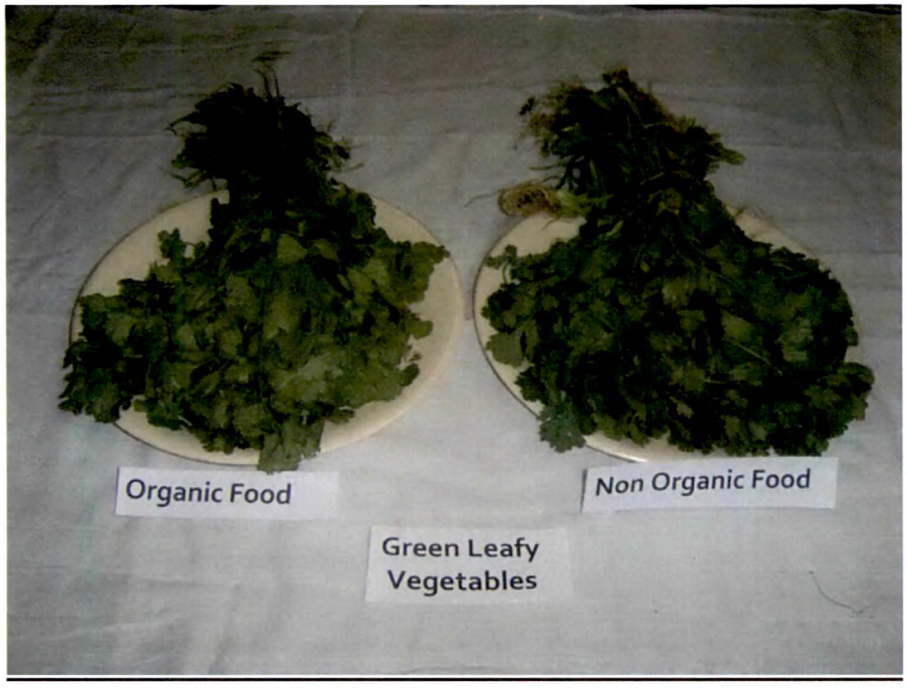


Plate 48: After 72 hours

Plate 49: After 144 hours

Plate 50: After 192 hours

Fenugreek leaves

Plate 51: Day one

Plate 52: After 72 hours

Plate 53: After 144 hours

Plate 54: After 192 hours

Spinach

Plate 55 :Day One

Plate 56: After 72 hours

Plate 57: After 144 hours

Plate 58: After 192 hours

Cabbage

Plate 59: Day one

Plate 60: After 72 hours

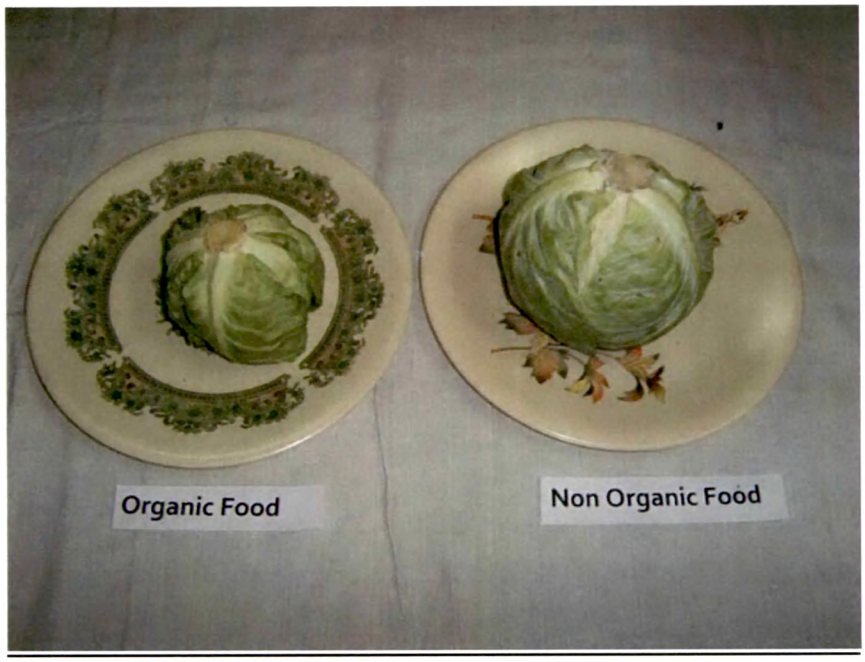


Plate 61: After 144 hours

Plate 62: After 192 hours

Papaya

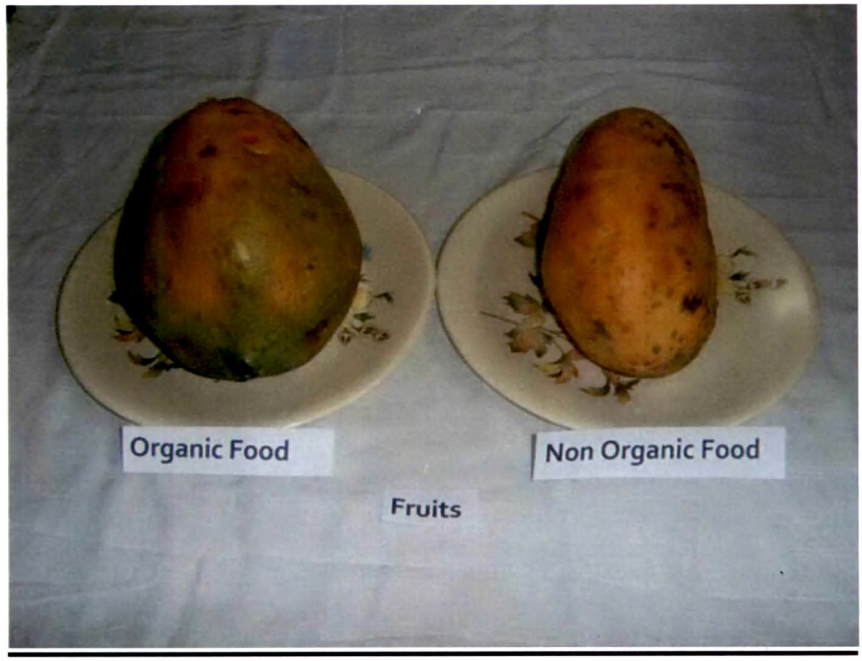


Plate 63 : Day one

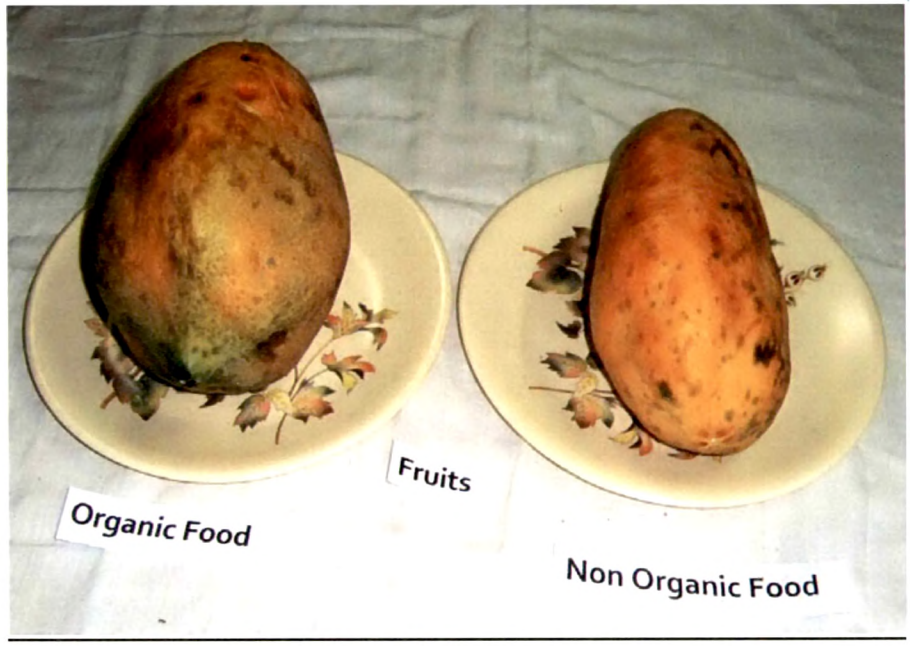


Plate 64: After 72 hours

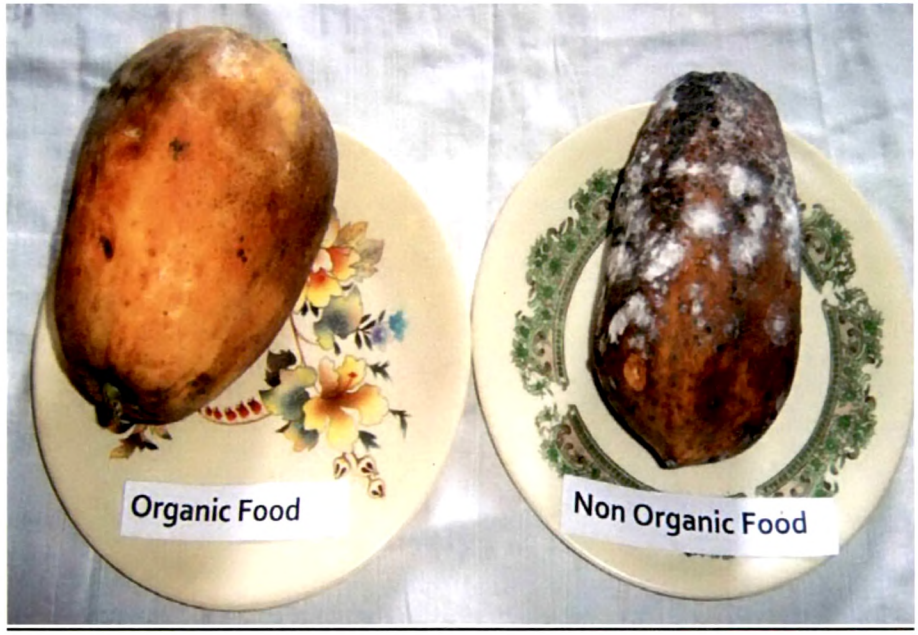


Plate 65: After 144 hours

It can be revealed from the pictures that the shelf life of organically grown leafy vegetables and fruits was observed to be more than that of non organically grown food items. Papaya grown organically started deteriorating after 144 hours. Whereas organic papaya did not deteriorate.

In case of green leafy vegetables, it was found that the organic vegetable looked fresh even after 144 hours. The colour was also green. Very little decaying started after 192 hours. Whereas in case of non organic items leaves appeared yellow after 144 hours only. And it deteriorated completely after 192 hours.

4.5 Conclusion:

An attempt was made in present study to assess food quality of organic food, to find out whether there was any difference between organically grown food items and those grown with non-organic farming methods. An attempt was made to obtain selected food items from adjoining/neighbouring farms, so that soil quality can be controlled to some extent.

In case of non organic rice and yam elephant, traces of urea was found as a physical mixture. Whereas in case of Cabbage traces of Chlorpyriphos and in Yam elephant, traces of Lindane (which is type of organochlorine pesticide) were found in both organic and non organic categories. Farming method, harvesting time, quality of soil, water quality and many other factors were not controlled. The reason could be that the crops were selected from the adjoining farms. It might have been possible to pass the pesticides of conventional farm to the organic farm. There might have been possibility of use of pesticides by the farmers growing cabbage and yam elephant non organically. As the farmers said that sometimes during rainy season some chemicals used as fertilizer and pesticides by the farmers doing conventional farming flow with the rainy water to the farms doing organic farming. Hence, the unknown effect of chemicals might come. These might have been the reasons for finding some traces of chemicals in organically grown food items included as sample in the present study.

With reference to sensory evaluation test, it was found that the shape was uneven and size was small in case of organic rice and red gram dal than those grown through conventional farming. After cooking no differences were found in shape and size. But taste and aroma were found better in case of organic rice and red gram dal. The judges found that the visual texture, aroma and healthy appearance and colour were better in organic yam elephant compared to non organic yam elephant. Organic yam elephant was more juicy soft than non organic yam elephant. The taste of organic yam elephant was sweet and more juicy. Organic yam elephant was more juicy and soft than non organic yam elephant. They also reported that the taste of organic yam elephant was sweet and more juicy. The judges found complete difference in firmness, texture and aroma among both the samples of chiku. Organic chiku had better aroma, firmness and texture.

It was found that conventional (non organic) rice took less time to cook. Whereas in case of Dal and yam elephant, it was observed that non organic items took more time to cook. All the products were assessed by the panel of judges and it was reported that the texture of organic rice was found softer

than the non organic rice and Red gram dal also. The texture was found smooth in organic yam elephant than the non organic yam elephant.

It observed that in green leafy vegetables and fruits, the shelf life was more, if it was grown organically. Thus shelf life of organically grown fruits and vegetables were more than the non organic fruits and leafy vegetables.

Section V Educational Package

One of the aim of the present research was to disseminate knowledge among young females of Vadodara city regarding organic food. For this an educational package comprising of a lecture supported with a slide show (PowerPoint presentation) and a booklet were prepared. To establish the effectiveness of the educational package, it was administered to a group of students of Faculty of Family and Community Sciences considering them as prospective homemakers. All the undergraduate students (females) of S.Y. and T.Y. of Home Management specialization were considered as the sample for the exposure to educational package. The Educational package included information related to various aspects of organic food, its advantages, impact on health, shops selling organic food in Vadodara city etc. To assess their existing knowledge the respondents were asked to fill the questionnaire containing scale before the presentation. After presentation, they were requested to fill the same questionnaire again. This helped researcher to check the effectiveness of the educational package. Result of pre and post test were described under the following section.

5.1 Background information of the respondents

The information regarding age, family size, type of family and their knowledge regarding shops selling organic food are described in this section.

Table: 69: Distribution of respondents according to their background Information.

	Background Information	Young females (n=75)	
		f	%
1.	**Age**		
	18 to 20 years	58	77.33
	21 to 23 years	16	21.3
	24 years or above	1	1.33
	Mean	**19.8**	
	SD	**1.11**	
2.	**Education**		
	Second Year (B.F.C.Sc)	39	52.0
	Third Year (B.F.C.Sc)	36	48.0

	Background Information	Young females (n=75)	
		f	%
3.	**Type of family**		
	Nuclear	56	74.7
	Joint	19	25.3
4.	**Size of Family**		
	2 to 4 members	32	42.7
	5 to 6 members	34	45.3
	More than 6 members	9	12.0

The mean age of the females was 19.8. Nearly three-fourth of the respondents belonged to the age group of 18 to 20 years and very less respondents were in age group of 24 years and above (Table-69).

Information regarding education level showed that nearly half of the respondents were students from second year and half of the respondents were from third year of Home Management department of Faculty of Family and Community Sciences, The M.S. University of Baroda, Vadodara.

Majority of the respondents (74.7%) belonged to nuclear family and one-fourth(25.3%) of the respondents belonged to joint family (Table-69).

5.1.1. Knowledge regarding shops selling organic food in Vadodara city before and after the administration of Educational Programme.

This section included the knowledge of respondents regarding the shops selling organic food in Vadodara city before and after the administration of educational programme which were termed as pre test, post test (Table-70).

Table:70: Distribution of females according to their knowledge regarding shops selling organic food.

Sr. No	Background Information	Females (n=75)			
		Pre test		Post test	
		f	%	f	%
1	**Knowledge regarding shops selling organic food in Vadodara city**				
	Knew about shops selling organic food in Vadodara city	25	33.3	66	88
	Did not know about shops selling organic food in Vadodara city	50	66.7	9	12
2	**Number of shops in Vadodara city**				
	Zero	52	69.3	7	9.3
	One	2	2.7	7	9.3
	Two	14	18.7	9	12.0
	Three	-	-	5	6.7
	Four	4	5.3	11	14.7
	Five	3	4.0	2	2.7
	Six	-	-	11	14.7
	Seven	-	-	7	9.3
	Eight	-	-	14	18.7
	Nine	-	-	1	1.3
	Ten	-	-	1	1.3
3.	**Name of the shops selling organic food**				
	Taza Maza	-	-	59	78.7
	Oasis	-	-	6	8.0
	Amidhara	-	-	4	5.3
	FabIndia	-	-	8	10.7
	Apana Dhaba	-	-	29	38.7
4.	**Shops near respondent's residence**				
	Near to residence	4	5.3	16	21.3
	Far from residence	71	94.7	59	78.7
5	**Name of shops near to residence**				
	Taza Maza	-	-	13	17.3
	Apana Dhaba	-	-	3	4.0
	None	-	-	59	78.7
6	**Family Purchase organic food**				
	Purchase	23	30.7	23	30.7
	Do not purchase	52	69.3	52	69.3

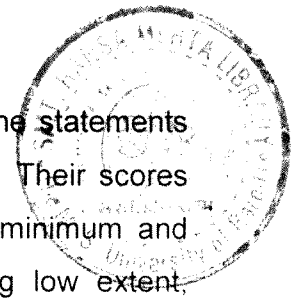
Sr. No	Background Information	Females (n=75)			
		Pre test		Post test	
		f	%	f	%
7.	**Frequency of buying organic food**				
	Daily	2	2.7	2	2.7
	Occasionally	5	6.7	5	6.7
	Sometimes	15	20.0	15	20.0
	Rarely	1	1.3	1	1.3
	Never	52	69.3	52	69.3

The information was gathered to see the change in the level of knowledge about shops selling organic food in Vadodara city. Data in post test revealed that majority of the respondents came to know about the shops selling organic food after the educational programme. The knowledge of respondents regarding the number of shops selling organic food in Vadodara city had also increased. It was found that more than three-fourth of the respondents reported the name of "Taza Maza". This was probably due to 4 branches of Taza Maza which were situated in various areas of Vadodara city (Table-70).

It was found that majority of the respondents' families "never" purchased organic food. Little less than one-third of the respondents reported that their family purchased organic food. Out of those who said that they purchased organic food, it was found that one-fifth of the respondents purchased organic food "sometimes". Very few (2.7%) of respondents reported that they purchased organic food daily. No difference was found in the frequency of buying organic food before and after administration of educational package about organic food (Table-70)..

5.2 Knowledge regarding organic food before and after the exposure to educational programme

This section deals with the knowledge related to various aspects of organic food such as availability, price, nutrition, pesticide residues, impact on health etc. before and after the administration of educational programme which were termed as pre test and post test. Statements were formed in positive and



negative form. Respondents were asked to indicate whether the statements were correct or incorrect. This was a summated rating scale. Their scores were summated for each statement. The range of possible minimum and maximum scores was divided into three categories reflecting low extent, moderate extent and high extent of knowledge of respondents regarding organic food.

Table: 71 Distribution of respondents according to their knowledge regarding organic food before and after the exposure to educational programme

Statement	Test	Correct		Incorrect		Weighted Mean score 1 - 2
		f	%	f	%	
Organic farming						
1) Organic farming apply natural fertilizers such as manure or compost to feed the soil. (+)	Pre	52	69.3	23	30.6	1.69
	Post	67	89.3	8	10.6	1.89
2) Non organic farming apply chemical fertilizers and pesticides to promote the plant growth. (+)	Pre	42	56	33	44	1.56
	Post	54	72	21	28	1.72
3) Organic food is grown using synthetic fertilizer. (-)	Pre	29	38.7	46	61.3	1.38
	Post	30	40	45	60	1.40
4) Organic food production helps to improve the quality of soil. (+)	Pre	48	64	27	36	1.64
	Post	65	86.7	10	13.3	1.86
5) Organic food production requires more water compared to non-organic food. (-)	Pre	40	53.3	35	46.7	1.46
	Post	43	57.3	32	42.7	1.42
6) Food items grown through Organic farming system are less in quantity per unit of land as compared to non-organic farming system. (+)	Pre	35	46.7	40	53.3	1.46
	Post	53	70.7	22	29.2	1.70
7) Organic food is not completely free of chemical residues. (-)	Pre	41	54.7	34	45.33	1.45
	Post	22	29.3	53	70.6	1.70
8) Antibiotics, growth hormones and medications are given to animals in organic farming. (-)	Pre	30	40	45	60	1.60
	Post	33	44	42	56	1.53
9) Organic farming leads to	Pre	53	70.7	22	29.3	1.70

bright future of agriculture. (+)	Post	59	78.7	16	21.3	1.78
10) Organic farming is unkind to animals. (-)	Pre	24	32	51	68	1.68
	Post	19	25.3	56	74.7	1.74
	Pre			Total		1.56
	Post					1.67
				Net gain		**0.11**
Organic food						
1) Organic food usually refers to all "Naturally produced" food. (+)	Pre	59	78.7	16	21.3	1.78
	Post	54	72	21	28	1.72
2) Organic foods are seasonal food. (+)	Pre	34	45.3	41	54.6	1.45
	Post	39	52	36	48	1.52
3) Eating organic is same as eating natural food. (-)	Pre	43	57.3	32	42.6	1.42
	Post	40	53.3	35	46.6	1.46
4) Organic food is available at selected outlets only. (+)	Pre	44	58.7	31	41.3	1.58
	Post	62	82.7	13	17.3	1.88
	Pre			Total		1.55
	Post					1.64
				Net gain		**0.09**
Organic food quality						
1) Organically grown fruits, vegetables and grains may contain better nutrients than the non-organically grown food items. (+)	Pre	54	72	21	28	1.72
	Post	63	84	12	16	1.84
2) Organic fruits and vegetables have more pesticides residues compared to non-organic food. (-)	Pre	41	54.6	34	45.3	1.45
	Post	28	37.3	47	62.7	1.62
3) Organic Food contains artificial food additives. (-)	Pre	32	42.6	43	57.3	1.57
	Post	17	22.6	58	77.3	1.77
4) Organic milk is better than Non-organic milk as far as nutrient contents are concerned. (+)	Pre	51	68	24	32	1.68
	Post	59	78.7	21	28	1.85
5) Organic foods are minimally processed with artificial ingredients, preservatives or irradiation to maintain the integrity of foods. (-)	Pre	50	66.6	25	33.3	1.33
	Post	48	64	27	36	1.36
	Pre			Total		1.5
	Post					1.68
				Net gain		**0.18**
Appearance and Shelf life of organic food						
1) Organic food products are not good in appearance as compared to non-organic	Pre	26	34.6	49	65.3	1.34
	Post	24	32	51	68	1.32

food. (+)						
2) Organic food has less shelf life as compared to non-organic food. (-)	Pre	35	46.6	40	53.3	1.53
	Post	26	34.6	49	65.3	1.65
	Pre			Total		1.43
	Post					1.48
				Net gain		**0.05**
Taste, Aroma and cooking time of organic food						
1) Organic food tastes better than non-organic food as it is produced by using natural Manure. (+)	Pre	47	62.7	27	36	1.61
	Post	59	78.7	16	21.3	1.78
2)Organic food does not have good aroma. (-)	Pre	30	40	45	60	1.6
	Post	28	37.3	47	62.7	1.62
3)Taste of organic food is better than the non organic food. (+)	Pre	49	65.3	26	34.6	1.65
	Post	61	81.3	14	18.6	1.81
4)Organic food takes less time in cooking than the non-organic food. (+)	Pre	44	58.7	31	41.3	1.58
	Post	52	69.3	23	30.6	1.69
	Pre			Total		1.61
	Post					1.72
				Net gain		**0.11**
Label and Certification of organic food						
1) Generally in order to be certified organic, food must be grown on land without use of chemical fertilizer for at least 2 years. (+)	Pre	28	37.3	47	62.6	1.37
	Post	46	61.3	29	38.6	1.61
2) All organic food that is available in the market is certified organic food. (-)	Pre	34	45.3	41	54.7	1.54
	Post	49	65.3	26	34.7	1.34
3) Processed organic food available in the market are always completely organic as claimed. (+)	Pre	30	40	45	60	1.4
	Post	33	44	42	56	1.44
4) A "Certified organic" label is usually the only way for consumers to trust that a product is "Organic". (+)	Pre	45	60	30	40	1.6
	Post	50	66.7	25	33.3	1.66
5) Label "organic" indicates that the food is 100% organic. (-)	Pre	50	66.6	25	33.3	1.33
	Post	35	46.6	40	53.3	1.53
	Pre			Total		1.44
	Post					1.51
				Net gain		**0.07**
Environment aspects						
1) Organic food is "Eco friendly". (+)	Pre	58	77.3	17	22.6	1.77
	Post	63	84	12	16	1.84

2) Organic farming uses pesticides that damage the environment. (-)	Pre	32	42.6	43	57.3	1.57
	Post	22	29.3	53	70.7	1.7
3) Organic food is safe for environment. (+)	Pre	56	74.7	19	25.3	1.74
	Post	63	84	12	16	1.85
4) Organic farming increase pollution of water and soil. (-)	Pre	33	44	42	56	1.56
	Post	18	24	57	76	1.76
	Pre			Total		1.66
	Post					1.78
				Net gain		**0.12**
Health Aspects						
1) Organic food has increased risk of food borne diseases. (-)	Pre	36	48	39	52	1.52
	Post	13	17.3	62	82.7	1.82
2) The primary goal of eating Organic food is to optimize health and productivity. (+)	Pre	48	64	27	36	1.64
	Post	65	86.7	10	13.3	1.86
3) Organic food are not good for health. (-)	Pre	20	26.6	55	73.3	1.73
	Post	8	10.6	67	89.3	1.78
4) Organic food reduces health risk . (+)	Pre	46	61.3	29	38.6	1.61
	Post	59	78.7	16	21.3	1.78
	Pre			Total		1.62
	Post					1.81
				Net gain		**0.19**
Price of organic food						
1) Market price of Organic food is more than non-organic food. (+)	Pre	52	69.3	23	30.6	1.69
	Post	61	81.3	14	18.6	1.81
2) Price of organic food is higher as production is less. (-)	Pre	50	66.6	25	33.3	1.33
	Post	38	50.6	37	49.3	1.49
	Pre			Total		1.51
	Post					1.65
				Net gain		**0.14**

The results showed that the weighted mean score on each aspect was the lowest in pre test which increased to high extent immediately after the exposure to educational programme. With reference to knowledge regarding organic farming, it was found that more than two-third (69.3%) of the respondents had correct knowledge that "organic farming apply natural

fertilizers such as manure or compost to feed the soil". Weighted mean score was 1.69 which had increased to 1.89 after the administration of educational programme (Table-71). Little less than two-third of the respondents had correct knowledge that "Organic food production helps to improve the quality of soil" in pre test but, in post test 86.7 per cent of respondents had correct knowledge about it. It was found that after administration of educational programme, nearly 72 per cent of respondents had correct knowledge that "Non-organic farming applies chemical fertilizers and pesticides to promote plant growth". Overall it was found that there was a net gain of 0.11 with reference to concepts related to organic farming.

With reference to organic food, it was found that after administration of educational programme, majority of the respondents (82%) had correct knowledge that "organic food is available at selected outlets only" and weighted mean value had also increased from 1.58 to 1.88.

With reference to shelf life, it was found that nearly half of the respondents had correct knowledge that "shelf life of organic food is more than the non organic food". After administration of educational programme, the knowledge regarding shelf life had increased and weighted mean score had also increased from 1.53 to 1.65 (Table-71).

The weighted mean score for the statement "Organic fruits and vegetables had more pesticide residue than non organic food" was 1.45 in pre test which had increased to 1.62 in post test. This indicated that there was a net gain of 0.17 in the knowledge regarding presence of pesticides residues in organically grown fruits and vegetables after execution of educational programme.

The weighted mean score for the taste, aroma and coking time of the organic food was 1.61 in pre test. After execution of educational programme it increased to 1.72. This indicated that there was a net gain of 0.11 in the knowledge of respondents with reference to taste, aroma and cooking time (Table-71).

With reference to label and certification, it was found that after administration of educational programme, the knowledge had increased and they reported correct for the statement "Certified organic" label is usually the only way for consumers to trust that a product is "Organic" (66.7%) (Table-71).

Little more than one-third of the respondents had reported incorrect for the statement "Organic farming uses pesticides that damage the environment" and "Organic farming increase pollution of water and soil". The weighted mean value was 1.57 and 1.56 respectively in the pre test which had increased to 1.7 and 1.76 respectively in post test.

In pre test 52 per cent and in post test 82 per cent of the respondents stated incorrect for the statement "Organic food had increased risk of food borne diseases". This shows their correct knowledge regarding health aspects related associated with organic food. Weighted mean value had increased from 1.52 to 1.82. After administration of educational programme, majority (78.7%) of respondents reported correct for the statement "organic food reduces health risk" . Overall weighted mean score had increased from 1.62 to 1.81 for the knowledge related to health aspects associated with the organic food.

Majority (81.3%) of the respondents had correct knowledge regarding price of organic food after the administration of educational package and they stated that market price of organic food is more than the conventional food (Table-71).

Naik and Sharma (1997) reported that in Ahmedabad the percentage of consumers who were ready to pay premium for organically produced vegetables increased for 60 to 72 per cent after providing information regarding harmful effects of pesticide residues on health.

2.1 Extent of knowledge before and after the administration of educational programme: An overall view

The responses of respondents knowledge regarding organic food was Correct and Incorrect. They were given scores of 2 through 1 respectively. The possible range of maximum and minimum scores was divided in to 3 categories having equal interval (Table-72) Higher scores indicated high extent of knowledge.

Table: 72 Distribution of respondents according to their extent of knowledge regarding organic food before and after the administration of educational programme

Extent of Knowledge	Pre test (n=75)		Post test (n=75)	
	f	%	f	%
Low extent (40-53)	2	2.7	-	-
Moderate extent (54-67)	56	74.6	40	53.3
High extent (68-80)	17	22.7	35	46.7

It was found from the table-72 that nearly three-fourth (74.6%) respondents had moderate extent of knowledge and less than one-fourth had high extent of knowledge regarding organic food before the administration of educational programme. After their exposure to educational programme, there was a clear enhancement in their knowledge as little less than half (46.7%) of the respondents had high extent of knowledge regarding organic food.

Weighted Mean Score (Intensity index):

Mean weighted score were calculated for each statement listed among different aspects related to organic food. The range of continuum was from 1 – 2. The range of mean weighted score was divided into two categories (i) 1.00-1.50 as low and (ii) 1.51 – 2.00 as high.

Table:73: Weighted mean score(intensity Index) for the extent of knowledge regarding organic food before and after the administration of educational programme

Sr. No	Knowledge regarding organic food	Mean Weighted Score (Range 1 to 2)		
		Pre test	Post test	Net gain
1	Organic farming	1.56	1.67	0.11
2.	Organic food	1.55	1.64	0.09
3.	Organic food quality	1.5	1.68	0.18
4.	Appearance and shelf life of Organic food	1.43	1.48	0.05
5.	Taste, Aroma and cooking time of Organic food	1.61	1.72	0.11
6.	Label and Certification of organic food	1.44	1.51	0.07
7.	Environment aspects	1.66	1.78	0.12
8.	Health Aspects	1.62	1.81	0.19
9.	Price of Organic food	1.51	1.65	0.14
	Total Net gain	**1.54**	**1.65**	**0.11**

It was observed that for almost all the aspects related to organic food, the extent of knowledge was found high after the administration of educational programme. Overall knowledge related to various aspects associated with the organic food had increased from 1.54 in pre test to 1.65 in post test. Total net gain in the knowledge regarding various aspects of organic food was of 0.11 (Table-73). It is supported by the hypothesis HO5 (wide table-64.1).

Conclusion: The enhancement in the knowledge of the respondents established the efficacy of educational programme (Table-73). The intensity index on various aspects reflected that there was a net gain in the weighted mean score from pre test to post test. This established the efficacy of the educational programme. This educational programme can be used on other target group to create awareness regarding organic food.

Fig: 27 Percentage distribution of respondents according to their extent of knowledge regarding organic food before and after the administration of educational programme.

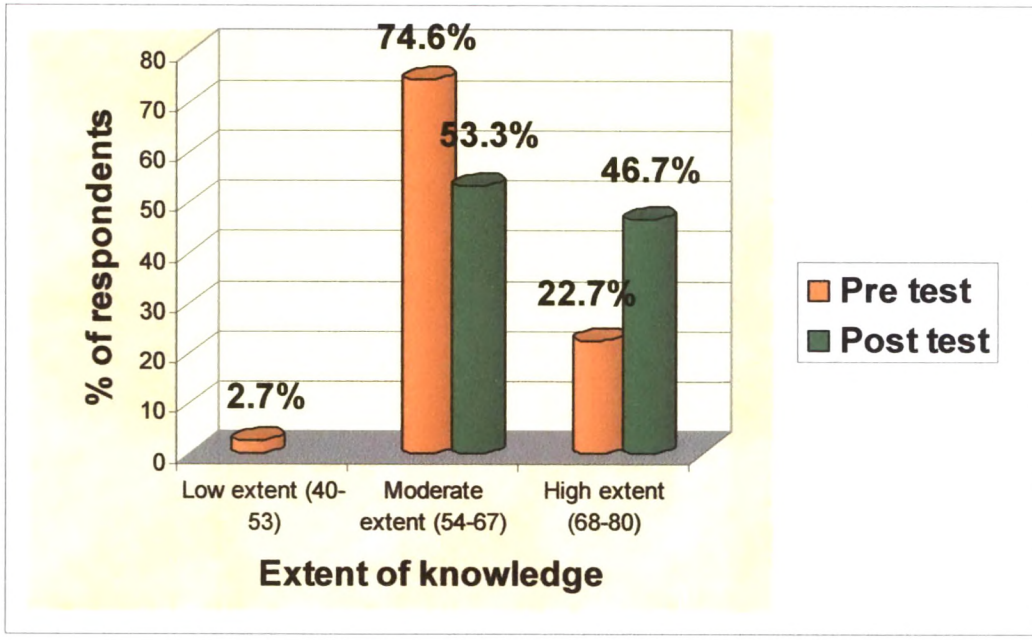


Fig 28: Weighted mean scores for the extent of knowledge regarding organic food before and after the administration of educational programme.