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Consumer Preferences on Organic and Anorganic Vegetable in Bandung, West Java, Indonesia

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Abstract

Recently consumer back to nature in consuming food. The increasing demand of organic vegetable in supermarket is one indicator that consumers realized for healthy food. This fenomena occur in many region in Indonesia, especially in big city such as Jakarta, Bandung, Surabaya, Palembang, Medan dan Ujung pandang. Organic vegetable are very potential to cultivated, but only few farmer produced organic vegetable, because of the lack information of comsumer preferences. Hopefully, when the farmer get the right information for the consumer needs, the farmer produce the hight profitable vegetable. The purpose of this study to know the description of the characteristics of respondents, who consume organic and anorganic vegetable, how consumer preferences of organic and anorganic vegetable, which are the most dominant attribute of these vegetable. The research was conducted in Bandung West Java Indonesia because supermarket in Bandung growth increased more than other cities in West Java and other provinces in Indonesia ,excluding Jakarta (World Bank, 2007). Determination of the respondents conducted in this study is to use simple random sampling to 100 people. Data was analysis by Fishbein Model. This research contributes to the goverment policy, consumers of organic product, producers, and investors.

Keywords: Consumer behavior, Fishbein analysis, Organic and anorganic vegetable.

Introduction

Vegetable production in Indonesia increased each year, annual production increased 4.25 %[1]. The total vegetable production is 11.042.845 ton which the largest production in tomato (13.56%), chile (10.82%), union (8.50%), cabbage (6.73%), potato (3.95%) and others such as carrots and spinach (56.44%). The largest production carrot, spinach and tomato in Indonesia is West Java, in the last five year, carrot production increased 2.5 % each year, while spinach and tomato stabil. In 2009, Total carrot production in West Java is 128 253 tons (35.83 % from total carrot production in Indonesia), spinach production 54 253 tons (36.10 % from total carrot production in Indonesia) and tomato 309 653 tons (36.21 % from total carrot production in Indonesia)

Organic farming is actually not something new and unfamiliar to Indonesian farmers, especially those that cultivated their land before the 1970. Organic farming has been implemented so that the system is considered to be almost identical to the pattern of traditional agriculture which environmentally friendly farming and produce healthy food. Although organic farming is very potential to be cultivated, but only a few farmer who are interested to produce organic vegetable. In 2009, organic farming was 66. 723 hectare and its manage by 6 050 farmers spread across Indonesia, so it only supply 31.2 % to whole organic market in Indonesia[2]. From consumer side, consumer knowledge and awareness about organic food has been developed and need live healthy by consuming organic food, free pesticide, synthetic fertilizer and other synthetic chemicals. Hopefully, when the farmer get the right information for the consumer needs, the farmer produce the hight profitable vegetable. The purpose of this study to know the description of the characteristics of respondents, who consume organic and anorganic vegetable, how consumer preferences of organic and anorganic vegetable, which are the most dominant attribute of these vegetable.

Material and Methods

Consumer preference is defined as a choice like it or not by one's products or (goods and services) are consumed. Consumer preferences show preferences of consumers from a wide selection of existing products[3]. The product is a set of attributes that are real *(tangible)*and intangible *(intangible)*[4], mean while the product attributes include physical attributes and non physical atribute Physical attributes describe the characteristics of the product such as size, type, brand, color, packaging, price, taste, and others[5]. The non physical attributes describe the subjective characteristics of a product based on consumer perception[6]. Based on the pra survey in Mei 2011, consumer belief that some attribute product push consumer to buy or preferences to buy. Some attractive atrribute procuct from organic and anorganic vegetable are taste, aroma, colour, texture,

freshness, water content, usefulness, price, brand and packaging.

The research was conducted in Bandung West Java Indonesia on the grounds that supermaketnya growth increased more than other cities in West Java and other provinces in Indonesia (excluding Jakarta). Determination of the respondents conducted in this study is to use sampling judgment. Judgement sampling as many as 100 people. Data was analysis by Fishbein Model :

$$Ao = \sum_{i=1}^{n} biei$$

where : Ao = behavior toward the object, bi = level of convidence that the attribute of the object has attributes i ei = evaluation to attribute I, n = number of attributes that the object owned, i = taste, aroma, colour, texture, freshness, water content, usefulness, price, brand and packaging. After organic and anorganic vegetable attributes are identified, then measurements were taken of ei and bi. Components ei and bi are measured using a Likert scale with a score of -2 to 2. Subsequently sought an average value of each attribute. The greater the average value obtained ei attribute indicates that the attribute is more important for respondents, as well as for bi greater average value obtained attribute indicates that attributes the better according to the respondents.

Results and Discussion

Providing environmentally friendly not only free from pesticide, synthetic fertilizer, synthetic chemical but also from our ecosystem. Reseacher found that increasing phytoplankton and phytobentozic production caused to increase fish biomass, The high diversity of phytoplankton has due to stable ecological condition[6].

Product organic are products which produced with organic production standard and certified by goverment legistimate institution, while organic farming is an agriculture activities promote avoid pesticide, synthetic fertilizer, synthetic chemical and environmentally friendly[7]. This guideline are : Protecting consumers from deception and fraud that occured in the market due to the recognition of product that do not correspon to reality, Protect the agricultural producers of organic agricultural products in the market from the presence of producers who cheat claim of organic agriculture products Ensure that all stages of production, preperation, storage, transportation and selling that can be inspected with the standard operation procedure of organic productsIn order to harmonize all the materials in production, certification, identification and labeling that have been produced organically.

Consumer Characteristic of Organic and Anorganic Vegetable: Respondent are someone who shopping in the supermarket at least twice a week consume organic vegetable. From 100 respondent 37 respondent often to consume carrot (15 respondent organic and 22 respondent anoganic), 30 often to consume spinach (13 respondent organic and 17 respondent anorganic), 33 often to consume tomato (12 responden organic and 21 anorganic). In general, organic consumer is women (59%), while organic carrot, organic spinach and organic tomato was favorited by 35 – 34 years, and no differences for the age group 25 – 34; 35 – 44 and 45- 55 years for anorganic vegetable. Respondent who already married, working in State Owned Enterprises (BUMN), and private sector, graduated from university, and monthly income $300 - $500 prefer organic vegetable than anorganic vegetable. An organic vegetable are spread evenly across all monthly income and education. This research revealed that small member of family (< 3 person) prefer organic vegetable, with an purchace frequency of 3- 5 times in a month, because this group has been well established economically and educated.

It has been empirically investigated that socio-demographic profile, food buying behaviour and nutritional knowledge of the consumers are most likely to affect the awareness level and purchase decision of organic foods[8-11]. Consumers with high income often buy organic food to reflect on their awareness and status. The age factor does not seem to play an important role however, few studies have resulted that younger are more aware of organic food and seemingly slightly more willing to pay for purchase the same. Education is descibed by various researches as an important factor of awareness and purchase motive of organic food. Consumers with higher education are more likely to buy organic food products[10]. Households with smaller family size are found to more aware of organic food and showing attitude of willingness to pay for organic food purchase[12].

The Degree of Attibute Interest Evaluation Component: The data needed to analyze consumer attitudes is the degree of importance of attributes (ei) and the level of trust attributes (bi). Attributes that will be assessed in this study is, taste, aroma, color, texture of the fruit (fiber), freshness, moisture content, usability, price, brand and packaging. The degree of important attribute indicate the degree of attribute consumer interest[13]. This model to determine the importance attribute of carrot, spinach and tomato. The scaling from one to five, starting from 5 which means very important and one means not important. From the Fishbein analysis, the value of the interest (ei) of carrot, spinach and tomato can be seen from table 1. The important attribute of carrot are taste, freshness, water content, texture (fiber) and price, because carrot are often used for juice, salat and other dishes. Important attribute for spinach are water content, price, taste, usefulness and colour. Like carrot, spinach widely used as a vegetable juice or daily menu.

Price become important attribute because the respondent considered that the spinach price is expensive in the market. Spinach widely grown in the household scale in polybag plastic or pot. Spinach also potential home industry for spinach chips that have a high selling price and value added.

The important attribute for tomato are usefulness, colour, water content, texture (fiber) and taste. Colour attribute is also important, because tomato used for juice, and often used for garnish food. Food become more attractive with garnish.

Table-1
Interest Value (ei) of Attributes on Carrot, Spinach and Tomato

Attribute	**Carrot**			**Spinach**			**Tomato**		
	ei	r	criteria	ei	r	criteria	ei	r	criteria
Taste	1.17	1	imp	0.72	3	Imp	0.42	5	imp
Aroma	- 0.50	10	netral	- 0.89	10	n. imp	- 0.53	10	n. imp
Colour	- 0.12	9	netral	0.52	5	imp	0.80	2	imp
Texture	0.59	4	imp	0.31	7	netral	0.47	4	imp
Freshness	0.71	2	imp	0.49	6	imp	0.35	7	netral
Water content	0.61	3	imp	0.79	1	imp	0.49	3	imp
Usefulness	0.30	6	imp	0.72	4	imp	0.80	1	imp
Price	0.35	5	netral	0.79	2	imp	0.37	6	netral
Brand	0.22	8	netral	- 0.26	9	netral	0.05	9	netral
Packaging	0.29	7	netral	0.08	8	netral	0.18	8	netral

Note : imp = important ; Vimp = very important; n.imp = not important r = ranking

Table-2
Convidence Level of Attributes (bi) on Organic and Anorganic Vegetable

Atribute	**Carrot**				**Spinach**				**Tomato**			
	Organic		**Anorganic**		**Organic**		**Anorganic**		**Organic**		**Anorganic**	
	bi	**r**	**bi**	**r**	**bi**	**r**	**bi**	**r**	**bi**	**r**	**bi**	**r**
Taste	0,51	2	0.50	2	0.22	3	0.19	3	0.40	2	0.64	2
Aroma	- 0.69	4	- 0.64	4	-0.62	4	-0.7	4	-0.59	4	-0.6	4
Colour	0.24	3	0.41	2	0.17	3	0.35	3	0.46	2	0.48	2
Texture	0.86	1	0.47	2	0.72	2	0.46	2	0.73	2	0.52	2
Freshness	0.35	3	0.08	3	0.67	2	0.82	2	0.60	2	0.58	2
Water content	0.23	3	- 0,12	3	0.50	2	0.67	2	0.80	2	0.63	2
Usefulness	0.58	1	0.02	3	0.39	2	0.51	3	0.88	2	0.47	2
Price	0.11	3	- 0.10	3	0.38	3	0.42	2	0.65	2	0.48	2
Brand	0.25	3	- 0.10	3	-0.27	3	0.30	3	0.44	2	0.39	3
Packaging	0.38	3	- 0.19	3	-0.23	3	0.30	3	0.56	2	-0,1	3

Note : 1 = very good ; 2 = good ; 3 = good enough 4= not good 5 = very not good r = ranking

Table -3
Fishbein Analysis for Organic and Anorganic Vegetable

Atribute	Carrot		Spinach		Tomato	
	Organic	Anorganic	Organic	Anorganic	Organic	Anorganic
	b_ie_i	b_ie_i	b_ie_i	b_ie_i	b_ie_i	b_ie_i
Taste	0.872	0.855	0.158	0.136	0.168	0.268
Aroma	0.345	0.320	0.551	0.649	0.312	0.323
Colour	-0.028	-0,04	0.088	0.182	0.368	0.384
Texture	0.507	0.270	0.223	0.142	0.343	0.244
Freshness	0.248	0.050	0.328	0.401	0.210	0.203
Water content	0.140	-0.07	0.395	0.529	0.392	0.308
Usefulness	0.174	0.01	0.280	0.367	0.704	0.376
Price	0.038	-0.035	0.300	0.331	0.240	0.177
Brand	0.055	-0.022	0.070	-0.07	0.022	0.019
Packaging	0.11	-0.055	-0.018	0.024	0.100	-0.03
TOTAL	**2.46**	**1.28**	**2.37**	**2.03**	**2.86**	**2.27**

Based on the interval scale = m – n/ b , where m = the highest value ; n = the lowest value and b = group that will be formed, the interval line of catagory on consumer behavior for organic and anorganic vegetable can be seen in figure 1, 2 and 3

Five important attribute of carrot, spinach and tomato, it can be concluded that water content and taste is important. Several study found that water content and taste is important[14,15].

The important attribute of carrot and spinach is freshness, but for tomato that attribute is netral, because tomato are always available in supermarket in fresh condition, so that the consumer have the perception that tomato always fresh. Compare to traditional market, tomato and other vegetable are often not available in a fresh condition. Aroma atrribute are not important for all commodities, because consumer assume that the carrot, spinach and tomato are distinctive aroma. Brand attribute is not important, because in consumer side the most importing thing are taste, quality and freshness[16].

Confidence Level of Attribute: Confidence level of attribute indicate the the value of assessment from all attribute for carrot, spinach and tomato. At this confidence level, start from very good to very bad. The result of confidence level of this attribute can be seen in table 2. In general, respondent of organic carrot catagory for texture (fiber) and usefulness is very good, than successively followed by other attributes such as taste, packaging, fresness and others. Fiber content and usefulness is considered good by consumer, because consumer believe that organic carrot content high fiber and usefulness for diet. An organic carrot the important attribute are taste, texture (fiber), freshness and colour with good catagory, than successively followed by usefulness and other attribute. Colour of an organic carrot is good catagory, because consumer believe that colour in anorganic carrot is bright and clear than organic carrot. Catagory of water content, price, brand organic and anorganic carrot is netral. This means, consumer assume that those attribute similar between organic and anorganic carrot, but consumer could be able to distinguished brand and packaging for organic and anorganic carrot. Catagory of aroma is the lowest, because it considers that the scent of organic and anorganic carrot do not distinctive.

In average, spinach catagory of attribut texture (fiber), freshness and water content are good, than successively followed by other attributes such as usefulness, price and other attibute. Consumer assume that texture (fiber), freshness dan usefulness of organic spinach is better than anorganic spinach, and they believe that of anorganic spinach is cheaper than organic spinach.Taste attribute is netral for organic and anorganic spinach, because consumer assume that organic and anorganic has no difference taste, while brand and pacakaging could simple distinguished. Just as carrot, aroma of organic and an organic spinach do not distinctive.

Tomato consumer catagorized attribute of usefulness, water content, texture (fiber). price and freshness are good, while attribute taste and colour is netral. Water content was catagorizes good, because consumer believe that tomato is good for juice. The important attribute for an organic tomato are usefulness, water content, texture (fiber). price and freshness, and consumer believed that taste of organic tomato is better than an organic tomato. Brand and packaging are netral, because that attribute are similar for organic and an organic tomato. Attribute of aroma is the lowest, and consumer assume that the scent of organic and anorganic tomato do not distinctive. Nutritive sensory and food safety attribute influence consumer choice between organic versus conventionally produced foods[17].

Analysis of Consumer Attitudes (Multiattribute Fishbein) of Organic and Anorganic Vegetable: The result of the analysis multiattribute Fishbein can be seen in table 3. Based on Fishbein value. It can be conclude that consumer attitude toward organic carrot is good with Ao 2.46. while attribute of anorganic only 1.28. This value indicate that consumer tend to prefer organic carrot than anorganic carrot. The total consumer attitudes of carrot is mapped into line interval catagories, could be seen in figure 1. Consumer attitudes for organic and anorganic spinach was catagorised positif, Ao for organic spinah 2.03 and anorganic spinach 2.37. This value indicate that consumer tend to prefer organic spinach than anorganic spinach. The total consumer attitudes of spinach is mapped into line interval catagories, could be seen in figure 2.

While consumer attitudes for organic and anorganic tomato was catagorised positif, Ao for organic tomato 2.86 and anorganic spinach 2.27. This value indicate that consumer tend to prefer organic tomato than anorganic tomato. The total consumer attitudes of tomato is mapped into line interval catagories, could be seen in figure 3. From that statement it could be concluded that in general consumer prefer organic vegetable than an organic vegetable. Several research in contradictive finding. Overall, organic foods are safer than conventional foods. Perseptions that organic is associated with less or no chemical residues, for example, is sometimes questioned because of the potential for contamination during processing, and the possibility of mixing organic and conventional products in the food distribution chain. However, such risk can be reduced with proper management practices[9,13].

The reasoning that consumer prefer organic vegetable than anorganic vegetable are the cleanliess of organic vegetable (57.50 %), easy to find (22.50%) and the cheaper price (20 %), while consumer choose anorganic vegetable because of cheaper price (46.66%), cleanliness (28.3%) and easy to find (25 %). Consumer expectation is certification, write clear in the packaging that easy distinguished between organic and an organic vegetable.

Recently, the packaging do not inform well whether organicor anorganic vegetable. Research found that five important factors indicating five groups of new generation potential organic consumers: Humanists, Food Phobics, Healthy Eater, Environmentalists and Hedonis. This indicate that consumer's interest in organic food is influenced by their belief that organically produced food is safe and better for health, environment and welfare of farmers and poor[20].
In Indonesia, organic agricultural product set out by Indonesian National Standart (SNI) that legistimate by National Standaritation Agency throug the BSN SI 01-6729 – 2002. There are four types of labels that describe the level of organic production system, namely a ble label, yellow label, green label organic and organically grown green label. Blue label indicates that production process is free from pesticide synthetic.

Yellow label indicates that the production process in undergoing the transition from farming methods that have been using synthetic chemical to the farming methods that do not use syntthetic chemical at all. Organic green label indicates the production process is equivalent to the SNI and organically grown green label indicates agricultural product cultivated organically and environmentally friendly. This information should given to the farmers, market agents, industry, and consumers by media. The success of a certain message or information depends to avery high extent on the experience, talent and tacfulness of this species of communicators. This is because their expertise in this field will matter higly towards making the people easily understand what is being broadcast or aired or printed by the media[1].

Although there are already classification in labeling, but in Indonesia until now there is no implementing regulation are sufficiently clear so that almost no organic product used the label or throught the certification process. This research revealed that the most consumer expectation is organic certification that write clear in pakcaging, so they get right information about organic product. These regulation are less strict in its implementation, which is often used by cheating organic producer. They delivered organic vegetable, but in fact those were anorganic vegetable. The potential market of organic vegetable no yet responded by the farmer, because small farmer still lack information how to cultivate organic farming in right way.

Conclusion

The important attribute for carrot are taste, freshness, water content, texture (fiber) and price, because carrot often used for juice, salat or other menu. The important attribute for spinach are price, taste, usefulness and colour. The important of attribute for tomato are usefulness, colour, water content, texture (fiber) and taste. Colour attribute become important for tomato, because tomato often used for juice and garnish. Attribute of taste, watercontent are the important attribute for carrot, spinach and tomato. Attribute aroma is not important attribute for carrot, spinach and tomato, because consumer assumed that those vegetable do no has distinctive aroma. The reasoning that consumer prefer organic than an organic vegetable are cleanliness (57.50%), easy to find (22.50%) and Cheaper price (20%), while consumer choose anorganic vegetable because of cheaper price (44.66%), cleanliness (28.33%) and easy to find (25%). The most consumer expextation is organic certification, write clear in packaging so they can easily to distinguished betwen organic and anorganic vegetable.

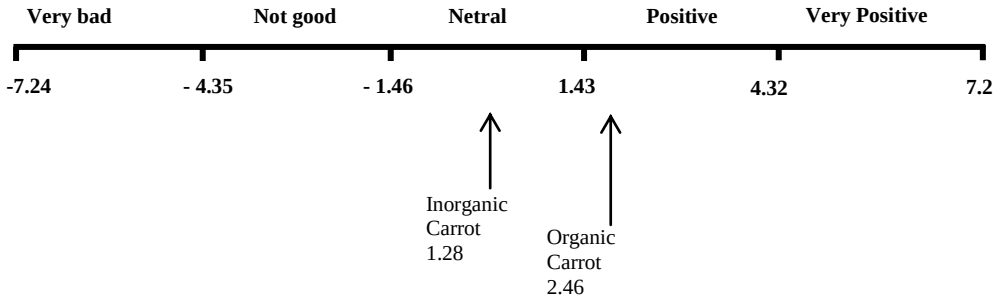

Figure1
Interval Line of Category on Consumer Behavior for Organic and Inorganic Carrot

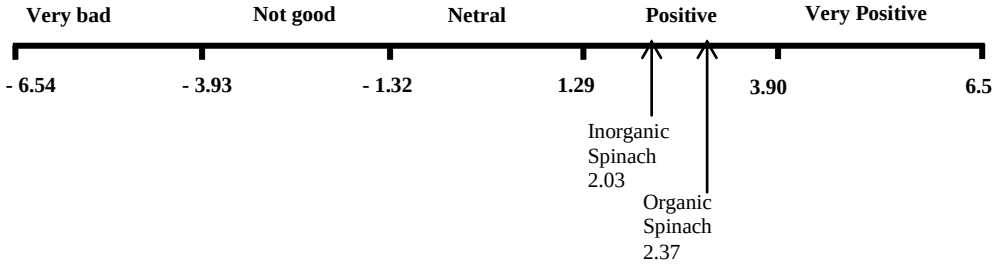

Figure 2
Interval Line of Category on Consumer Behavior for Organic and Inorganic Spinach

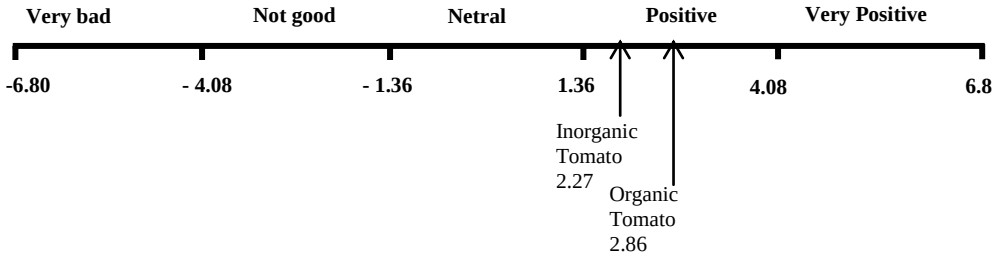

Figure 3
Interval Line of Category on Consumer Behavior for Organic and Inorganic Tomato

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References

1. Research Center for Agricultural Policy and Agribusiness (CAPAS), UNPAD. , Interim Report of AMA Project of Manggo and Mangosteen. Collaboration between Research Center for Agricultural Policy and Agribusiness- UNPAD and Michigan State University, USA, 6-9, **(2009)**

2. Indonesian Organic Group., Organic Farm, Bogor Indonesia, 1-15 **(2010**)

3. Kohl., Marketing of Agricultural Product, Prentice-Hall, Inc. New Jersey, USA, 65- 79 **(2002)**

4. Tirmizi Muhammad Ali., Rechman Kashif-Ur and Saif M. Iqbal., An Empirical study of consumer impulse

buying behavior in local markets, *Euro Journal of Sciences Research*, **4 (1)** 522 – 532 **(2009)**

5. Engel James F., Roger D., Blackwell and Miniard Paul W., Consumer Behavior, The McGraw- Hill Companies, Inc. New York (**2004)**

6. Young Showing, Jane Li Shyh, Huang Yu-Ying and Tsai An-Ho., *Analize Word-of- Mouth Effect in Term of Macro - Behavior : The Herd Behavior in Chinese Market,* Working Paper, 1- 15 **(2004)**

7. FAO. General concepts and issues in organic agriculture, Environment and Natural Resources Series, No.4. (**2005)**

8. Britz T. and Ward R.W., Consumer awareness of organic products in Spain An a pplication of multinomial Logit Models, *Food Policy*, **34 (3)**, 295-304 **(2009)**

9. Gracia A. and Magistris T., The demand for organic foods in The South of Italy: A discrete Choice Model, *Food Policy*, **33**, 386-396 **(2008)**

10. Lockie S., Lyons K., Lawrence G. and Mummery K., Eating Green motivations behind organic food consumption in Australia, *Europen Society for Rural Sociology*, **41(1),** 23-40 **(2002)**

11. Tsakiridou E., Konstantinos M. and Tzimitra-Kalogianni I., The infuence of consumer characteristics and attitudes on the demand for organic olive oil, *Journal International Food Agribusiness Market*, **18**, 23-31 **(2006)**

12. Soler F. and Sanched M., Consumer's acceptability of organic food in Spain : Result from an Experimental Auction Market, *Brithish. Food Journal*, **104**, 670-687 **(2002)**

13. Frykblom P., and Shogren J.F., An experimantal testing of anchoring effects in discrete response, *American Journal Agriculture Economics,* **16(1),** 329-341**(2000)**

14. Babin B.J. and Babin L., Seeking something different?, A model of scema typically, consumer affect, purchase intentions and perceived shopping value, *Journal of Business Research,* **54 (2),** 86 – 96 **(2001)**

15. Kacen J.J., and Lee J.A., The influence of culture on consumer impulse buying behavior, *Journal of Consumer Impuse Buying Behaviour*, **12(1),** 163 – 176 **(2002)**

16. Dittmar, H. And Drury, J., Self image - Is it bag ? A qualitative comparison between ordinary and excessive consumers, *Journal of Economics Psychology,* **21 (2)**, 109 – 142 **(2000)**

17. Bourn D. and Prescott J., A comparison of the nutritional value, sensory qualities and food safety of organically and conventionally produced foods, *Critical Reviews in Food Science and Nutrition,* **42(1)**, 1 -34 **(2002)**

18. Gagliardi J.V. and Karns J.S., Leaching of *Escherichia coli* 0157 H7 in Diverse soils under various agricultural management practices, *Applied Environmental Micro*, **66**, 877-883 **(2000)**

19. Hussein H.S., On farm factors can decrease risk of *E. Coli* contamination, *Feedstuffs*, **13**, 18-23 **(2000)**

20. Kumar Sushil and Jabir Ali, Analyzing the factors affecting consumer awareness on organic foods in India, Paper presenting at 21th Annual IFAMA Word Forum and Symposium on The Road to 2050 : Sustainability as a business opportunity, Frankfurt, Germany, 1-8 **(2011)**

21. Bora Abhijit, Science communication through mass media, *Res.J.Recent Sci*., **1(1),** 10-15 **(2012)**