Market Potential and Willingness-To-Pay (WTP) for Selected Organic Vegetables within Colombo Municipal Council limits

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ABSTRACT

Farming, without use of synthetic chemicals commonly referred as organic farming. It is becoming increasingly popular well over the world even in Sri Lanka. So that market for the organic produces has quickly evolved in recent years. This study was carried out with a view of identifying the market potentials for organic products and consumer buying behaviour in Colombo municipal council. In addition to that this study provides an analysis of consumer Willingness-To–Pay (WTP) for selected organic vegetables which decomposes the marginal effect of demographic variables. This study was conducted in three main supermarkets, namely Cargill's, Arpico and Keels supper. Forty respondents were systematically selected from each supermarket. According to the results, most of the consumers are aware of organic products and this awareness has influenced their consumption of organic products. Majority of the consumers considered the quality as the most important factor to purchase organic product. The second important factor expected by the farmers is price of the organic product. Results of the Chi Square analysis revealed that the socio demographic factors such as income and education level significantly influence the WTP for both types (Up & Low country) of organic vegetables. Based on the study it can be concluded that consumer awareness effectively advance the demand for organic products and there is a high marketing potential to introduce organic products to supermarkets in Colombo municipal council.

KEYWORDS: Organic Vegetables, Additional Willingness To Pay, Market Potential

INTRODUCTION

Organic agriculture is an agricultural system that promotes environmentally, socially and economically sound production of food, fiber, timber etc. In this system soil fertility is seen as the key to successful production. Working with the natural properties of plants, animals and landscape, organic farming aim to optimize the quality in all aspects of agriculture & the environment. Organic agriculture significantly reduces external inputs by avoiding the use of chemosynthetic fertilizers, pesticides and pharmaceuticals. Instead it works with nature to increase both agricultural yield and disease resistance. (International Federation of Organic Agriculture Movements- IFOAM)

Organic agriculture is currently practiced in more than 120 countries. In a number of European countries (Austria, Sweden and Switzerland) Organic agriculture now accounts for around 10% of farmed land. Hundred of thousands farmers in the developing world practice organic farming. Organic trade is a rapidly growing sector. For more than a decade it has achieved annual growth rate of 10- 25 %. In a number of food stores (most notably infant food) organic has moved from niche to mainstream markets in many countries. The world wide value of organic trade has doubled in the last 3 years and reached an estimated 25 billions of US$ in the year 2003. (IFOAM, 2004) The toxilogical survey conducted by London Food Commission on active ingredient currently permitted for use by the United Kingdom pesticide manufactures. Results of the survey showed that of the 426 chemicals listed, 68 to be carcinogenic, 61 to mutagenic and 35 to have various reproductive effects, ranging from impotency to a variety of birth defects. In total, 40 % of the pesticides currently in use were linked with at least one adverse effect. (Agrochemical, 2001).In Sri Lanka organic farming practices with proper stands were initiated in 1979 by a non government organization, namely "Gami Seva Sevana" (Jayakody, 2001).In a survey done among the organic consumers in Sri Lanka, It has reveled that they wanted fresh attractive, tasty, nutritious & convenient organic foods. Consumers wanted to purchase of high quality at affordable prices. (PALM Foundation, 1999)

The research conducted in Kandy district to identify willingness to pay for selected organic vegetables has reveled that the demographic factors (income, education, age and family size) significantly influence the willingness to pay for organic vegetables and high potential to introduce organic products to supper markets in Kandy. (Piyasiri and Ariyawardana, 2001). Organically produced foods and other products are the best to prevent the numerous health hazards. Organic vegetables have high dry matter content and less water content. So that it has a higher keeping quality, less post harvesting losses even transportation. (*www.unescap.org/rural/doc)*

However, in Sri Lanka the market for organic products is not well developed and market statistics are unavailable. It is characterized by lack of proper retail venues, lack of continuous supply, lack of certification, poor quality products etc. Further, none of the marketers have adopted successful marketing strategies for the provisions of the organic market in the country. But, there is a growing trend among the urban consumers to try organic products from places where they could get an assurance about the quality of the products, as they do not get any chance to consume pesticide free food products. (Anuradha, 2001) Consumer awareness and experiences about organic products could determine the demand for these organic products. Furthermore, market potentials are mainly determined by consumer prospect of the product attributes, which are attached to the product such as price, quality, certification etc (Kotler, 2001). Therefore, producers must identify such qualities and

their level of importance in adapting successful promotion campaigns.

Given this background, this study was conducted with the general objective of identifying the market potential and Willingness-To-Pay for organic vegetables in Colombo municipal council and specific objectives of this study are identify consumer awareness and past experience regarding organic products, estimate Willingness-To-Pay for organic vegetables , identify the socio demographic factors influence the Willingness-To-Pay for organic vegetables and identify the income group which consume more organic vegetables.

METHODOLOGY

Three different types of supermarkets in Colombo municipal council were purposely selected as the sample. Namely Arpico in union place, Cargills' in Bambalapitiya and Keels Super in word place as these markets are very popular super markets in Sri Lanka. However, forty customers were systematically selected from each of the supermarkets. Therefore, the final sample comprised of 120 respondents who came to buy vegetables from the supermarkets. All these 120 respondents were interviewed during the month of January 2005.

Primary data were collected from the consumer survey using a pretested questionnaire. Information was gathered basically under three main areas.

(1) Socio demographic factors (income, education, age, gender etc),
(11) Awareness of organic vegetables and past experiences about organic products,
(111) Buying preference of organic vegetables and additional Willingness-To-Pay for selected organic vegetables.

In addition to that, get the information on respondent's comments and suggestions to improve the organic vegetable markets. Five types of organic vegetables were selected for the study from Low-Country and Up-Country vegetables. Tomato and Brinjal are the Low-Country vegetables and Cabbage, Carrot and Leeks are the Up-Country vegetables. The information regarding the additional Willingness-To-Pay was obtained after explaining the benefits of organic product consumption and providing the prevailing price of each type of inorganically produced vegetables.

Distribution pattern of the data and relationship among different factors explain by using the descriptive data analysis technique. Chi- Square test is used as the statistical test to explain the significance of the overall relationship between two qualitative variables.

RESULTS & DISCUSSION

Consumer awareness is one of the best factors to determine the market potential of organic products. Among the total respondents, 93.3% had awareness about organic products, while 6.7% did not have awareness about organic products. Chi-Square one way analysis proved that these two percentages are significantly different.

Information on Organic Product Passing to Public

The study revealed that personal communication, publications and mass media are the three main ways through which they get knowledge about organic products.

Table 1: Sources of awareness of organic products

Sources	Percentage
Publication	42.9%
Personal communication	35.7%
Mass media	21.4%

According to the Table 1, 43% of the respondents were made aware through publication while 36%, 21% of the people made aware about organic products by personal communications and mass media respectively. Basically personal communication (meetings and telephone conversations) is done by non governmental organizations such as Lanka Organic Agricultural Movement (LOAM), Gami Seva Sevana (GSS) etc. They conduct different types of awareness programs to keep members aware. With compare to other two methods mass media give less contribution to pass information to public on organic products.

Past Organic Product Consumption Experiences

The association between consumption and the awareness of the organic products is statistically significant. 90% of the respondents, who have had awareness, consumed organic products. This result reveals that most of the consumers are aware of organic products and this awareness has influenced their consumption. This indicates that awareness programs about organic products could be an effective way of promoting the consumption of organic products.

The associations between past experience of consumption organic products and consumers' education level, monthly household income levels are presented in Table 2.

According to Chi- Square analysis, monthly household income and the education levels are the factors that have an association with past consumption of organic products. According to the Table 2, people with education up to graduate level or above, had highest past consumption experience (68%) compared to other two categories. Among the other two categories up to A/L had higher past consumption experience (27%) compared to 5% in O/L category.

This implies that the consumption of organic products mostly practiced by educated people and it is popular in the educated society. The other important factor that effects to the consumption is income level. The higher income level had highest past consumption experience (51%). Among the other two categories lowest income group had lowest past consumption. This result clearly illustrate when increasing the income level the consumers tend to consume more organic products.

Table 2: experiences Past in consumption organic products with Income levels and Education levels

	Education level			Income (Rs.'000)		
	O/L	A/L	GRD	<20	20-40	>40
Past experience %	5.0	27.0	68.0	5.0	44.0	51.0
Not past experience %	36.0	27.0	36.0	64.0	27.0	9.0

Significantly association at P < 0.05 *O/L-General Certificates Examination of Ordinary Level *A/L- G C E Advance Level *GRD-graduation level or similar qualifications

Table 3: AWTP for Up-County and Low-Country Organic vegetables

AWTP	% of respondents for Up-Country vegetables	% of respondents for Low-Country vegetables
<10%	8.3	12.5
11%-25%	35.0	70.8
>25%	56.7	16.7

Additional Willingness-To-Pay (AWTP) for Up-Country and Low-Country Organic Vegetables

Generally prices of the organic vegetables are higher than the non-organic vegetables. To identify the Willingness-to-Pay for selected organic vegetables separately for Up-Country and Low-Country, two categories of vegetables were considered. Cabbage, Carrot, and Leeks for Up-Country and Tomato and Brinjal for Low-Country were considered for the study. Willingness-To-Pay was varying according to the types (Low-Country and Up-Country) of organic vegetables. AWTP was obtained by indicating the prevailing prices of inorganically produce vegetables in the supermarket as the base value. The results shows that almost all the consumers like to pay higher prices for organic vegetables while for Up-Country organic vegetables Willingness-To-Pay is much higher than Low-Country organic vegetables.

According to the Table 3, majority of the respondents are (56.7%) willing to pay more than 25% for organically produced Up-Country vegetables than inorganically produce vegetables. That is because higher application of pesticide for Up-Country vegetables. Therefore consumers tend to buy Up-Country organic vegetables by paying higher prices. For Low-Country organic vegetables, majority are (71%) willing to pay 11%-25% more price. Approximately 91% and 87% of the respondents are willing to pay more than 11% for Up–County and Low-Country organic vegetables respectively.

AWTP for Different Types of Organic Vegetables

Additional Willingness-To-Pay (AWTP) for 1kg of Tomato is fluctuating 9%- 27% around the average of 18%. When considering the price of Brinjal, 1kg varies in between 5% -20% around the average of 12.5%. This clearly shows that the consumers tend to pay higher prices for the Tomato than Brinjal (Figure 1). Quality improvements such as less water content, long storage ability and the taste of organic products, especially for perishable vegetables like Tomato is the main reasons to pay high price.

When considering the Up-Country organic vegetables, consumers tend to pay higher prices for Cabbage than Carrot and Leeks (Figure 2). The Additional Willingness-To-Pay for 1 kg of Cabbage changes in between 19% - 37% around the average of 28%. According to the consumers' views for high paying of Organic Cabbage is free from inorganic fertilizers and pesticides in their life cycle. Organic Cabbages contain less water; high taste and long period storage ability are the other reason for their high willingness. The price change of the 1kg of Carrot is in between 10% - 19% around the average of 14.5% and that is the second heights AWTP recorded. The price change of 1kg of Leeks is in between 27% - 15% around the average of 21%. According to these results, Consumers are willing to pay heights price for Cabbage followed by Carrot and Leeks.

Factors that Influence the Additional Willingness-To-Pay (AWTP) for Organic Vegetables

In addition to the type of vegetables there are some demographic factors (monthly household income levels, age groups, education levels and gender) which are affected to the AWTP for both types of organic vegetables are presented in table 4 and 5.

According to the Table 4 and 5, there is an association between monthly household income level and education level of the consumers with the AWTP for both types of organic vegetables. But age categories and the gender of the consumers' associated with only the Low-Country organic vegetables. According to the result when increasing the education level the level of AWTP also increases for both types of organic vegetables. Possible implications suggest that higher educated consumers may exaggerate the true risk of pesticide usage or higher educated respondents have a lower degree of confidence in producing safe stands. When considered the income variable with the AWTP for both types of organic vegetables, those who have low monthly house hold

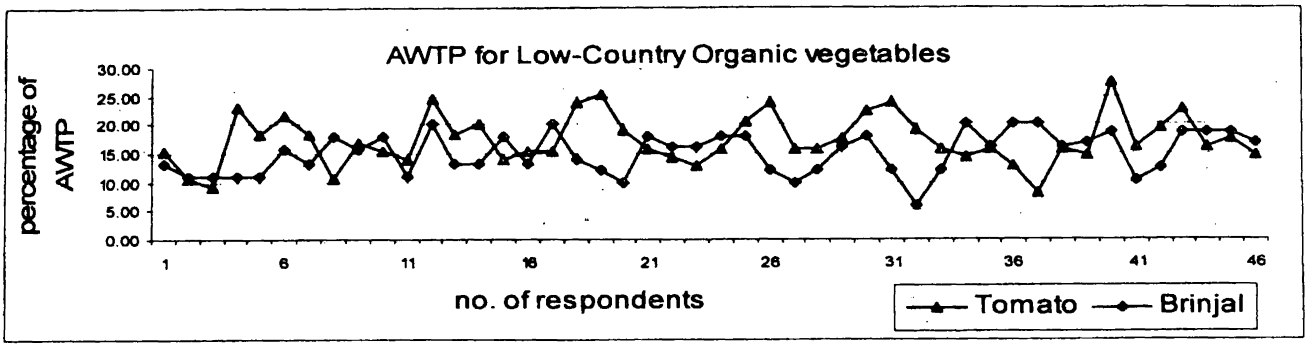

Figure 1: Percentage of AWTP for Low-Country Organic vegetables

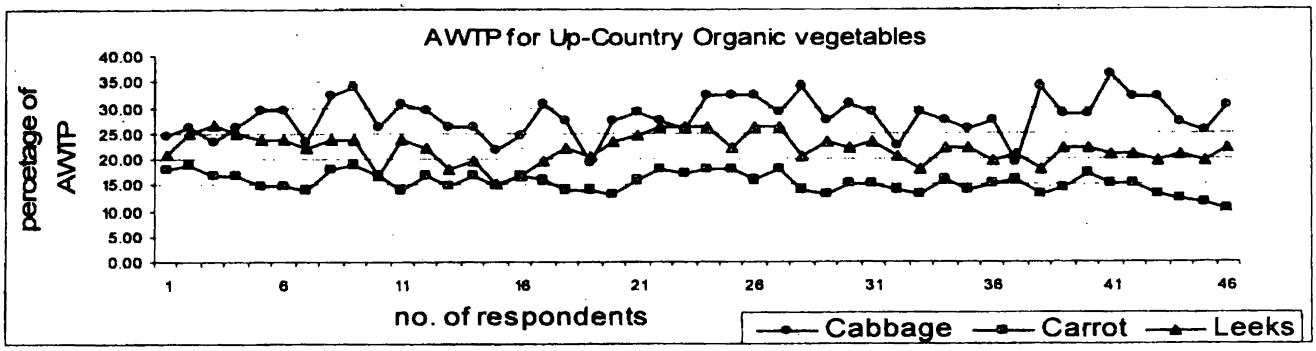

Figure 2: Percentage of AWTP for Up-Country Organic vegetables

Table 4: Sample characteristics of demographic factors and AWTP of Low-Country Organic vegetables

	Education level			Income (Rs.'000)			Age (yrs)			Gender	
AWTP	**O/L**	**A/L**	**GRD**	**<20**	**20-40**	**>40**	**18-30**	**31-50**	**>51**	**male**	**female**
<10%	53.0	13.0	33.0	53.0	34.0	13.0	66.0	20.0	14.0	20.0	80.0
11%-25%	3.0	32.0	65.0	6.0	49.0	45.0	32.0	49.0	17.0	37.0	63.0
>25%	10.0	15.0	75.0	15.0	15.0	70.0	25.0	20.0	55.0	70.0	30.0

Significantly association at P < 0.05

Table 5: Sample characteristics of demographic factors and AWTP of Up-Country Organic vegetables

	Education level			Income (Rs.'000)		
AWTP	**O/L**	**A/L**	**GRD**	**<20**	**20-40**	**>40**
<10%	40.0	30.0	30.0	38.0	31.0	31.0
11%-25%	10.0	40.0	50.0	9.0	55.0	36.0
>25%	6.0	18.0	76.0	0.0	18.0	82.0

Significantly association at P < 0.05

income willing to pay comparatively low percentage of AWTP with comparing to people who have high house hold income. This showed AWTP for both types of organic vegetables, increases with the monthly household income level of the consumers.

When it is considered the age of the consumers with the AWTP, similar trend as Education level can be seen for Low-Country organic vegetables. The highest percentage of AWTP was recorded from the oldest age group, those who over 51 yrs of age while lowest percentage of AWTP was recorded from the youngest age group. Health consciousness is the main reason for paying high price for organic vegetable of older group.

When considering the gender of the consumers with the AWTP of Low-Country organic vegetables, males recorded high Willingness-To-Pay for organic vegetables than female. That is because male dominant society in Sri Lanka.. However when consider the Up-Country organic vegetables there are no restriction among gender and age groups of the consumers for paying higher prices.

Table 6: Past consumption of Organic products

Products	Past Consumption%
Spices	30
Vegetables	24
Fruits	21
Leafy vegetables	17
Animal products	4
Tea	4

According to Table 6, highest past consumption was recorded for the organic spices fallowed by organic vegetables and organic fruits. Organic animal products and organic tea recorded comparatively low percentage of past consumption experience due to unaffordable prices.

According to Table 7, highest expected consumption will be organically produced vegetables,

fruits and leafy vegetables respectively. There is a demand for these products and a high potential to introduce organic products to supermarkets in Colombo municipal council.

Table 7: Expected consumption of Organic products

Products	Expected Consumption%
Vegetables	30
Fruits	24
Leafy vegetables	23
Spices	16
Animal products	4
Tea	3

Reasons for buying Organic Vegetables

The major reasons recorded by the consumers for buying organic vegetables were, maintaining of good health condition, environmental friendliness high taste and other quality improvement characters. Majority of the respondents (98%) buy organic vegetables to maintain there health condition. They believe organic vegetables are free from synthetic chemical pesticides. This attribute addresses the strong risk aversion to the ingestion of pesticide residues. 21% of the consumers buy organic vegetables because it is an environmental friendly product. It reduces the environment pollution. 9% of the respondents buy organic vegetables due to high taste than non-organic vegetables. Therefore organic product market could cater to these consumer expectations by introducing organic vegetables and fruits to supermarkets in Colombo.

Expected Product Attributes

In addition to the selection of organic vegetables, consumers also revealed that they expect more attributes along with the vegetables. Such attributes indicated were quality, price, certification, shop environment and packaging. Almost all the consumers (more than 98%) indicated that the quality of the organically produced vegetables should be superior to that of inorganically produced vegetables. They consider freshness, cleanliness and external appearance of the vegetables. Because of that reason there should be continuous supply of fresh vegetables in supermarkets. 81.7% of the respondents said that the price is an important factor when determining them to buying organic vegetables. 52.5% of the respondents consider the certification of the products. 60% of the respondents are willing to buy organic vegetables from supermarkets due to that they think it will be a good assurance of the certified organic vegetables. 42.5% of the respondents think about the shop environment. 76% of the respondents' don't consider about the packaging on vegetables. They think it will be an unnecessary value increment on the vegetables.

CONCLUSIONS

This study indicated that consumer awareness effectively advances the demand for organic products, it could be concluded that adoption of proper awareness programs would help in promoting the organic vegetable consumption. The respondents' higher important determinants in deciding their buying behaviour of organic products are quality & price. In order to enhance the quality of organic vegetables, establishment of proper local certification stands should be considered. The Additional Willingness-To-Pay for organic vegetables is significantly influenced by monthly household income and education level of the consumers. This provide food marketing agents with a better understanding of consumer purchase behavior, preferences and believes that are relevant to organic production these findings are specially encouraging those who are developing marketing strategies for organic produces.

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