

## **Sub-Urban Agriculture, Food Practice and Its Impact on Environment**

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### **1 Introduction**

This paper basically attempts to address the attitude and behavior of people in Kesbewa Urban Council areas in terms of urban agriculture at their home garden, food consumption and environmental conservation. For this purpose, two different sample groups were identified as ‘control’ and ‘experimental’ consisting of twenty households based on purposive sampling. A semi structured questionnaire and in-depth interview methods were used to collect both quantitative and qualitative data respectively. The three main sociological concepts related this report known as consumption pattern of food security and food practice, income and expenditure and environmental-concern were found to be important are discussed here. It is clearly pointed out that there is an obvious difference between experimental and control group in terms of expenditure on food items, amount and types of food consumption and food production at their home garden.

### **2 Background**

Consumption is a typical human behavior of all societies and all periods in history. However, the pattern of food consumption and its significance for an individual and for society has changed over time with the influence of various socio-economic and cultural aspects. The economic system and value system are interconnected in the process of consuming. As food consumption is a significant domain of everyday life, it should not be considered only selecting, purchasing and using of goods and services but should be defined broadly. The socio-cultural significance of consumption should also be recognized. The idea is that consumption is essentially a symbolic activity which creates order in the mental world of individuals. Their idea has been widely accepted and applied. In contemporary society, consumers are active in attaching symbolic meanings to goods and services. Actually, they are eagerly seeking the meanings and significance of goods. Contemporary, modern and postmodern, consumer theories admit that

consumption is a social activity by which symbolic meanings as well as social codes and relations are produced and reproduced. For example, people in Sri Lanka are more interested in buying food from KFC, McDonalds and Super Markets to communicate with others through consumption symbols of food.

We usually consume signs and symbols rather than material goods. Really goods are replaced by simulations, and a new reality is created which has lost its reference to the original (Baudrillard, 1988). Baudrillard sees society as being dominated by objects and pervaded by signs. Baudrillard sees the consumer society, with its apparently prosperous, comfortable and enriched lives of many, as a snare and a delusion, as a continuation of the traditionally exploitative nature of capitalism (Cuff, 2004: 297).

In the past, our food was considered something fit to eat or to reject by culture. The food and behavior in terms of food practice are critically studied by sociologists and social anthropologists in the contemporary world. However, food studies are an interdisciplinary field that in the last decade has produced a vast body of literature. The popular British Anthropologist, Marry Douglous (1979 and 1966) are of the view that it is the social system and culture that determines the eating habit of people. She further argues that the notion of dirt and pollution can have enormous impact on concept of cultural pollution and eating habit of people. The sociology of food and nutrition, or food sociology, concentrates on the myriad of socio-cultural, political, economic, and philosophical factors that influence our food habits what we eat, when we eat, how we eat, and why we eat. Food sociology focuses on the social patterning of food production, distribution, and consumption which can be conceptualized as the social appetite (Germov and Williams 2004).

The concept of awareness and attitudes are very important in understanding the environmental issue as well as environmental action of people such as urban agriculture and environmental friendly consumption pattern. Education is one of the key factors in determining the environmental attitude of people depending on their economic and cultural background. Generally, education is supposed to be having positive relationship with the environmental attitude among middle or upper middle-class people in developed countries or economically least developed societies. Several studies found that higher level of education have a positive effect on environmental attitude (McMillan *et al.*, 1998).

In analyzing environmental attitude or environmentalism, the concept of gender plays crucial role as a leading socio-cultural factor of this study. According to Zelezny et al. (2000), women report stronger environmental attitude and behaviors than men in the studies of gender differences in environmentalism across many ages and 14 countries. It is also very important to identify whether youth or elders are more environmentally concerned in order to change attitude of people and inaugurate environmental actions. In other words, the recognition of relationship between age and environmental attitude is useful to understand the urban environmental consciousness and behavior of youth and elders separately for future planning and activities in terms of urban sustainable development.

The social class is another most crucial factor which is influential on environmental attitude and action. Income as major component of class is found significant in formation of environmental actions in developed and developing countries. The environmental action in the Global North is largely influenced by middle or upper middle class (income group) ideology, whereas it is mainly the lower middle class (income group) or the poor influencing third world environmental actions through livelihood view or life supporting ecological perception (Dwivedi, 2000 and Mahees, 2010).

According to Jayasiri (2008), there are values and custom in association with food behavior in Sri Lanka. The ecological variations, Ayurvedic practices, Buddhist culture and other religious background have enormously effected on food preference and behavior of Sri Lankans. However, since the recent past, food behavior has been influenced by changing political economic conditions and media lead consumer culture. When it comes to Kesbewa area, it is important to understand the environmental attitude, class background and religiously motivated consumer culture in terms of food behavior and food production at their home gardens.

### **3 Methodology**

The methodology adopted for this study was mainly based on explanatory and explorative approach used sociological research. For this purpose, questionnaire and in-depth interview techniques were used to collect quantitative and qualitative data respectively. Sample for questionnaire survey were drawn by using Simple Random Method (SRM) based on two strata known as 'experimental group', (people who are currently engaged in home gardening or urban

agricultural activities and identified by Agrarian Department and 'control group' (people who do not practice any home garden activities and composting. Therefore, the sample method used for questionnaire survey could be called even as stratified random sampling (SRS). Although limited twenty (20) samples were drawn for this purpose, these entire twenty samples were studied for a longer period continuously and in-depth manner based on their changing food consumption and practices getting nutrition. The data generated from questionnaire survey were analysed by using Statistical Package for Social Science (SPSS).

The in-depth interview method was the major data collection method used to gather information related to qualitative aspects of food, nutrition practice and environmental perception of people. The qualitative data and information collected from in-depth interviews were used to critically examine the quantitative data generated from questionnaire survey. This data collection technique was helpful to understand the subjective experiences and hidden characteristics of people in food practice and other environmental actions. Ten (10) in-depth interviews were used on the basis of purposive sample method. The purposive sampling was useful in selecting the most ideal and relevant key informants representing both experimental and control group. The qualitative data were sociologically analysed founded on major theoretical concepts used in social and cultural aspects.

## **Results and Discussion**

According to the study carried out in KUC area, it is important to understand the socio-economic and demographic characteristics of people selected for both experimental and control groups. The comparative sociological analysis of these two groups brings number of critical and subjective ideas regarding food consumption, nutrition and other environmental attitude towards urban agriculture. The age is one of the crucial factors that determine the behavior of people in terms of food consumption, nutrition and environmental conservation practices. The distribution of age of sample population representing both experimental and control group is given in table 01.

**Table 01: Age of Sample Groups**

Age (Years)	Study Groups			
	Control	Percentage	Experimental	Percentage
<b>1 - 40</b>	05	25.0	01	5.0
<b>41 - 60</b>	12	60.0	13	65.0
<b>Above 61</b>	03	15.0	06	30.0
<b>Total</b>	20	100.0	20	100.0

Source: Field survey, 2013

According to the table (01), the age has been categories into three groups. There are more young respondents in the control group (25%) than in experimental group (5%) whose age is below 40 years. There are 55% of respondents in control and 65% of respondents in experimental group respectively in the age category of 41 – 60. There are 30% of elderly respondents in the experimental groups which is two times bigger than the control group. According to the in-depth interviews carried out with both control and experimental groups, it is important to mention that respondents who are above the age limit of 61 are more concerned about their home gardens and the food that they can produce in the home garden. It is due to the fact that their time availability and the preference of spending their evening life with nature more than with other activities. As results, almost all the elderly respondents were found to be engaging in some form of home gardening and food production compared to young responders especially in the experimental group. In addition to age, sex as another demographic factor, also makes massive impact on food practice and environmental attitude of people in KUC area.

Although sex biologically originate, it always socially and culturally reproduced and reflect on day to-day activities of people. Many cross-cultural studies have clearly proved that there is a significant correlation in between gender and environmental attitude and actions of people (Agarwal, 1997, Shiva and Mies, 1987). According to the socialization process in Sri Lanka, the factor of gender is very crucial in deterring food preference, amount of food consumed, the way food is consumed and the level of nutrition. For example, men in Sri Lanka irrespective their cultural differences, prefer to eat more hot food mixed with chilly flavor and a large portion of food than that of women. Therefore, it is far more essential to look at food practice and nutrition

of both experimental and sample groups of KUC study from the gender perspective. The distribution of study sample based on the sex of respondents is indicated in the table 02.

**Table 02: Sex Background of Sample Groups**

Sex	Study Group			
	Control	Percentage	Experimental	Percentage
<b>Male</b>	13	65.0	14	70.0
<b>Female</b>	07	35.0	06	30.0
<b>Total</b>	20	100.0	20	100.0

Source: Field survey, 2013

According to table 02, there is almost equal distribution of sex factor in the sample selection of both groups in KUC study. When look at the table 02, it clearly shows that at least 30% of the sample of both groups are female. Although 30% of female sample is healthier for a good study, it would have been better to have more female sample for an in-depth gender analysis of food and nutrition. However, according to the information and experiences shared in the in-depth interviews, the perceptions and attitudes of female respondents are totally different from males in terms of food practice and home gardening. According to these in-depth interviews, females are more concerned about of economic and simple life style than men in terms of food consumption and maximum utility of whatever the food available at home. Elderly women especially in the experimental group maintain a very closer relationship with their home gardens and enjoy more satisfaction through the food production they had from the gardens.

**Table 03 Education Level of Sample Groups**

Education Category	Study Group			
	Control	Percentage	Experimental	Percentage
<b>Primary</b>	2	10.0	0	0.0
<b>O / L</b>	6	30.0	9	45.0
<b>A / L</b>	8	40.0	9	45.0
<b>Degree or Above</b>	4	20.0	2	10.0
<b>Total</b>	20	100	20	100.0

Source: Field survey, 2013

The education is a leading factor that we can use to critically analyse the realistic aspects of human behavior. The education level of respondents in both control and experimental groups could be seen in the table 03. According to the arguments of Michel Foucault, a postmodern

sociologist (1980), knowledge of people always controls their body and whole life. The consumption of food, eating habit including amount and types of food people eat and nutrition is mainly influenced by education level. The table 03 clearly indicates that respondents in the control as well as experimental groups have received almost equal education level. For example, there are 30% of O/L, 40 % of A/L and 20% of degree or above level qualified respondents in control group and at the same time it is possible to notice 45% of O / L, 45 % of A/ L and 10% degree or above level qualified respondents in the experimental groups. This could be one of best sample considering the educational achievements of respondents. Thus, the opinion, attitude and action of respondents about food and home gardening will reflect irrespective of their educational levels. It could be observed in the discussion of food choice and amount of food consumed to be presented later.

Whatever the study related to social science has enormous impact from the livelihood background of people. Even in this study, the employment background of respondents has caused more impact on the food and other environmental behavior of people compared to other variable such age, education and monthly income.

**Table 04: Employment of Sample Groups**

Employment	Study Group			
	Control	Percentage	Experimental	Percentage
<b>Government</b>	04	20.0	05	25.0
<b>Private</b>	08	40.0	03	15.0
<b>Self</b>	07	35.0	0	0.0
<b>Farming</b>	0	0.0	03	15.0
<b>Retired or Not employed</b>	01	5.0	05	25.0
<b>Others</b>	0	0.0	04	20.0
<b>Total</b>	20	100.0	20 (100)	100.0

Source: Field survey, 2013

According to the table 04, the distribution pattern of employment is clearly pointed out. In the control group, 40% of respondents are engaged in private sector and another 35% of respondents are involved in self employment and 20% of respondents in control group are also government employed. When it comes to the experimental group, there are 25% of government employee 15% of farming, 20% engaged in other employments which does not come any main stream jobs and finally there are 25% of experimental group members either retired or not employed. It is

important to understand the employment background of respondents because the movement, time availability and involvements in extra activities all depend on the nature of employment and place of employment. As a result, the nature of employment and place of employment influence the food preference, food consumed at home, home garden activities and other environmental actions at their home.

The monthly household income is useful information to understand the behavior of these respondents in terms of food consumption. According to table 05, all the respondents in the experimental group are receiving the monthly household income below the Rs. 45000/- whereas it is possible to witness the respondents of control in all the income categories. It is important to mention that 35% of the respondents in control group enjoy the household income above the 45000/-.

**Table: 05 Monthly Household Income**

Income Categories (Rs)	Study Group			
	Control	Percentage	Experimental	Percentage
<b>Below 15000</b>	4	20.0	6	30.0
<b>15001 - 30000</b>	7	35.0	12	60.0
<b>30001 - 45000</b>	2	10.0	2	10.0
<b>45001 - 60000</b>	4	20.0	0	0
<b>Above 60001</b>	3	15.0	0	0
<b>Total</b>	20	100.0	20	100.0

Source: Field survey, 2013

The income is one of the crucial factors that determine the quantity and quality of food consumption. The respondents in the control group are mostly attached to employment in private sector and they are younger compared to experimental group. Moreover, respondents in the experimental group are either unemployed or retired and mostly prefer simple life by being at home compared to control group. These differences could be the cause of monthly income difference between these two groups. The comparison of monthly income and pattern of food consumption is clearly given in table 09.

According to the in-depth interviews, it was revealed that the land availability is vital factor that determine the home gardening practices and some form of farming activities. Some respondents at their in-depth interviews pointed out that they engage some form of farming or home



gardening because of the land availability; in contrast, some respondents were of the opinion that the size of the land does not matter for one to engage in farming or home gardening activities. They further stated that people have necessity and interest engage in farming or home gardening even without big land or home garden. Thus, it is found significant to know the size of home garden of both experimental and control group.

**Table 06: Extent of Home Garden**

Land extent in Home Garden (Perches)	Study Group			
	Control	Percentage	Experimental	Percentage
<b>Below 20</b>	17	85.0	8	40.0
<b>21 - 40</b>	3	15.0	2	10.0
<b>41 - 60</b>	0	0	2	10.0
<b>Above 61</b>	0	0	8	40.0
<b>Total</b>	20	100.0	20	100.0

**Source: Field survey, 2013**

According to the table of extent of home garden, it clearly shows that the 85% of control group members own home land below 20 perches and another 15% own land in between 21 – 40 perches. On the other hand, 50% respondents in experimental group have got minimum of 40 perches land and 40% of respondents in experimental group enjoy above 61 perches of land.

Now it is necessary to discuss the food practice of the respondents control and experimental groups based on the data collected from field survey. It is also important to identify the pattern of expenditure and consumption of food of the community of Kesbewa. Since Kesbewa urban area belong to Colombo district Western Province, it is far more vital to look at the secondary data collected on expenditure on food. According to Household Income and Expenditure Survey - 2009/10 conducted by the Department of Census and Statistics, the mean household income in Sri Lanka is 35,495 rupees and mean expenditure on food is 12,918 rupees with of 36.4% of the total income. In accordance with table 07, the average monthly household total expenditure of Sri Lanka is 32,446 rupees and it is rather higher than when it comes to Western province where Colombo and Kesbewa located. In Western Province, the average monthly household total expenditure is 44,845 rupees. The table 07 further indicates that average household monthly food expenditure is 15,445 rupees which is higher than the country and general urban level. Thus, it is

clearly pointed out that food expenditure in Colombo including Kesbewa Urban area is higher than other places in the country. According to table 07, the average monthly household expenditure on non-food and drinks (29,400 rupees) items is also higher than other sectors and provinces in Sri Lanka. As results, the food ratio of Western Province, Colombo and Kesbewa urban area is lower (34.4) than rural sector (40.6) and country level (39.8).

**Table 07: Average Monthly Household Expenditure on Food & Non-food in Sri Lanka (Rs) - 2009**

Sector	Total Expenditure	Expenditure on food & drink	Food Ratio	Expenditure on non-food	Non food Ratio
<b>Sri Lanka</b>	32446	12918	39.8	19529	60.2
<b>Western Province</b>	44845	15445	34.4	29400	65.5
<b>Urban Sector</b>	43275	14409	33.3	28867	66.7
<b>Rural Sector</b>	30805	12509	40.6	18296	59.4

**Source:** Department of Census and Statistics, 2009

Although the expenditure on non-food items is higher than food expenditure, a household in the Western province spend more on their food items compared to all other sectors and Provinces. These information or knowledge is very crucial in explaining the field situation of KUC area in terms of monthly household expenditure on food based on field data.

According to the field survey and in-depth interviews carried out in Kesbewa urban area, the total monthly household income of control group is 712,000.00 rupees and the average monthly income of them is 67,809.00 rupees. In contrast, the total monthly household income of experimental group is 513,500. 00 rupees and average it is 48,904.00 rupees. As it was pointed out in the table 4 and 5, the respondents in control group are mainly engaged in private sector and earn fairly higher monthly income compared to the experimental group.

When it comes to the total monthly household expenditure (on food and non-food items) of both groups, the experimental group is reported to be having the total expenditure of 333,000. 00 rupees and its mean value is 16,650.00 rupees. In contrast, the total monthly household expenditure of control group is 443000.00 rupees and it makes the average of 22,150.00 rupees

for the monthly household expenditure. Since the respondents in the control group earn higher monthly household income their monthly household expenditure is also comparatively higher than experimental group. According to in-depth interviews, respondents in the control group spent more money on food, drugs, and cultural and other leisure activities. However, respondents in experimental group consume more electricity compared to control group.

For example, according to field survey data, 75% of respondents in control group consume monthly household electricity from 101 – 200 units whereas 95% of respondents in the control group consumed only from 25 – 100 units of electricity monthly. It is clearly indicating that respondents in the experimental group spend more time at their residents and use electricity for various activity whereas majority of respondents in control group usually spend their day time at their working places and they always try to take their lunch or breakfast outside the home. Even if the experimental group to engage in more home garden food production and cut off their monthly expenditure, the actual situation is totally different. Since there are more elderly and retired or unemployed respondents in the experimental group, they must spend more money for their healthy food, medication, and other satisfaction.

The food items consumed by the respondents were grouped into categories considering the convenience in data analysis and interpretation. They are dry food (cereals such as rice, flour, and dhal), Protean (meat, fish, dried fish, and egg), fruits and vegetable, sweets (sugar, jaggery, biscuits, and cake) and other foods (milk, butter, and coconut). In order to critically compare experimental and control groups on food consumption, a scoring system was developed for each and every food considering nutrition and health seeking behavior. It can be seen in the table 08. This scoring system was applied to assess the food consumed by the respondent. This scoring was designed considering the nutritional value of food based the information provided by the Department of Census and Statistics in 2009. This scoring design has been integrated table 08 where food consumption pattern of respondents on the basis of separate food items. Although there can be some errors or inapplicability, it is possible to have an overall comparison of two groups.

**Table 08: Model of Scoring System for Food and Nutrition for a Week**

Dry food		Protean		Veg/ fruits		Sweets		Other food	
Amount	Score	Amount	Score	Amount	Score	Amount	Score	Amount	Score
<b>100 kg</b>	3	25 kg	1	50 kg	1	10 kg	3	10 kg	1
<b>200 kg</b>	2	50 kg	2	100 kg	2	20 kg	2	20 kg	2
<b>300 kg</b>	1	75 kg	3	150 kg	3	30 kg	1	39 kg	3

According to the Department of Census and Statistics (2009), food ratio (between total income and food expenditure) in Colombo (Western Province) is 34.4. Accordingly, the total expenditure of experimental group on food and drink is approximately 114,885.00 rupees (with the mean value of 5744/-) out of 333,000.00 rupees. On the other hand, control group totally spend 152,835. 00 rupees (with the mean value of 7641/-) out of 443,000.00 rupees. Therefore, it is quite clear that control group spend more money on food and drinks compared to experimental group. The table 09 is most crucial one which bring and shows clear difference between the experimental and control group in terms of food consumption based on field data.

**Table 09: Amount of Food Consume by Household for Week**

Food Category	Control Group	Score	Experimental Group	Score
<b>Dry Foods</b>	146.3kg (45.20%)	2.5	243.4kg (55.86%)	1.5
<b>Protean Foods</b>	56.7kg (17.52%)	2	35.67kg (8.19%)	1.5
<b>Fruits/Vegetables</b>	74kg (22.86%)	1.5	125.7.kg (28.83%)	2.5
<b>Sweets</b>	35.4kg (10.94%)	0.5	20.55kg (4.72%)	2
<b>Other</b>	11.3kg (3.49%)	1	10.5kg (2.41%)	1
<b>Total</b>	<b>323.7kg (100)</b>	<b>7.5</b>	<b>435.72kg (100)</b>	<b>8.5</b>

Source: Field survey, 2013

According to table 09, the total weekly consumption of control group is 323.77 kg and experimental group consume only 435.72 kg. Moreover, respondent in sample group consume more dry food (243kg) and 125 kg of vegetable and fruits. On the other hand, respondent in the control group consume 146 kg of dry food and 56 kg of protean. However, there is a very clear-cut difference of food consumption pattern of two groups. Sample group consume more dry

foods, vegetables and fruits which are easily available and produce by themselves whilst control group consume more protean food.

The score given to these two groups can also be witnessed based on food consumption and as a result, control group has earned 7.5 points and experimental group scored 8.5 points. Therefore, it is very clear that since the experimental group engages in some form of farming or home gardening, they consume more food and spend less money for purchasing food. The food production of experimental group is indicated in the table 10. According to in-depth interview, control group spend more money for consuming food due to following reasons.

- (1) Respondents in the control group spend more time outside their residences and they happen to buy food from shop instead of preparing at home.
- (2) Since they are busy with their time schedule, they always tend to consume fast food.
- (3) The control group was under the influenced consumer culture more than the experimental group.

On the other hand, respondents in the experimental group eat more food considering their age and health. Respondents in experimental group were always happy about their life and leading simple life without much material desires. All the respondents in the experimental groups are traditional dwellers of the Kesbewa area and they are more attached to religious or religiously form cultural life which always promotes economical and simple consumption. The majority of the respondents in the experimental group are either retired or unemployed persons and they have enough time to engage in some form of home gardening activities. In addition to the socio-economically sustainable life style, they maintain food security either by conserving or producing food.

The significant different between the control and experimental is the food production which is supposed to be the sustainability of food security. According to the table 10, the respondents in experimental groups produce 140 kg of food per week and 40.7% of food they produce is vegetable and 32.8% of fruits. In addition to vegetable and fruits, they produce green, yams and spices. According to the in-depth interviews, the majority of respondents in the experimental group engage some form of cultivation or home gardening in order to produce some food for self consumption. These foods produced at their home garden were free from artificial chemical use

and advanced technology. They mainly use organic fertilizer with simple manual technology for their farming activities.

**Table 10: Weekly Food Production of Experimental Group**

<b>Food Type</b>	<b>Amount (Kg)</b>	<b>Percentage</b>
<b>Vegetables</b>	57	40.0
<b>Greens</b>	10	7.1
<b>Yams</b>	10	7.1
<b>Fruits</b>	46	32.0
<b>Spices</b>	12	8.5
<b>Others</b>	5	3.5
<b>Total</b>	140	100.0

Source: Field survey, 2013

Some respondents in the experimental group never buy vegetable, fruits and greens from shops and they make use their home garden harvest for food consumption. These respondents were extremely happy about their home garden practice and the harvest they reaped. They always enjoyed not only with economic value that they gained from food production but also psychological satisfaction. Most of the respondents never sell their harvest and they shared them with their neighbors.

### **Conclusion**

The two groups selected for this study clearly bring out the different perception, attitude actions in terms of food production, food consumption and environmentally friendly life style. The respondents in the control group do not have any interest in food production. Whereas the respondents in the experimental group engage some form of food production and maintain a control in food consumption. The more interest towards food production and less willingness to purchase food symbolized the life style against the consumer culture and formulated the environmentally sensitive personality among the respondents in the experimental group. Therefore, the experimental group has well absorbed the concept of sub-urban agriculture and home gardening. However, the factors such as age, employment, monthly income, and time availability, size of home garden and nature of life style are crucial in determining the perception of urban agriculture, home gardening and consumer culture.

## References

- Cuff, E.C., Sharlock, W.W. and Francis, W.D. (2004), *Perspectives in Sociology*. London: Routledge.
- Baudrillard, J. (1988). *Consumer Society*, In Jean Baudrillard: *Selected Writings* (ed.), Mark Poster, Stanford: Stanford University Press.
- Douglas, M (1972) 'Deciphering a Meal', *Daedulus Studio International* Vol 101, (1). pp 61-81, reprinted in Douglas, M (1975) *Implicit Meanings: Essays in Anthropology*, pp 249-275; London: Routledge & Kegan Paul
- Douglas, M. (1966), *Purity and Danger: An Analysis of the Concept of Pollution, Taboo*, New York: Routledge.
- Dwivedi, R. (2001). *Environmental Movements in the Global South*, *International Sociology*, 16(1): 11-31
- Germov, John Boris, and Williams Lauren Therese, 2004, *Sociology of food and nutrition: The social appetite*. Melbourne: Oxford University Press.
- Jayasiri, J. (2008), *Social Anthropology of Food and Nutrition*. Colombo, Fast Publishing (In Sinhala)
- Mahees, M. T.M, (2010), *Environmental Movements in Sri Lanka*, Germany: VDM Publisher.
- McMillan, M. B., Hoban, T. J., Clifford, W. B. and Brant, M. R. (1998), *Social and Demographic Influences on Environmental Attitude*, *South Rural Sociology*, 13.
- Zelezny, L., Chua, P, and Aldrich, C. (2000). *Elaborating on Gender Differences in Environmentalism*, *Journal of Social Science*, 56 (3): 443 – 457.