

## Factors Affecting the Popularity of Selected Underutilized Fruits within Urban Households: Evidence from Maharagama Divisional Secretariat Division

GDDM Rangani\*, RP Mahaliyanaarachchi, P Sivashankar, IC Hettiarachchi and BES Bandara

<sup>1</sup>Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka, Belihuloya, Sri Lanka

### Abstract

Sri Lanka, as a developing country has many problems related to food scarcity and malnutrition. Many underutilized fruit species are nutritionally rich and adapted to low input agriculture. These fruits complement the diet by providing important vitamins and minerals but are not widely consumed mainly by urbanites due to less popularity. This research studied the factors affecting the popularity of selected underutilized fruits within urban households. Quantitative and qualitative measures along with cross-sectional survey method were used. Multi stage sampling technique was used to select 100 households. Frequency Distribution and Chi-square Tests were the statistical techniques applied in the quantitative analysis of data. Results revealed that Banana was the most popular fruit among (more than 96% of the respondents), followed by Papaya (more than 88%) and Mango (more than 78%) were the other popular fruits. Kirala (*Sonneratia alba*) and Lawulu (*Pouteria campechiana*) showed 2% consumption frequency hence categorized as less popular and Himbutu (*Salacia chinensis*) and Madan (*Syzygium cumini*) were not popular at all. As a whole 28.1% consumption frequency was observed for underutilized fruits which stated that they are less popular. As major factors affecting popularity, fruit scarcity and less commercial cultivation were observed. Other factors are seasonality and less awareness on those fruits. It was discovered that less land availability and time constraint are the major causes for less propensity to cultivate them in home gardens

**Keywords:** Consumption frequency, Popularity, Underutilized fruits

**\*Corresponding author:** dilukshi.gddm@gmail.com

### Introduction

Fruits can be divided into two different categories according to their economic importance, namely, 'major tropical fruits' which are well-known in both local and export markets and have been subjected to scientific data gathering. Secondly, 'minor fruits' which are regarded as species having a small commercial value compared to major fruits. There are no scientific data about minor fruits and they are defined as underutilized fruit species. But Gordon (2012) has shown that minor fruits food scarcity and malnutrition while demonstrating their potential for wider adoption, commercial exploitation and high nutritional value. Also Williams and Haq, (2002) showed that promotions of certain underutilize crops create employment opportunities through increased demand in agriculture sector.

FAO (2015) state that Sri Lanka is rich with around 60 varieties of underutilized crops and most of these species have lost their significance among the present generation and no organized or proper cultivation of these crop species. Most of these underutilized plant species are fruit crops and they are found in wild or in home gardens and are commonly found in many rural areas of Sri Lanka. Malkanthi *et al.* (2014) showed that neglected and underutilized species

are those to which little attention is paid or which are entirely ignored by agricultural researchers, plant breeders and policymakers. Typically, underutilized species are not traded as commodities. Many of these varieties and species, along with a wealth of traditional knowledge about their cultivation and use, are lost at an alarming rate although they have been used for centuries for their food, fiber, fodder, oil or medicinal values. These fruits are disappearing from the consumption of the people, mostly among urban. Main objective of this research is to find out the factors affecting for less popularity with specific objectives 1) to find an association between socio demographic factors and popularity 2) to contrast between popularity of major tropical fruit and underutilized fruits, 3) to find the factors which affect for the popularity of underutilized fruits 4) find the propensity to grow these fruits in their home gardens in order to increase the popularity.

### Materials and Methods

Enabling quantitative and qualitative measures, cross-sectional survey method was used. A structured questionnaire and face to face interviews were used to obtain primary data. Deductive research approach and explanatory type of research were used. Sample frame was

5973 households and sample size was 100 households. Multi Stage sampling technique was used to obtain the sample. Population of Maharagama Divisional Secretariat Division within the district of Colombo was represented in the study. From 13 DS divisions of Colombo district Maharagama DS Division was selected through simple random sampling and 2 GN Divisions were selected through simple random sampling from 41 GN Divisions within Maharagama DS Division. Within 2 GN Divisions 100 households were selected simple randomly. Data were analysed by Microsoft Excel 2010 and SPSS Statistical Analysis 16 Software programs. Within descriptive statistics, Frequency Distribution and Chi-square tests were the statistical techniques applied in the quantitative analysis of data. Representative sample of selected 16 underutilized fruits in Sri Lanka was used to investigate the popularity of underutilized fruits among urban people (Table 1). Popularity of each fruit was measured by the consumption frequency based criteria in daily routines of the households. Following general criteria was used in determining popularity.

When consumption frequency (c.f.) 0%	No popularity at all
When c.f. is between 0%-30%	Less popular
When it is in between 31%-50%	Moderately popular
When in between 51%-80%	Popular
When c.f. is in between 81%-100%	Highly popular

In order to find the association between socio demographic factors and the popularity, chi square test was used.

### Results and Discussion

The major socio-demographic characteristics of the consumers such as age, gender, household size, educational level, occupation, monthly income, nationality and religion were observed in order to find an association with the popularity of each fruit. 31% of the consumers in households fall within the category between 40-50 years of age and 21% falls within the category of age more than 60 years which depicts that more than the half of the sample is based on the people who are more than 40 years of age. 31% households constituted with 3 member families, 30% constituted with 5 member families and 23% constituted with 4

member families. Majority 64% of the sample was women. It was found that 44% of the sample's educational level is up to advanced level. 26% of the respondents in the sample fall into monthly income category of Rs. 20,000 - 30,000 income level, 21% falls into Rs. 30,000-40,000 income level. 81% of the sample represents nationality of Sinhala and 72% of the sample represents Buddhists.

Among above 16 fruits the association between popularity and socio-economic factors were tested using chi square test objective 1. It states that there was no association between the popularity of fruits with socio-economic factors except for bitter orange (*Citrus aurantium*) and Musk lime (*Nas naran - Citrus madurensis Lour*), that also only with income level. This shows that income level affects for the preference of those two underutilized fruits.

Most of the people highly consume Banana, Papaya and Mango in their day to day consumption because they are major tropical fruits. Among major tropical fruit types, banana has 96% of consumption frequency, papaya has 88% and mango has 78% which indicates banana and papaya are the most popular fruits and mango is just a popular fruit within households according to the criteria mentioned in methodology part.

Depicting that underutilized fruits are less popular among urban people, consumption frequency of underutilized fruits among the households was 28.12% as a whole. From likert scale of 10 categories to identify reasons of less popularity of underutilized fruits within urban households', fruit scarcity was the major factor which has 92% response rate and less commercial cultivation is the other major factor where response rate is 79%. Other reasons are high cost, less nutrient level, less tastiness, low market demand, seasonality, less awareness etc. As a remedy to the less popularity, home garden cultivation of underutilized fruits can be introduced. It was discovered that less land availability and time constrains are the main reason for not cultivating these fruits in home gardens.

### Conclusion

The results depict that underutilized fruits are less popular among the urban household Maharagama DS Division. Within selected 16 underutilized fruit types most of the fruits were categorized under less popularity some such as

**Table 1:** List of selected underutilized fruits which used to investigate the popularity

No	Common name	Scientific name	No	Common name	Scientific name
1	Louvi(lovi)	<i>Flacourtia inermis</i>	9	(Himbutu)	<i>Salacia chinensis</i>
2	Bitter orange (Ambuldodam)	<i>Citrus aurantium</i>	10	(Madan)	<i>Syzygium cumini</i>
3	(Uguressa)	<i>Baccaurea motleyana</i>	11	Golden apple/(beli)	<i>Aegle marmelos</i>
4	Rose apple	<i>Syzygium spp</i>	12	Nelli	<i>Phyllanthus emblica</i>
5	Musk lime (Nas naran)	<i>Citrus madurensis Lour</i>	13	Ceylon olive (weralu)	<i>Laeocarpus serratus</i>
6	Pomelo	<i>Citrus maxima</i>	14	Wood apple	<i>Limonia acidissima</i>
7	Annona/ Custard apple	<i>Annona muricata</i>	15	Mangrove apple (Kerala)	<i>Sonneratia alba</i>
8	Sapodilla	<i>Manilkara zapota</i>	16	Egg fruit (Lawalu)	<i>Pouteria campechiana</i>

**Table 2:** Popularity of the selected 16 underutilized fruits among households

No	Common Name	Consumption frequency(%)- Popularity group	No	Common Name	Consumption frequency (%) - Popularity group
1	Louvi (lovi)	19 - less popular	9	Himbutu	0% - no popularity
2	Bitter orange (Ambul dodam)	39- moderately popular	10	Madan	0% - no popularity
3	Uguressa	20- less popular	11	Golden apple/ bael (beli)	6% - popular
4	Rose apple	35- moderately popular	12	Nelli	40-moderately popular
5	Musk lime (Nas naran)	54 - popular	13	Ceylon olive (weralu)	51 - popular
6	Pomelo	15 - less popular	14	Wood apple	77 - popular
7	Annona/Custard apple	24 - less popular	15	Mangrove apple (Kerala)	2 - less popular
8	Sapodilla	10 - less popular	16	Egg fruit (Laulu)	2 - less popular

*Himbutu (Salacia chinensis)* and *Madan (Syzygium cumini)* with were not popular at all. The fruits which are most popular among households in Maharagama DS Division are major tropical fruits such ad banana, mango and papaya where banana has highest popularity, then papaya and mango. Among studied underutilized fruits, bitter orange and Musk lime (Nas-Naran) are the only fruits which have a significant difference with only socio-demographic factor income level which showed an association. Major factors which reduce popularity of fruits are fruit scarcity and less cultivation.

#### References

Food and Agriculture Organization 2015. Country Report on the State Of Plant Genetic Resources For Food And Agriculture - Sri Lanka, Prepared by Department of Agriculture, in "State of World's Plant Genetic Resources for Food and Agriculture second report", Available at: [www.http://www.fao.org/docrep/013/i1500e/SriLanka.pdf](http://www.fao.org/docrep/013/i1500e/SriLanka.pdf) (Accessed:

20/05/2015).

Gordon A 2012. 'Bioactive Compounds in Underutilized Tropical Fruits from Latin America', Universitäts-und Landesbibliothek Bonn, Available at: [https://books.google.lk/books/about/Bioactive\\_Compounds\\_in\\_Underutilized\\_Tro.html?id=WMggmAEACAAJ&redir\\_esc=y](https://books.google.lk/books/about/Bioactive_Compounds_in_Underutilized_Tro.html?id=WMggmAEACAAJ&redir_esc=y) (Accessed: 30/08/2015).

Malkanathi SHP, Karunaratne AS, Amuwala SD And Silva 2014.'Opportunities And Challenges In Cultivating Underutilized Field Crops In Moneragala District Of Sri Lanka'. Asian Journal of Agriculture and rural Development. 4.1: 96-105. (Accessed: 20/05/2015).

Williams JT and Haq N 2002. Global research on underutilized crops: An assessment of current activities and proposals for enhanced cooperation. Bioversity International.