FFTC Agricultural Policy Platform (FFTC-AP)
Available online at: http://ap.fftc.agnet.org/index.php

Value of Indigenous Fruits in Home Gardens for Household Livelihood

Noorlidawati Ab Halim
Economics and Social Science Research Centre, MARDI HQ, Persiaran MARDI-UPM,
43400 Serdang, Selangor
E-mail: noorlida@mardi.gov.my

INTRODUCTION

Massive uses of indigenous plants of local origin have potential to increase global food production and local variation to different environmental humans' habits. Developing the rare crop creates the potential to diversify food production toward limited number of crops by engaging new and local species. Oren. S (2017) stated that the potential loss of food variety has been having a 75% reduction in global crop diversity. Therefore, commercial uses of new crops and wild plants have potential to make global food production more sustainable and resilient. With the global population expected to reach over nine billion people by 2050, there is a continuous need to increase food production. Therefore, it has been projected that global food production needs to be increased by 70% as to meet the average daily requirement of the world's population in 2050.

In recent years, there has been a growing interest by countries to reinforce and strengthen local food production in order to alleviate the effect of global food insecurities and food price instabilities. Moreover, the need for resources available for food such as land, water, labor and credit are becoming threatened and costly.

Currently, there is much attention given towards home gardens as a strategy to enhance food production. Conventionally, home gardens are rich with food trees and serve as primary food source of direct access to rural families. Home gardeners obtain nutrients from these crops, naturally grown plants and trees via two channels namely, parts or trees consumed directly, and parts consumed by livestock and their products are available for families. Home gardens are places for innovation with the potential to improve the livelihood of urban, peri-urban and rural communities. It broadly benefits these communities with social, economic and environmental advantages.

What is home garden?

Home garden is a local approach that is widely implemented and practiced in many situations by local communities. This refers to the cultivation of a small portion of land which may be surrounding the house or within walking distance from the house. Besides that, home gardens can be described as a mixed cropping system that encompasses vegetables, fruits, plantation crops, spices, herbs, ornamental and medicinal plants. Some of these home gardeners also

had livestock that can be served as supplementary sources of food and income. Home gardens can be found both in rural and urban areas and mostly in small-scale subsistence agricultural system either using indigenous plant species, or others which involves a short life- cycle crop.

For decades, home gardens have been an important component of family farming and local food system. Home gardens was a very back dated application but they are the beginning of modern agriculture production that began in a small gardens' plots around the household. Moreover, home gardens are also a part of the agriculture and food production system in many developing countries and are widely used as cure to alleviate hunger and malnutrition in the appearance of global food crisis. Furthermore, home gardens also have been known as an important additional source that contributed to food and nutritional security and livelihoods. There are more than 50% of indigenous plants such as vegetables, fruits, tuber and others that came from their home gardens, where 60% of household income are generated from products produced in home gardens.

A study by Wiersum, KF (2006) observed that the structure, composition, intensity of cultivation and diversity of home gardens can be subjected to the socioeconomic status of the household. This is because home gardens use family labor such as women, children and elders to grow and produce food items for family consumption, which can be differentiated either to produce foods or outputs that have multiple uses. In fact, home gardens activities demand lesser amount of horticultural and agronomic know-how, less risk of crop losses and other negative implications.

Why home garden is so important?

Home gardens contributed to household food security trough increasing availability, accessibility and utilization of food products. Marsh (1998) stated that home gardens can provide easy access to a variety of fresh and nutritious foods for the household with more than 50% of vegetables, fruits, tuber and others from their home gardens.

Many studies were conducted to evaluate the potential and economic contribution of home gardens to households and local economy (Ranasinghe, 2009). A study by Abdeollah (2006) shows that home gardens increase in household's food consumption through intensive home food production. Besides that, a study by Kehlenbeck (2004) stated that crops and livestock produced in home gardens accounted for more than 60% of household income. In many cases, the sale of produce from the home gardens improves the financial status of the family by providing additional income. Home gardens can stimulate social change and development where nearly half of food are consumed at home and one-third of food are sold in the markets that came from these garden plots (Marsh, 1998). Furthermore, surrounding interactions around home gardens create and reinforce social status amongst household and the communities where people exchange or gift something such as foods, fruits or vegetables. Potential benefits from home gardens to livelihood systems are presented in Table 1.

Table 1. Benefits of home gardens

o Improved food security – availability, accessibility and utilizations
o Increased availability of food and nutrition through plant diversity
o Enhanced rural income through additional productions
o Decreased risks
o Environmental benefits

Source: Landon L. (2011)

Besides that, income generation, improved livelihood and household economic welfare are contributions by home gardens toward household economic wellbeing where gardens products can be sold to earn additional income, earning from sales could be saving for the

household and consuming home gardens can lead to more reusable income. Home gardens are widely promoted as a strategy to solve poverty and source of income for families in developing countries.

VALUE OF INDIGENOUS FRUITS FOR HOUSEHOLD LIVELIHOOD: *A STUDY SCENARIO*

Home gardens provide multiple benefits toward society, environment and ecology. It always contained a rich composition of plant and animal species. Home gardens comprise a wide-range of plants which are landraces, rare or threatened species. Home gardens serve as a valuable repository for preserving and transferring indigenous crops species, producing knowledge and the skills from one to another.

Indigenous means native or rare. Generally, 370 species of fruits can be found in Malaysia and 95% of them are categorized as indigenous fruits (Rukayah, 2016). Indigenous fruits are rarely grown commercially and are harder to find. The fruit trees are mostly found in the villages, either in the yards, in small orchards with other fruit trees or on the edge of forests (Rukayah, 2016). The value of this rare or unexpected fruit species can give many benefits to the life of growers. Raziah (2008) states that there are ten types of rare fruits such as *Garcinia atroviridis* (locally known as asam gelugur), *Mangifera foetida* (bacang), *Annona muricata* (sour soap), *Pithecellobium jiringa (*jering), *Mangifera odorata* (kuini), *Bouea macrophylla* (kundang), *Parkia speciosa* (petai), *Nephellium rambutan*-ake (pulasan), *Baccaurea motleyana* (rambai) and *Salacca zalacca* (salak), and these fruits have been identified to have a potential to grow commercially and can generate high income for growers.

Conservation is very important as it ensures the sustainability of natural resources especially for future generation. Conservation is a method of multiplying plants or animals that are almost extinct to prevent them from extinction. Good conservation management guarantees that existing genetic resources can be conserved and preserved. Recognition of the value and potential of home gardens for enhancing food security and livelihoods is important and, several projects have been introduced by government, non-government, and international organizations to support and build local capacity to enhance the productivity and also for scaling up home garden activities.

The Government through the National Agro-Food Policy (2011-2020) also developed strategies to promote the fruit industry by exploiting the less-consumed and potentially unreliable fruit potential, through: i) Malaysian Agriculture Research and Development Institute (MARDI) R & D activities to develop new varieties and improve the series of existing varieties including increasing resistance to diseases based on non-primary germplasm and preserved fruit groups; ii) intensify the conservation of rare fruits *in-situ* and *ex-situ*; and iii) strengthen the use of the functional aspects of rare fruits through ethnobotany and biochemistry (MOA, 2016).

MARDI as a research institution takes a responsibility to conserve genes in the field, mostly for underutilized tropical fruit genetic resources. M.Nordin (2015) stated that currently, about 168 species of underutilized, rare and wild tropical fruit species consisting of about 2,000 accessions, the largest in the country, are being conserved. The species include *Mangifera odorata* (kuini), *Mangifera foetida* (bacang), *Mangifera caesia* (binjai), *Garcinia praniana* (cerapu), *Bacaurea motleyana* (rambai), *Garcinia atroviridis* (asam gelugor), *Arthocarpus odoratissimus* (terap) and *Nephellium rambutan*-ake (pulasan). MARDI also now produces new innovations and technologies to make home gardens an industry that contributes to the economic, environmental and social wellbeing of the nation. Focusing on the urban community, urban farming innovation was a technology that saves and uses space

more versatilely and efficiently in terms of time savings and water use. Proper and convenient approach of these technologies will give the group a tendency to implement urban farming continuously and sustainably.

A study was carried out to assess the socioeconomic status of the community, and conservation potential of indigenous fruit species from selected genus such as *Mangifera*, *Lepisanthes* and *Garcinia*. The diversity of content and usage of these fruits also has the potential to assist the growing community in increasing income and living standards. Study shows that the majority of growers who conserve these rare fruits are for self-feeding (43.0%). In addition, there are also growers who planted these trees for conservation purposes as it is a heritage tree (43.0%), for hobby (9.5%) and for income purposes (4.5%). Besides that, other study on *Garcinia atroviridis* (*asam gelugur*) stated the main purpose of cultivating this indigenous plant was to generate income for household (48.7%), 23.7% for the purpose of conservation, 21.1% for own use and 6.6% of them planted the trees as a hobby. Study shows that most of the growers or household (82.4%) have monthly additional income around US$120, followed by income between US$120 - US$168.33 (9.8%), 2.0% earning between US$168.33 - US$216 and 5.9% more than US$216. This shows that cultivation of these indigenous fruits within the community or home gardens can indeed help to generate the economy and household income as well as helping the community to increase their living conditions.

CONCLUSION

Home gardens are the best method in supplementary food production system for households and can be regarded as a source of food. Home gardening is one of the strategies that has the potential of enhancing food security for the poor. As are traditional sources of food and nutrition, home gardens have improved the livelihoods of households by supplementing food or income or by sharing produce. Home gardens as the very back-dated application but the beginning of modern agriculture production really helps to generate incomes, improve livelihood and household economic welfare.

REFERENCES

Abdoellah OS, Hadikusumah HY, Takeuchi K, Okubo S, Parikesit (2006) Commercialization of Homegardens In an Indonesian Village: Vegetation Composition and Functional Changes. Agrofor Syst. 68:1-13

Kehlenbeck K, Maass BL (2004) Crop Diversify and Classification of Homegardens in Central Sulawesi, Indonesia. Agrofor Syst. 63:53-62

Landon L.C. (2011) Livelihood Grow in Gardens – Diversifying Rural Income Through Home Gardens. Volume 2. Rome, Italy: Food and Agriculture Organization of the United Nations.

Marsh R. (1998) Building on Traditional Gardening to Improve Household Security. Food Nutr Agr, 22:4-14

MOA. (2016). National Agro-Food Policy (2011-2020). Ministry of Agriculture and Agro-based Industry, Malaysia.

Mohd Shukor Nordin, Mohd Shafie Md Shah, Mohd Norfaizal Mohd Ghazali, Siti Nurzuraini Abdul Rahman, Salma Idris and Mohd Shukri Mohd Ali (2015) Conservation and Utilization of Crop Genetic Resources in Malaysia: Mardi's Effort. Journal of Agricultural Science and Technology A 5 (2015) 381-386

Oren Shelef, Peter J. Weisberg And Frederick D. Provenza (2017) The Value of Native Plants and Local Production in Era of Global Agriculture. Frontiers in Plant Science. Published 05 December 2017

Ranasinghe TT (2009) Manual of Low/No Space Agriculture cum-Family Business Gardens. AN Leusden, The Netherland: RUAF Foundation

Raziah. M.L., Alam. A.R., Salma. I., A.Rahman. M., Kadijah. A., Ariffin. T. (2008) Dimensi Sosioekonomi Pemuliharaan dan Penggunaan Buah-buahan Tradisional di Kebun, Halaman Rumah dan di Dusun Semenanjung Malaysia, MARDI Report No. 208 (2008)

Rukayah. A (2016) Buah-buahan Nadir Semenanjung Malaysia. Edisi Ketiga. Dewan Bahasa dan Pustaka.

Wiersum, KF (2010) Diversity and Change in Homegarden Cultivation in Indonesia. In Tropical Homegardens: A Time-Tested Example of Sustainable Agroforesty. Vol. 3. Springer Science.

Date submitted: Nov. 12, 2018
Reviewed, edited and uploaded: Nov. 20, 2018