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tropical fruit net

Your Global Partner in Tropical Fruit Development

Newsletter of the International Tropical Fruits Network (TFNet)

World Current Market Situation and Outlook: Bananas and Tropical Fruits

Presented by Kaison Chang at the Workshop on 'Increasing competitiveness and market access through quality assurance' in China on 17 December 2011.*

Tropical Fruits: Actual and projected production and trade

(in thousand tonnes)	1997-1999	2007-2009	2019
World Production	42724.9	64921.7	82203.5
Developing Countries	41595.3	63621.8	80760.1
Developed Countries	1129.5	1299.9	1443.3
World Trade	1816.2	4126.3	6179.9
Developing Countries	1665	3901.1	5862.6
Developed Countries	151.4	225.2	266.3

Bananas and other tropical fruits have grown to be essential commodities in the international market. Developing countries value these fruits both for nutritional content and commercial viability, as they are relatively cheap yet excellent sources of vitamins and minerals. Banana is one of the 5 most commonly eaten

fruit in the world. Including Cavendish, the most commonly traded variety, banana is also the fourth most important food crop in agriculture after rice, wheat, and maize. Most banana exports involve a small number of countries and are mostly controlled by 5 multinational companies.

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5TH INTERNATIONAL SYMPOSIUM
ON TROPICAL AND SUBTROPICAL FRUITS
18-20 June 2012 | Guangzhou, China

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Organized by:



5th Session

INTERNATIONAL TROPICAL FRUITS NETWORK
GENERAL ASSEMBLY

21 June 2012
Guangzhou, China

**Kaison Chang is a Senior Economist at FAO and Secretary to the Intergovernmental Group on Bananas and Tropical Fruits*

2012 will be a busy year for TFNet. The main events planned for this year include the *5th International Symposium on Tropical and Subtropical Fruits* from 18-20 June in Guangzhou, China, and *TFNet's General Assembly* on 21 June. A workshop in Costa Rica involving countries from Latin America and the Caribbean at the end of the year is also under works. A Tropical Fruit Latin America and Caribbean Network is expected to be established during that time. Tropical fruit workshops are also planned for country members Fiji, Philippines, and Sudan.

TFNet is also actively involved in organizing the *7th International Postharvest Symposium* in Malaysia from 25-29 June 2012.

This issue highlights a TFNet initiated workshop held in Bangladesh in February with the theme *Increasing income of tropical fruit among Smallholders through Quality Improvement, Post harvest Management and Processing in Bangladesh*. TFNet was also involved in the training of Officers from Afghanistan's Ministry of Agriculture, Irrigation, and Livestock, who were in Malaysia attending a *Leadership Seminar and Study Tour* program.

The increasingly popular tropical fruit, Rambutan, is our featured fruit. On technology, the bio-dynamic freeze dry method patented in Thailand for perishable produce is highlighted.

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- The Syrian Arab Republic
- Federal Republic of Nigeria
- Republic of Indonesia
- People's Republic of Bangladesh
- Republic of the Philippines
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5TH INTERNATIONAL SYMPOSIUM ON TROPICAL AND SUBTROPICAL FRUITS



TFNet invites you to join the 5th International Symposium on Tropical and Subtropical Fruits to be held in Hua Tai Hotel, Guangzhou, China on 18-20 June 2012, jointly organized by the Fruit Tree Research Institute, Guangdong Academy of Agricultural Sciences, International Tropical Fruits Network (TFNet), International Society for Horticultural Sciences, Hunan Agricultural University, and Guangdong Fruit Association.

For more information on the symposium, kindly visit www.istst2012.com

The symposium aims to highlight recent research and development in production and postharvest fruit technologies; discuss current issues on consumer demand, market access, and trade; provide a forum for information exchange among researchers, producers, academicians, traders, policy makers, and other stakeholders in the tropical and subtropical fruit industry; and establish and strengthen network linkages between the researchers, producers, traders, policy makers and other stakeholders in the tropical and subtropical fruit industry.

Participants are encouraged to contribute to the symposium in oral and poster presentations under these themes:

- Germplasm diversity and breeding
- Molecular biology and biotechnology
- Production Technology and Physiology
- Postharvest and Processing Technology
- Pest and Disease Management
- Economics, Marketing, and Trade

More than 500 participants are expected to attend the symposium. To register, log on to www.istst2012.com/register.php

7th INTERNATIONAL POSTHARVEST SYMPOSIUM 2012 (IPS 2012)

25-29 June 2012 | Kuala Lumpur, Malaysia
Putra World Trade Center (PWTC)

Bearing the theme *Postharvest for Wealth and Health*, IPS 2012 aims to highlight advances in the global postharvest horticulture research and development, facilitate a forum for information exchange, and strengthen linkages among stakeholders involved in the horticulture industry. Sessions are divided into the following topics: Pre-harvest Effects on Postharvest; Postharvest Physiology; Postharvest Technology; Postharvest Pathology and Entomology; Quality, Safety, and Security; Handling, Packaging, and Shipping Technology; and Consumers and Marketing.

Three plenary sessions will be conducted during the symposium. These are *Postharvest for Wealth and Health* by Dr. Shiow Y. Wang

Website: <http://postharvest2012.mardi.gov.my>

of the United States Department of Agriculture - Agricultural Research Service (USDA-ARS); *New Emerging Technologies and Postharvest Sciences* by Prof. Pietro Tonutti of the Scuola Superiore Studi Universitari Sant'Anna, Italy; and *Bridging the Gaps Between Postharvest Technology, Commercialisation, and Consumer Needs* by Dr. Ron B. H. Wills of the New Castle University, Australia.

Workshops will also be held, bearing the following themes: *Postharvest Technologies for Developing Countries* by Dr. Elhadi M. Yahia of the Autonomous University of Queretaro, Mexico; *Managing Chilling Injury* by Dr. Chien Yi Wang of the United States Department of Agriculture - Agricultural Research Service (USDA-ARS); *Antioxidants, Bioactive Compounds and Health-Promoting Substances* by Dr. Angelos Kanellis of the Aristotle University of Thessaloniki, Greece; and *Emerging Postharvest Technologies*

- *From Concept to Reality* by Dr. Errol W. Hewett of the Massey University, New Zealand.

Other invited speakers hail from renowned institutions in the United States of America, Jamaica, Canada, New Zealand, Malaysia, Australia, Greece, South Korea, South Africa, Thailand, United Kingdom, Italy, and Mexico.

Participants can also join a one-day technical tour to postharvest packing houses, distribution, and collecting centers; production sites; and other places of interest. Post-symposium tours to the Northern Malaysian Peninsular, Southern Malaysian Peninsular, and the Malaysia Borneo will also be organized.

IPS 2012 is jointly organized by ISHS, Malaysian Agricultural Research and Development Institute (MARDI) and Universiti Putra Malaysia (UPM), with the International Tropical Fruits Network (TFNet) as part of the technical and organizing committee.

Related Events

International Symposium on Mechanical Harvesting & Handling Systems of Fruits and Nuts

Focus: Mechanical harvesting

Date: 2-4 April 2012

Venue: Florida, USA

Website: <http://conference.ifas.ufl.edu/harvest/>

3rd International Symposium on Guava and Other Myrtaceae

Focus: Guava and Other Myrtaceae

Date: 23-25 April 2012

Venue: Petrolina, Brazil

Website: <http://www.cpatas.embrapa.br/sygom/>

Foodnews Juice Asia 2012

Focus: Juice supply and demand in Asia

Date: 21-24 May 2012

Venue: Singapore

Website: <http://www.juiceasiaconference.com/>

4th IMO Global Mango Conference

Focus: Mangoes

Date: 29 June 2012

Venue: Trinidad and Tobago

Website: <http://mangoworldmagazine.blogspot.com/2012/02/4th-imo-global-mango-conference.htm>

4th Agribusiness Economics Conference

Focus: Globalizing food chains and the emerging economies: Agribusiness potentials and issues

Date: 10-11 July 2012

Venue: Davao City, Philippines

Website: <https://sites.google.com/a/upmin.edu.ph/4abe/>

Lychee Symposium 2012

Focus: Lychee, Longan and Other Sapindaceae Fruits

Date: 2-6 December, 2012

Venue: White River, South Africa

Website: <http://www.lychee2012.com/>

News

Workshop on enhancing tropical fruit markets held in China

GUANGZHOU, CHINA: TFNet Chief Executive Officer Jacob Ahmad presented a paper in a workshop on *Increasing competitiveness and market access for tropical and subtropical fruit through quality assurance* in China last 17 December 2011. Jacob was invited to discuss *Enhancing market access through quality management and Good Agricultural Practice initiatives* in some producing countries.

Two hundred growers, exporters, traders, researchers, and technicians participated from the public sector, the academe, and private sector. The workshop provided a platform for these stakeholders in the Chinese tropical and subtropical fruit industry to interact and exchange about production and trade issues.

Various technologies that enhance tropical fruit competitiveness were introduced



Important guests during the opening ceremony of the workshop

on areas such as quality assurance, postharvest losses, food safety, sanitary and phytosanitary procedures, and Good Agricultural Practices. Current global trends on consumption and trade were also discussed, including the standard requirements of supermarkets and hypermarkets.

Senior Economist Kaison Chang of the Food and Agriculture Organization of the United Nations (FAO) presented a paper on the *World Current Market Situation and Outlook for Bananas and Tropical Fruits* while Vice President Jeffery Cheah of the Malaysian Fruit Growers Association discussed *The*



Exhibits of some fruit products by major companies

Potential of Malaysian Tropical Fruits in the China Market. Huang Binzhi from the Fruit Tree Institute of the Guangdong Academy of Agricultural Sciences introduced *New Technologies for Fruit Production in Guangdong Province*, followed by a technical presentation by Dr. Chen Weixin from the South China Agricultural University on *Postharvest and Logistics Technology of Tropical and Subtropical Fruits*. Qi Chunjie, manager of a supermarket chain, advised participants on *How Small Growers can gain Access to the Big Markets*.

In the afternoon workshop session, the participants were divided into 3 groups to deliberate on issues related to market strategy, management, and cooperatives development. The participants also exchanged information on fruit production technologies.

News

Workshop on increasing the income of tropical fruit smallholders held in Bangladesh



Participants of the Workshop

International Tropical Fruits Network (TFNet), the Seed Wing of Ministry of Agriculture, Bangladesh and Bangladesh Agricultural University, Mymensingh, jointly organized a Workshop on *Increasing Income Of Tropical Fruit Among Smallholders Through Quality Improvement, Post Harvest Management And Processing* at the Bangladesh Agricultural University, Mymensingh, Bangladesh on 11-12th February 2012.

A total of 42 participants from Bangladesh Agriculture University (BAU), Bangladesh Agriculture Research Institute (BARI), Department of Agriculture Extension Education (DAE),

Pakistan Agriculture Research Centre, and progressive farmers attended the workshop. Speakers and resource persons were from Bangladesh, India, Malaysia, and TFNet. Observers from Pakistan and Sri Lanka also graced the workshop.

The workshop focused on formulating a strategy to improve the production technology and the postharvest handling and processing of tropical fruits for growers and traders, while accounting for constraints and deficiencies that are prevalent along the value chain.

The objectives of the workshop were to:

- a. Provide an overview on the current trends and developments in the tropical fruit industry;
- b. Assess and affirm issues and challenges of the tropical fruit scenario in Bangladesh;
- c. Provide information on the importance of cooperative and farmers group involvement in overcoming constraints along the tropical fruit value chain;
- d. Strengthen the capacity of participants on addressing quality assurance, post harvest losses, food safety, SPS, and Good Agricultural Practices in the marketing of tropical fruits;
- e. Develop a strategy and action plan to enhance the quality and marketing of tropical fruits by

smallholders in Bangladesh, which includes the exploration of various pre- and postharvest management and processing improvements.

Participants were later divided into 2 groups to deliberate on issues related to:

1. Reducing post harvest losses to improve quality and marketability of tropical fruits, focusing on mango;

2. Processing of tropical fruits to enhance utilization, add value, and increase income of farmers, with a special focus on jackfruit.

The plans provide steps

to reduce post harvest losses and improve the quality and marketability of tropical fruits. Special focus was given to the minimal processing of jack fruit and postharvest treatment for the quality improvement of mango. The workshop also emphasized that product under-pricing can be alleviated by including the farmers in the decision making process, especially during price setting. This task is a major challenge to the extension staff of the Bangladesh Department of Agriculture and other non-governmental organizations involved in the transformation process.

On the last day of the workshop, participants joined a field visit to a tropical fruit germplasm collection centre in the Bangladesh Agricultural University, Mymensingh. This centre is the largest germplasm depository of fruits, medicinal plants, and agroforestry samples in Bangladesh. This centre has more than 200 varieties of mango, 40 varieties of guava, 25 varieties of litchi, 48 varieties of citrus, 94 accession of jackfruit, 67 species of minor fruits, 31 species of exotic fruits collected from more than 20 countries.

News

Leadership Seminar and Study Tour Program held in Malaysia for Afghan Ministry of Agriculture, Irrigation, and Livestock (MAIL)

It is a useful experience to learn from countries with successful agricultural and socioeconomic programs. Hence, a 15-member delegation lead by the Deputy Minister for Agricultural Affairs (MAIL), Islamic Republic of Afghanistan participated in Leadership Seminar and Study Tour organized by the Institute of International Education (IIE) under the US Department of Agriculture (USDA), and local Malaysian partner Skill Focus Consultancy.

The program was held in Malaysia from 17-24 February 2012 with the following objectives – to improve leadership skills, organizational capacity, service delivery processes, and explore key models and best practices. The program comprised of presentations by VIPs, site visits for benchmarking and a dialogue with invited panellist on issues pertaining to agricultural development.

MAIL aims to increase sustainable production of high value and staple crops in Afghanistan for income generation, food



Organizers and participants from MAIL

security and export. Efforts are in progress to tackle constraints along the value chain from production to market and consumers, with emphasis on research and development, capacity development, infrastructural development, credit facilities and market access.

During the panel discussion on 19 February 2012, TFNet CEO was invited to present a paper on *Food Supply Chain Management in Tropical Fruits – Issues and Challenges*. He also was a panel member during the dialogue and discussion session. He highlighted various initiatives carried out by countries in the region to improve their tropical fruits industry through identifying weaknesses in the value chains and addressing them with appropriate actions.

World Current Market Situation and Outlook: Bananas and Tropical Fruits (...continued from page 1)

Meanwhile, countries produced tropical fruits solely for domestic consumption until the 1970s. Trade volumes have expanded dramatically as developing countries recognize the benefits of diversifying products, since traditional export crops have been experiencing a downward trend in prices. However, only about 20% of the products are traded internationally.

BANANA

Production

World production of bananas was estimated at more than 102.1 million tonnes in 2010, about 6% more than 2009. Asia accounted for nearly 61% of world production. Next were the Americas with 27%, Africa with 10%, Oceania with 1.7%, and Europe with 0.4%.

Exports

Total world banana exports marginally declined to 14.7 million tonnes in 2009 compared to 2008, due to a lesser available supply from Asia and Africa. Larger shipments from Latin America and the Caribbean were not enough to offset the decline.

Latin America continued to be the largest banana exporting region in the world, with Ecuador reaching 5.5 million tonnes. The reduction of import tariffs in

the European Union (EU), firm prices, and favorable weather were primarily responsible for the 9% expansion in supply. The official minimum price for Ecuadorian banana producers was raised from USD 5.40 per box in 2009 and continued throughout 2010, from USD 4.80 in 2008. Exports from Ecuador are predicted to further increase in the upcoming years. Meanwhile, Costa Rican exports recovered by 14% in 2010 after falling by 17% in 2009 due to bad weather. Export volumes from Colombia and Guatemala also decreased by 14% and 24%, respectively because average export prices fell by about 12%.

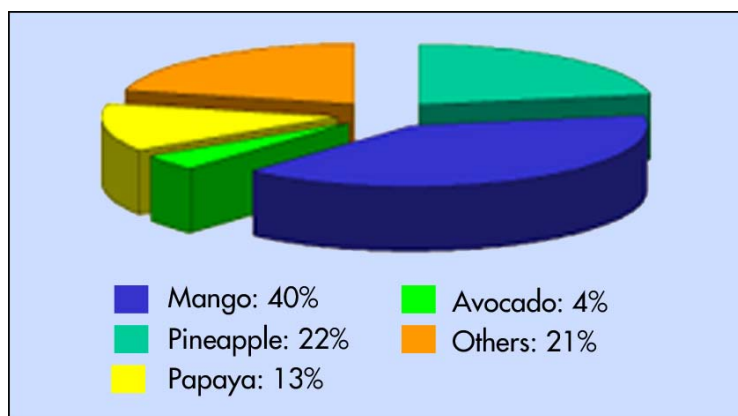
In Asia, India increased exploratory shipments of banana to the EU by 65%. Export reduced in the Philippines by 24% in 2009 because of typhoons and flooding. The impact of natural disasters further decreased exports by 24% in 2010. Export of Philippine bananas to the Australian market was stalled because of a study in risk management measures. In

China, export reduced by 13% in 2010 because of increased domestic consumption, prompting a rapid production growth. This could have serious implications for the Philippines, which accounts for 85% of China's total banana imports.

For Africa, banana exports from Cameroon declined by 8% in 2010. Cote d'Ivoire decreased by 3% in 2009.

Imports

World imports of banana fell by 7% in 2009. Although China and Japan respectively increased imports by 36% and 15%, these were not enough to offset the decline in traditional import markets of the United States and the EU. This decline was an effect of a significant drop in consumption due to the economic slowdown and the higher prices of goods. Import returns in the EU increased in 2010, possibly as a result of the reduction in import tariffs and the natural recovery in consumption trends.



Share of world tropical fruit production by variety

Outlook for banana

Major suppliers are breaking into the market to answer the increasing demand for banana. Most expansion projects are aimed to take advantage of the European Union's (EU) Everything But Arms (EBA) initiative. The EBA states that fruit exports from the United Nation's 'Least Developed Countries' are duty free and quota free. This would ensure a cheap and steady supply of bananas to the European markets.

Production, trade, and consumption of bananas will largely be affected by the environment, trade policies, food safety, and health concerns. However, the expansion of production and trade growth does not necessarily assure improved benefits for banana growers in developing countries.

TROPICAL FRUITS

Production

World production of other tropical fruits was estimated to be over 82.2 million tonnes in 2009, slightly less than 82.5 million tonnes of 2008. Mango accounted for 39% of production, followed by pineapple at 23%, papaya at 13%, and avocado at 4%. Minor

tropical fruits like lychee, durian, rambutan, guava, and passion fruit were traded in smaller volumes, accounting for 17.8 million tonnes or 22% of world tropical fruit production in 2009. Asia remained to be the region that produced the largest volume of tropical fruits, followed by the Americas, Africa, then Oceania.

Export

Although the volume of exported tropical fruits is a small fraction of the total, the quantities were large when compared to other fruits. In 2009, the total value of the international fresh tropical fruit trade was USD 5.4 billion, compared to USD 7.9 billion for bananas, USD 5.4 billion for apples, USD 4 billion for oranges, and USD 2.1 billion for pears. Processed tropical fruits that were traded in 2009 even accounted for a higher value, with USD 6.5 billion.

Export of fresh tropical fruits generally increased 2009. Avocados increased by 23%, papayas by 15% and mangoes by 6%. The exception were pineapples, where export declined by 22%. Global exports of minor fruits indicated expansion, although at a weaker rate because of the economic slowdown of the region.

Import

World imports of fresh major tropical fruits increased by 5% in 2009. The United States was the largest importer of fresh tropical fruits, followed by EU, Japan, and China. Imports for minor tropical fruits were concentrated in China, Singapore, and Malaysia.

Outlook for Tropical Fruits

In 2009, rural and household income from tropical fruit production amounted to USD 18 billion. Tropical fruits compete at the upper end of the market, maximizing earnings and contributing to the rapid rise in trade values. To keep this income secure, the tropical fruit industry has to remain competitive. Previous price premiums can longer depend on the novelty of tropical fruits, replaced by the need for quality-based premiums. This can be attained through high-quality post-harvest infrastructures.

Further research is also required for new technology and effective production methods that will lower the cost in the supply chain, ensuring a competitive tropical fruit industry. Profit margin erodes along the value chain, and an increase in price could result to product substitution. A decrease in demand may cause smaller firms to close down.

The demand for tropical fruits should continue to grow strongly, amidst the slower rate last decade. Ample opportunities exists for tropical fruits, ensuring food security while maintaining profit as long as the challenge of managing the field-to-market supply chain for fresh and processed products is addressed.

Bananas: Actual and projected exports and imports

(in thousand tonnes)	1997-1999	2007-2009	2019
Exports			
World	11773.9	14855.4	17807.9
Developing Countries	11773.9	14855.4	17807.9
Imports			
World	11312.6	14360.8	17042.4
Developing Countries	1862.2	2915.5	3492.4
Developed Countries	9450.3	11445.3	13550.0

Rambutan:

Rising Fruit of the East

Once grown solely for domestic consumption in Southeast Asia, Rambutan is increasingly gaining popularity in western markets. While the demand was initially driven by the growing number of Asian residents in Europe and America, its unusual appearance and sweetness has gained it a niche as an exotic fruit worthy of a global audience. Recent studies indicate that the fruit has antioxidant properties and may be a potential source of an anti-hyperglycemic agent.

Rambutan (*Nephelium lappaceum* L.) belongs to the family *Sapindaceae* and is a close relative of lychee and longan. It derives its name from the Malay word *rambut* for hair. It is native to the Malaysian archipelago and is widely distributed throughout southern China, the Indo-Chinese region, and the Philippines. Through the Manila Galleon Trade in the 1600s, Spanish botanist Juan de Cuellar sent samples of rambutan to Mexico and it has spread to Hawaii, Colombia, Ecuador, Honduras, Costa Rica, Trinidad, Cuba, and Suriname. Meanwhile, Arab traders introduced it into Zanzibar and it spread to the rest of East Africa. Rambutan was later cultivated in India and South Asia.

Fruit Description

The rambutan is an oval-shaped fruit covered with numerous curved spines or spinthorns, giving the fruit a hairy appearance. The thin, leathery fruit skin is either red or yellow when ripe and can be easily peeled away, revealing a white, juicy gelatinous pulp or aril covering a large seed. Depending on the variety, the pulp can be attached to the skin or can be easily separated. The translucent pulp can be sweet to slightly acidic, which is

usually eaten as a fresh dessert.

Plant Description

The tree is medium-sized and evergreen with an open structure growing 12-15 m high. They exhibit a strong apical dominance and have a tendency to produce long, upright growth.

Varieties

Rambutan is a cross-pollinated crop, resulting to a large genetic variation with numerous varieties over generations. Proper selection and vegetative propagation has lead to selected clones that produce desirable fruit characteristics such as thick, firm, flesh that is sweet. Common Malaysian are R134, R156 (yellow variety), R162, R167, R170, R191 and R193 but the current popular variety in Malaysia is R191. The varieties grown in Australia originated from Malaysia such as R9, R134, R156, R162, R167. Varieties Binjai, Rapih, Garuda, Sibangkok, and Lebak Bulus are popular Indonesian varieties, while the Rongrian, Si Chomphu, and Chanthaburi 1 are the popular varieties in Thailand. The Binjai and Rongrien are also grown in Hawaii. Selected rambutan clones are also grown in Costa Rica, Honduras,

and Mexico.

Soil and Climate

Rambutan is suited for the tropics with a moist warm climate with a well-distributed annual rainfall of at least 200 cm. It is intolerant to frost, especially during the juvenile stage. Mature trees may survive a brief period of temperatures as low as 4°C but with severe loss of leaves. The plants can grow at 10-500m above sea level, but should be kept from strong winds as it leads to leaf browning.

The trees grow best in deep, well-drained soils that are rich in organic matter. Soil pH of 4.5-6.5 is suitable for the plant. If it is subjected to soils with a higher pH, the plant experiences iron and zinc deficiencies that induce chlorosis and leaf yellowing.

Propagation

Rambutan is normally propagated vegetatively by bud grafting. For rootstocks, fresh seeds are planted in humus rich medium with good drainage. Seeds germinate within two weeks. When 3-4 leaves sprout, the seedlings are transplanted to polybags with minimum possible damage to roots.

Average Rambutan Prices (per kg)

Malaysia: 4 RM (1.32 USD)
Thailand: 30 Baht (0.97 USD)
Indonesia: 10,000 Rupiah (1.1 USD)
Philippines: 35 PHP (0.7 USD)
USA: 3-6 USD
Europe: 4-6 Euros (5.25-7.8 USD)

Food Value Per 100g Serving

Moisture: 84.7 g	Phosphorus: 30.0 mg
Protein: 0.7 g	Iron: 2.5 mg
Fat: 0.1 g	Thiamine (Vitamin B1): 0.01 mg
Carbohydrates: 13.9 g	Riboflavin (Vitamin B2): 0.04 mg
Fibre: 0.3 g	Niacin (Vitamin B3): 0.1 mg
Ash: 0.3 g	Ascorbic Acid (Vitamin C): 38.6 mg
Calcium: 22.0 mg	Food Energy: 59.0 calories

Well-grown rootstocks are bud grafted at 8 to 12 months. All leaves must be removed at two weeks after budding. This promotes bud break of the new graft 14 to 17 days later

Field Establishment

A spacing of 9 m between trees is recommended, but can be modified depending on soil fertility and growth habit of the cultivar. Meanwhile, the tree should ideally have a wide crown with the well-separated branches. The interior should be free from dead, diseased, broken branches, and suckers. Hence, early pruning and training to form an open center is recommended.

In case of drought or long gaps between rainfall, trees may be irrigated either by canals or by drip. Trees should be properly hydrated because the lack of water induces flower drop. Mulching can be done during establishment and dry periods. No mulching should be applied prior to flowering.

Pest Control

Few pests and diseases have been reported by rambutan growers. These include the usual leaf-eating insect (*Hypomeces squamosus*), leaf-sucking insects (*Mictic longicornis*, *Tessaratomy longicorne*), leaf-miners (*Phyllocnistis* sp.) and mealybugs (*Pseudococcus* sp.). The mango twig-borer (*Nipponoclea albata*) occasionally appears on rambutan

trees. Fruit flies (*Bactrocera* sp.) attack ripe fruits. Birds and bats also consume and damage the fruits.

There are several pathogens that attack the fruits and cause rotting under warm, moist conditions. Powdery mildew, caused by *Oidium* sp., may affect the foliage or other parts of the tree. A serious disease, stem canker, caused by *Fomes lignosus* in the Philippines can be fatal to rambutan trees if not controlled at the outset.

Harvesting

Rambutan requires approximately 107 to 111 days from fruit set to harvest. The best rind appearance and color can be achieved if the fruit is harvested 16 to 28 days after it changes color. The fruits are frequently harvested as early as 10 days after color break to capture the higher market, sacrificing the sweetness and quality of the mature

fruit. Fruits harvested 28 days after color break are overripe, having a darker color, lower sugar, and higher acid content.

Average yield is about 2.0 tons per ha during the first 2 years of production to about 8.0 tons per ha after 6 years. Harvesting can be done using a long pole with a cutter or pruner on one end. Damage to the branches while harvesting should be avoided.

Processed Rambutan

Rambutan is also processed to increase added value. Several products like jam, jellies, cocktails, sweets, and canned rambutan are prepared from the pulp. However, much the fresh fruit flavor is lost. The processed fruit is used for pies, ice cream and fruit ice. Sometimes the pulp are canned by stuffing with pineapple in heavy syrup.



Red and yellow rambutan varieties in Indonesia

Other uses

Timber: The reddish colored rambutan wood is fairly hard, heavy and resistant to insects. However, the small trunks make it too small for timber. However, it is still suitable for construction if carefully dried.

Seeds: The seed kernel yields 37-43% of a solid, white fat resembling cacao butter, with a high level of

arachidic acid. The fat is edible and can be used to make soap and candles.

Shoots: Young shoots are used to produce a green color on silk. The fruit dye can also be used as an ingredient to create a black colored dye.

Medicinal uses: In Malaysia, the roots are boiled and used for treating fever. The leaves are

effective as poultices to alleviate headache. The bark can be ground as an astringent to treat tongue diseases. The unripe fruit can be used to remove intestinal worms, reduce fever, and relieve diarrhea and dysentery. The dried fruit rind is also sold in Chinese drugstores and for local medicine. Recent scientific investigations suggest that rambutan fruit rind has been shown to be effective in inhibiting enzymes that cause hyperglycemia.

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Street vendor selling rambutan in Indonesia

Feature: Trade

US authorizes fresh rambutan imports from Vietnam, Malaysia, and Puerto Rico

The United States of America Department of Agriculture has authorized the importation of fresh rambutan fruit from Vietnam, Malaysia, and Puerto Rico as traditional Latin American suppliers can no longer meet the increasing demand.

Based on pest risk analysis, the US Department of Agriculture found that fresh rambutan from the three countries meet technical standards and designated phytosanitary measures will be sufficient to mitigate the risks of introducing plant pests or noxious weeds. One

measure includes commercial consignments strictly limited to continental United States.

Special phytosanitary measures are required for rambutan from Malaysia. First, all products must be inspected by the national plant protection organization of Malaysia to ensure that it is free of the fungus *Oidium nephelii*. The fresh fruits are required to be irradiated with a minimum absorbed dose of 400 Gy.

Surge of Vietnam exports

Rambutan exports to the US surged strongly a few days before the

2012 Chinese New Year, according to the Plant Protection Department of Vietnam. The amount of orders for rambutan shoot up from 2-4 containers per week to about 20 containers, reaching up to 9-10 freight containers per day.

Before 2012, Vietnam could not compete with South American suppliers. The price of Vietnamese rambutan exported via airway was USD 6.7 per kilo, a lot more expensive than the South American counterparts at USD 3 per kilo. Despite the price difference, exports from Vietnam

continued to increase because rambutan from competitors were off-season.

Vietnam's Ministry of Industry and Trade said that rambutan accounted for the largest export earnings of any Vietnamese fruit in 2009, with USD 2.5 million. Markets such as the United Arab Emirates, Korea, and the Netherlands were the top importers. With the US authorization, export earnings are projected to shoot up in 2012.

This rise in demand can be also be accounted for the improvement of fruit quality. Farmers in the

provinces within the Mekong Delta have obtained Global GAP (Good Agricultural Practices) certificates. These include 31 hectares in Vinh Long province and 81 hectares in the Ben Tre and Tien Giang provinces.

Increasing production in Mexico

The president of the Association of Producers and Exporters of Rambutan in Chiapas, Mexico signed an agreement with a group of Chinese businessmen to ship 100 tons of fresh rambutan each week to European, Asian, and North American markets. It was estimated

that Mexico produced 7,000 tonnes of rambutan in 2011 and exports 5,000 tonnes to international markets. The production was a record for Mexico, since only 300 tonnes were exported in 2010 and 50 tonnes from 2000-2009.

Canned Costa Rican rambutan

Export of fresh Costa Rican rambutan has declined because of Mexico's strong supply. Jorge Sanchez, executive director of the Foundation Proagroin believes that canning could revive exports, as this is a common value-adding practice.

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Rambutan Recipe

Stuffed rambutan soup (from www.recipebridge.com)



Ingredients

- | | |
|--------------------------------------|---------------------------|
| 50 g shredded chicken | 2 tbsp coriander leaves |
| 2 tbsp light soy sauce | 1.2 litres chicken stock, |
| 2 pinches of sugar | flavoured with ginger and |
| 30 g white crab meat | dashes of fish sauce |
| 12 fresh rambutans | 1 coriander root, scraped |
| 4 spring onions, shredded | 1 clove garlic, peeled |
| 1 pandanus leaf (rampe) | 1 slices ginger, peeled |
| 1-2 tbsp deep-fried, sliced shallots | 6 white peppercorns |

Instructions

1. Pound the coriander root, garlic, ginger and peppercorns into a paste.
2. Mix the paste, chicken, 1 tablespoon of soy sauce, a pinch of sugar and half the crab meat.
3. Peel and de-seed the rambutans. Fill each rambutan with the chicken mixture.
4. In a large saucepan bring the stock to the boil. Season with the remaining soy and sugar.
5. Add the rambutans, reduce the heat to a simmer and poach around 10 minutes.
6. Add the spring onion and pandan leaves and simmer.
7. Add the remaining crab and fried shallot. Sprinkle with coriander and serve at once.

Postharvest handling of Rambutan

by *Latifah Mohd Nor & AbAziz Ibrahim, MARDI, Malaysia*

A major constraint in rambutan export is the rapid deterioration of fruit quality and visual appearance. The fruit is high in water content and is prone to desiccation, resulting to an unappealing shriveled form. They are also susceptible to pathological breakdown from bacteria and fungi, characterized by dry hairs or spinterns.

Several postharvest measures can be implemented to preserve fruit quality.

Harvesting

The proper time for harvesting varies with climate, variety and intended use. For domestic consumption, fruits should be harvested at the maturity for the peak in flavor and nutrition. In most varieties, fruits should be picked when the spinterns are in full red color. For export markets, rambutan should be picked when the fruit body has turned red but the spinterns are still green. This allows for a longer shelf life of exported fruits.

From the field to the packinghouse

In the field, harvested fruits should be placed in reusable plastic containers because they offer protection from transportation in rugged terrain. Banana leaves or old newspaper can be used to line the container and prevent bruising. Each container should not be excessively loaded with produce to reduce fruit injury. Harvested rambutan should not

be exposed to direct sunlight and left on bare soil for long periods to prevent wilting and contamination, respectively.

To avoid quality deterioration, the fruits must be immediately transported to the packinghouse. The stacking height, arrangement, and ventilation of containers should be considered during loading. Conventional trucks should be covered with a tarpaulin sheet during transportation. Care should also be observed during unloading.

Sorting

Freshly harvested rambutan are sorted for uniformity in size, shape and colour. Heavily bruised, discolored, decayed, and irregular-shaped fruits should be removed. Fruits with symptoms of disease should also be rejected to avoid contamination.

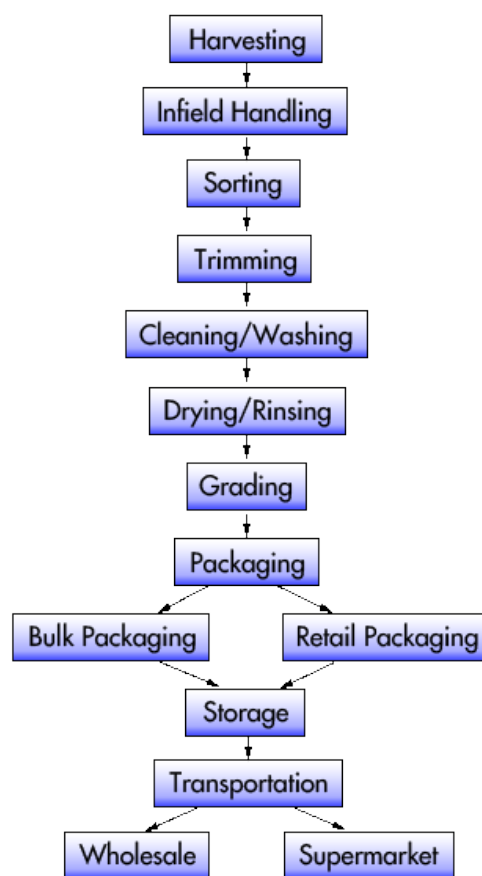
Washing

Adequate washing not only removes the dirt and chemical residue, it also provides a pre-cooling effect to the fruits. To reduce the incidence of decay, a sodium hypochloride solution is added to the wash water (100ppm). The washing water should only be used for a certain number of batches – it should be changed regularly to avoid contamination.

Drying

Drying removes the excess water on the surface of the fruits. The most ideal method to achieve

Figure: Proper postharvest process



Infield sorting and trimming after harvesting



Rambutan being loaded for transport



Packing for wholesale markets



Packing method used to reduce dehydration

this is through the use of a spinner. However, the machine's speed must be controlled to avoid bruises to the spinterns.

Grading

There are several Malaysian standards of specification developed by Standards and Industrial Research Institute of Malaysia (SIRIM) that could be used as guidelines for the grading rambutan. This is usually manually carried out based on size, color, maturity, and the presence free of diseases, insect damage, and mechanical injury.

Packaging

The fruits are easier to distribute if properly packed.

Regular polyethylene bags and containers are packaging materials for retail packaging. For bulk packaging, reusable high density plastic containers are used for transportation from the farm to the packinghouse, the wholesale market, and their destinations.

The fruits are packed in corrugated fiberboard (CFB) cartons for export. Banana leaves and polyethylene bags are used to pack the rambutan in these cartons to ensure freshness and retain moisture.

Storage and transportation

The shelf life of rambutan is limited due to the wilting, browning, and blackening. Once the skin wilts, shelf life is reduced to

only 1-2 days. However, modified atmosphere packing can be used to keep rambutan fruits fresh for 5-6 days. It is important to plan the harvesting based on the date and the volume required by the buyer. The fruit should be distributed immediately after harvesting. If storage is needed, the fruits should be kept in a cold room at 10 C. This extends the shelf life to 2 weeks.

The products must be immediately transported and distributed to various markets. The produce must be properly arranged to allow ventilation within the package. It is advisable to transport at night, early in the morning, or late in the evening to reduce deterioration from the high temperature.

Rambutan Recipe

Rambutan, Pineapple and Tofu Curry

from www.food.com

Ingredients

500 g tofu, cubed	2 teaspoons ground cumin
75 ml peanut oil	½ teaspoon turmeric
2 inches gingerroot	1 teaspoon salt
2 red chilies	2 slices pineapple
2 cardamom pods	5 rambutans
3 cloves garlic, crushed	1 pineapple, juice of
2 teaspoons garam masala	200 ml coconut milk
2 teaspoons ground coriander	

Instructions

1. Shallow fry the tofu and set aside.
2. Heat the oil in a thick based saucepan.
3. Add the ginger, chilies, cardamom pods and garlic and sauté.
4. Add the garam masala, coriander, cumin and turmeric and lightly fry.
5. Add the salt, tofu, pineapple, rambutan and pineapple juice. Simmer for 10 minutes.
6. Add the coconut milk.
7. Serve with rice when cooked.

Philippine scientists develop seedless rambutan using gibberellic acid

One of the ways to achieve food security is by improving our crops. Aside from developing disease-resistant plants with higher yields, agronomists also increase the edible portion of produce. While the sweet and succulent rambutan flesh has improved in thickness over the past decades, the big inedible seeds take up a huge portion of the fruit.

Seedless rambutan fruits occur naturally at an average of 4.45%. Scientists from Aklan State University in the Philippines discovered that gibberellic acid (GA₃), a plant growth regulator, can inhibit the development of rambutan seeds. With a 50 parts-per-million (ppm) solution, the study claims that 86.67% of fruits did not develop seeds. They also claim that a 200 ppm solution can reduce seed development by nearly 100%.

In an interview with Manila Bulletin, lead researcher Dr. Marilyn Romaquin says that she discovered the reduction of seed development while evaluating effects of gibberellic acid on the yield and quality of rambutan. The research was conducted on nine eight-year-old asexually propagated *Maharlika* rambutan trees of uniform vigor, height, and canopy. Though discovered on accident, her adviser Dr. Danilo T. Eligio claims that “it is a breakthrough”.

Aside from a reducing seeds, results show that GA₃-treated

rambutan branches has 18 to 28 percent more yield than untreated branches. Seedless fruits are shorter in length but has about the same diameter and weight as the seeded fruits. The weight of the edible portion was also not significantly affected. However, seedless fruits are significantly sweeter.

The study also found that the proportion of seedless fruits increases if GA₃ is applied before the flower buds break. More seeds would develop if the treatment is applied during later stages of fruit growth.

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Thai company introduces “Bio-Dynamic Freeze Drying”

Bio-dynamic freeze drying is a new technique that can minimize loss of natural phytochemicals present in horticultural crops during processing. The technique utilizes a natural process called *sublimation*, where matter is converted from solid to gas without going through the liquid phase.

The Thai Freeze Dry Co. LTD. in Thailand has succeeded in producing bio-dynamic freeze dried products from mangosteen and the noni fruit. Through this method, phytochemicals such as xanthenes from mangosteens and xeronine, serotonin, and nitric oxide from the noni fruit can be preserved. Xanthenes have beneficial effect for cardiovascular health, with



Left: Tray freeze-dried, mechanically ground particles.



Right: Bio-dynamic freeze-dried particles. Scaled at 10 µm

antiviral, antibiotic, and analgesic properties. Xeronine stimulates the synthesis of alkaloids, serotonin makes enzymes more receptive to endorphins, and nitric oxide is essential to cardiac health.

For more information, email info@thaimassage.com.

Source: <http://www.thaifreezedry.com/>

Disclaimer:

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