



The Fruit Growers of Southwest Florida

SEPTEMBER 2020



Michael Benjamin will be the speaker for the Collier Fruit Growers September 15 membership meeting. Michael is a rare tropical fruit collector and edible plant enthusiast living in Sarasota FL. He traveled to Singapore and Malaysian Borneo in February of 2020 to taste wild and cultivated fruit of the region, especially Durian. Borneo is a biodiversity hotspot and has some of the most pristine primary rainforest in the world. Many fascinating tropical fruits come from this region. Borneo is also considered one of the best places to find Durian species other than *D. Zibethinus*. Traveling for fruit and edible plants is a wonderful way to connect with food, culture, ecology, and history. His travels to Boneo, will highlighted at the meeting.

Michael owns a small business specializing in creating building exhibitions for museums and botanical gardens. He is a volunteer with the tropical fruit collection at the Elling Eide Center. Michael is interested in the evolution of fruit, plant breeding, tissue culture, and generally anything edible.



Collier Fruit Growers Meeting: TUESDAY, September 15, 2020.
Limited tasting table starts at 7:00 pm. The meeting starts at 7:30 pm.
Life Center, Tree of Life Church, 2132 Shadowlawn Dr., Naples, FL 34112
Please observe Collier County's masks mandate and social distancing guidelines.
All meetings will also be streamed live on Facebook

After almost 20 years with UF|IFAS Extension, **Doug Caldwell**, to little fanfare, retired on July 31, 2020.

He expects to continue being involved in landscape entomology and warm climate fruit outreach, working on a tree protection ordinance, and maybe some landscape diagnostic troubleshooting. Doug promises to check his email...now and then. Remember the Dougbughimself Youtube videos at: <http://www.youtube.com/user/dougbughimself>
"Help beautify your landscape and protect the environment!"

Also, checkout the UF/IFAS Collier County Extension Facebook page at:
<https://www.facebook.com/CollierCountyExtension>

COVID 19 is affecting our lives and the world economies. As such the Meetings and Activities of the Bonita Springs Tropical Fruit Club along with those of the many associated organizations have been curtailed since March 15. Slowly things are coming back with social distancing and other safety precautions.

A possible speaker for the September meeting will be announced prior to the night of the meeting.



Bonita Springs Tropical Fruit Club Meeting will be SEPTEMBER 8, 2020.
Workshop: Tuesday, SEPTEMBER 22, 2020.

Revive Wellness Center, 3521 Bonita Springs Blvd., Bonita Springs, FL 34134
Please always observe the County's Mask Mandate and social distancing guidelines.

Both Lee and Collier Counties have Mask Mandates where all person are required to wear masks in public places.

RECIPE OF THE MONTH:

recipe:

**Avocado Lime Sorbet**

This recipe is from savvyvegetarian.com which was prepared for the Avocado 101 Class taught at the Naples Botanical Garden in 2015.

- ½ to 1 cup sugar
- 1 Tbsp. lime zest
- 2 cups avocado (about three fruits)
- ⅔ cup fresh lime juice (about three limes)
- 1 cup water

Process the sugar and lime zest in a food processor for two minutes. Add avocado, lime juice and water and process until smooth. Strain mixture and discard solids. Cover the bowl and freeze for two hours.

Return mixture to the food processor and process until smooth. Repeat freezing and blending two more times, then freeze for one to eight hours. Best if served within 24 hours.

Carambola Walnut Bread

Source: Sarasota Extension Service

- 2 cups flour
- ¼ tsp. baking soda
- ¼ cup vegetable oil
- ¾ cup orange juice
- 1 cup carambola, seed removed & diced
- 1 ½ tsp. baking powder
- ⅔ cups sugar
- 2 eggs
- 1 cup chopped walnuts

Combine flour, baking powder, baking soda, and set aside. Cream together sugar, oil, eggs and orange juice. Add to dry ingredients, a little at a time. Fold in nuts and carambola. Bake in a well-greased pan at 350 F for 45-50 minutes.



Good News Concerning Citrus Greening

For about fifteen years the Florida Citrus Industry has been battling to save their Groves from '**Citrus Greening' disease or huanglongbing (HLB)**. Now from the University of California, Riverside there is promising hope of a new scientific breakthrough which could save the Citrus Industry. The following article discusses this potential breakthrough. A feature program entitled "**Exotic Australian Fruit May Help Save Florida's Citrus Industry**" was also broadcasted on National Public Radio, '**All Things Considered**' hosted by Greg Allen, on July 27. **The two-minute broadcast can be heard at:**

<https://www.npr.org/2020/07/27/895775625/exotic-australian-fruit-may-help-save-floridas-citrus-industry>

The following articles was published in the 'THE RECORD,' a research development publication.

Experimental treatment could save California citrus

BY JOHN COX, The Record, July 26, 2020



Kern County citrus growers are extremely anxious about the looming threat of citrus greening disease, known as huanglongbing in China, where it originated. The illness is not harmful to people or animals, but it kills fruit trees and has decimated the citrus industry in Florida. The disease is carried on an insect called the Asian citrus psyllid. Not every psyllid is a carrier, but the disease cannot spread without the pest, which transmits it by feeding on the liquid inside citrus leaves.

Courtesy of the University of California Division of Agriculture and Natural Resources

The Central Valley's citrus industry is hailing a potential breakthrough in the fight against a so-far incurable bacterial disease threatening to wipe out Kern's mandarin, orange and lemon groves.

A researcher at the University of California, Riverside has identified a naturally occurring protein compound that appears to not only treat trees infected with the disease but also immunize them against it.

The material is a peptide found in Australian finger lime trees, which naturally resist the disease. The researcher behind its discovery, UC Riverside geneticist and molecular biologist Hailing Jin, said the treatment has proved effective in the lab and in small citrus trees growing in a greenhouse.

Further testing will be required before it can be determined whether the peptide is widely effective and can be commercialized for use by local growers. It is unclear how soon that might happen but Jin said the process could take years.

The treatment's regulatory approval process could be accelerated by the Cambridge, Mass.-based company that is secured an exclusive worldwide license to the peptide, Invaio Sciences.

MOTTLED THREAT

Citrus greening disease, better known by its Chinese name, Huanglongbing, or HLB, has devastated Florida's citrus industry. It's been found in Los Angeles and Orange counties but not in the Central Valley, though people in the industry say it's a matter of time before it arrives in Kern.

Only one creature is known to carry HLB: a tiny, mottled-brown insect called an Asian citrus psyllid. The moth-like insect has been spotted all over Bakersfield and other parts of the state but no specimens carrying the disease have been found in the Central Valley.

Casey Creamer, president and CEO of Exeter-based trade group California Citrus Mutual, called the discovery exciting and a potential breakthrough. But he emphasized the industry is exercising cautious optimism.

'YOU NEVER KNOW'

"A lot of things work in the lab and don't work out in the field," Creamer said. He noted other researchers are working to attack HLB using a variety of approaches, adding: "You never know what's going to work until it actually does."

He said efforts to protect the Central Valley from HLB have largely succeeded, though there is some concern that the psyllid is turning up in Ventura County despite expanded quarantine areas.

"I think we've exceeded the expectations on how long we could manage keeping it out of the commercial groves," Creamer said. "I'm still (optimistic) that we're going to be successful in this battle. The suppression of the psyllid is a sign of that."

NEXT TO WATER

Delano area-based grower Matt Fisher, a fourth-generation farmer, said he was aware of Jin's peptide and that he considers it "one of the most promising pieces of research that I've heard about and seen.

"It appears to be something that can really help us turn the corner," he said. "This HLB is, other than water, our single-greatest threat in this business."

Jin, reached by phone Friday, said she has been working to cure HLB for close to 10 years. When she learned certain wild citrus trees tolerate HLB, she focused on isolating the genes responsible.

She made a list of candidate genes and then a screening system. She had to substitute a bacterium related to HLB because the one carried by the psyllids is hard to cultivate in a lab.

GREEN, HEALTHY

The University of California, Davis contributed sets of infected sweet orange trees, lemon trees and root stalks. The ones treated with the peptide improved dramatically in experiments that extended up to 1½ years, Jin said.

"The new flesh and the new leaves are green and healthy," she said.

She said the treatment, also a vaccine, can withstand temperatures of up to 130 degrees — an important characteristic that other antibiotics fail to achieve. It enters a tree's system after being sprayed, she said.

Her hope now is the U.S. Environmental Protection Agency approves the finger lime's peptide before it is too late.

"I hope we can be fast enough before the disease ... reaches the Central Valley," she said.

Editor's note: This story has been corrected to reflect that California Citrus Mutual did not put money toward Jin's research.

Preliminary field adaptation and fruit characterization of *Mangifera* species in Florida

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Abstract

Fairchild Tropical Botanic Garden maintains a living collection of *Mangifera* species collected in Indonesian and Malaysian Borneo, Hawaii, Java, Peninsular Malaysia, Puerto Rico, Singapore, Sumatra and Thailand. This collection is composed of single tree accessions planted at the Williams Grove Genetic facility located in Homestead, Florida, USA. Planting began in 2004 and there are currently 55 accessions of *Mangifera* species; the non-indica *Mangifera* constitute up to 25 species, including *M. altissima*, *M. applanata*, *M. caesia*, *M. casturi*, *M. fetida*, *M. griffithii*, *M. lalijiwa*, *M. langong*, *M. laurina*, *M. magnifica*, *M. odorata*, *M. pajang*, *M. pentandra*, *M. quadrifida*, *M. rubropetala*, *M. torquenda* and *M. zeylanica*. The current study begins to build base-line information for these species that can be used for the determination of taxonomic relationships between the species and for the breeding and improvement of both these species and the mango. *M. applanata*, *M. casturi*, *M. lalijiwa*, *M. odorata*, *M. quadrifida*, *M. rubropetala*, *M. zeylanica*. *M. sp.* 'Rampagni', *M. sp.* 'Tenom', *M. sp.* 'JD1' and *M. sp.* 'JD5' were characterized in the current study. Only fruit characters are included in this study and all data were derived from measurements taken on the trees growing in Florida.

Keywords: mango, genetic resources, germplasm, biodiversity, breeding and crop improvement

INTRODUCTION

Kostermans and Bompard (1993) recognized nearly 70 *Mangifera* species that bear edible fruit, with the greatest concentration of species on the islands of Borneo, Java and Sumatra and in Peninsular Malaysia. The authors point to the usefulness of these species as fruit crops in their own right, or in breeding with the major commercial mango species, *Mangifera indica*. Many species are locally rare and/or included on the IUCN Red List of Threatened Species [vulnerable (*M. pajang*, *M. zeylanica*), data deficient (*M. lalijiwa*, *M. odorata*) and extinct in the wild (*M. casturi*)]. The current project began nearly three decades ago, to identify, collect and establish living field collections of *Mangifera* species for use as economic crops and in improvement programs with *M. indica*. Wild crop relatives of mango remain under-represented in world gene banks and are of critical importance to the commercial mango industry.

Field collections of *Mangifera* species were conducted primarily on the island of Borneo and in Peninsular Malaysia where there is considerable *Mangifera* genetic diversity. Wild mangos are common in local markets throughout Borneo and clonal selections are recognized for many species. Predominantly we collected clonal material as scions and grafted to *M. indica*, *M. rubrapetala*, *M. casturi* and *M. odorata* rootstocks under greenhouse conditions in Miami, Florida (Campbell, 2004).

New superior clonal selections of *Mangifera* species were established in the living genetic collections of Fairchild Tropical Botanic Garden from 1991 to the present. Living accessions were assessed for survival, growth and development, and genetic characterization and for fruit characteristics as fruiting has begun. This living collection with species growing side-by-side under controlled field conditions will allow for the study and characterization of important phenological aspects of each species. This is essential for developing a base-line of species phenology, given that these *Mangifera* species, in habitat, may flower and/or fruit only



once every 15 years or more (Ledesma and Campbell, 2014).

MATERIALS AND METHODS

Location and collection of fruit

Fruit characterization was conducted on *M. applanata*, *M. casturi*, *M. lalijiwa*, *M. odorata*, *M. quadrifida*, *M. rubropetala*, *M. zeylanica*. *M. sp. 'Rampagni'*, *M. sp. 'Tenom'*, *M. sp. 'JD1'* and *M. sp. 'JD5'* grown at the Fairchild Tropical Botanic Garden living collection located in Homestead, FL, USA (25.47°N; 80.46°W). Fruit were collected from a single to three or more trees of each species. The accessions had been planted in different years between 1993 and 2013.

Growing conditions

The trees were planted in the field from 1 to 4 years after grafting and maintained per standard cultural practices used for mango in South Florida. The soils are an oolitic limestone with a thin layer of organic matter and a pH of 8.5. Trees had no irrigation and no additional inputs of fertilizer or pesticides were applied during or after planting. The mango collection is free of herbicide and instead uses ground covers to suppress weeds. Additional mowing and hand weeding was performed as needed. Two to five fungicide applications were applied at bloom and throughout fruit development.

Flowering

Blooming of the *Mangifera* species occurred naturally from November to April. No bloom induction was used with the trees in the study. There were distinct flowering events in each of the years of study for most of the species and the largest contributor to crop loss was low winter temperatures, which were near to slightly below freezing for durations of less than 2 h in each of the fruiting seasons.

Fruit setting

Honey bee colonies were placed in the collection to provide better fruit setting. *Mangifera* species are highly attractive to the Asian honeybee (*Apis cerana*) and our experience in South Florida has shown that the European honeybee also has a strong preference for most non-*indica* *Mangifera* species. Fruit reached maturity between 3 to 5 months from flowering.

Fruit harvest and post-harvest handling

Harvest was accomplished by multiple pickings because fruit ripening was not synchronized within the same tree. Fruit was harvested from May to July during 3 years from 2013 to 2016. The target was to harvest fruit at physiological maturity and to ripen off the tree. Picking time was estimated based on a ground skin color progressing from dark to light green and when the fruit shoulders were full. Harvesting was done by hand. Fruit was picked using clippers, leaving 20 mm stem attached to protect the fruit from sap burn. Fruit was moved to the laboratory for cleaning and ripening. Fruit was unloaded from the field bins, washed and rinsed with water. Fruit were ripened with good air movement at a temperature of 75°F.

Fruit morphology

For each species five fruit were randomly selected from each tree during season 2013 through 2016. Fruit were evaluated when they were fully ripened. Fruit were photographed and drawn. Pictures were used to study the structure of the fruit and used to support the botanical illustration of each species.

The species and their corresponding Fairchild Tropical Botanic Garden or USDA accession number were:

- *Mangifera casturi* (2012-2356)
- *Mangifera quadrifida* (98-2186)
- *Mangifera lalijiwa* (2004-1213)
- *Mangifera odorata* (2008-1293)

- *Mangifera rubropetala* (2003-1730)
- *Mangifera zeylanica* (I)
- *Mangifera* sp. 'Rampagni' (2001-0889)
- *Mangifera* sp. 'Tenom' (2012-2407)
- *Mangifera* sp. 'JD1' (2013-0555)
- *Mangifera* sp. 'JD5' (2013-0554)
- *Mangifera applanata*

The observations on fruit structure, measurements and characterization followed that of Gangolly et al. (1957) (Figure 1) which includes:

- **Fruit characters:** weight (g); range of weight; fruit size (cm); length/breadth/thickness; shape; surface; base; stem; cavity; apex; beak
- **Skin:** texture; bloom; ground color; blush; lenticels
- **Flesh:** texture; color; flavor; brix; aroma; fiber; length on seed; overall quality
- **Stone:** form; size (cm); length/breadth/thickness; weight (g); texture
- **Seed:** polyembryonic or monoembryonic.

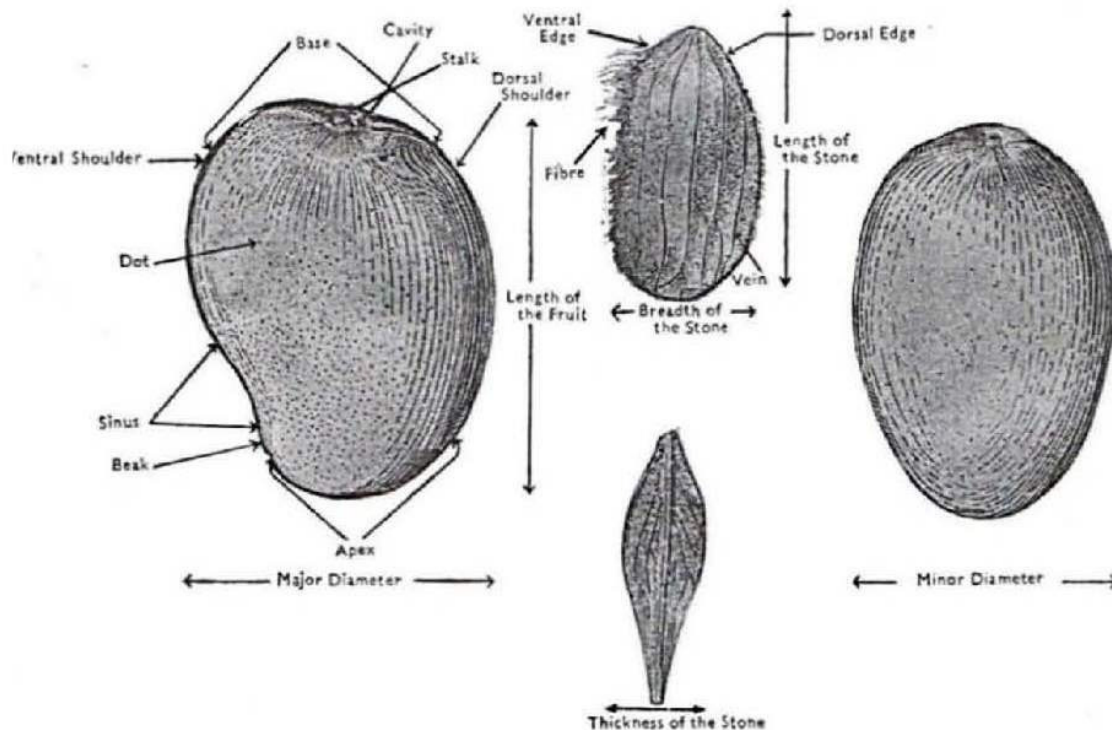


Figure 1. Fruit Morphology (Gangolly et al., 1957).

RESULTS AND DISCUSSION

Table 1 contains the results of the first three years of evaluation. The results are preliminary. The study was conducted using a single tree or at most three trees per accession. It will be required to continue monitoring the fruit for more years. The characterization of important phenological aspects of each species will provide information base-line for future studies. There are some limitations with the material available that may interfere in the fruit characterization and the relationship between rootstocks and interstocks. Rootstock-interstock experiments have shown in *Mangifera indica* that different combinations significantly affected tree height and vigor. Fruit yield was also influenced by rootstock and there have been studies that have shown variation in fruit and seed characters in mango (Kilany et al., 2012).

Table 1. Fruit characterization of *Mangifera* species fruiting at Williams Grove Genetic Facility of the Fairchild Tropical Botanic Garden, Homestead, FL.

Characteristic	<i>Mangifera casturi</i> 2012-2356	<i>Mangifera quadrifida</i> 98-2186	<i>Mangifera laljiiva</i> 2004-1213	<i>Mangifera odorata</i> 2008-1293	<i>Mangifera rubropetala</i> 2003-1730	<i>Mangifera zeylanica</i> 2001-0889	<i>Mangifera</i> sp. 'Rampagni' 2001-0889	<i>Mangifera</i> sp. 'Tenom' 2012-2407	<i>Mangifera</i> sp. 'JD1' 2013-0555	<i>Mangifera</i> sp. 'JD5' 2013-0554	<i>Mangifera</i> <i>applanata</i>
Average fruit weight (g)	72.5	63.1	380.5	186.8	72.5	74.5	565.2	177.5	42.4	40	245
Range of weight	60 - 95	45 - 70	300 - 450	140 - 240	65 - 80	72 - 87	450 - 620	160 - 200	30 - 55	30 - 52	200 - 260
Fruit size (cm): length/breadth/thickness	6.2/6.0/3.9	6.0/4.9/4.8	9.8/7.0/6.2	11.1/7.7/7.8	6.2/6.1/2.8	6.4/3.5/3.2	12.5/9.3/8.8	6.9/5.7/5.5	5.0/3.4/3.2	5.7/3.2/2.9	8.5/7.0/4.1
Shape	Ovate oblique	Roundish	Oblong oval	Long and slender	Ovate oblique	Oblong oval	Oval	Roundish oblique	Oblong oval	Oblong oval	Ovate roundish
Surface	Smooth	Undulating	Undulating	Lightly undulating	Smooth	Undulating	Lightly undulating	Smooth	Smooth	Smooth	Undulating
Base	Slightly flattened	Slightly flattened	Rounded	Round	Obliquely rounded	Rounded	Flattened	Obliquely flattened	Round	Extended	Obliquely flattened
Stem	Stout/Square	Slender/Square	Stout/Square	Square	Stout/Square	Slender/Oblique	Stout	Stout/Oblique	Slender/Square	Slender/Square	Slender/Square
Cavity	None	None	None	None	None	None	Level/shadow	Shallow	None	None	Slight
Apex	Rounded	Rounded	Rounded	Sharply pointed	Broadly rounded	Broadly pointed	Large, lateral	Broadly rounded	Broadly pointed	Broadly pointed	Broadly rounded
Beak	Small	Small	Large	Lateral	Small	None	Thick, tough	None	Small	None	Large, lateral
Skin texture	Thick, separating	Thick, tough	Thick, tough	Thick	Thick	Thick	None	Thin	Thick	Greenish/yellow	Thick
Bloom	None	Slight	Slight	Slight	None	None	None	None	None	Red	None
Ground color	Green	Green	Green	Green	Green	Green/yellow	Green	Green/yellow	Greenish-yellow	Red	Greenish yellow
Blush	Dark purple	Dark purple	Green	Green	Yellow	Yellow	Yellow	Green/yellow	Greenish-yellow	Red	Greenish yellow
Lenticels	Numerous, white/corky	Numerous, corky	Numerous, white	Few, brown	Few, brown	Few, brown	Numerous, small, white	Numerous, yellow	Few, brown	Numerous, corky	Numerous, russet
Flesh texture	Soft, juicy	Soft, juicy	Cream	Yellow	Soft, watery	Soft, watery	Soft, juicy	Firm, dry	Greenish yellow	Orange	Firm, juicy
Color	Orange	Orange	Excellent	Rich	Orange	Orange	Yellow	Yellow	Yellow	Numerous	Greenish yellow
Flavor	Excellent, rich	Good, rich	Excellent	Rich	Good, rich	Mild	Rich	Mild	Sour	Rich	Sour
Brix	22	20	24	16	19	16	13.5	13	12	19	
Aroma	Strong, pleasant	Strong, unpleasant	Weak	Strong	Weak	Weak	Strong, pleasant	Weak	Weak	Weak	Mangga
Fiber	Abundant	Abundant	Few	Abundant	Abundant	Abundant	Abundant, medium	Medium	Abundant	Abundant	Abundant
Length on seed	Short	Medium	Medium	Medium	Medium	Medium	Short	Short	Medium	Medium	Medium
Overall quality	Good	Excellent	Excellent	Good	Fair	Fair	Fair	Fair	Fair	Good	Fair
Stone form	Oblong	Oblong	Oblong	Oblong	Oblong	Oblong	Oval	Oblong	Oblong	Oblong	Long, coarse
Size (cm): length/breadth/thickness	6/2.8/1.9	5.4/3/1.6	6.5/2.2/4.5	8.2/4/2	6/2.9/2.0	5.4/3.1/1.8	9/4/2.1	6.5/4/1	4.7/3/2.4	4.7/3/2.4	7.7/6.7/2.8
Weight (g)	30	30	45	55	35	32	60	31	26	20	75
Texture	Thick and woody	Thick and woody, red pigmentation	Thick and woody	Thick and woody	Thick	Thick	Thick and woody	Thin and papery	Thick	Thick and woody	Thick and woody, grooved
Seed	Polyembryonic (high %)	Polyembryonic (low %)	Polyembryonic (low %)	Polyembryonic	Polyembryonic	Polyembryonic	Monoembryonic	Polyembryonic	Polyembryonic	Polyembryonic	Monoembryonic

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Mangifera odorata

Marley Hagerstrom has furnished two *Mangifera odorata* (kwini, kweni, kuwani, Kuwini or Saipan mango) to the Collier Fruit Growers. One has spouted and hopefully will become a viable fruit tree. *Mangifera odorata* is a related species to the more common mangos (*Mangifera indica*). It is a welcome addition to the collection of *Mangifera* fruit trees in the Anacardiaceae family.

A Medium-sized tree. This tree has a unique feature. It emits a characteristic fragrant smell. Even the flowers of this tree are strongly scented with the same fragrance. That is why this species has been named *M. odorata*. This fruit has never been found in the wild. Botanists are commonly of the opinion that Kuwini (*M. odorata*) has originated as a hybrid between *Mangifera indica* and *Mangifera foetida*, (Indian horse mango).

This fruit is commonly cultivated in Borneo, Sumatra and Java. It is also found in Thailand, Vietnam and Guam Islands. The Kuwini is a popular fruit, having local economic significance in areas where *Mangifera indica* cannot be grown satisfactorily because of excessive humidity. Kuwini can produce two crops a year in areas where two dry seasons prevail.

The fruit must be peeled thick because of the presence of an acrid juice in the skin, which can also be reduced by steeping in diluted lime-water before eating.

The fruits are also used for making chutney and for pickles with salt.

Propagated by seed, only rarely by grafting.

Much like *Mangifera indica* its sap is an irritant which may inflame the lips and mouth.

Related Mangifera Species

Now that this year's successful mango season is winding down the Collier Fruit Growers has turned its attention to the other mango related *Mangifera* species. Recent acquisitions include *Mangifera lalijiwa* and *Mangifera odorata* (a hybridized relative) seedlings. Their continued preservation is contingent upon the establishment of a permanent local repository for these fruit tree variates. There are current eleven different *Mangifera* varieties, as mentioned in the article by Dr. Noris Ledesma as growing at the Fairchild Tropical Botanic Garden living collection, located in Homestead. CFG will attempt to acquire other mango species, especially *Mangifera foetida*, *Mangifera rubropetala*, to create its own collection.

In the Year 2020, What is a Rare Fruit? By Crafton Clift

One of the founders of the Rare Fruit Council International, Bill Whitman, used to remind us that if you can buy it at a local nursery, it is no longer of interest to the Rare Fruit Council.

To those early members, sitting around a library table at the University of Miami, sharing a tinned can of Guyana chestnuts (*Bombax glabra*) or a big, flat, December ripening black sapote (*Diospyros nigra*) Reineke brought from Mexico, or a Florida apricot (a Homestead, Fl *Dovyalis* hybrid) was a novel experience. If I had listed half a century ago fruits that would move from rare to common, I had no way to know that, sweet or sour, the first thing to do [with] any fruit is to make them into jams and jellies.

Furthermore, when I tasted that purple sawdust acai palm fruit from the Amazon, I never dreamed of promoting it in the USA and couldn't believe society's upper crust called Yuppies, using a word I had never heard "antioxidant," would be flying that fruit into the US and adding 99% anything else to make it palatable.

And, for those people who, despite the advice of their elders, insist on growing breadfruit (*Artocarpus altilis*) we get three consecutive winters without frost and these people share their hundreds of breadfruits with us.

Trevor Parks of Bonita Springs has a sweet kwai muk ungrafted.

John Painter on Big Pine Key has the only 'Wan' maprang that survived the frosts of 25 years ago. Hundreds of seeds of sour maprang for rootstocks are at Wilson Popenoe Botanic Garden in Tela, Honduras. While you're at WPBG, bring *Mangifera caesia*, *Modorata* and scions of 'Lancetilla' mango. Alupag (Longan realitive) is there and at Grimal's Grove on Big Pine Key – hard to find in the Philippines. *Garcinia hombriana* from Calibok Valley in the Philippines tastes like mangosteen and takes Florida's cold & soil quite well. Nutmeg fruited for David McLean in Ft. Lauderdale. *Erythrophloeum suavealens* (ordeal tree from Liberia) is there (WPBG, Tela, Honduras).

Santol has fruit with 5 carpels similar to mangosteen, but much better adapted to soil & climate of Florida.

Kei apple (*Dovyalis caffra*) is usually very sour. San Diego Zoo has really sweet ones and seedlings (not grafted) are at Steve Brady's, Fruit & Spice Park and Rita O'Hearn's.

Abiu – Dr. McNaughton lived near The Kampong, near the ocean where even in the 1977 freeze that turned 500 species of palms at the Fairchild Garden in Miami brown, did not hurt McNaughton's abiu collection. Then later, in a winter without frost, just prolonged low temperature, many heliconias, bananas, the century old *Mamea americana* at Fairchild Garden, and all of Dr. McNaughton's abius were killed.

I have often discouraged people from wasting time on mangosteens in Florida, but I would like to see someone fill a big pit with kitty litter (the clay type) and try durian. I haven't seen durian die from cold in Florida, but our oolite and sand don't hold water.

The 'Skinner' balata (*Manilkara balata*) is more cold sensitive than sapodilla onto which it grafts, but I predict the people from Trinidad will make that common in Florida. Dr. Scott Cohen chiropractor in Miami has scions.

Yaupon Holly: A Tale of Tea, Sugar, Slavery and Slander

Adapted from an article as [HYPERLINK "https://www.yauponbrothers.com/search?type=article&q=Bryon%20White"](https://www.yauponbrothers.com/search?type=article&q=Bryon%20White) published in Edible South Florida Magazine, Spring 2020 issue.

By Bryon White and Mark Steel, June 12, 2020

It is amazing that something at the center of Native American civilization here in Florida for at least 8,000 years has fallen into complete obscurity. Yaupon was worshipped as a sacred gift from the god of purity, used as a daily drink, leveraged as the go-to medicinal plant, and carried for hundreds of miles in a vast trade network. A major part of everyday life ... that sort of thing.



Yaupon tea has since been trashed and forgotten in the modern world. The demise of American tea was planned and orchestrated in England in 1789. The killing Yaupon (commercially) changed the course of the British Empire, financed the English industrial revolution, which also costed 6 million African slaves their lives.

ENGLAND DOWN BUT NOT OUT:

The year 1789 was just 6 years after the signing of the treaty that ended the American Revolutionary War. England spent the modern equivalent of over 18 billion dollars and lost 25,000 young men in their losing effort. They still had a staggering national debt from decades of endless wars with Spain and France, not to mention the psychological damage to the country and the utter humiliation of King George III (already on shaky ground in terms of mental health).

ENGLISH TEA ... a brief history:

A young Portuguese princess (Catarina) married into the English royal family in 1662 and wanted the drink that Portuguese merchants had been bringing back from China. Her husband (King Charles II) tried to make his new bride happy by importing the tea that Catarina was craving.

Catarina shared it with her friends, and it was a big hit with the aristocratic ladies in the English Royal court. It exploded commercially when the East India Company started a vast tea import/export network that brought tea to the masses. Fast forward about 100 years and the East India Company had eleven cargo ships that were sailing 24/7, bringing tea from China with a 400% return on investment.

SUGAR, ONE LUMP OR TWO?

Asian teas have tannin, so it naturally has a bitter aftertaste that gets worse when tea is over-steeped. Tannin also causes nausea (and sometimes vomiting) when consumed on an empty stomach. Sugar was the solution and lots of it! Add a few lumps of sugar to some elaborate steeping regimens, combine it with plenty of sweet baked goods to settle upset stomachs... and you get the perfect afternoon tea party experience. Classy!

So, how could this beautiful social ritual be a bad thing?

When the British appetite for tea grew exponentially, so did the demand for sugar... so they established their own extremely lucrative supply chain. British West India Company took fertile islands throughout the Caribbean by force and enslaved the indigenous populations then Africans to work sugar plantations.

The Triangular Trade route system was in full swing:

The combined income from tea, sugar and slavery was astronomical in its time. King George got 70% of his income by taxing this conglomerate and he used the proceeds to reward his followers, build up the Royal Navy and expand the Empire. Not to mention feathering the King's own nest egg.

Meanwhile, the average slave in the sugar fields of the Caribbean lived less than ten years, which meant that continued income from the selling slaves was a sure thing. This system had endured for centuries and was ruthlessly defended. Then Yaupon tea came on the scene.

ENTER AMERICAN TEA (YAUPON):

After the Revolutionary War, American merchants started selling Yaupon Holly tea in England and throughout Europe. In some places it was labeled with its ancient name, Cassina. In other places it was sold as "South-Sea-Tea" or "Appalachine" (in France). By the year 1789, Europeans were beginning to learn about this tasty medicinal tea from America that had caffeine but didn't have any of the bitterness of Asian teas. The key behind Yaupon tea's delicious taste was that Yaupon leaves are tannin-free. NO TANNIN?! No tannin meant it needed little or no sugar, or sugary crumpets for upset stomachs, or mountains of sugar in the Caribbean. Now this new tea player from America (and those pesky American patriots) is looking like it could be a real competitor on the tea scene.

To make matters worse, England's historic adversary 'Spain' took control of Florida (prime Yaupon country) as part of the surrender treaty of 1783.

THE ENGLISH RESPOND:

A marketing campaign ensued, and it became the patriotic duty of all Englishmen to drink tea from England, but they still had a problem with other European countries where Yaupon was sold. A mistake by one of the world's most revered scientists gave the British an opportunity to destroy their new competitor... and they took it.

THE MASTER MAKES AN ERROR:

In 1753 Carl Linnaeus (the revered father of taxonomy) gave Yaupon Holly its Latin name: *Ilex cassine*. He chose that name because Yaupon tea had been called Cassina by Europeans for around 250 years, and Native Americans used the name for a long time before that. But Linnaeus thought that Yaupon and the newly discovered Dahoon Holly were the same plant, so two different species had the same Latin name, so a sinister plan was derived.

AND THE ROYAL GARDENER USES IT TO KILL THE COMPETITION:

William Aiton was the Royal Gardener and loyal friend of King George at Kew Gardens, and he had a very simple plan to end the taxonomy discrepancy and at the same time eliminate Yaupon from the marketplace (two birds, one stone).

William's smear campaign has worked brilliantly for centuries... and is still in effect today. What did he do? He took the Latin name *Ilex cassine* away from Yaupon and gave it to the Dahoon Holly exclusively and rebranded the Yaupon Holly plant with a wonderful new Latin name: *Ilex vomitoria*.

You don't have to be a Latin scholar to know that the literal translation of this is "The Holly that makes you vomit." Aiton surely knew that the name itself was a lie. He was remarkably familiar with Yaupon (it had been cultivated in England for 90 years), and while the tea was gaining traction in Europe, he knew that nobody was getting sick from the tea.

THE BEST LIES HAVE A SLIVER OF TRUTH:

Native American men in some tribes did occasionally drink and purge large amounts of what was called the "Black Drink" (usually containing Yaupon) as a way to cleanse their

sins in the eyes of the God of purity: Yahola. Some theories are that other plants were added to the brew, but I am convinced that it was a learned skill that men did to restore their relationship to their God and to proclaim their righteousness and purity in front of other men. What's the best way to prove to other warriors that you're truly pure? Publicly purge.

Early white explorers (predominantly from Spain), who were at these ceremonies and drank the "Black Drink" did not get sick, and numerous studies at several modern universities confirm that Yaupon Holly tea has **no emetic properties**. Regardless, the name has persisted and so has the misperception of what we think is the world's best tea. In other words, the plan worked brilliantly! The demand for American Yaupon fell to zero overnight and has pretty much stayed there for centuries. It is obvious to me that William Aiton succeeded in his goal of commercially ruining a competitor of the Empire...thus saving the British tea industry from the threat of American tea (grown by traitors to the crown). The science expert, Dr. Jack Putz (famous botanist at the University of Florida) thinks that Aiton was on the payroll of the British East India Company. We may never know for sure.

If one Googles Yaupon the first thing, they will see is the work of William Aiton: *Ilex vomitoria* (Ait.). If Yaupon had a different name. Even though science is on Florida's side in having the world's best tea, it has been (and will be) an uphill battle to overcome this stain (lie) from 230 years ago.

Approximately 45,000 Floridians have lost jobs due to a disease [Citrus Greening] that has pretty much wiped out the Florida citrus industry, with another 31,000 more jobs in jeopardy. At the same time, America imports over 200,000 tons of tea from Asia every year while Florida farmers are in desperate need of a new crop. We think Yaupon can and will transform the future of agriculture here in America continues ... despite William Aiton.

FOOTNOTES: Yaupon Holly it is not *actually tea*. The tea plant, (*Camellia sinensis*), is a separate plant species that originated in China. Tea is now grown all over the world, but it is difficult or impossible to grow in most parts of the United States. Yaupon, on the other hand, is native to the United States from Texas to Florida and on to Virginia. Like the tea plant, Yaupon naturally contains caffeine in its leaves. It is the only caffeinated plant species native to the United States. Yaupon has been consumed as a food, medicine, and ceremonial item by indigenous people for at least 8,000 years. [Recently, Yaupon is even being used to flavor beer.]

Mark Steele

Co-founder, Yaupon Brothers American Tea Company



Fruits which Ripen in September:



Atemoya (beginning of season), banana, Barbados cherry, black sapote (sporadic), carambola, carissa, coconut, fig, guava, jackfruit, kwai muk, macadamia, mango (late varieties), monstera, muscadine grape, papaya, pineapple, passionfruit, peanut butter fruit, persimmon, pineapple, pomegranate, santol, sapodilla, soursop (beginning of fall season), Spanish lime, strawberry tree, sugar apple.

Annual Fruits: Watermelon, cantaloupe, eggplant, winter squash (Seminole pumpkin), beans, sunflower seeds, pepper (hot), cherry tomatoes.

Sir Joseph Banks, First Baronet (1743 –1820) A Life in Service to Nature

Joseph Banks first made his name on the natural-history expedition to Newfoundland and Labrador in 1766. He then traveled on Captain James Cook's first great voyage in 1768-1771 to Brazil, Tahiti, New Zealand and Australia. Mr. Banks has been attributed with introducing Breadfruit (*Artocarpus altilis*) to Jamaica in the Caribbean from Tahiti. He held the position of president of the Royal Society for over four-and-a-half years, during which he advised King George III on the Kew Royal Botanic Gardens and sent botanists around the world to collect plants to make Kew the world's leading botanical gardens. Mr. Banks is credited for bringing 30,000 plant specimens home to England, of which approximately 1,400 were new discoveries. He was a naturalist, botanist and patron of the natural sciences.



Portrait of Joseph Banks (1773) by Benjamin West

Wikipedia has an extensive history of Sir Joseph Banks' life and accomplishment. There is also a new book entitled "The Multifarious Mr. Banks" by Toby Musgrave, Yale Press, which plant enthusiasts may find fascinating and enjoyable to read.



Bonita Springs Tropical Fruit Club



Who We Are & What We Do

The Bonita Springs Tropical Fruit Club, Inc., is an educational not-for-profit organization whose purpose is to inform, educate and advise members and the public in the selection of plants and trees, to encourage their cultivation, and to provide a social forum where members can freely exchange plant material and information. The club cooperates with many organizations, and provides a basis for producing new cultivars. We function in any legal manner to further the above stated aims.

General Meeting:

General meeting, that include an educational program, are held the *second Tuesday* of each month. General meetings begin at **6:15 pm for social time**, and the **speakers begin promptly at 7 pm.**, at the Revive Wellness Center, **3521 Bonita Bay Blvd.**, Bonita Springs.

Workshops:

Workshops (monthly discussions) are held on the *fourth Tuesday* of each month at **7 PM** at the Revive Magazine, when practical. This open format encourages discussion and sharing of fruits and information. Bring in your fruits, plants, seeds, leaves, insects, photos, recipes, ect.. This is a great chance to get answers to specific questions, and there always seems to be a local expert on hand!

Tree Sales:

Semi-annual tree sales in SEPTEMBER and November, in the Bonita Springs area, raise revenue for educational programs for club members and other related purposes of the club.

Trips:

The club occasionally organizes trips and tours of other organizations that share our interests. The IFAS Experimental Station and the Fairchild Nursery Farm are examples of our recent excursions.

Membership:

Dues are \$15 per person for new members, and \$25 per household. Name tags are \$6 each. Send checks to: PO Box 367791, Bonita Springs, FL 34136, or bring to any regularly scheduled meeting.



Bonita Springs Tropical Fruit Club



Feel free to join BSTFC on **our Facebook group**, where you can post pictures of your plants, ask advice, and find out about upcoming events!

<https://www.facebook.com/groups/BSTFC/>

Link to the **next meeting**: <https://www.facebook.com/groups/BSTFC/events/>
Meetup Link (events/meetings sync with the calendar on your phone!):

<https://www.meetup.com/Bonita-Springs-Tropical-Fruit-Club/>

Our **Website** (and newsletters with tons of info):
<https://www.BonitaSpringsTropicalFruitClub.com/>

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Jorge Sanchez, President
Luis Garrido, Vice President
Dwain Kiddo, Treasurer
Talitha DeLuco, Secretary
Crafton Clift, Director
Lisa Mesmer, Director
George Kaladiny, Director



Like Us on Facebook! <https://www.facebook.com/groups/BSTFC/>

The Collier Fruit Growers Inc. (CFG) is an active organization dedicated to inform, educate and advise its members as well as the public, as to the propagation of the many varieties of fruits that can be grown in Collier County. The CFG is also actively engaged in the distribution of the many commonly grown fruits, as well as the rare tropical and subtropical fruits grown throughout the world. CFG encourages its members to extend their cultivation by providing a basis for researching and producing new cultivars and hybrids, whenever possible. CFG functions without regard to race, color or national origin.

REMEMBER TO RENEW YOUR MEMBERSHIP!

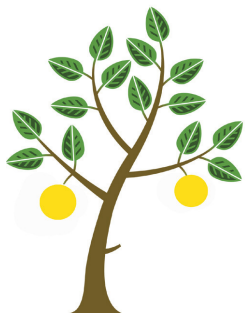
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VISIT US AT:
www.collierfruit.org



Like Us on Facebook! <https://www.facebook.com/CollierFruitGrowers/>

The Collier Fruit Growers monthly meetings are now broadcast live on Facebook at 7:30 pm on the third Tuesday of each month. The meetings are posted on the 'Collier Fruit Growers Group's Facebook page. Access the page by requesting to be a Member.