



Tropical Fruits

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<http://simonneusdatstar.ifas.ufl.edu/images/tro1/523.JPG>

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Tropical Fruits Include

- Acerola



http://www.lookfeelproducts.com/eshop/images/snorin/sn_acerola.jpg

- Banana



<http://www.viaki.com/images/banana.jpg>

- Breadfruit



<http://www.orecity.k12.or.us/classlink/du nn/travel/trip/7macnut/6breadfruit.jpg>



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Tropical Fruits Include

- Carambola



- Durian



<http://www.timwu.org/durian.JPG>

- Guava



<http://www.tcsiam.com/tcsiam/images/Guava%20big.jpg>

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Tropical Fruits Include

- Jackfruit



- Mango



<http://www.globalgourmet.com/food/kgk/2004/0904/mango.jpg>

- Mangosteen



http://www.alternative-health-supplements.com/images/mangosteen_fruit_juice.jpg

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Tropical Fruits Include

- Papaya

- Passion fruit



<http://www.wegmans.com/kitchen/ingredients/produce/fruit/images/passionfruit.jpg>



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Tropical Fruits Include

- Pineapple

- Prickly pear

- Rambutan



<http://ronslog.typepad.com/photos/genl/pricklypear2.jpg>



<http://jonathanyee.com/kahaluu/rambutan.jpg>

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Tropical Fruits Include

- Sapodilla



- Soursop



- Sweetsop



<http://toptropicals.com/pics/garden/2004/9/9919s.jpg>

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Class	(mg CO ₂ /kg-hr) at 5 °C (41 °F)	Commodities
Very Low	< 5	Dates, dried fruits and vegetables, nuts
Low	5 - 10	Apple, beet, celery, citrus fruits, cranberry, garlic, grape, honeydew melon, kiwifruit, onion, papaya , persimmon, pineapple , potato (mature), sweet potato, watermelon
Moderate	10 - 20	Apricot, banana , blueberry, cabbage, cantaloupe, carrot (topped), celeriac, cherry, cucumber, fig, gooseberry, lettuce (head), mango , nectarine, olive, peach, pear, plum, potato (immature), radish (topped), summer squash, tomato
High	20 - 40	Avocado, blackberry, carrot (with tops), cauliflower, leeks, lettuce (leaf), lima bean, radish (with tops), raspberry
Very High	40 - 60	Artichoke, bean sprouts, broccoli, Brussels sprouts, cut flowers, endive, green onions, kale, okra, snap bean, watercress, cherimoya, passion fruit
Extremely High	> 60	Asparagus, mushroom, parsley, peas, spinach, sweet corn



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■ ■ ■ Ripening Patterns

- Climacteric:
 - Banana, Breadfruit, Carambola, Guava, Jackfruit, Mango, Papaya, Passion fruit, Rambutan, Sapodilla, Sapote
- Non-climacteric:
 - Caramola, Pineapple



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■ ■ ■ Compositional Characteristics

- In the tropics, these fruit are an important source of nutrients
- **Starch**: Bananas and Breadfruit
- **Vitamin C** (ascorbic acid):
 - Acerola has the highest levels of any know fruit (1000-3300 mg/100g fresh wt)
 - Guava, Papaya, and passion fruit are also good sources
- **Vitamin A**:
 - Mango and Papaya are good sources



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Compositional Characteristics

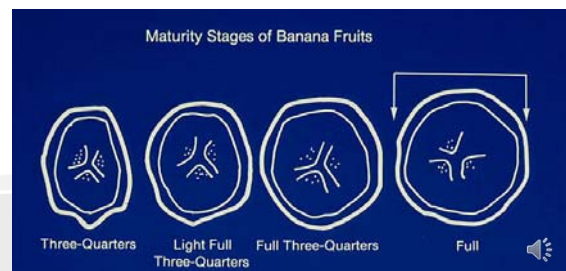
- **Niacin and Thiamin:**
 - Breadfruit have high amounts
- **Minerals** (esp. potassium and iron) are usually high in most tropical fruits
- Many tropical fruits have large seeds and inedible skins or rinds
 - **Less edible portions** (e.g. 25 to >40% inedible) compared to most temperate-zone fruits (~2 to 15%)



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Maturity & Quality Standards

- Includes:
 - **Internal quality** attributes (sugars, acids, ratio, etc.)
 - Banana: Pulp/peel ratio
 - **Exterior attributes** (color, shape, size, freedom from defects, etc.)
 - Banana: Fullness of fingers (disappearance of angularity)
 - **Days after fruit set** (banana)



http://postharvest.ucdavis.edu/Produce/ProduceFacts/Fruit/banana_maturitystages.jpg

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Optimum Temp & RH

- **Chilling injury** limits the ability to store or market these fruit over long distances



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Commodity	Optimum Temperature (in °F & °C)		Opt. RH
Atemoya	55°F	13°C	85-90%RH
Banana	56-58°F	13-14°C	90-95%RH
Black sapote	55-60°F	13-16°C	85-90%RH
Breadfruit	55-60°F	13-16°C	85-90%RH
Cherimoya	55°F	13°C	85-90%RH
Durian	39-43°F	4-6°C	85-90%RH
Jaboticaba	55-60°F	13-16°C	90-95%RH
Jackfruit	55°F	13°C	85-90%RH
Longan	35°F	2°C	90-95%RH
Lychee	35°F	2°C	90-95%RH
Mamey	55-60°F	13-16°C	90-95%RH
Mango	55°F	13°C	85-90%RH
Mangosteen	55°F	13°C	85-90%RH
Passion Fruit	45-50°F	7-10°C	95%RH
Papaya	45-55°F	7-13°C	85-90%RH
Pineapple	45-55°F	7-13°C	85-95%RH
Rambutan	54°F	12°C	90-95%RH
Sapodilla	61-68°F	16-20°C	85-90%RH
Soursop	55°F	13°C	85-90%RH



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Shelf Life

Atemoya	4-6 weeks
Banana	1-4 weeks
Black sapote	2-3 weeks
Breadfruit	2-6 weeks
Durian	6-8 weeks
Jaboticaba	2-3 days
Jackfruit	2-6 weeks
Longan	3-5 weeks
Mamey	2-6 weeks
Mango	2-3 weeks
Mangosteen	2-4 weeks
Papaya	1-3 weeks
Passion Fruit	3-5 weeks
Rambutan	1-3 weeks
Sapodilla	2-3 weeks
Soursop	1-2 weeks

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MA or CA

- 2-5% O₂ and 5-10% CO₂ (MA or CA) or hypobaric storage can:
 - Reduce respiration and ethylene production
 - Reduce sensitivity to ethylene
 - Delay ripening
 - And extend the storage life of tropical fruits by 25 to 100%



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MA or CA

- **Banana:**
 - 2-5% O₂ and 2-5% CO₂
- **Papaya:**
 - 3 to 5% O₂ and 5-8% CO₂
- **Pineapple:**
 - 3 to 5% O₂ and 5-8% CO₂



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Chilling Injury

- Common **symptoms** include surface pitting, discoloration, inhibited or uneven ripening, development of poor or off-flavors, increased decay
- CI of pineapples was called **endogenous brown spot** (EBS):
 - Associated with cool and overcast preharvest conditions



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Decay Control

- **Anthracnose** is a key pathogen for tropical fruits
 - Latent infections occur in immature fruit
- Other important diseases include:
 - Black rot (*Ceratocystis paradoxa*) of banana
 - Black rot (*Thielaviopsis paradoxa*) of pineapple
 - Brown rot (*Penicillium & Fusarium*) of pineapple
 - *Diplodia* stem-end rot on Mango



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Quarantine Treatments

- Fruit grown in tropical areas often must receive a **quarantine treatment** to kill or sterilize invasive insects for importing countries
 - See links for more information on quarantine issues



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