

*The ten most popular tropical-
subtropical fruit trees
for the home landscape*

Jonathan H. Crane,

Tropical Fruit Crop Specialist

University of Florida, IFAS

Tropical Research and Education Center

Homestead

Factors to consider

- Site selection
 - Temperature
 - Soil type, depth, and texture
- Rainfall and access to water
- Plant selection and cultivars
- Planting in the home landscape

Historical maximum low temperatures (1981-1990)

Mo.	<i>J</i>	<i>F</i>	<i>M</i>	<i>A</i>	<i>M</i>	<i>J</i>	<i>J</i>	<i>A</i>	<i>S</i>	<i>O</i>	<i>N</i>	<i>D</i>
1	21	24	29	40	49	53	63	67	57	40	23	18
2	19	28	25	38	48	53	64	64	56	43	29	20
3	27	32	30	43	51	61	66	65	66	46	36	28
4	21	28	32	45	48	57	67	64	65	46	38	23
5	26	30	32	40	49	58	61	66	64	46	34	29
6	30	32	32	46	53	60	69	68	68	51	39	30
7	25	24	25	39	47	56	63	63	61	50	30	26
8	41	46	47	48	64	68	69	68	69	60	49	44

1, Tampa; 2, Orlando; 3, W. Palm Bch; 4, Vero Bch; 5, Ft. Lauderdale;
6, Miami; 7, Homestead and; 8, Key West.

Cold Tolerance

Example of estimated temperatures (°F) for freeze damage or death of non-protected selected tropical fruit crops

Crop	Young trees	Mature trees
Avocado	25-30	
Carambola	27-32	26-28
Lime	25-30	22-30
Longan	28-30	24-28
Lychee	28-32	24-25
Pummelo	<32	

BMP #1 – select a tree species that is adapted to temperatures in your location

Cold Tolerance

Example of estimated temperatures (°F) for freeze damage or death of non-protected selected tropical fruit crops

Crop	Young trees	Mature trees
Jackfruit	<32	
Banana	28 injury, <28 death	
Guava	25-26	27-28
Key lime	<32	
Papaya	<31	
White sapote	24	26

RECOMMENDATION

Site selection - temperature

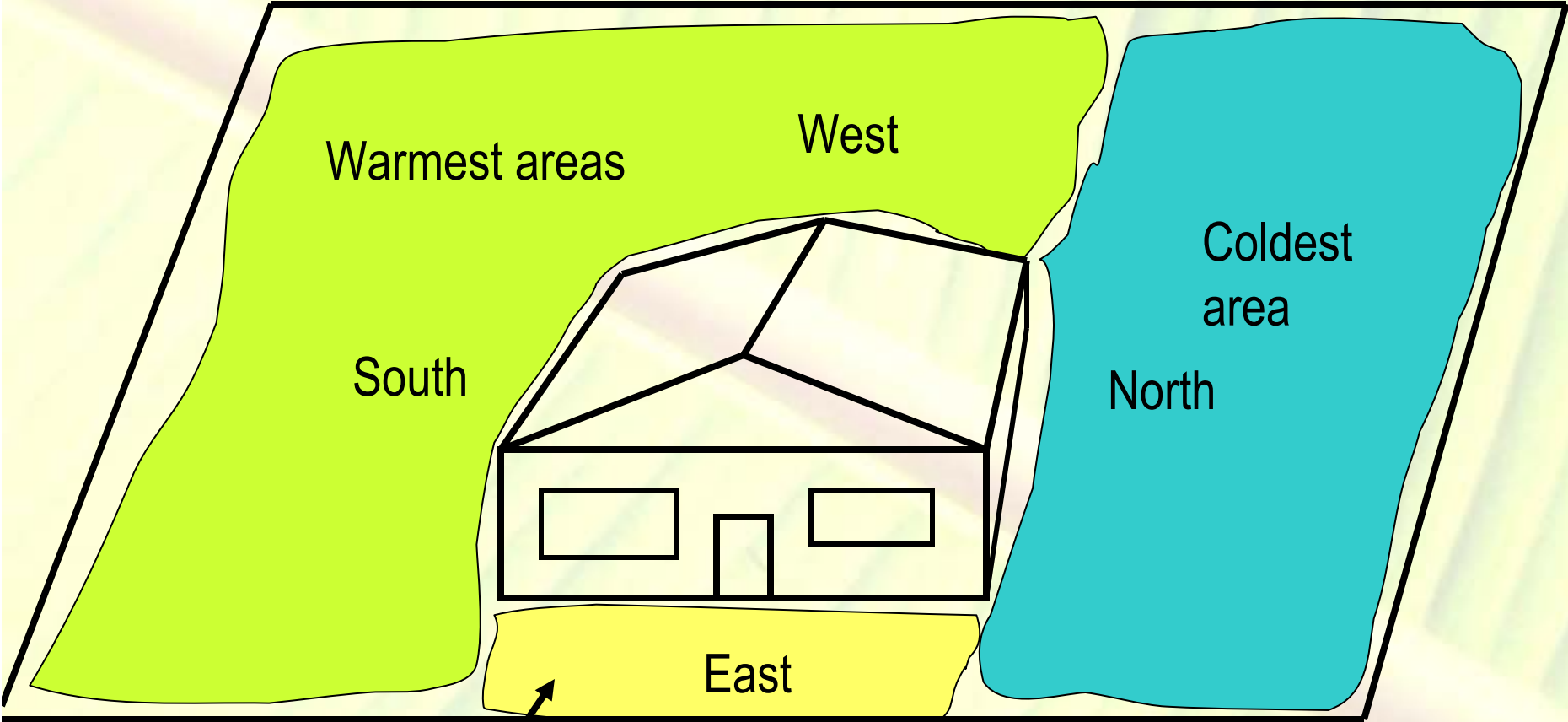
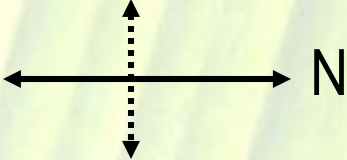
- The best time of year to plant and establish tropical fruit trees in the home landscape is during the spring and summer - air and soil temperatures are warm and it's the rainy season. Trees will establish quickly and easily during this time of year.
- During the fall and winter, cool air and soil temperatures slow establishment (i.e., new root and shoot growth) of newly planted trees. In addition, our fall and winter is the driest time of the year and during the fall and winter young trees are more susceptible to freezing temperature damage.

RECOMMENDATION

Site selection - temperature

- The warmest to coolest sides adjacent to your home are generally the south, west, east, and north.
- The warmest and coolest locations in the landscape are similar.
- In general, the tops of slopes are warmer than the lower areas in your landscape. Note, even a few inches can make a difference.
- Note, areas adjacent to large bodies of water are warmer than in-land areas.

RECOMMENDATION
Site selection - temperature

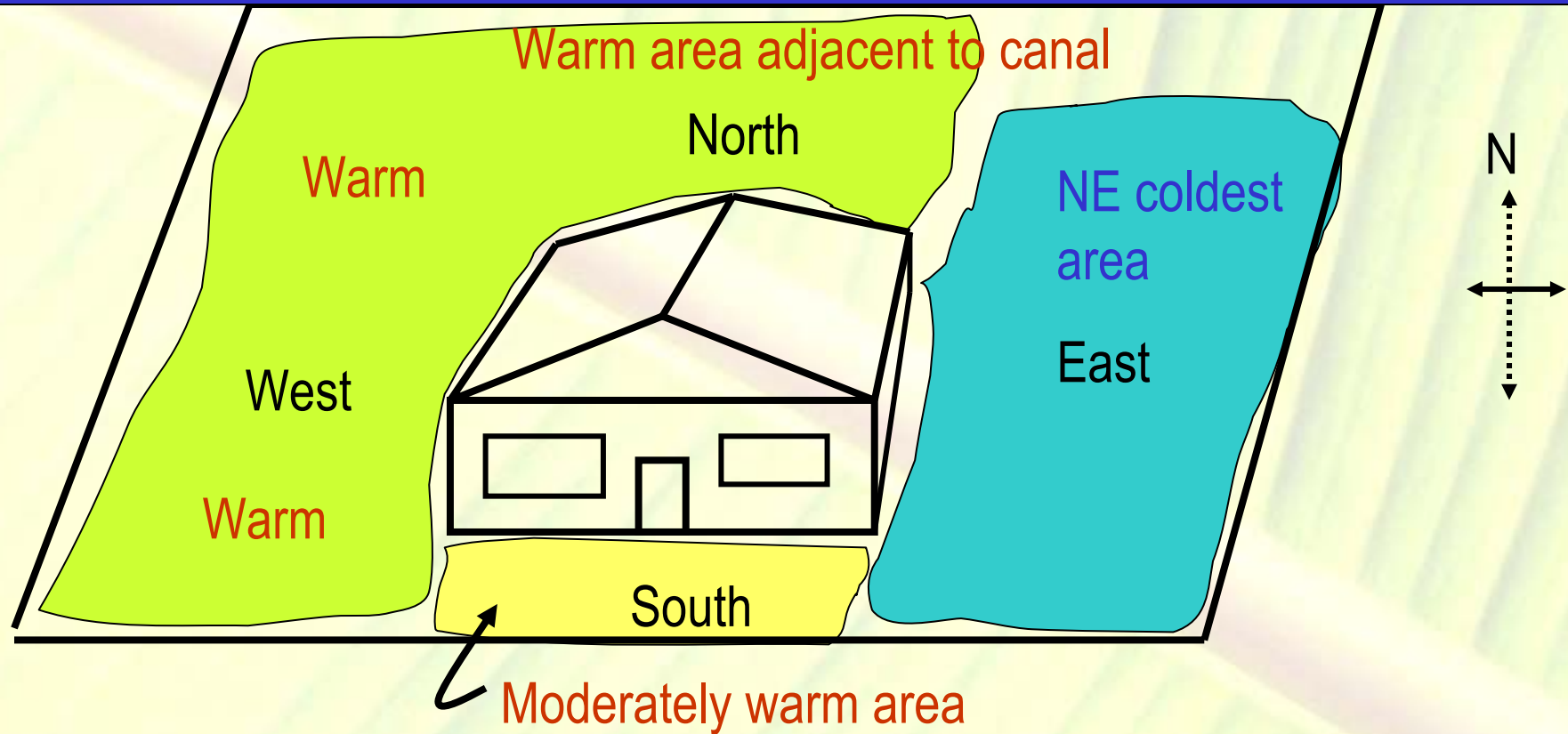


Moderately warm area

RECOMMENDATION

Site selection - temperature

Canal



Site selection - soil type and depth to the water table

- The soil type and depth to the water table is another major deciding environmental.
- Tropical and subtropical fruit crops vary in their tolerance to continuously wet or periodically flooded soils.
- The effect of excessively wet soils on plants depends upon their inherent flood tolerance.

BMP#2 – don't plant in flood-prone areas of the landscape.

Sandy lowland flat-land type soils

- Soils mostly composed of sand.
- Very low organic matter content, low native fertility, low water holding capacity, poorly to well drained depending upon ground water levels, and rainfall intensity.
- Soil pH ranges from acid (pH 4) to neutral (pH 7).
- May require construction of mounds or beds for safely planting tropical and subtropical fruit trees in the home landscape due to the chance of flooding.

Sandy soils underlain by a hardpan

- These may be deep sandy soils or shallow soils with a high water table.
- Generally, the hardpan is from 6 to 36 inches below the soil surface. These soils are characterized by slow or poor drainage; subject to ponding and flooding.
- Generally, these soils have low organic matter content, native fertility, and low water holding capacity.
- These sandy soils may have a high or low soil pH.
- Shallow sandy soils with a hardpan may require construction of mounds or beds for safely planting tropical and subtropical fruit trees in the home landscape.

Urban-fill based soils

- May be composed of sand, silt, muck, and natural and manmade rock fragments of various types trucked in to raise the land surface prior to and/or after home construction.
- The texture, pH, and drainage characteristics of the home yard may vary greatly from place to place depending upon the nature of the fill.
- Take note of areas of the lawn that are healthy, well drained/less well drained, etc. It may take some trial and error to find suitable areas for particular trees because of the variable soil characteristics.
- Construction of large planting holes and mixing of the fill may help reduce soil related problems.

Muck soils

- Composed largely of organic matter with usually less than 35% mineral content.
- High water holding capacity and moderately to poorly drained depending upon the water management in the area.
- The muck layer depth ranges from <20 inches to over 50 inches in depth and is underlain by a limestone bedrock.
- Muck soils are high in nitrogen and require micronutrient applications (i.e., iron, zinc, manganese, copper) to avoid plant nutrient deficiencies.
- Muck soils are at low elevations and may require construction of mounds or beds for safely planting tropical and subtropical fruit trees in the home landscape.

Limestone based soils – rockland

- Limestone based soils are primarily found in Miami-Dade and Monroe Counties and are composed mainly of oolitic limestone (calcium carbonate). In its native state it is a solid but water permeable rock.
- This soil is characterized by very high calcium content, high soil pH (7.5-8.5), low native fertility, and low organic matter content.
- In general, rockland soils are well drained however some areas of the County are subject to flooding depending upon the depth to the water table.
- Rockland soils require micronutrient applications (i.e., iron, zinc, manganese, copper) to avoid plant nutrient deficiencies.

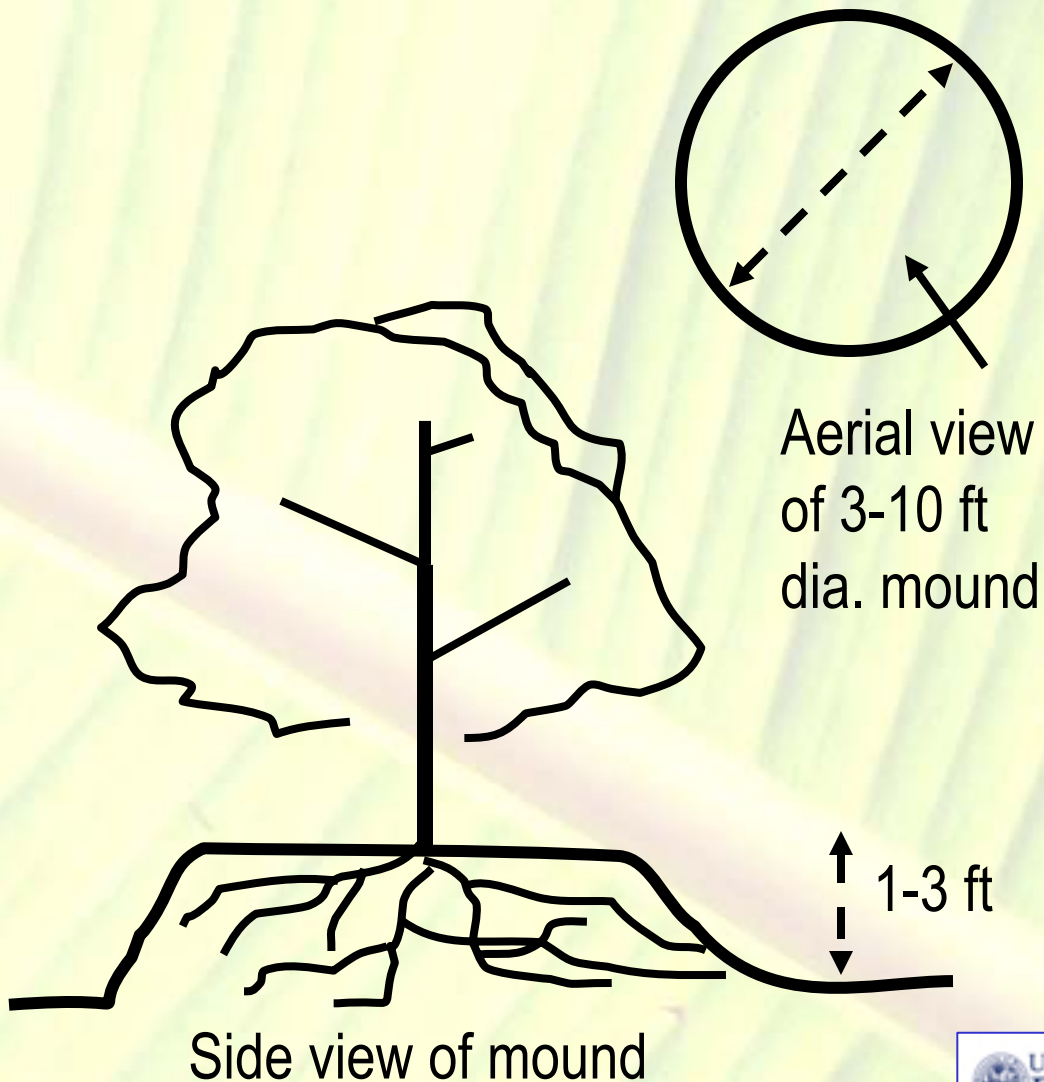
Limestone based soils – marl

- Marl-limestone based soils are primarily found in Miami-Dade County and are composed mainly of oolitic limestone (calcium carbonate). In its native state marl soil has a very powdery and clay-like texture.
- This soil is also characterized by very high calcium content, high soil pH (7.5-8.5), low native fertility, and low organic matter content.
- Marl soils are usually found in low lying areas and in contrast to the rockland soil, marl soil is not well drained and are subject to flooding depending upon the depth to the water table.
- Marl soils require micronutrient applications (i.e., iron, zinc, manganese, copper) to avoid plant nutrient deficiencies.

RECOMMENDATION

Site selection - soils

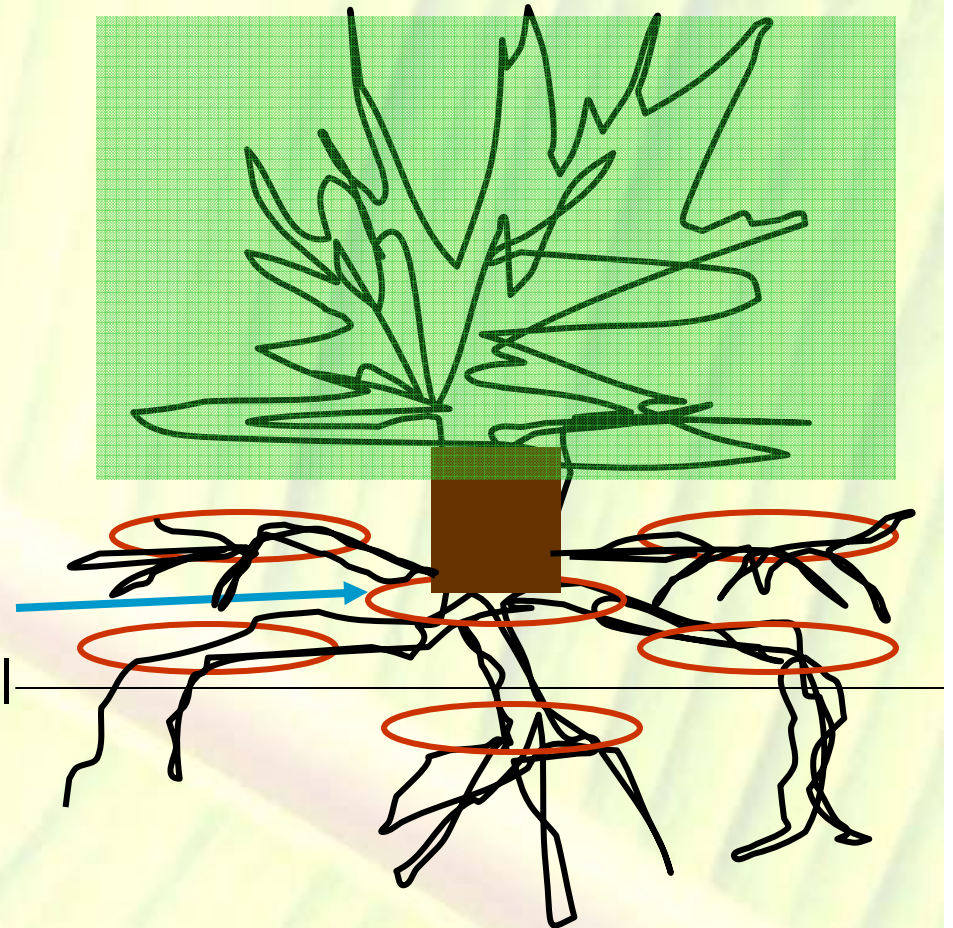
- Select sites in the landscape that do not flood.
- In places that have high water table or periodically flood, plant trees on mounds constructed of native soil. Mounds should be 1-3 ft high and 3-10 ft in diameter.



RECOMMENDATION

Site selection - soils

- On sites that may periodically flood select only flood tolerant fruit species (see fact sheet HS202).
- On sites with a hardpan, if possible dig into or auger planting holes past the hardpan to improve water drainage.
- On sites with rockland or urban fill soil, use an auger or backhoe and have holes 3 or more feet deep and wide constructed. Multiple holes will increase rooting area and tree stability.



Soil depth, drainage, and flood tolerance of tropical fruit crops

Flood tolerance		
Tolerant	Moderately tolerant	Not tolerant
Guava	Banana	Atemoya
Sapodilla	Canistel	Avocado
Caimito	Carambola	Jackfruit
Coconut	Lime	Mamey sapote
Grafted citrus*	Longan	Papaya
	Lychee	Passion fruit
	Mango	Sugar apple

*, Flood tolerance varies with rootstock.

Site selection - rainfall and access to water

- Rainfall is an important source of irrigation water for fruit trees in the home landscape in that:
 - The best time of year to plant fruit trees in the home landscape is during the spring-summer wet season (May-August).
 - Many homeowners forget to water their fruit trees or may not have the capacity to water trees far from the spigots attached to the home.
- Access to good quality well and/or city water is also important for irrigating fruit trees in the home landscape during prolonged dry periods.

BMP#3 – water newly planted trees until they are established and then periodically during prolonged dry conditions. Follow water use restriction rules and regulations.

Further RECOMMENDATIONS

- **BMP#4 - Fertilize trees frequently with small amounts rather than infrequently with large amounts of fertilizer.**
- **BMP#5 – Don't overwater. Overwatering may leach fertilizer into the water table and may lead to root diseases and tree decline.**
- **BMP#6 - Keep water off the leaves when watering as wet/moist leaves may facilitate foliar and fruit diseases.**

Site selection in the home landscape – light exposure and tree spacing

- In general, fruit crops grow and produce best when exposed to full sunlight. Shaded trees tend to be weak growing and less productive.
- The lower limbs of mature trees may be lost if shaded for too many hours of the day, resulting in fruit trees that only have fruit far from the ground.
- The ultimate size of fruit trees varies with species and growing conditions. Some have the potential to grow very large (e.g., mango, avocado, sapodilla), others are inherently smaller (e.g., guava, jaboticaba).

BMP#7 – plant trees in full sun and provide enough space for trees to grow.

Site selection in the home landscape – tree spacing examples

- Avocado, mango, lychee, mamey sapote, and loquat should be planted 30 ft or more from buildings and other trees.
- These trees should be selectively pruned and maintained at a 10-15 foot height, maximum.
- Carambola, sugar apple, atemoya, and guava should be planted 20 ft or more from buildings and other trees and should be selectively pruned and maintained at a 6-12 foot height, maximum.
- Jaboticaba are small bush-like trees and may be planted 10 ft away from buildings and other trees.

BMP#8 – Plant trees away from buildings and electrical wires.

Recommended maintenance tree height (ft) for selected tropical fruit trees in the home landscape

Fruit crop	Maintenance ht (ft)	Fruit crop	Maintenance ht (ft)
Atemoya	6-12	Jackfruit	8-12
Avocado	10-15	Longan	10-15
Black sapote	12-15	Loquat	6-12
Canistel	10-12	Lychee	10-15
Carambola	6-12	Mamey sapote	12-15
Guava	3-10	Mamoncillo	12-15

Recommended maintenance tree height (ft) for selected tropical fruit trees in the home landscape

Fruit crop	Maintenance ht (ft)
Mango	6-15
Sapodilla	12-15
<i>Spondias</i> spp.	8-12
Sugar apple	6-12
White sapote	10-15

Overview of tropical fruit crops for the home landscape

Mango (*Mangifera indica*)

- Limited cold tolerance (25-28°F). Does not acclimate to cold temperatures.
- Does best on well drained soil – plant on mounds if necessary.
- Highly sensitive to salt intrusion/poor quality water.
- Periodic application of micronutrients (manganese, zinc, iron) is important.
- Do not over-water trees especially during the winter. Water trees during extended dry periods only.
- Recommend cultivars include ‘Tommy Atkins’, ‘Keitt’, ‘Kent’, ‘Glenn’, ‘Cogshall’, ‘Irwin’, ‘Carrie’, ‘Fairchild’, ‘Duncan’, ‘Rosigold’, ‘Manilita’, and many others.



'Edward'



'Hayden'



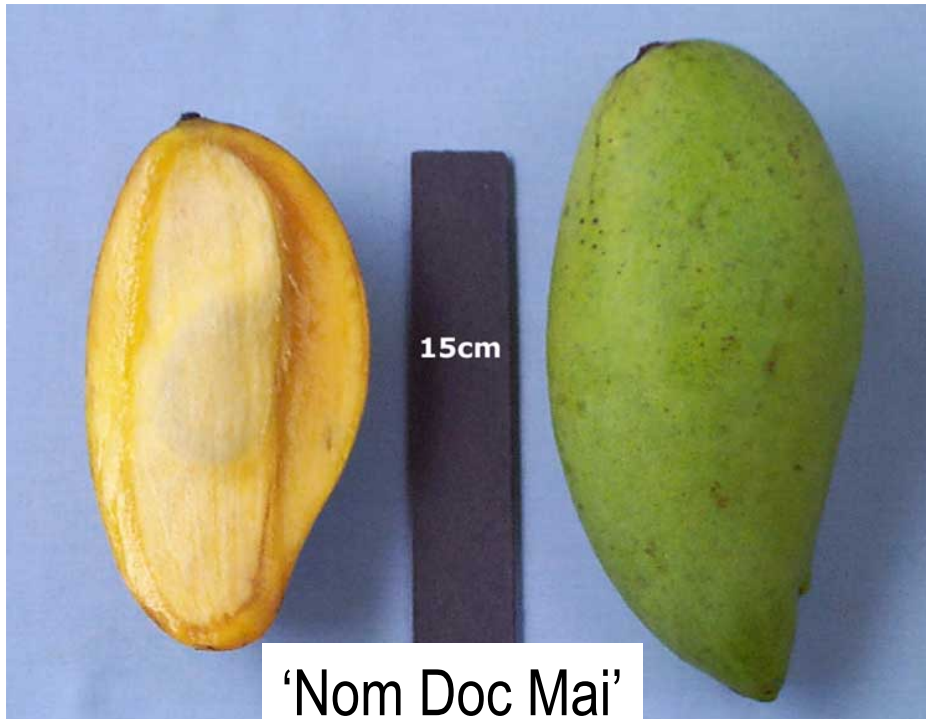
'Glenn'



'Tommy Atkins'

'Keitt'

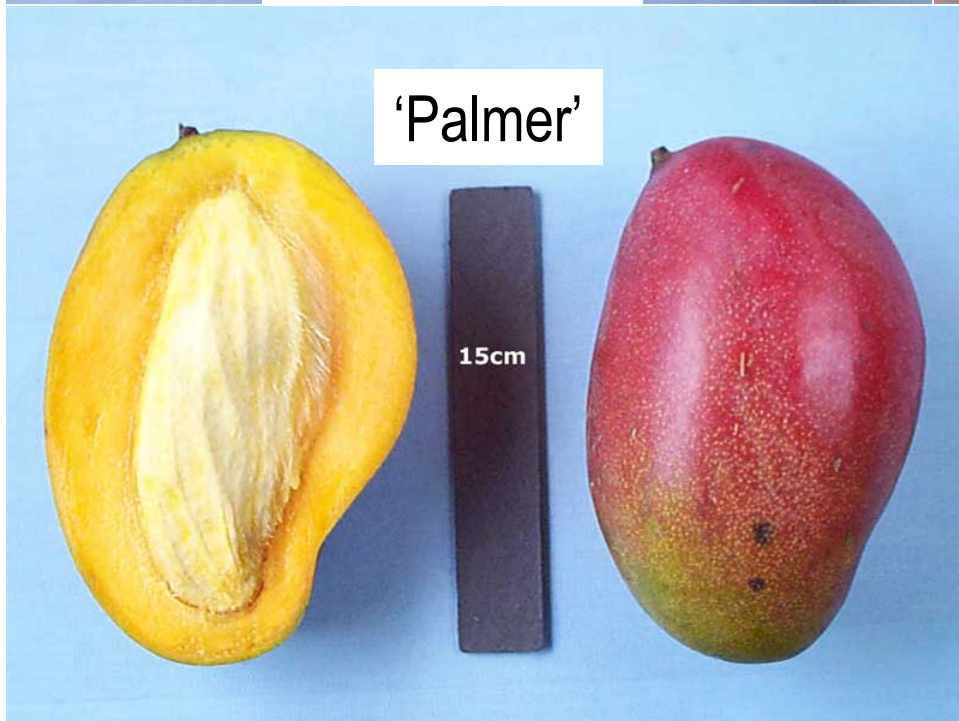




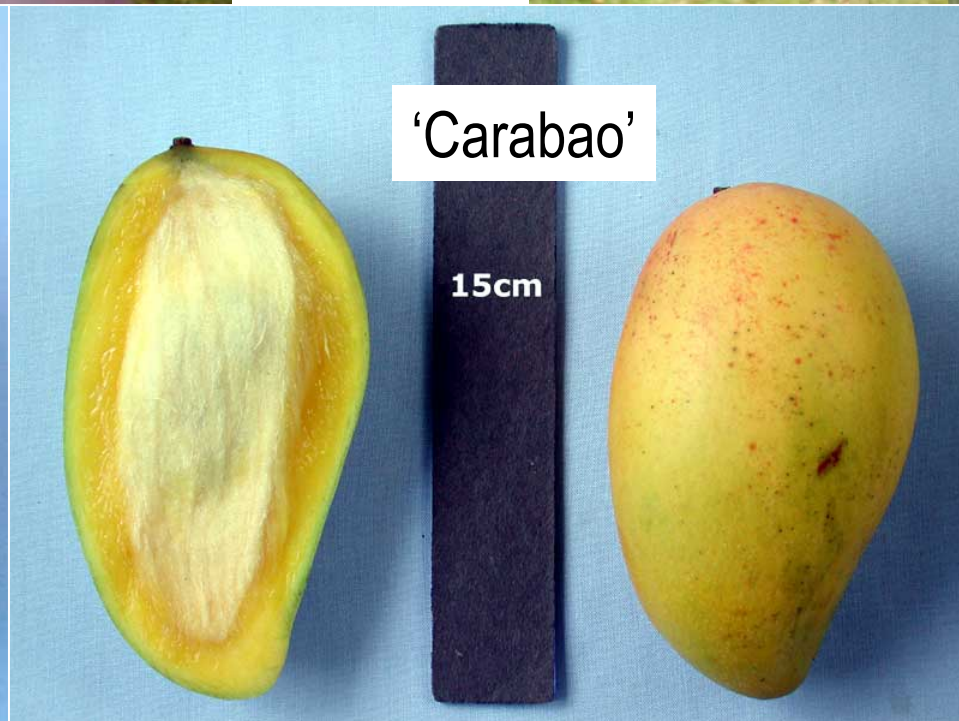
'Nom Doc Mai'



'Sensation'



'Palmer'



'Carabao'



Fairchild

'Carrie'



Avocado (*Persea americana*)

- Requires well drained soil – plant on mounds if necessary.
- There are two types of avocado, A-types and B-types.
- In general avocados need cross pollination with a complimentary cultivar, i.e., A-type and B-type.
- Therefore, you may need to plant two avocado trees near each other for good fruit set. Exceptions are ‘Lula’ and ‘Taylor’.
- However, if neighbors also have avocado trees this may not be necessary.

Avocado (*Persea americana*)

Limited cold tolerance (25-30°F).

- Recommend Guatemalan (G) or G - West Indian hybrids.
- Recommended cultivars include 'Brogdon', 'Brookslate', 'Tonnage', 'Miguel', 'Choquette', 'Monroe', 'Taylor', and 'Hall'.
- Others untested but worth trying include 'Day' and 'Ettinger'.
- Others recommended but hard to find include 'Gainesville', 'Mexicola', and 'Winter Mexican'.



Cold tolerant

'Brogdon'

B-type

'Choquette'



'Tonnage'



'Hall'



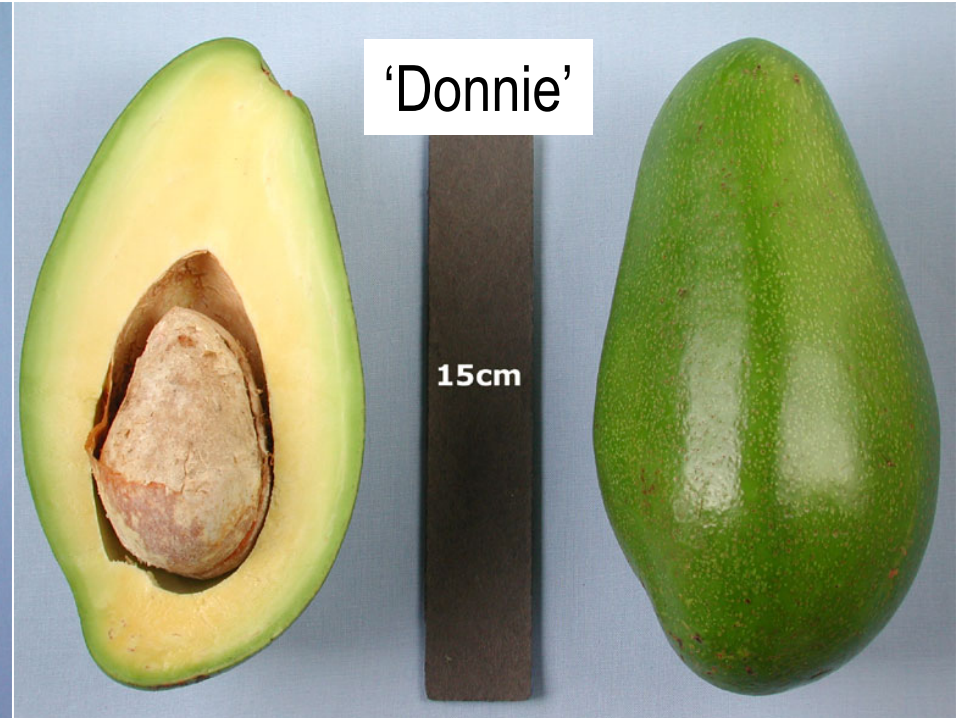
'Monroe'



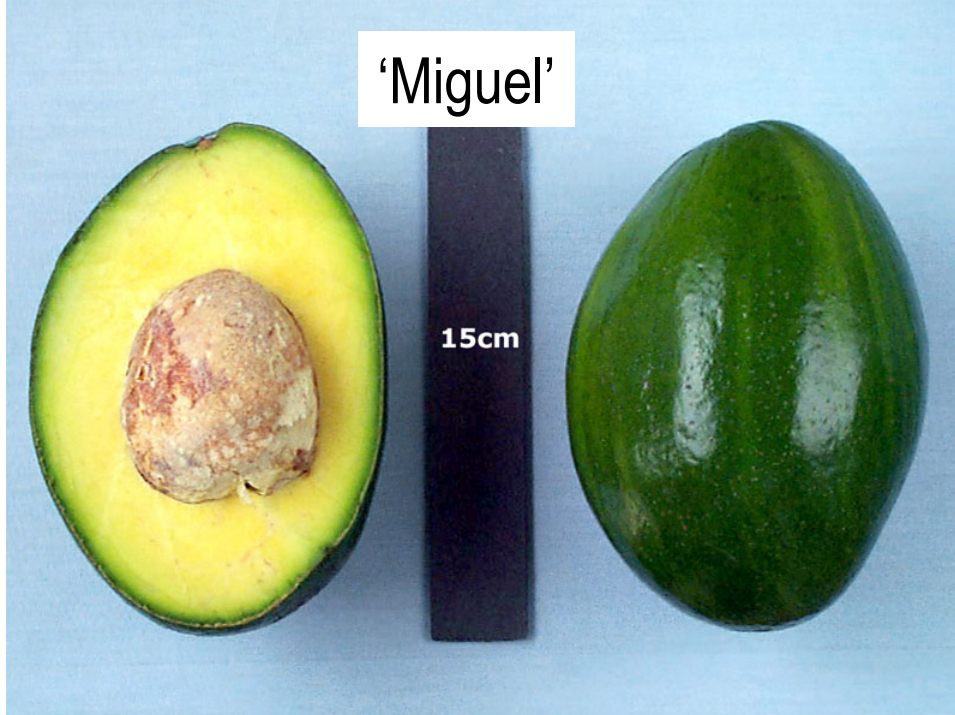
'Russell'



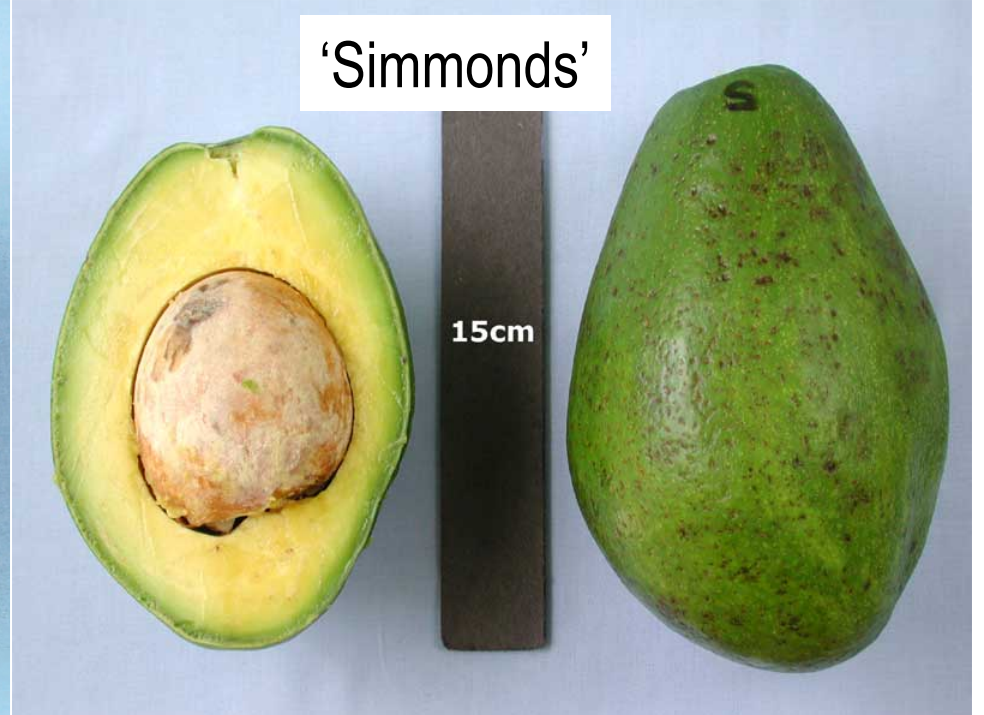
'Donnie'



'Miguel'



'Simmonds'



Lychee (*Litchi chinensis*)

- Limited cold tolerance – (24-25°F).
- Requires well drained soil – plant on mounds if necessary.
- Unreliable bearing is a problem with all lychee cultivars.
- Requires a cool period in the late fall/winter for good flowering in the spring.
- Do not apply nitrogen containing fertilizers from Sept.-March.
- Irrigate well from March through Aug., then cut back or stop watering from Nov.-Feb.
- Numerous cultivars to choose from, however, 'Mauritius' is more reliable bearing than others.



‘Mauritius’

'Brewster'





'Bosworth 3'
('Kwai May Pink')



'Hak Ip'
(‘Black Leaf’)

Banana (*Musa* sp. and hybrids)

- Three groups of bananas
 - sweet bananas eaten fresh (dessert), starchy cooking bananas and plantains.
- There are numerous clones/cultivars of banana and multiple names for the same clone is common.
- Plant growth slows below 60°F and stops below 50°F.
- Symptoms of chilling injury (caused by below 60°F but above 32°F) symptoms include choking, dull yellow or greenish-gray color to fruit and increased fruit rots.

Banana (*Musa* sp. and hybrids)

- The psuedostem (above ground stems) may be killed by freezing temperatures, however, the plant will generally regrow from the rhizome (underground stem).
- Plant in full sunlight (best), in well-drained areas only and wind protection is beneficial.
- Major disease problems include Panama disease (attacks roots) and black sigatoka (attacks leaves).
- Major insect problems include the banana weevil (attacks corm).
- Burrowing and spiral nematodes may also be major problems (attacks roots).

'FHIA01' also called
'Goldfinger'





'FHIA02' also called 'Mona Lisa'



'Praying Hands'



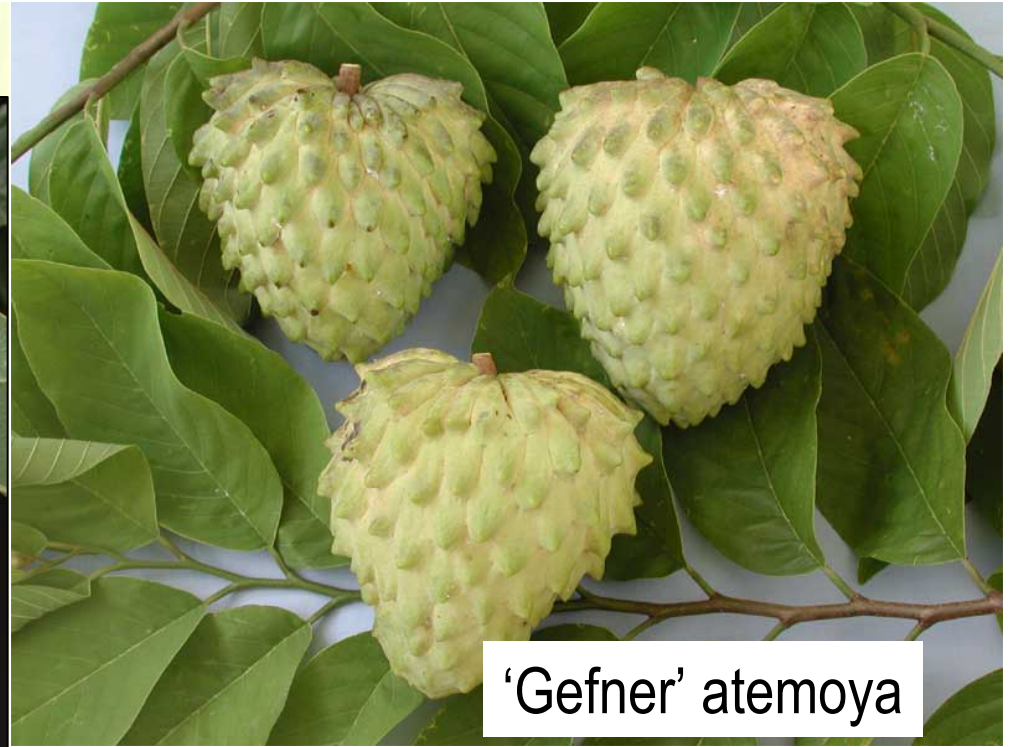
'Jamaican Red'

Sugar apple (*Annona squamosa*) and atemoya (*A. cherimola* x *A. squamosa*)

- Limited cold tolerance (<32°F).
- Plant only in well drained soils.
- Periodic application of micronutrients (manganese, zinc, iron) is important.
- Easily pruned to maintain small stature.
- Recommend cultivars include 'Red' and 'Lessard Thai' sugar apple and 'Gefner' atemoya.



'Red' sugar apple



'Gefner' atemoya



'Lessard Thai' sugar apple

Jackfruit (*Artocarpus heterophyllus*)

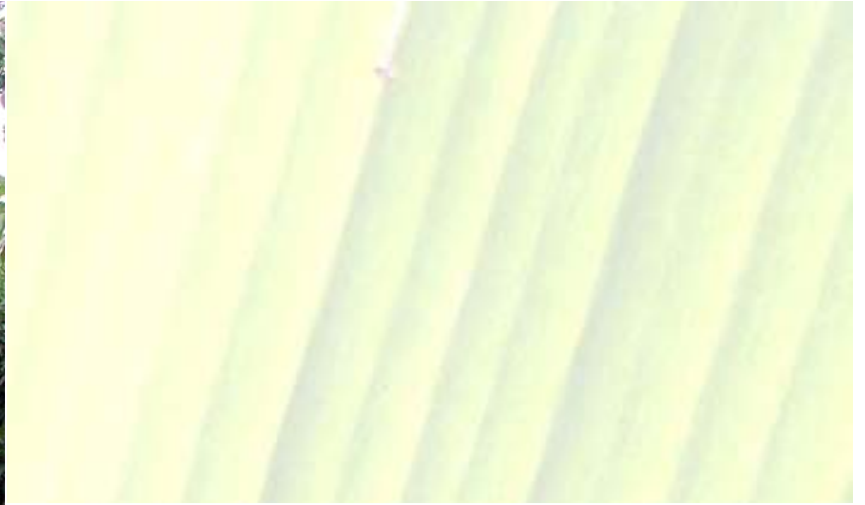
- Limited cold tolerance (<32°F for leaves; ≤28°F whole tree).
- Plant only in well drained soils.
- Periodic application of micronutrients (manganese, zinc, iron) is important.
- Easily pruned to maintain small stature.
- Recommend cultivars include 'Dang Rasimi', 'Honey Gold', 'Cheena', and 'NS-1'.

Jackfruit



Longan (*Dimocarpus longan*)

- Limited cold tolerance – (28-30°F).
- Requires well drained soil – plant on mounds if necessary.
- Unreliable bearing is a problem with all longan cultivars.
- Requires a cool period in the late fall/winter for good flowering in the spring.
- Do not apply nitrogen containing fertilizers from Sept.-March.
- Irrigate well from March through Aug., then cut back or stop watering from Nov.-Feb.
- A number of cultivars to choose from: 'Kohala', 'Degelman', 'Edau', and others.

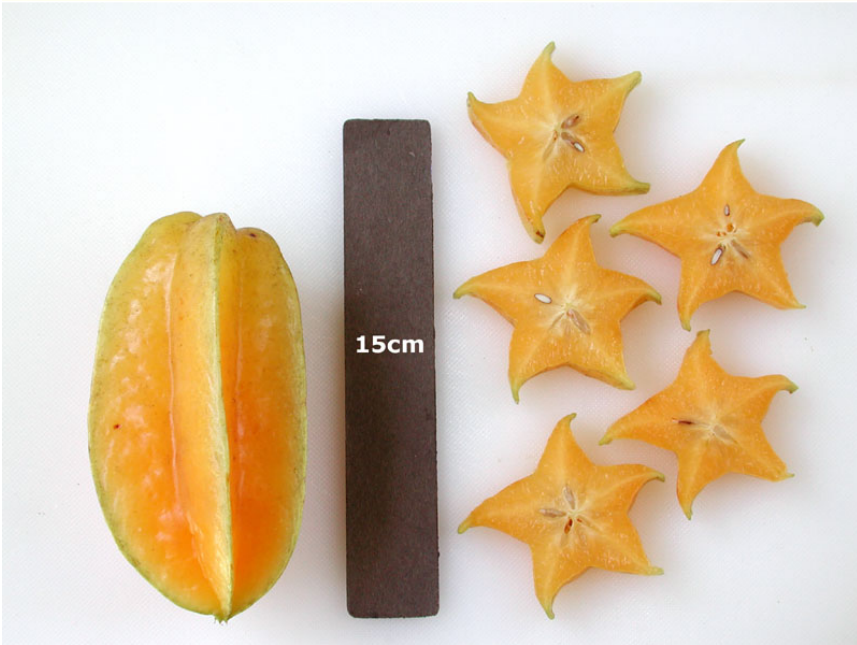


'Kohala'

Carambola (*Averrhoa carambola*)

- Limited cold tolerance – (26-28°F).
- Requires well drained soil – plant on mounds if necessary.
- Highly sensitive to wind – plant only in a wind protected area of the landscape.
- Moderately shade tolerant and may be planted in areas of light shade.
- Requires frequent light applications of fertilizers.
- Iron should be applied in chelated form 2-4 times during the warm part of the year.
- Recommended trees are mulched with 4-6 inches of clean organic matter (6" away from trunk).
- Water trees well during dry periods.

'Arkin'





'Kary'



'Lara'





'Fwang Tung'



'B-10'

Papaya (*Carica papaya*)

- Not cold tolerant (~31-32°F).
- Not salt and flood tolerant.
- Fast growing, plant seeds in Dec., plant seedling in March, harvest in Sept.-Oct.
- Numerous cultivars but most not available to home owners.
- Take seed from fruit, clean, dry, plant in artificial media, when seedlings 8 –12 inches high, plant.
- Plant at least 3 plants (8-12 ft apart).



Bisexual plant

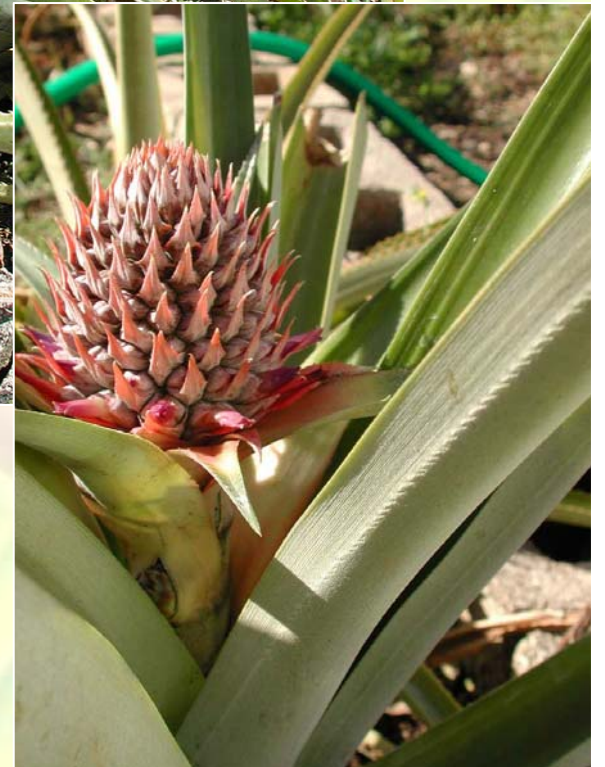
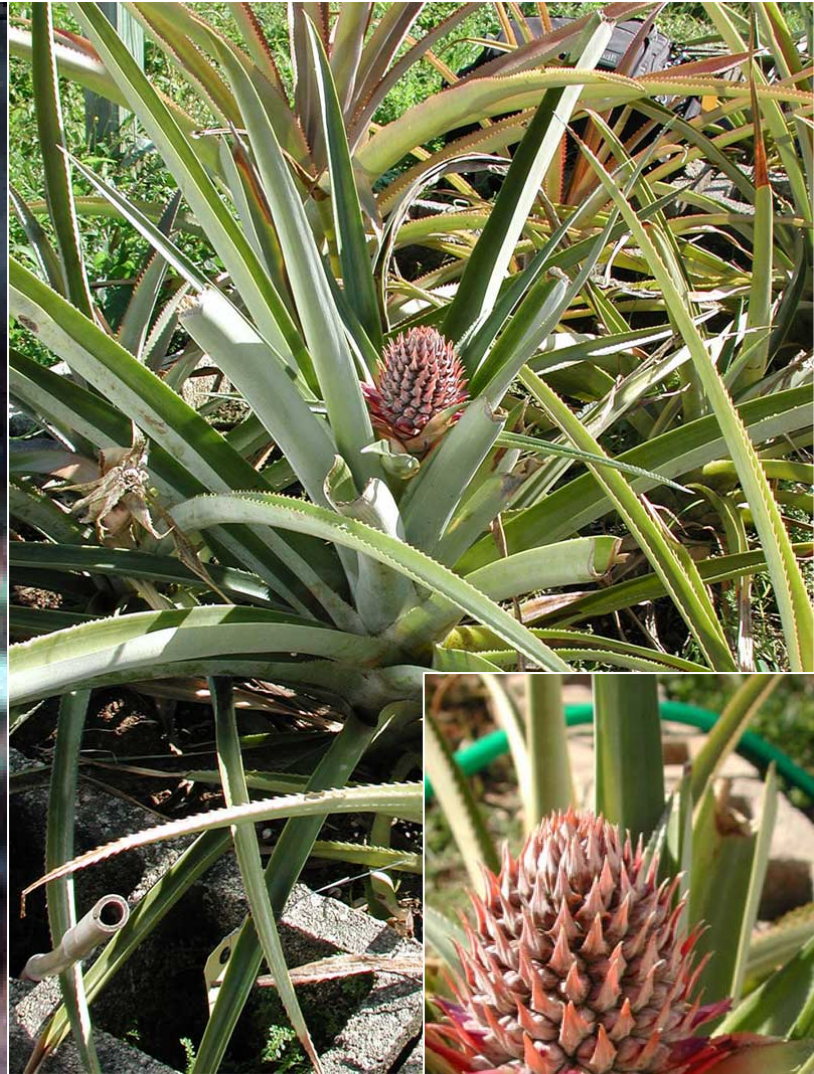


Male plant

Pineapple (*Ananas comosus*)

- Limited cold tolerance (to ~28°F); prolonged exposure to temperatures in the low 40s results in internal breakdown of the fruit; extreme high temperatures may cause sunburn.
- Requires well drained soils.
- Fruit take 8-12 months to mature from planting.
- Flowering can be induced by applying 1/16th teaspoon of calcium carbide to the crown.
- Mealy bug is a major insect pest. Nematodes may also be a problem – so use clean material.

'Smooth Cayenne'



Photo, USDA-ARS, HI

Sapodilla (*Manilkara zapota*)*

- Limited cold tolerance (26-32°F).
- Moderately tolerant of flooded/wet soil conditions.
- Moderately tolerance of salt spray and saline soil/water conditions.
- No major nutrient problems although iron should be applied regularly in calcareous soils.
- Some cultivars appear more susceptible to Caribbean fruit fly than others.
- No major diseases.
- Fruit available Feb. – June.
- *, considered invasive and not recommended for planting in south Florida



Tikal



Hasya

Guava (*Psidium guajava*)*

- Limited cold tolerance (25-28°F).
- Moderately tolerant of flooded/wet soil conditions.
- Moderately tolerance of salt spray and saline soil/water conditions.
- Iron should be applied regularly in calcareous soils.
- Some cultivars appear more susceptible to Caribbean fruit fly than others.
- Red algae and anthracnose diseases.
- Fruit available Aug.-Oct. + Feb.-March.
- *, considered invasive and not recommended for planting in south Florida

Thai white guava
(green crunchy)



'Lara' pink guava
(ripe, soft)

Loquat (*Eriobotrya japonica*)

- Well adapted to most soil types; requires well-drained soils.
- Very tolerant of limited fertilizer and watering regime (although will benefit from irrigation during flowering and fruiting).
- Very cold tolerant tree (to 10°F), fruit to 27-28°F.
- Major problems include loss of crop due to severe freezing, Caribbean fruit fly, and fire blight.
- Recommend planting in warm site, paper bag fruit when small, and remove and destroy fire-blight infected wood.
- Numerous cultivars to choose from.

'Thales'



2 cm

7

'Advance'



2 cm



2 cm

11

'Wolfe'

'Champagne'



Jaboticaba (*Myrciaria cauliflora*)

- Small, bush-like tree that may have 4-6 crops per year.
- Limited cold tolerance (27-29°F).
- Trees propagated by seed, may take up to 8 years to flower and fruit.
- Grows best in well drained, fertile, slightly acid soils (pH 5-7).
- Benefits from light mulching around the tree (keep it away from the tree trunk).



Photos, JH Crane

Jaboticaba



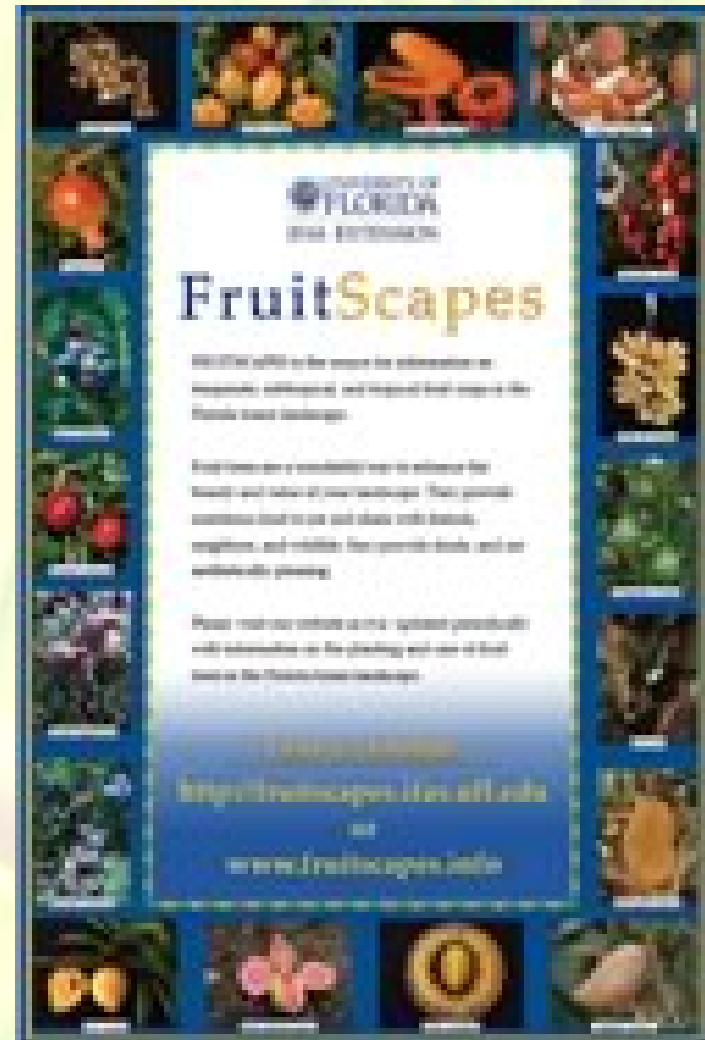
For self-improvement and Master Gardener training

- There are 15 tropical fruit crop PowerPoint presentations on the UF Presentations website at <http://presentations.ifas.ufl.edu/> (requires UF gatorlink username and password).
- These presentations may be used for self-improvement, Master Gardener Training, reference, or individual workshops.

FruitScapes

Your source for temperate, subtropical and tropical fruit tree growing in the home landscape.

- <http://fruitscapes.ifas.ufl.edu>
or
- <http://fruitscapes.info>



For more information

- UF-IFAS publications web site:
<http://edis.ifas.ufl.edu>
- UF-TREC *FruitScapes* web site:
<http://fruitscapes.ifas.ufl.edu> or
www.fruitscapes.info
- UF-TREC: <http://trec.ifas.ufl.edu>
- Fla. State Hort. Soc.: www.fshs.org

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