Potential of selected subtropical and tropical fruits for Florida

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Key factors for tropical and subtropical fruit production

- **Tropical**: warm to hot temperatures year-round for most crops
- **Subtropical**: may require or benefit from cold non-freezing temperatures
- **Site selection**: none to infrequent freezing temperatures is best
  - **Micro-climates**
  - **Nearness to water**
  - **Cold protection possibilities – protected agriculture**
- **Well drained soils and/or well formed beds and drainage system**
- **Tree size management to minimize tropical storm or hurricane damage**
  - **Preparedness for hurricanes**
  - **Preparedness for flooding and/or continuous saturated soil conditions**
<table>
<thead>
<tr>
<th>Common name</th>
<th>Temperature (F°)</th>
<th>Common name</th>
<th>Temperature (F°)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atemoya/sugar apple</td>
<td>M, 28-29/32; Y, 30/32</td>
<td>Mamey sapote</td>
<td>M, 28; Y, &lt;32</td>
</tr>
<tr>
<td>Banana</td>
<td>&lt;28</td>
<td>Olive</td>
<td>~12 (28 fruit)</td>
</tr>
<tr>
<td>Canistel</td>
<td>M, 23; Y, 29</td>
<td>Papaya</td>
<td>&lt;30</td>
</tr>
<tr>
<td>Carambola</td>
<td>M, 26-28; Y, 27-32</td>
<td>Passion fruit</td>
<td>&lt;32</td>
</tr>
<tr>
<td>Guava</td>
<td>M, 25-26; Y 27-28</td>
<td>Pitaya</td>
<td>~31?</td>
</tr>
<tr>
<td>Jackfruit</td>
<td>&lt;32</td>
<td>Pomegranate</td>
<td>~10-15</td>
</tr>
<tr>
<td>Jujube (Chinese/Indian)</td>
<td>-28 to 10</td>
<td>Sapodilla</td>
<td>M, 26; Y 30-32</td>
</tr>
<tr>
<td>Kumquat</td>
<td>&lt;18</td>
<td>Spondias</td>
<td>&lt;30</td>
</tr>
<tr>
<td>Longan</td>
<td>M, 24-28; Y, 28-30</td>
<td>Tamarind</td>
<td>~24</td>
</tr>
<tr>
<td>Loquat</td>
<td>Dormant 10, fruit &lt;27-28</td>
<td>Wax jambu</td>
<td>&lt;32</td>
</tr>
<tr>
<td>Lychee</td>
<td>M, 24-25; Y, 28-32</td>
<td>White sapote</td>
<td>M, 24; Y, 26</td>
</tr>
</tbody>
</table>

*W=West Indian; G=Guatemalan race; M=Mexican race; M=mature; Y=young

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Cold temperature tolerance – the temperature at which damage or death may occur

- Genetics
- Site selection
- Preparation
- Phenology
Avocado (Guatemalan, Mexican and GxM hybrids) ~6,400 acres

Attributes
- Some cultivars tolerate temperatures down to mid-20s
- May be pruned to maintain small stature, <15 ft tall
- Good market demand (consumption increasing)

Issues
- Freeze damage
- Must be grown in well-drained soil (phytophthora root rot)
- Laurel wilt an insect-disease complex that kills trees
  - Race/cultivar differences
  - Ambrosia beetle vectors
  - Tree size, root grafting, effect of light regime

‘Carmen Hass’
Phytophthora root rot and laurel wilt

Laurel Wilt

- Wilting
- Sawdust tubes
- Brown leaves
- Dead canopy
- Dark streaks in sapwood

Phytophthora root rot
**Lychee (Litchi chinensis)**

**Attributes**
- Cold tolerance to ~24-25°F
- Excellent fruit
- Numerous cultivars and potential niche markets

**Issues**
- Unreliable cropping
- Some insect and disease problems
  - Lychee erinose mite
- Off-shore competition

~700 acres
Longan (*Dimocarpus longan*)

Attributes

- Cold tolerance to 26-28°F
- Off-season fruit production possible
- A number of cultivars to choose from – potential niches

Problems

- Unreliable “natural” cropping
  - However, may be induced to flower
- Some insect pests
- Off-shore competition is increasing

~1,368 acres
Mango (Mangifera indica)

Attributes
• Large number of cultivars
• Diverse niche market (increasing)
• Cold tolerance to 25-30°F

Issues
• Potential freeze – damage, death
• Fruit disease issues
  • Anthracnose
  • Bacterial black spot
• Off-shore competition

~1,351 acres
**Pitaya (Hylocereus udatus and others)**

**Attributes**
- Can be an excellent fruit
- Numerous cultivars

**Issues**
- Needs trellis system
- Some pollination issues
- Some disease and insect problems
- Off-shore competition increasing
- Relatively new – so new issues may emerge

~721 acres
Guava (*Psidium guajava*)

**Attributes**
- Tolerates to ~25-26°F
- Numerous cultivars for specialty markets (green-hard, green-soft, ripe, pink/white)
- Tree easily kept small
- Long harvest season

**Issues**
- Caribbean fruit fly
- Some potential insect and disease problems
- Considered invasive in some areas
- May be labor intensive
  - Bagging
  - Constant spraying

~714 acres

‘Homestead’ (Ruby x Supreme)
Jujube (Indian – Syzygium mauritania/Chinese – Z. jujube)

Attributes

• Cold tolerance to 10 °F (Indian)/-28°F (Chinese)
• October to mid-March
• A number of cultivars to choose from – potential niches

Problems

• Fruit splitting/cracking
• Minor market
• No major insect or disease issues at present
Finger limes (*Microcitrus australiasica*)

**Attributes**
- Very new niche market, novel
- Tolerant to HLB (citrus greening)
- Trees can be kept small

**Issues**
- Site selection
  - Freeze sensitive
  - Wind protection
- Thorny
- Peel is delicate (scarring)
- Limited market

Singh, A. et al., 2017. Finger lime..
http://edis.ifas.ufl.edu/fe1033
Protected agriculture

Carambola

‘Arkin’

Papaya

‘Red Lady’
Carambola (Averrhoa carambola)

Attributes
• Numerous cultivars
• Easy to control tree size
• Off-season flowering/fruiting potential
• Seedless to near-seedless fruit possible

Issues
• Florida competitors
• Limited fresh market
• Wind sensitive
• Needs air and soil temperatures ≥68°F
• Some mite problems in-doors

~150 acres

‘Lara’
‘Arkin’
‘Bell’
Wind-protected carambola culture (with/without roof) - limited temperature control
Papaya (Carica papaya)

Attributes
• Numerous cultivars
• Easy to control tree size
• Potential year-round production

Issues
• Temperature and light
• Some insect issues
• Some disease issues
• Competition

CREC Dr. Arnold Schumann

~356 acres
Kaffir lime (Citrus hystrix)

Attributes
• Very niche market for leaves and fruit in cooking
• Non-vigorous shrubby plant

Problems
• Susceptible to citrus canker and citrus greening
• Some insect problems
Further information

University of Florida/IFAS

• On-line publications, EDIS
  http://edis.ifas.ufl.edu

• FruitScapes, an on-line website dedicated to fruit growing in the home landscape
  http://trec.ifas.ufl.edu/fruitscapes/