Peach Production in Florida

TRIPTI VASHISTH AND MERCY OLMSTEAD
ASSISTANT PROFESSOR
CREC UF
Peaches vs. Nectarines

Peaches = Nectarines!
- What’s different about them?
  - The “fuzz” is one gene difference in the skin
    - Nectarine = recessive for the gene
    - Naturally occurring

Nectarines tend to be:
- Smaller
- More blush on skin
- Sweeter
Peach Flesh Types

Melting flesh focus
- Juicy
- Shipping problems
- Short shelf-life

Non-melting flesh genes introduced
- Firmer, tree-ripe
- Shipping is easier
- Longer lasting fruit at home
- Consumer bias (firm=unripe)?
  - Need education on new textures
What to Grow?

Peaches, nectarines, and plums

All need a certain amount of “chill units” even though low-chill varieties have been developed

How is a unit of chill defined?

- **Unit Definition**
  - One unit = 1 hour between 37°F and 48°F (Ideal range)
  - Accumulated over a 24 hour period

- **Resources**
  - AgroClimate; [http://agroclimate.org](http://agroclimate.org)
  - Chill Unit Accumulation for past two weeks
Chill Units and Stone Fruit Varieties

500-600 chill units = Gulfcrest

400-500 chill units = Gulfprince, Gulfcrimson, Gulfsnow, Flordaking, UFGlo

300-400 chill units = Flordadawn, UFBlaze, UF2000, Flordacrest, Gulfking, UFSharp, Sundollar (N), Suncoast (N)

200-300 chill units = UFBeauty, UFGold, TropicSnow, UFOne, UFO, Flordabest, UFRoyal (N), Sunraycer (N), Sunmist (N), UFQueen (N)

100-200 chill units = UFSun, UFBest, UFGem, Flordaprince, Flordaglo, TropicBeauty

*Map shows the number of hours between 32-45°F received to February 10th in 75% of winters.

Plant varieties that are 75% of the total chill unit accumulation to get consistent cropping.
Accumulation of chill hours is one of the biggest challenges for peach production in central and south Florida.
Potential Solutions

Low chill peaches

Hydrogen Cyanamide

‘UFSun’ and ‘UFOne’

• Dormex® application (v/v)**2% and 3% [OFF LABEL]

Used SilwetL-77 Surfactant

Sprayed at 125 gpa

Application = December (Jan.) 17, 2013 3 weeks before anticipated budbreak
HC on ‘UFSun’

Lateral Budbreak (%)

- 0: 38.1%
- 2: 73.1%
- 3: 69.2%

Hydrogen Cyanamide Rate (%)
HC on ‘UFOOne’

Lateral Budbreak (%)

0 11

Hydrogen Cyanamide Rate (%) 3

54.4
Timing of application of Hydrogen Cyanamide

Tropic Beauty

Trees were defoliated using ZnS

Treatment- Foliar application of 1.2% HC; Control (only water), sprayed on December 22
17 days post HCN application

HCN  

Control
Vegetative Bud Break
Flowers
Hydrogen Cyanamide

HC can be successfully used to induce uniform bud break and flowering in low-chill peaches.

In absence of significant chill hours, HC can be beneficial.

Pollen grain color can be a good indicator for the time of application of HC.
Cultural Practices
Planting & Training Systems

Soil type:
- Sandy, well-drained soil
- Ideal pH: 6.5-7.0

Orchard site may need beds
- Poor site drainage
- Should be at least 18” high to facilitate drainage

Weed-free strip to reduce competition

Tree guards can be useful for herbicide application
## Tree Densities

<table>
<thead>
<tr>
<th>Spacing Between Trees</th>
<th>Spacing Between Rows</th>
<th>Total Trees/Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>25</td>
<td>116</td>
</tr>
<tr>
<td>15</td>
<td>20</td>
<td>145</td>
</tr>
<tr>
<td>10</td>
<td>20</td>
<td>218</td>
</tr>
<tr>
<td>10</td>
<td>15</td>
<td>290</td>
</tr>
</tbody>
</table>

Take 43,560 (sq. ft. for 1 acre) and divide by spacing between trees.
Then divide by spacing between rows.
15 x 25 is standard for citrus groves.
15 x 20 standard for new orchard plantings.
Frost Protection

Overhead sprinklers
- Heat lost from the trees is replaced by heat released by water as it turns to ice
- Water needs to be continuously applied
- More damage could occur if not continuously applied
- Not recommended when wind speed is over 10 mph.
## Frost Protection

<table>
<thead>
<tr>
<th>Dry Leaf Temperature (°F)</th>
<th>Wind Speed (mph)</th>
<th>0 - 1</th>
<th>2 - 4</th>
<th>5 – 8</th>
<th>10 – 14</th>
<th>18 – 22</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acre-inches per hour needed for freeze protection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.10</td>
<td>0.20</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>0.10</td>
<td>0.10</td>
<td>0.14</td>
<td>0.20</td>
<td>0.40</td>
<td>0.60</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>0.10</td>
<td>0.16</td>
<td>0.30</td>
<td>0.40</td>
<td>0.80</td>
<td>1.60</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>0.12</td>
<td>0.24</td>
<td>0.50</td>
<td>0.60</td>
<td>1.20</td>
<td>1.80</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>0.16</td>
<td>0.30</td>
<td>0.60</td>
<td>0.80</td>
<td>1.60</td>
<td>2.40</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>0.20</td>
<td>0.40</td>
<td>0.70</td>
<td>1.00</td>
<td>2.00</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>0.26</td>
<td>0.50</td>
<td>0.90</td>
<td>1.30</td>
<td>2.60</td>
<td>4.00</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>0.34</td>
<td>0.70</td>
<td>1.20</td>
<td>1.70</td>
<td>3.40</td>
<td>5.00</td>
<td></td>
</tr>
</tbody>
</table>
Peach Growth

One year old wood

Vegetative Bud  Flower Bud
Pruning Principles for Orchards

- Develops strong tree structure
- Thins buds to achieve yields of high quality fruit
- Balances cropload with vegetative growth
  - Especially important with short fruit developmental period in Florida (78 days vs. 120 days; temperate climates)
- Development of good-sized fruiting wood vs. blind wood
Pruning Principles for Orchards

Remove diseased or dead limbs

In Florida, two pruning periods:
  ◦ Winter
  ◦ Summer
Blind Wood

Blind Wood = No leaves to support current season’s fruit, no buds to produce future shoots

- More prevalent with fast, vigorous growth
Pruning Principles for Orchards

Reduces canopy temperature by increasing airflow (directly)
  ◦ Can reduce incidence of doubling fruit
Open Vase Training System

Mature trees must be managed to optimize sunlight interception

Avoid sunburn!!

- Leave a few upright shoots in canopy center during summer pruning
Open Vase Training System

Traditional System
- In other locations —6-8 years for trees to fill in spaces
- Florida = ideal growing conditions with 7-8 feet of growth per year

Trees trained to 3-4 scaffolds
- Cover each quadrant to optimize light interception

Tree height set at 8 feet
- Optimize activities without use of ladders
Open vase

Pruning young trees:

Year 1

Year 2
Before & After (Winter):

![Before Image](image1)

![After Image](image2)
FlordaPrince vs. TropicBeauty

Upright Growth

Semi-spreading Growth
Types of Pruning Cuts

Thinning Cuts
- Reduce branch number
- Encourage apical shoot elongation

Heading Cuts
- Invigorate the tree
- Increase branching by causing lateral bud break
Pruning Summary

Prune to maintain productive tree

Heading cuts can result in thinner fruiting wood

Thinning cuts should be the majority of those made in each season.
Peach/Plum Flowering

Peaches and Nectarines do not need pollinizers
- They are self-fertile
- Do not need hives to pollinate
  - Native populations set adequate fruit

Plums need pollinizers
- All three varieties can work as pollinizers
  - ‘Gulfrose’
  - ‘Gulfblaze’
  - ‘Gulfbeauty’
Fruit Thinning

Peaches and nectarines must be thinned to get large fruit size
  ◦ Plums only thinned if too heavy for branch

Should be thinned before pit hardening
  ◦ Otherwise, won’t make difference in fruit size

Thin to at least 6” between each fruit
Tree on left has ideal cropload and canopy growth
Tree on right has heavy cropload, poor canopy
Thinning and pruning are important for cropload management

Good balance with crop and canopy
Not thinned
Fertilization

Use a balanced 10-10-10 fertilizer

- 1st year: 11-12 lbs N/acre
- 2nd year: 26-39 lbs N/acre
- 3rd year: 80-110 lbs N/acre

Sandy soils: 12-4-8 fertilizer

- Minimizes potassium and phosphorus leaching

Zinc deficiency shows up readily in sandy soils with higher pH

- Plums more sensitive to it
- Yellowing leaves, green veins, short internodes
Impact of pH on Nutrients

pH affects nutrient availability
- The thicker the bar, the more available the nutrient

Solutions with high pH water?
- Acidify the water source
- Monitor soil pH and acidify as necessary
- Apply fertilizers with sulfur to bring pH down
Nitrogen Requirement

According to trials conducted by Dr. Mercy Olmstead:

- Fruit yield is not affected in range of 80-160 lbs. N
- Fruit size differences depended upon year 2013 (160 lbs./A), 2014 (80 lbs./A)
- Cropload differences
  - Reduce amounts to around recommended rates of 100-125 lbs. N/A depending upon tree growth and system
Dr. Ali Sarkhosh
Assistant Professor
Stone Fruit Extension Specialist
Email: sarkhosha@ufl.edu
Thank you!