Florida Production Practices to Promote Citrus Health

J.H. Graham, UF/IFAS - CREC
H.L. Chamberlain, UF/IFAS – CREC
L.W. Timmer, UF/IFAS - CREC
M.E. Rogers, UF/IFAS - CREC
Citrus Nursery Regulations

- Nursery Industry is in transition
- Essential to survival of the production industry
  - Location
  - Structures
  - Sanitation practices
  - Budwood program
  - Inspection
New nurseries must be located 1 mile away from commercial citrus, 0.25 mile from residential citrus.
Structures

Registration of all nurseries and budwood facilities, including approval of all sites; All production indoors in approved structures.
Sanitation

Everyone
Must enter through Spray Station!
1) Push Button
2) Step in pan & walk through mist
3) Spray turns off automatically

MAR 27 2006
Relocation of the Budwood Foundation – All budwood is being tested for HLB beforehand

Relocation from Dundee to Chiefland, FL
Greening survey status

Map subject to change as of 4/19/2006

- 615 HLB PCR confirmed positive trees out of 536 residential property trees and 77 commercial grove trees in 441 locations
- 424 residential properties and 17 commercial groves
- Total of 248 positive HLB TRS in 12 Counties

Created by CARS - Andrea Chaves, 4/18/2006

Legend:
- HLB PCR Positive TRS Residential
- HLB PCR Positive TRS Groove
- HLB Surveyed TRS (no positive find)
- City
- County Boundary
- Groves
Nursery Inspection

- Plants must be inspected every 30 days and be certified disease-free before shipping
- Nursery environ surveys – FDACS, DPI
- Nursery self-survey (IFAS Nursery Citrus Canker Self Survey DVD)
- IFAS Nursery Disease Management Guide
Citrus Greening Management

- Disease – free nursery stock
- Scouting / Survey
- Tree removal
- Psyllid suppression
Disease-Free Nursery Stock

Insect excluding structures for nursery production are essential.
Scouting for Psyllids and Survey for Citrus Greening
HLB Infected Tree Removal

No regulatory plan for tree removal
Psyllid Suppression

Management of Asian citrus psyllid populations is necessary to slow the spread of greening disease in a grove once present.
<table>
<thead>
<tr>
<th>Pesticide</th>
<th>Rate</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admire 2F</td>
<td>1/16 – 1/8 oz per tree</td>
<td>Soil systemic</td>
</tr>
<tr>
<td>Provado 1.6 F</td>
<td>10 – 20 oz / A</td>
<td>Foliar systemic</td>
</tr>
<tr>
<td>Danitol 2.4 EC</td>
<td>1 pt / A</td>
<td>Foliar application</td>
</tr>
<tr>
<td>Lorsban 4EC</td>
<td>5 pt / A</td>
<td>Foliar Application</td>
</tr>
<tr>
<td>Temik 15 G</td>
<td>33 lbs / A</td>
<td>Soil Incorporated</td>
</tr>
</tbody>
</table>

2006 Florida Citrus Pest Management Guide
75% of the citrus acreage is within 5 miles of a canker find.
Citrus Canker Management

- Inspection
- Decontamination
- Inoculum suppression
- Tree removal where applicable
- Defoliation where applicable
- Varietal susceptibility
- Windbreaks
- Copper sprays
- Leafminer control
- Flush management
Decontamination
Windbreaks & Copper Sprays

Essential for fresh fruit production; recommended for most susceptible varieties (ie GF); single most effective measure for canker management
Leafminer control on young trees reduces inoculum build-up on early season leaf flushes.
<table>
<thead>
<tr>
<th>Insecticide/Formulation</th>
<th>Rate</th>
<th>Appl. method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admire Pro (fenpropathrin)</td>
<td>7-14 fl oz/acre</td>
<td>Soil applied systemic</td>
</tr>
<tr>
<td>Agri-mek 0.15 EC + Petroleum oil</td>
<td>10 oz/acre</td>
<td>Foliar application</td>
</tr>
<tr>
<td>Assail 70 WP (acetamiprid)</td>
<td>2 oz / acre</td>
<td>Foliar application</td>
</tr>
<tr>
<td>Micromite 80 WGS + petroleum oil</td>
<td>6.25 oz/acre</td>
<td>Foliar application</td>
</tr>
<tr>
<td>HMOs (horticultural mineral oils: FC435-66; FC455-80)</td>
<td>2% spray or 5 gal/acre</td>
<td>Foliar spray</td>
</tr>
<tr>
<td>Spintor (spinosad)</td>
<td>6 oz / acre</td>
<td>Foliar application</td>
</tr>
</tbody>
</table>
Varietal Susceptibility: Processing

Moderately to highly susceptible Hamlin is 40% of FL round orange crop
Fresh market: Profitability of grapefruit is of highest concern

Fresh fruit market products must be certified canker-free within 30 days of harvest
Defoliation and Buckhorning

MUST be used in conjunction with FREQUENT INSPECTION
Tree Removal Where Applicable

- Case – by – Case basis, not part of the regulatory plan
- Per individual risk assessment; thorough survey & market destination
- Proximity of neighboring canker incursions
- Susceptibility of the variety
IFAS Education Program

Materials developed

- HLB, CC, & Nursery CC DVDs for identification
- Decontamination video
- CC & HLB field ID decks
- PwPt and articles on canker management

Cancro Citrico o Cancrosis
Tarjetas de identificación de los síntomas del cancro citrico
Procedimientos de descontaminación

Mongi Zekri, Holly Chamberlain, Pete Timmer & Pamela Roberts
IFAS Education Program

Programs

- 4 HLB & CC statewide meetings (200)
- Extension meetings and IRCS (350)
- Grove worker training (780E, 420S)
- Windbreak Short Course (60)
- Grower trip to Parana to observe canker management and exclusion (150-200K acres represented by the group)
Take Home Points

- The status of leafminer and psyllid as minor pests is a thing of the past…
- We *CANNOT* live with citrus greening
- Early detection and tree removal are KEY!
- Educational programs, training, DVDs available through UF/IFAS
- 2006 dry spring very good for canker management on processed oranges, fresh red grapefruit?!?
Questions

- Contact
  - Citrus Research and Education Center
    - Phone: (863) 956-1151  Fax: (863) 956-4631
    - www.crec.ifas.ufl.edu
      - holly102@crec.ifas.ufl.edu
      - jhg@crec.ifas.ufl.edu
      - lwt@crec.ifas.ufl.edu