UPCOMING EVENTS

Seminars/workshops at the Immokalee IFAS Center

Tuesday, November 18, 2003, 10:00 AM – 12:00 Noon
Water supply issues for citrus growers
Can the impoundments in citrus groves be used for irrigation water supply?
Speakers: Hugh English and Dr. Sanjay Shukla
2 CEUs for Certified Crop Advisors
Sponsor: Doug Brown

Tuesday, December 16, 2003, 10:00 AM – 12:00 Noon
Sensitivity of Flatwoods citrus to phosphorus and potassium, and How to adjust fertilizer programs based on leaf and soil analysis?
The Scotts Approach to Citrus Reset Fertilization.
Speaker: Drs. Tom Obreza and Andree-Anne Couillard
2 CEUs for Certified Crop Advisors
Sponsor: The Scotts Company.

If you want to print a color copy of the Flatwoods Citrus Newsletter, get to the Florida Citrus Resources Site at http://flcitrus.ifas.ufl.edu/
You can also find all you need and all links to the University of Florida Citrus Extension and the Florida Citrus Industry.
Wednesday, January 14, 2004, 9:00 AM – 4:00 PM

**Hendry County Extension Office, LaBelle**

*Workshop* on scouting for pests and diseases  
Speakers: Drs. Pete Timmer, Steven Rogers, and Phil Stansly  
6 CEUs for Pesticide License Renewal  
6 CEUs for Certified Crop Advisors  
**Sponsor:** Shelby Hinrichs, Nufarm Agriculture USA

Tuesday, January 20, 2004, 9:00 AM – 3:00 PM

**Immokalee IFAS Center**

*Workshop* Using organic amendments in citrus production  
Speakers: Drs. Jim Ferguson, Tom Obreza, Jim Graham, and Monica Ozores-Hampton  
2 CEUs for Pesticide License Renewal  
4 CEUs for Certified Crop Advisors  
**Sponsor:** ?

**Indian River Citrus Seminar**

January 27–28, 2004  
For more information call 561 468 3922 or 561 462 1660

**INTERNATIONAL SOCIETY OF CITRICULTURE**

**10th International Citrus Congress**

February 15-20, 2004, Agadir, Morocco  
[http://www.lal.ufl.edu/ISC_Citrus_homepage.htm](http://www.lal.ufl.edu/ISC_Citrus_homepage.htm)

**COLLIER COUNTY EXTENSION AG TOURS**

Wednesday, 17 March and Friday 19 March 2004  
For more information, call the Collier County Extension Office at 239 353 4244
<table>
<thead>
<tr>
<th>Name</th>
<th>Company/Address</th>
<th>Phone</th>
<th>Fax</th>
</tr>
</thead>
<tbody>
<tr>
<td>David Courtney</td>
<td>Creel Tractor Company</td>
<td>1 800 282 7949</td>
<td></td>
</tr>
<tr>
<td>Donna Muir Strickland</td>
<td>MONSANTO</td>
<td>863 673 0182</td>
<td></td>
</tr>
<tr>
<td>Thad G. Boatwright</td>
<td></td>
<td>561 478 4970</td>
<td></td>
</tr>
<tr>
<td>Donald Allen</td>
<td>AGLIME SALES, INC.</td>
<td>863 287 2925</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Babson Park, FL 33827-9549</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mobile: 863 287 2925</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agnet # 52925</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ed Early</td>
<td>DU PONT Ag. Products</td>
<td>239 332 1467</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5100 S. Cleveland Ave., Suite 318-368</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fort Myers, FL 33907</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phone: 239 332 1467</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fax: 239 332 1707</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FIRST BANK</td>
<td>P.O. Box 697</td>
<td>863 675 4242</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LaBelle, FL 33975</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phone: 863 675 4242</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fax: 863 675 1099</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moore Haven: 863 946 1515</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robert F. Gregg</td>
<td>SYNGENTNA</td>
<td>239 561 8568</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11051 Championship Drive</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fort Myers, FL 33913</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Phone: 239 561 8568</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fax: 239 561 8569</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GeoAg Solutions</td>
<td>David Summers (863) 441 1200</td>
<td><a href="mailto:dsummers@geoagsolutions.com">dsummers@geoagsolutions.com</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Neal Horrom (239) 369 9806</td>
<td><a href="mailto:nhorrom@geoagsolutions.com">nhorrom@geoagsolutions.com</a></td>
<td></td>
</tr>
<tr>
<td></td>
<td><a href="http://www.geoagsolutions.com">www.geoagsolutions.com</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Special Thanks** to the following sponsors of the Flatwoods Citrus Newsletter for their generous contribution and support. If you would like to be among them, please contact me at 863 674 4092.
ATTENTION: COMMERCIAL PESTICIDE USERS

OPERATION CLEANSWEEP
Statewide Pesticide Pick-Up for 2002-2003

Operation Cleansweep is a mobile pesticide collection that provides a safe way to dispose of cancelled, suspended, and unusable pesticides at no cost. Pesticide dealers can participate for a fee.

- Farmers
- Nurseries
- Golf Courses
- Greenhouses
- Forestry
- Pest Control Services

FREE PICK–UP
We want your pesticides.

Cleansweep Partners and Representatives:
Florida Peanut Producers Association
Florida Turf Grass Association
Florida Farm Bureau
Florida Fertilizer and Agrichemical Association
Florida Fruit and Vegetable Association
Florida Soybean Producers Association
Certified Pest Control Operators
Florida Pest Management Association
Florida Nurseriesmen & Growers Association
Florida Tomato Committee
Florida Forestry Association
IFAS/University of Florida
Central Florida Regional Planning Council
Florida Department of Agriculture & Consumer Services
Florida Department of Environmental Protection

For more information

CONTACT:
Keith Myhre
Florida Department of Agriculture & Consumer Services
or call Toll-Free
877-851-5285

CLEANSWEEP WEBSITE:
www.dep.state.fl.us/waste/categories/cleansweep-pesticides/default.htm
BIOSOLIDS

Biosolids are nutrient-rich organic materials. Although classified as a waste material, biosolids can be beneficial to agriculture because they contain many essential plant nutrients and organic matter. Following proper treatment and processing, biosolids can be recycled as fertilizers or soil amendments to improve soil chemical and physical properties with negligible negative impacts.

Application of organic wastes like biosolids to agricultural land provides several benefits, including:

1. Reduction of the chemical fertilizer requirement, since biosolids are sources of many plant nutrients;
2. Improvement of soil chemical properties by increasing the nutrient pool, promoting an increase in pH of acid soils, and increasing soil buffering capacity;
3. Improvement of soil physical properties, such as structure and particle aggregation, aeration and drainage, and water retention;
4. Enhancement of biological properties by increasing microbial communities and soil fauna and contributing to disease suppression.

Biosolids are generated when solids, accumulated during domestic sewage processing, undergo pathogen control treatment that meets federal and state sewage sludge regulatory requirements before being applied to the soil. Wastewater treatment facilities monitor their incoming wastewater stream to ensure that the water and the accompanying organic material are safe to recycle and are compatible with the treatment plant process. This pre-treatment has resulted in dramatic decreases in metal concentrations of biosolids nationwide. The biosolids of today are cleaner and of better quality than those that were produced one to two decades ago.

Once wastewater reaches the treatment plant, domestic sewage is subjected to physical, chemical, and biological processes that kill pathogens and remove solids. The overall mass and volume of solids are reduced as the organic matter is degraded and digested by microorganisms. At some treatment plants, the solids are further treated with lime (calcium oxide or calcium hydroxide) to raise the pH, which reduces bad odors. Lime treatment also decreases the amount of pathogens and the attractiveness of the material to insects and other organisms capable of transporting diseases.

Agricultural uses of biosolids that meet strict quality criteria have been shown to produce improvements in crop growth and yield when applied at recommended rates. Nutrients found in biosolids, including nitrogen, phosphorus, sulfur, calcium, magnesium and micronutrients, are necessary for crop growth and production. Most biosolids contain micronutrients in a natural organically-chelated form. Crops use nutrients from biosolids efficiently because they are released slowly as the
biosolids break down. Biosolids application does not necessarily replace inorganic fertilization. Organic wastes lack the proper balance of nutrients necessary to fully meet crop requirements. They can, however, be used in conjunction with fertilizers to reduce chemical fertilizer inputs. At high rates, the organic matter in biosolids can improve water and nutrient holding capacities of the soil.

Because the fertilizer value of biosolids is so well established, most recent investigations in Florida have focused on various environmental or health risk evaluations. Research has addressed "heavy metal" (cadmium) availability to plants, toxic organic behavior, and possible molybdenosis risk to cattle grazing biosolids-amended pastureland. A major current interest in Florida is the biosolids-phosphorus relationship because many states, including Florida, are moving to restrict biosolids application rates based on phosphorus concerns associated with water quality impairment (leaching and runoff). Researchers are studying phosphorus forms, solubility, leachability, and availability to plants.

Decades of worldwide research have demonstrated that biosolids can be safely used in agriculture. As previously mentioned, some biosolids are treated with lime to reduce pathogen concentrations. These lime-stabilized biosolids have an alkaline pH and can increase soil pH the same way agricultural lime does following application to soil. A major land application issue in Florida is the use of lime-stabilized biosolids on pastures where "acid-loving" grasses like bahiagrass grow. Addition of an alkaline material can result in elevated soil pH, which in turn leads to poor grass growth caused by micronutrient deficiencies. For a citrus grove that has been receiving alkaline irrigation water and/or has been limed to obtain a soil pH of 6.0 to 7.0, a lime stabilized material could possibly induce a micronutrient deficiency because it has a pH greater than 12. Florida's sandy soils have low capacity to resist changes in pH. Thus, soil pH can increase quickly and substantially in fields where lime-stabilized biosolids have been land applied. Production managers using soil amendments should be aware that biosolids may contain lime, and should apply biosolids stabilized by other means where acid-loving plants are growing.

Biosolids are land-applied across most of the state of Florida without restriction beyond the basic federal and state guidelines. However, since biosolids contain considerable amounts of phosphorus, application has recently been limited or banned outright in phosphorus-sensitive regions (e.g. the area adjacent to Lake Okeechobee) due to water quality concerns. FDEP and the USEPA continue to support land application of biosolids and insist that, when conducted correctly, the practice is safe. USEPA continues to support research to improve testing and verification procedures confirming that treatment practices accomplish intended pathogen reductions.
There are several types of municipal biosolids available for land application in Florida, and they can vary widely in moisture content: a) Fresh Materials--2-6% solids; b) De-watered materials--18-35% solids; and c) Pelletized (granular), like Milorganite and Granulite organic fertilizers--more than 90% solids. The stabilization process used to treat wastewater significantly alters the nutrient composition and the rate of nutrient release or mineralization of the resulting biosolids. Mineralization values ranging from 40 to 50% of the organic N from aerobically (with oxygen)-digested sewage sludge and 25 to 40% of the organic N from anaerobically (without oxygen)-digested sludge have been reported during the initial crop season. Mineralization rates of approximately 40%, 15%, and 10% have also been estimated for waste-activated sludge, anaerobically-digested sludge, and composted sludge, respectively.

The two main types of biosolids produced in Florida are based on the stabilization process: 1) lime-stabilized, and 2) stabilized by other processes (chemical, physical, or biological). Most biologically stabilized materials undergo an aerobic or an anaerobic digestion process. The typical compositions of lime-stabilized and anaerobically-digested biosolids are shown in the Table next page.

Economic values of biosolids are determined by the marketplace of goods and services for which people are willing and able to pay. Grower should be willing to pay for biosolids only if the product increases overall net returns. An increase in net returns can be achieved by reducing production costs and/or increasing crop yield or quality. Growers and farmers purchase fertilizers and liming materials, and the extent to which biosolids provide plant nutrients and/or liming capacity provides a basis for valuing biosolids.

Biosolids pose a management challenge in that they do not deliver plant nutrients in the same proportion required for crop production. The economic value of biosolids can be expanded to include micronutrients. Most biosolids contain micronutrients in a natural "chelated" form. Commercially available chelated products can be expensive.

Computing a value for biosolids is a worthwhile exercise for growers who are considering supplying a portion of plant nutrient requirements with biosolids rather than with commercial sources. While the actual material may be "free," other costs such as transportation and field application have to be considered. If the "value" of the biosolid is less than these costs, applying biosolids will not be a wise economic decision. The value of a biosolid will depend on the nutrient analysis of the material and amount of nutrients which will be utilized at a specified application rate. Improvements to soil tilth, microbial populations, and disease suppression are other benefits associated with applying biosolids, but they are difficult to be quantified in terms of yield gains. 

This is a summary of three publications written by Obreza, Muchovej, and Roka.
Selected characteristics of two types of municipal biosolids.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Anaerobically Digested</th>
<th>Lime Stabilized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solids (%)</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>Nitrogen (%)</td>
<td>5.6</td>
<td>3.8</td>
</tr>
<tr>
<td>Phosphorus (%)</td>
<td>2.2</td>
<td>1.0</td>
</tr>
<tr>
<td>Potassium (%)</td>
<td>0.2</td>
<td>0.4</td>
</tr>
<tr>
<td>Copper (ppm)</td>
<td>566</td>
<td>236</td>
</tr>
<tr>
<td>Molybdenum (ppm)</td>
<td>23</td>
<td>5</td>
</tr>
<tr>
<td>Zinc (ppm)</td>
<td>1484</td>
<td>321</td>
</tr>
<tr>
<td>Arsenic (ppm)</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Cadmium (ppm)</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>Chromium (ppm)</td>
<td>91</td>
<td>10</td>
</tr>
<tr>
<td>Lead (ppm)</td>
<td>195</td>
<td>17</td>
</tr>
<tr>
<td>Nickel (ppm)</td>
<td>59</td>
<td>33</td>
</tr>
<tr>
<td>Mercury (ppm)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Selenium (ppm)</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>pH</td>
<td>8</td>
<td>12</td>
</tr>
</tbody>
</table>
From the Florida Agricultural Statistics Service

The 2003-04 Florida orange forecast (excluding Temples) released in October 2003 by the USDA Agricultural Statistics Board is 252.0 million boxes. This is 24 percent more than the final utilization of last season and three percent more than the previous record high 244.0 million boxes in 1997-98. The total is divided into the early-midseason-Navel forecast of 137.0 million boxes and the late season (Valencia) forecast of 115.0 million boxes, also a record. For the numbers of grapefruit, Temples, tangelos and tangerines, see the following Table.

**Florida Citrus Production (Million Boxes)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Early/Mid orange</td>
<td>140.0</td>
<td>112.0</td>
<td>134.0</td>
<td>128.0</td>
<td>128.0</td>
<td>112.0</td>
<td>137.0</td>
<td>+22.3%</td>
</tr>
<tr>
<td>Valencia orange</td>
<td>104.0</td>
<td>73.7</td>
<td>99.0</td>
<td>95.3</td>
<td>102.0</td>
<td>91.0</td>
<td>115.0</td>
<td>+26.4%</td>
</tr>
<tr>
<td>All oranges</td>
<td>244.0</td>
<td>185.7</td>
<td>233.0</td>
<td>223.3</td>
<td>230.0</td>
<td>203.0</td>
<td>252.0</td>
<td>+24.1%</td>
</tr>
<tr>
<td>All grapefruit</td>
<td>49.55</td>
<td>47.05</td>
<td>53.4</td>
<td>46.0</td>
<td>46.7</td>
<td>38.7</td>
<td>42.0</td>
<td>+8.5%</td>
</tr>
<tr>
<td>Temples</td>
<td>2.25</td>
<td>1.80</td>
<td>1.95</td>
<td>1.25</td>
<td>1.55</td>
<td>1.30</td>
<td>1.40</td>
<td>+7.7%</td>
</tr>
<tr>
<td>Tangelos</td>
<td>2.85</td>
<td>2.55</td>
<td>2.2</td>
<td>2.1</td>
<td>2.15</td>
<td>2.35</td>
<td>1.3</td>
<td>-44.7%</td>
</tr>
<tr>
<td>All tangerines</td>
<td>5.2</td>
<td>4.95</td>
<td>7.0</td>
<td>5.6</td>
<td>6.6</td>
<td>5.5</td>
<td>6.6</td>
<td>+20.0%</td>
</tr>
<tr>
<td>Limes</td>
<td>0.44</td>
<td>0.50</td>
<td>0.60</td>
<td>0.25</td>
<td>0.15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lemons</td>
<td>0.12</td>
<td>0.235</td>
<td>0.265</td>
<td>0.085</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>304.450</td>
<td>242.865</td>
<td>298.15</td>
<td>278.765</td>
<td>287.235</td>
<td>250.850</td>
<td>303.300</td>
<td>+20.9%</td>
</tr>
</tbody>
</table>
### 2002-2003 Southwest Florida Citrus Production (Boxes) & Florida Citrus Prices ($)

<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Charlotte</th>
<th>Collier</th>
<th>Glades</th>
<th>Hendry</th>
<th>Lee</th>
<th>Total</th>
<th>Avg. On-Tree Prices &amp; Returns/Box</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fresh</td>
</tr>
<tr>
<td>Early/Mid orange</td>
<td>1,666,000</td>
<td>4,698,000</td>
<td>2,009,000</td>
<td>12,124,000</td>
<td>1,235,000</td>
<td>21,732,000</td>
<td>5.85</td>
</tr>
<tr>
<td>Valencia orange</td>
<td>2,802,000</td>
<td>4,765,000</td>
<td>1,216,000</td>
<td>13,908,000</td>
<td>1,563,000</td>
<td>24,254,000</td>
<td>5.30</td>
</tr>
<tr>
<td>White grapefruit</td>
<td>79,000</td>
<td>59,000</td>
<td>7,000</td>
<td>1,008,000</td>
<td>58,000</td>
<td>1,211,000</td>
<td>7.44</td>
</tr>
<tr>
<td>Colored grapefruit</td>
<td>1,330,000</td>
<td>443,000</td>
<td>95,000</td>
<td>1,615,000</td>
<td>335,000</td>
<td>3,818,000</td>
<td>5.06</td>
</tr>
<tr>
<td>Early tangerines</td>
<td>100,000</td>
<td>41,000</td>
<td>22,000</td>
<td>75,000</td>
<td>22,000</td>
<td>260,000</td>
<td>12.10</td>
</tr>
<tr>
<td>Honey tangerine</td>
<td>57,000</td>
<td>94,000</td>
<td>44,000</td>
<td>327,000</td>
<td>16,000</td>
<td>538,000</td>
<td>11.80</td>
</tr>
<tr>
<td>Temples</td>
<td>9,000</td>
<td>38,000</td>
<td>----</td>
<td>132,000</td>
<td>1,000</td>
<td>180,000</td>
<td>3.80</td>
</tr>
<tr>
<td>Tangelos</td>
<td>23,000</td>
<td>21,000</td>
<td>5,000</td>
<td>101,000</td>
<td>8,000</td>
<td>158,000</td>
<td>7.80</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>6,066,000</td>
<td>10,159,000</td>
<td>3,398,000</td>
<td>29,290,000</td>
<td>3,238,000</td>
<td>52,151,000</td>
<td></td>
</tr>
</tbody>
</table>

### Southwest Florida Citrus Acreage and Tree Numbers

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Acres</td>
<td>Acres</td>
<td>Acres</td>
<td>Acres</td>
<td>Trees (million)</td>
<td>Acres</td>
<td>Trees (million)</td>
</tr>
<tr>
<td>Charlotte</td>
<td>6,734</td>
<td>8,759</td>
<td>11,718</td>
<td>15,981</td>
<td>21,522</td>
<td>3.172</td>
<td>21,756</td>
</tr>
<tr>
<td>Collier</td>
<td>5,052</td>
<td>10,063</td>
<td>23,565</td>
<td>34,167</td>
<td>35,655</td>
<td>5.251</td>
<td>35,302</td>
</tr>
<tr>
<td>Glades</td>
<td>1,572</td>
<td>6,076</td>
<td>7,523</td>
<td>9,136</td>
<td>10,776</td>
<td>1.684</td>
<td>10,506</td>
</tr>
<tr>
<td>Hendry</td>
<td>22,447</td>
<td>40,269</td>
<td>73,754</td>
<td>87,396</td>
<td>100,124</td>
<td>15.409</td>
<td>99,437</td>
</tr>
<tr>
<td>Lee</td>
<td>7,439</td>
<td>7,313</td>
<td>9,692</td>
<td>10,559</td>
<td>11,871</td>
<td>1.649</td>
<td>11,594</td>
</tr>
<tr>
<td>SW FL Total</td>
<td>43,244</td>
<td>72,480</td>
<td>126,252</td>
<td>157,239</td>
<td>179,948</td>
<td>27.165</td>
<td>178,595</td>
</tr>
<tr>
<td>State of Florida</td>
<td>941,471</td>
<td>624,492</td>
<td>732,767</td>
<td>791,290</td>
<td>845,260</td>
<td>107.110</td>
<td>832,275</td>
</tr>
<tr>
<td>SW FL (%)</td>
<td>4.6</td>
<td>11.6</td>
<td>17.2</td>
<td>19.9</td>
<td>21.3</td>
<td>25.4</td>
<td>21.5</td>
</tr>
</tbody>
</table>

In 1970, the Southwest Florida Citrus Acreage was 43,244 (less than 5% of the State of Florida Total Citrus Acreage ‘941,471’). Since 1998, in Southwest Florida, Citrus Acreage has been over 21% of the State of Florida Total Citrus Acreage and the Number of Citrus Trees is over 25% of all Citrus Trees in the State.
Special Thanks to the following sponsors of the Flatwoods Citrus Newsletter for their generous contribution and support. If you would like to be among them, please contact me at 863 674 4092.

Nufarm Agriculture USA
Shelby Hinrichs
Phone: 239 437 9970
Fax: 239 437 2646
Mobile: 941 416 0841
Gary Simmons
Phone: 772 260 1058

Larry McCauley
Griffin LLC
5843 Deer Flag Drive
Lakeland, FL 33811
Mobile: 863 712 6487
Fax: 863 607 9403

Jerry Southwell
Hydro Agri
574 Green Ash Lane
Wauchula, FL 33873
Phone: 863 773 0154
Fax: 863 773 5088

Robert Murray
Florida Favorite Fertilizer
787 Overiver Drive
North Fort Myers, FL 33903
Phone: 800 457 0807
Fax: 239 995 0691

Robert M. Bancroft
Citrus Hedging, Inc.
P.O. Box 1366
LaBelle, FL 33975
Phone: 863 675 2190
Fax: 863 675 2104

Rachel M. Walters
BAYER CropScience
Phone & Fax: 239 542 8831
Mobile: 239 707 1198
E-mail: rachel.walters@bayercropscience.com

Bart Hoopingarner
Cerexagri, Inc.
11933 3rd Street East
Parrish, FL 34219
Phone: 941 737 7444
Fax: 941 776 8127

Larry McCauley
Griffin LLC
5843 Deer Flag Drive
Lakeland, FL 33811
Mobile: 863 712 6487
Fax: 863 607 9403

Jerry Southwell
Hydro Agri
574 Green Ash Lane
Wauchula, FL 33873
Phone: 863 773 0154
Fax: 863 773 5088

Robert Murray
Florida Favorite Fertilizer
787 Overiver Drive
North Fort Myers, FL 33903
Phone: 800 457 0807
Fax: 239 995 0691

Robert M. Bancroft
Citrus Hedging, Inc.
P.O. Box 1366
LaBelle, FL 33975
Phone: 863 675 2190
Fax: 863 675 2104

Rachel M. Walters
BAYER CropScience
Phone & Fax: 239 542 8831
Mobile: 239 707 1198
E-mail: rachel.walters@bayercropscience.com

FARM CREDIT
SOUTHWEST FLORIDA
330 N. Brevard Ave.
Arcadia, FL 34266
Phone: 800 307 5677
Fax: 941 494 6460

Bobbitt Jenkins
BASF Corporation
11100 Lakeland Circle
Fort Myers, FL 33913
Phone: 239 561 2812
Fax: 239 561 6985
Mobile: 239 707 1603 AGNET #6652
November 15 & 16, 2003

Saturday - 9:00 AM to 4:00 PM
Sunday - 10 AM to 4:00 PM

Where: SW Florida Horticulture Learning Center
Collier County University Extension Education & Training Center
14700 Immokalee Road * Naples, FL
(239) 353-4244 (Vendors: call for information!)

Entrance fees: Adults $3.00
Children 12 and under - Free
Parking $1.00

Educational programs will be offered throughout the day!

* Children’s “hands-on” activities
  * Petting zoo
  * Garden tours
  * Books, t-shirts, plants for sale by Master Gardeners
  * Variety of vendors - Garden suppliers, Irrigation contractors, Arborists & Food!

1 The Institute of Food and Agricultural Sciences is an Equal Employment Opportunity-Affirmative Action Employer authorized to provide research, educational information and other services only to individuals and institutions that function without regard to race, color, sex, age, handicap or national origin. COOPERATIVE EXTENSION WORK IN AGRICULTURE, FAMILY AND CONSUMER SCIENCES, SEA GRANT AND 4-H YOUTH, STATE OF FLORIDA, IFAS, UNIVERSITY OF FLORIDA, U.S. DEPARTMENT OF AGRICULTURE, AND BOARDS OF COUNTY COMMISSIONERS COOPERATING.
DEGREENING FLORIDA FRESH CITRUS FRUIT

In Florida, early maturing citrus cultivars usually meet legal maturity standards before the peel becomes yellow or orange and therefore require degreening. Degreening involves the use of ethylene gas in packinghouses to destroy the chlorophyll and allow the yellow or orange color to predominate on the peel.

Recommended Degreening Conditions

Temperature. Temperatures of 82 to 85°F (28 to 29°C) are recommended for degreening. Both higher and lower temperatures tend to slow the degreening process.

Ethylene. Five parts per million (5 ppm) ethylene is adequate for the maximum degreening rate when using recommended conditions. Some packers are successfully using 3 ppm ethylene. Ethylene should be accurately metered into degreening rooms.

Humidity. Relative humidity (RH) of 90%-95% is recommended for degreening and can be maintained by steam or pneumatic atomizing nozzles which mix water with air.

Ventilation. Fresh air should enter the room at the rate of one air change per hour, based on the volume of the empty room. Fresh air will prevent accumulation of carbon dioxide (CO₂), which is given off by the fruit. The rate of degreening is reduced if the CO₂ concentration reaches 0.1% and will nearly stop at 1.0% or above. A constant supply of fresh air eliminates any need to periodically open rooms for ventilation.

Air circulation. Air movement should be a minimum of 10 cubic feet per minute (CFM) per field box or 100 CFM per pallet box. This air flow rate is necessary to maintain uniform temperature, ethylene concentration, and humidity at the surface of each fruit in the degreening room.

Operational Considerations

Degreening with ethylene increases decay. Fruit should not be exposed to concentrations greater than the 5 ppm needed for degreening. Furthermore, fruit should not be exposed to ethylene longer than necessary to obtain degreening.

Degreening tests should be made with sample pickings of fruit early in the season to determine if the peel is mature enough to degreen properly. This is especially important with early-maturing, mandarin-type fruits. If mandarins require longer than 36 hours to degreen, decay will be excessive.

Safe Handling of Ethylene

Ethylene gas used for degreening is sold in compressed gas cylinders containing slightly less than 100% ethylene and has a mild sweetish smell. Some packers use ethylene generators. Although non-toxic, ethylene can cause asphyxiation under very high concentrations as the gas displaces oxygen in the atmosphere. Ethylene is explosive at concentrations between 3.1% (31,000 ppm) and 32% (by volume) in air. These concentrations are extremely high compared to normal citrus degreening concentrations of 5 ppm but may occur through accidental increases in ethylene flow or leaks in ethylene lines or regulators. Be sure to follow these safety rules when working with ethylene:

- Do not move compressed gas cylinders without the cover cap in place (it protects the valve). Only remove the cap when the cylinder is in place and ready to be used. There are vivid stories of cylinders, turned into a rocket when the valve stem breaks.
- Securely fasten cylinders to walls, holding cages or other non-tip structures.
- Check for gas leaks using a solution of soapy water. If the cylinder is leaking, contact your service provider and have it replaced.
- Verify that ethylene flow regulators are operating correctly.
- Keep flames or spark producing equipment away from degreening rooms and ethylene cylinders. Post and observe no smoking signs in these areas. All piping should be grounded to prevent electrostatic discharge.
- Check ethylene flow often to ensure safe concentrations are maintained. Some ethylene monitoring equipment will sound an alarm if concentrations become too high.

This is a summary of a publication written by Ritenour, Miller and Wardowski.
Collier County University Extension
PRESENTS
2003 FARM-CITY BARBECUE
Collier’s biggest outdoor party!

“To promote an enlightened understanding between urban and rural residents and to promote awareness of the importance of agriculture to the area.”

Wednesday, November 26
11:30 a.m.
University Extension Education and Training Center
14700 Immokalee Road (10 miles east of I-75)

Tickets: $15.00 - Available at:

| Collier County/University of Florida Extension | Naples Area Chamber of Commerce Visitor’s Center - 895 Fifth Ave. S., Naples |
| 14700 Immokalee Road - 353-4244             | 262-6141 OR Administration Office - 3620 Tamiami Trail N., Naples - 262-6376 |
| Farm Bureau Insurance                       | Florida Community Bank |
| 5278 Golden Gate Pkwy. - 262-3667           | 1400 15th St., Immokalee - 657-3171 |

MENU: Grilled Steak, Corn on the Cob, Baked Beans, Rolls, Immokalee Salad

Please send me ______ tickets @ $15.00 each. I have enclosed payment.

NAME__________________________________________________________________
ADDRESS________________________________________________________________
CITY_____________________ZIP________________PHONE______________________

Please make checks payable to: Collier County Overall Extension Council and mail form to 14700 Immokalee Road, Naples 34120. MC/VISA purchases available from Collier County Extension/University of Florida ONLY.

MC_____ VISA_____
Account Number:__________________________Expiration________Signature__________________
Scholarship Application

Personal Data

Name: ____________________________________________    SS #:____________________________
Address: ____________________________________________________________________________
City/State: ___________________________  Zip:  ____________________  Phone:  _______________
Employer: __________________________________________________________________________
Address: ____________________________________________________________________________
City/State: ___________________________  Zip:  ____________________  Phone:  _______________

Does your employer reimburse you for tuition or other expenses incurred toward your degree?  Yes _____  No ______

Educational Information

College or University in which you are enrolled: _____________________________________________
Department / Degree Program: ___________________________________________________________
I am working toward the following:     AA ____  BS _____    MS _____     PhD _____     Other ______
Courses Taken in Major (both completed and those in which you are currently enrolled):
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
Total Credit Hours Toward Degree: _______  Cumulative Grade Point Average (GPA): _____________
Expected Date of Graduation: ________________________________
Please answer the following questions in complete sentences with as much detail as possible.

What are your career goals?  __________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________  
_____________________________________________________________________________________

What is the potential value of your education to the citrus industry in southwest Florida?
_____________________________________________________________________________________  
_____________________________________________________________________________________  
_____________________________________________________________________________________  
_____________________________________________________________________________________  

I authorize the release of this application and any relevant supporting information to persons involved in the selection of recipients for Gulf Citrus Growers Association scholarships.

________________________________________   _________________________________  
Applicant's Signature      Date

***APPLICATION DEADLINES ARE DECEMBER 1 AND JULY 1***

Please return this application to:
Gulf Citrus Growers Association Scholarship Foundation, Inc.  
Dr. Mongi Zekri, Application Coordinator  
Hendry County Extension Office  
P. O. Box 68  
LaBelle, Florida 33975  
(863) 674-4092 / Fax: (863) 674-4636
About the Gulf Citrus Growers Association

The citrus growers of southwest Florida are committed to supporting education as a long-term investment in the future of our industry. The first Gulf Citrus scholarship was awarded in 1992 through the Gulf Citrus Growers Association, a trade organization representing growers in Charlotte, Collier, Glades, Hendry and Lee Counties. These scholarships were created specifically to assist students pursuing degrees in citrus-related programs.

The Gulf Citrus Growers Association Scholarship Foundation was established in 2000 as a non-profit entity to oversee the distribution of these awards. Scholarship applications are accepted throughout the year and are reviewed semi-annually by a Scholarship Selection Committee comprised of academic and industry members. The number and amount of awards vary depending upon the number of applications received and available funds.

Applicants who are not selected may submit a new application for consideration in the next selection cycle. Previous award winners may also reapply.

Scholarship Criteria

Preferred requirements for scholarships are as follows:

Edison Community College / AA Degree:

- Completion of all placement testing.
- Completion of 12 credit hours with continuous enrollment.
- Minimum overall grade point average of 2.5.
- A demonstrated commitment to complete the AA degree with citrus courses.

BS, MS and PhD Degrees:

- Completion of all placement testing and a declared major in citrus or a citrus-related major.
- Completion of 12 credit hours towards a citrus degree.
- Minimum overall grade point average of 2.5 for a BS degree; 3.0 for MS and PhD degrees.
- A demonstrated commitment to complete the degree at a state college or university.

Applicants must complete the attached application, which includes a statement of release giving the selection committee permission to verify information submitted.