How to collect tissue samples for citrus greening testing and how to submit samples to the lab for analysis?

Information is included in this issue. For details, get to the following webpage:
Sampling Protocol for Submission of Huanglongbing (syn= Greening or HLB) Samples to the Southern Gardens Diagnostic Laboratory

If you want to see or 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
ORANGE JUICE GETS THE THUMBS UP
FOR DIABETICS!

Despite its high sugar content, diabetics are perfectly entitled to drink orange juice. Indeed, according to the results of an American study, orange juice appears to be beneficial to their health – mainly due to the fact that it is rich in flavonoids.

These magical substances help to combat oxidative stress which leads to cell destruction. This is a particularly harmful process for diabetics as it exposes them to a greater risk of developing arteriosclerosis (hardening of the arteries).

Professor Paresh Dandona of the University of Buffalo measured the oxidative stress levels of 32 participants, divided into four groups. They each had to drink 300 kilocalories of sugars in the form of either glucose, fructose, orange juice or water mixed with saccharin. After taking blood samples, Professor Dandona observed a significant increase in oxidative stress among those in the glucose group. On the other hand, “we were intrigued to find no oxidative reaction among the orange juice drinkers, who had nevertheless imbibed the same quantity of sugar”.
Special Thanks to all the 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.

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For more information, call Mongi at 863 674 4092 or send an e-mail to maz@ifas.ufl.edu

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Bart Hoopingarner
United Phosphorus, Inc.
3605 162nd Ave East, Parrish, FL 34219
Phone: 941 737 7444
Ag Net: 158*17*9485
bart.hoopingarner@uniphos.com
The training will be held from 8:30 am till 4:30 pm at the Immokalee IFAS Center 2686 State Road 29 North, Immokalee, FL 34142-9515, Phone: 239-658-3400

There will be a test at the end of the session. Enclosed are the agenda and directions. This class is still open; if you know of someone who would be interested in attending please have them contact my office. There is a $50.00 cost to attend, please make checks payable to Lake County Citrus Extension Program. Please send checks to the Lake County Extension office care of Ryan Atwood at 1951 Woodlea Rd., Tavares, FL 32778. If you have any other questions please feel free to contact Ryan at raatwood@ufl.edu

Extension Agent-Multi County Fruit Crops
Lake County Extension/UF/IFAS
1951 Woodlea Rd, Tavares, FL 32778
Phone: 352-343-4101
Fax: 352-343-2767 or Maggie Jarrell (mjarrell@ufl.edu) or myself (Mongi Zekri) at maz@ifas.ufl.edu or at 863 674 4092.

Florida’s Certified Pile Burner Training
August 7th, 2007

1. Opening Comments and Introduction 08:30 – 09:10
2. Smoke Management 09:10 – 10:30
3. BREAK 10:30 – 10:40
4. Fire Weather 10:40 – 11:20
5. Planning and Implementation 11:20 – 12:15
6. LUNCH (provided) 12:15 – 01:15
7. Open Burning Regulations 01:15 – 02:30
8. Safety 02:30 – 03:10
9. BREAK 03:10 – 03:20
10. Public Relations 03:20 – 04:00
11. Wrap Up & Test 04:00 – 04:30
Travel Directions to the Immokalee IFAS Research & Education Center

From the North:
Follow I-75 South to exit 138.
Head East on SR-82.
Turn Right and travel South on SR-29.
SWFREC is about 3 miles ahead on the right side of the road.

From Naples:
From I-75, take exit 111 (CR 846) East.
Turn left onto SR-29 and travel through Immokalee, staying on SR-29.
SWFREC is about 2 mile North of Immokalee on the left.

From the East:
Head West on I-75 (Alligator Alley).
Exit on SR-29 (Exit 80) and head North.
Pass through Immokalee, staying on SR-29.
SWFREC is about 2 miles North of Immokalee on the left.
CITRUS GREENING

Sample Documentation

1. No sample will be accepted without a properly filled out sample submission form!
2. No samples will be accepted or processed without the submission of a properly executed Disclaimer and Hold Harmless Agreement. Only one Disclaimer and Hold Harmless Agreement needs to be submitted for each organization/grove/nursery that is submitting samples (i.e. once the Disclaimer is on file, an unlimited number of samples can be submitted under the agreement for that organization).

Either include the Disclaimer in with the first set of samples or send it to:

Mike Irey  
United States Sugar Corporation  
Technical Operations  
111 Ponce de Leon Ave.  
Clewiston, FL 33440  
msirey@ussugar.com  
863-902-2249

3. Enough information must be provided in the “address where specimen was collected” and the “block/nursery designation” portions of the form to enable a state inspector to locate the row and tree or nursery block that was tested should subsequent testing by official sources be required.
4. Although not a requirement, we would like to have sample locations documented by GPS coordinates.

Sampling Protocol for Submission of Samples to the Southern Gardens Diagnostic Laboratory

Collection of Samples

Time of Year
1. If possible, samples should be collected from September through March although samples will be accepted throughout the year. Samples collected during non-optimal times of the year may not give an accurate representation of the disease status of the trees sampled.
2. Avoid collecting samples during leaf flushes (stop when feather flushes are approximately 2-3 in long, resume sampling when leaves from the most recent flush are fully expanded and beginning to harden off.

Symptomatic Field Trees
1. Samples should be collected from the symptomatic areas/branches of the trees.
2. Samples should consist of short sections (4-6 inches or greater) of symptomatic branches with the attached leaves. If fruit are present on the branches, the fruit can either be left on or they can be trimmed off. If the fruit are trimmed off, please leave the fruit stem on the sample (i.e. trim the fruit off as close to the button as possible leaving the stem on the branch).
3. If a variety of symptoms is present, the preferred samples (in order of preference) would be:
   a. Branches with mottled leaves
   b. Branches with leaves that have either green islands on a yellow background or yellow islands on a green background
   c. Branches that contain shoots that are almost entirely yellow
   d. Branches with nutrient deficiencies that have a “rabbit ear” appearance (small, upright leaves)
   e. Branches with leaves that show chlorosis and “vein corking”
   f. Branches with zinc and/or iron deficiencies that are not related to blight or other known causes
4. Place the leaves/twigs into a sealable (e.g. ziplock) plastic bag and keep the sample cool and out of the sunlight.

Sample Handling and Shipping
1. Each sample should be in an individual sealable plastic bag (zip lock).
2. A completed sample submission form should be included in the bag (or stapled) with each sample
3. Samples should be double bagged.
   a. When multiple samples are being submitted, multiple samples can be placed in one or more larger sealable bags, however each individual sample needs to be bagged individually and have its own individual completed sample submission form attached.
   b. If a large number of samples are being submitted from a nursery (i.e. a nursery submission from an increase block) it is permissible to use one form to cover each bench/block.
4. Samples should be kept cool and out of direct sunlight until shipping (i.e. cooler with ice, cooler or box w/o ice kept in the shade, etc.).
5. If at all possible, the samples should be shipped or hand delivered the same day that they are collected. If same day shipment/delivery is not possible, samples should be shipped/delivered the following day provided the samples are kept cool (but not frozen).
6. Samples should be shipped by overnight mail or courier and must not be shipped or held over the weekend.
7. Sample shipment/delivery can and should be coordinated with Mike Irey (msirey@ussugar.com, 863-902-2249).
8. If samples are received in poor condition, the samples will not be processed and the submitter will be asked to re-submit the samples.
Huanglongbing (Greening) Sample Submission Form

(► Required Information)

Submission Information
► Date Sample Collected: _________________________ ► Date Sent: _________________________
► Submitter name: _____________________________ ► Affiliation: __________________________
► Address: __________________________________
► City: ___________________________ ► State: ___________ ► Zipcode: __________________________
Email address: __________________________________
Phone Number: ___________________________ Fax Number: ___________________________
► Results To Be Returned By: Mail ___________ Email ___________ Fax ___________

Grove/Nursery/Sample Information
► Grove/Nursery Name: __________________________
► Address/Location Where Specimen Was Collected: __________________________
► City: ___________________________ ► County: ___________________________
► Block/Row/Tree Designation (must provide enough information to be able to locate the specific tree sampled) : __________________________________
Latitude: ___________________________ Longitude: ___________________________
► Section/Township/Range: Sample Id (local id): __________________________
► Host Plant Name/Variety: ___________________________
Tree Age ___________________________ Tree size ___________________________ Symptomatic ___________________________
Additional Comments: __________________________________
________________________________________

Do not write in this area
Date Received: ___________________________ Lab Id: ___________________________

Shipping/Delivery Address: United States Sugar Corporation, Technical Operations Laboratory, 500 Saginaw Avenue, Clewiston, FL 33440, 863-902-2249 (Mike Irey)
DISCLAIMER, INDEMNIFICATION AND HOLD HARMLESS AGREEMENT

Date: ______________________________ (“Effective Date”)

Company Name: _________________________________________ (“SUPPLIER”).

SUPPLIER Mailing Address: _______________________________________
________________________________________________________________________________
________________________________________________________________________________

WHEREAS, SUPPLIER desires to have UNITED STATES SUGAR CORPORATION (U.S. SUGAR) conduct diagnostic assays (“PCR TESTING”) for the presence of Liberibacter sp., the causal agent of Huanglongbing (citrus greening) in citrus samples supplied by the SUPPLIER.

WHEREAS, SUPPLIER is agreeing to assume all responsibility and liability for the PCR TESTING, and to indemnify and hold U.S. SUGAR and its subsidiaries, and its and their officers, directors, employees, agents, and property harmless from all such responsibility and liability in connection with and in exchange for the PCR TESTING pursuant to the provisions of this Agreement.

NOW THEREFORE, in consideration of the mutual covenants and promises contained herein, which the parties acknowledge to be good and valuable consideration for their obligations hereunder, the parties hereby agree as follows:

1. Definitions.

1.1. The term “Proceedings” shall include, without limitation, any threatened, pending, or completed claim, action, suit, or proceeding, whether of a civil, criminal, administrative, or investigative nature, in which U.S. SUGAR is or may have been involved as a party or otherwise, directly or indirectly in connection with any PCR TESTING performed by U.S. SUGAR for or on behalf of SUPPLIER, the use by SUPPLIER of the information generated by PCR TESTING, or by reason of any action or inaction of SUPPLIER, its officers, directors, employees, agents, representatives, contractors, or sub-contractors, related in any manner whatsoever to the PCR TESTING.

1.2. The term “Expenses” shall include, without limitation: expenses of investigations, judicial or administrative proceedings or appeals; amount of judgments, fines or penalties; losses; damages; liabilities; amounts paid in settlement by or on behalf of U.S. SUGAR; attorneys’ fees and disbursements; and any expenses of establishing a right to indemnification under this Agreement.

2. General Disclaimer; No Representations or Warranties. PCR TESTING IS A RESEARCH PROTOCOL THAT MAY PRODUCE INCONCLUSIVE RESULTS OR INFORMATION. SHOULD SUPPLIER RELY UPON THE INFORMATION GENERATED BY PCR TESTING, SUPPLIER ACKNOWLEDGES THAT SUPPLIER HAS ASSUMED ALL RISKS AND LIABILITY IN DOING SO. SUPPLIER ACKNOWLEDGES THAT U.S. SUGAR HAS NOT MADE ANY REPRESENTATIONS OR WARRANTIES CONCERNING THE PCR TESTING, THE INFORMATION GENERATED BY PCR TESTING, OR ANY COMPONENT OR CONSTITUENT THEREOF, INCLUDING, WITHOUT LIMITATION, THE COMPLIANCE OF THE PCR TESTING OR ANY PART THEREOF WITH ANY GOVERNMENTAL REQUIREMENTS OR SPECIFICATIONS. SUPPLIER DOES HEREBY DISCLAIM ANY AND ALL WARRANTIES THAT MAY BE DUE FROM U.S. SUGAR TO
SUPPLIER. U.S. SUGAR SHALL NOT BE LIABLE TO SUPPLIER, OR ANY OTHER PERSON OR ENTITY, FOR ANY DAMAGES ARISING FROM, RELATED TO, OR CAUSED BY THE PCR TESTING AND/OR THE USE OF THE INFORMATION GENERATED BY PCR TESTING, INCLUDING BUT NOT LIMITED TO, ANY INCIDENTAL, SPECIAL, CONSEQUENTIAL, OR PUNITIVE DAMAGES. U.S. SUGAR MAKES NO WARRANTIES, EXPRESS OR IMPLIED, REGARDING THE VIABILITY OF ANY MATERIALS SUBMITTED OR FURNISHED TO U.S. SUGAR PURSUANT HERETO AND STORED AT U.S. SUGAR’S FACILITIES.

3. Assumption of Liability and Indemnification. SUPPLIER shall indemnify and hold U.S. SUGAR and its subsidiaries, and its and their officers, directors, employees, representatives, and property free and harmless from any and all Expenses arising out of, resulting from, in connection with, or related in any manner whatsoever to any Proceedings.

4. Right of Indemnification. Any indemnification hereunder shall be made no later than thirty (30) days after receipt by SUPPLIER of a written request from U.S. SUGAR.

5. Enforcement. The right to indemnification as provided for in this Agreement shall be enforceable by U.S. SUGAR in an action in any court of competent jurisdiction. In such an action, the burden of proving that indemnification is not required hereunder shall be on SUPPLIER. The termination of any Proceedings by judgment, order, or settlement, whether with or without court approval, shall not create a presumption that indemnification hereunder is not permitted by applicable law. The indemnification provided under this Agreement shall not be deemed exclusive of any other rights to which U.S. SUGAR may be entitled.

6. Savings Clause. If this Agreement or any portion hereof shall be invalidated on any ground by any court of competent jurisdiction, SUPPLIER shall nevertheless indemnify and hold U.S. SUGAR harmless as to Expenses with respect to any Proceedings to the full extent permitted by any applicable portion of this Agreement that shall not have been invalidated.

7. No Advertising. SUPPLIER agrees that the use of information generated by PCR TESTING is for SUPPLIER’s use only. SUPPLIER shall not identify or use the information generated by PCR TESTING or the name or logo of U.S. SUGAR or its subsidiaries, or its and their officers, directors, employees, or representatives in any advertisement, public announcement, marketing material, or other similar documentation.

8. Storage of Samples Submitted. U.S. SUGAR shall not retain samples submitted for PCR TESTING longer than two (2) weeks after the completion of testing. Upon expiration of said storage period, all such samples shall be destroyed and U.S. SUGAR shall have no liability whatsoever for such destruction.

9. Breach. Breach of any terms contained herein or failure by SUPPLIER to perform any covenant, condition, or agreement contained in this Agreement shall be considered a default and shall entitle U.S. SUGAR to immediately pursue any remedy available hereunder or other remedy available at law or in equity; provided, however, that failure of U.S. SUGAR to enforce any default shall not be considered a waiver of the requirement, or the enforceability of this Agreement or any of its terms.

10. Successors. This Agreement shall be binding on and shall inure to the benefit of the heirs, executors, administrators, successors, and assigns of the parties hereto; provided, however, that SUPPLIER may not assign its rights and obligations hereunder without the prior written consent of U.S. SUGAR, which consent may be withheld in U.S. SUGAR’s sole discretion. Additionally, in the event of a merger, consolidation, or reorganization in which SUPPLIER is not the surviving entity, any sale of all or substantially all of the assets of SUPPLIER, or any liquidation of SUPPLIER, SUPPLIER shall have the obligations of SUPPLIER under this Agreement expressly assumed by the survivor, purchaser, or successor, as the case may be, or SUPPLIER shall otherwise adequately provide for the satisfaction of SUPPLIER’s obligations under this Agreement in a manner acceptable to U.S. SUGAR, in U.S. SUGAR’s sole discretion.
11. Governing Law and Jurisdiction. The terms and provisions of this Agreement shall be construed and enforced in accordance with the laws of the State of Florida. If a dispute shall arise between the parties hereto under this Agreement, the parties voluntarily submit to the jurisdiction of the state and federal courts in Florida.

12. Entire Agreement. This Agreement sets forth the entire understanding between the parties hereto regarding the subject matter contained herein.

13. Notices. All notices required under this Agreement shall be deemed duly given if in writing and delivered by courier or certified mail, return receipt requested as follows:
   If to U.S. SUGAR: c/o Legal Affairs Department, United States Sugar Corporation
   111 Ponce de Leon Avenue, Clewiston, Florida 33440
   If to SUPPLIER: At the mailing address listed hereinabove.
   Each party has a duty to report to the other parties any changes in their mailing address.

14. Amendment. No modification or amendment of this Agreement shall be valid unless in writing and signed by both parties.

15. Full Power and Authority. The signatories to this Agreement represent and warrant, each to the other, that the signatory: (a) has read and understands this Agreement; (b) has full authority to bind the party to this Agreement represented by the signatory and that the party has full authority to enter into this Agreement and be bound by the terms and conditions of this Agreement; and (c) sets the signatory’s hand hereunto with the intention of legally binding the party to this Agreement represented by the signatory.

16. Survival. The provisions in paragraphs 2, 3, 7, and 10 of this Agreement shall survive the expiration or termination of this Agreement.

17. Counterparts. This Agreement may be executed in any number of identical counterparts. If so executed, each of such counterparts is to be deemed an original for all purposes and all such counterparts shall, collectively, constitute one agreement, but, in making proof of this Agreement, it shall not be necessary to produce or account for more of such counterparts than are required to show that each party hereto executed at least one such counterpart. A facsimile or other reproduction of this Agreement may be executed by the parties, in counterparts or otherwise, and shall be considered valid, binding, and effective for all purposes.

UNITED STATES SUGAR CORPORATION

By:__________________________________________
Print Name: ____________________________________________
Title: ________________________________________________

SUPPLIER

By:__________________________________________
Print Name: ____________________________________________
Title: ________________________________________________
More on the Danger of Heat Stress

Be alert to early warnings of heat stress, both in yourself and in your co-workers.

Heat stress needs to be taken seriously
Working in a hot environment puts stress on the body's cooling system. When heat is combined with other stresses like hard physical work, loss of fluids, or fatigue it may lead to heat-related illness. Individuals over 40 years of age need to take extra care when the weather is hot because their ability to sweat declines as they age. However, heat stress can also affect individuals who are young and fit.

POINTS TO EMPHASIZE:
● Drink plenty of water to keep body fluid levels up
● Get out of the heat occasionally
Water is crucial to help the body adjust to high temperatures. The rate of water intake must be equal to the rate of water loss by perspiration to keep body temperature normal. When it's hot, drink plenty of water!
Your body must work even harder to get rid of excess heat when conditions are both hot and humid. Unfortunately, water can't evaporate as readily under muggy conditions. The process is easier if the surrounding air is moving. That's why we welcome a cool breeze, or turn on a fan when the air is "sticky".
Sickness and accident rates increase when heavy work is done at temperatures above 86 F. Don't push yourself beyond your limits. It could be harmful to your health, and could put you at increased risk of having an accident.

Heat stress hazards
1. Heat cramps: Heavy sweating drains the body of salt, which cannot be replaced by simply drinking water. Painful cramps occur in the arms, legs, or stomach while on the job, or later at home. Move to a cool area at once if cramping is experienced. Loosen clothing and drink cool, commercial fluid replacement beverage. Seek medical aid if the cramps are severe, or don't go away.
2. **Heat exhaustion:** Inadequate water and salt intake causes the body's cooling system to break down. Symptoms include heavy sweating, cool, moist skin, body temperature over 100 F, weak pulse, and normal or low blood pressure. The victim is likely to be tired, weak, clumsy, upset, or confused. He will be very thirsty, and will breathe rapidly. His vision may be blurred. **Get medical help immediately!** Heat exhaustion can lead to heat stroke, which can kill. Move the person to a cool, shaded area. Loosen or remove excess clothing. Provide cool, lightly-salted water. Fan and spray the victim with cool water.

3. **Heat stroke can kill a person quickly!** Once the body uses up all its water and salt, sweating ceases. Temperature can rise quickly. You can assume a person is suffering from heat stroke if their body temperature is over 105 F, and any of the following symptoms are present:
   - weakness, confusion, distress, strange behavior
   - hot, dry, red skin
   - rapid pulse
   - headache or dizziness
   - In later stages of a heat stroke, a victim may pass out and have convulsions

   **Call an ambulance immediately** if heat stroke is suspected. The victim's life may be on the line! Until help arrives, move the victim to a cool area and remove excess clothing. Fan and spray them with cool water. Offer sips of water if the victim is conscious.

**Heatwave guidelines**

The following measures should help prevent the development of heat-related illnesses.

- Slow down in hot weather. Your body's temperature regulating system faces a much greater workload when temperature and humidity are high.
- Heed early warnings of heat stress, such as headache, heavy perspiration, high pulse rate, and shallow breathing. Take a break immediately and get to a cooler location. **Watch for heat stress signs among your co-workers.**
  - Dress for hot weather. Lightweight, light-colored clothing reflects heat.
  - **Drink plenty of water.** Don't let yourself "dry out".
  - Try to get used to warm weather gradually. Take it easy for those first three hot days. Your body will have a better chance to adjust if you take it slow.
  - Get out of the heat occasionally. Physical stress increases with time in hot weather. Take breaks in a cool, shady location.
  - Wear a hat and long-sleeved shirt to prevent burning (which can increase the risk of skin cancer.)

"**Do's**" and "**Don'ts**" of preventing heat-related illnesses

<table>
<thead>
<tr>
<th><strong>DO:</strong></th>
<th><strong>DON’T:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Drink plenty of water</td>
<td>Ignore symptoms of heat stress</td>
</tr>
<tr>
<td>Take breaks in a cool, shady area</td>
<td>Try to &quot;keep up&quot; with the rest of the crew, even though you feel ill</td>
</tr>
<tr>
<td>Watch for symptoms of a heat stress, both in yourself and co-workers</td>
<td></td>
</tr>
</tbody>
</table>
**BMP Development**

While the ultimate responsibility for establishing and meeting TMDL water quality goals rests with FDEP, the Florida Department of Agriculture and Consumer services (FDACS) assumes the leadership role when dealing with agriculture’s non-point source pollution challenges. To accomplish this task FDACS must coordinate with FDEP and other stakeholders to identify, develop and adopt by rule science-based best management practices (BMPs) for agricultural land uses. BMPs must be environmentally protective, based on science, be economically viable, and focused on real problems and solutions that work.

BMP measures are strictly voluntary and not regulatory or enforcement-based. As part of the BMP implementation, growers perform an environmental assessment of their operations. This process identifies which BMPs should be considered to achieve the greatest economic and environmental benefit. The adopted BMPs may be a single practice or grouping of practices that, when implemented, are designed to improve water quality. The BMPs that are selected for each parcel of land with a tax ID are specified on a Notice of Intent to Implement and submitted to FDACS.

**BMP Implementation**

Once enrolled in the BMP program, landowners must maintain records and provide documentation regarding the implementation of all BMPs (i.e. fertilizer application dates and amounts, or design and construction details of a water control structure).

In all BMPs, education is a key factor to ensure success of the programs. Growers and landowners, need to be part of the solutions to reduce the environmental impact of their agricultural operations. All are encouraged to take part in the many IFAS-sponsored educational events that are designed to help understand the water-related issues and the role of BMPs in addressing these problems. Most importantly, the agricultural laborers and applicators need to have specific training to ensure that all their activities (fertilizer application, spraying, etc.) are accomplished safely with proper techniques to minimize environmental effects.

---

**Pick up your copy of the BMP (Best Management Practices) for Gulf Citrus manual from the Hendry County Extension Office in LaBelle or the SW Florida Research & Education Center in Immokalee.**

**Take advantage of the BMP cost share program (up to 75%).**

For more information and application go to: [http://citrusbmp.ifas.ufl.edu/gulfcoast/index.html](http://citrusbmp.ifas.ufl.edu/gulfcoast/index.html)

**Or get it from and submit to Dan Rutledge at the address below:**

Hendry Soil and Water Conservation District  
Attn: Dan Rutledge  
P.O. Box 248  
LaBelle, Florida 33975  
Phone: 863 674 4160

**Apply now!**
COMMENTS FROM
A RECENT RETIREE

Dr. Ken Derrick, Professor Emeritus, UF-IFAS, Citrus Research & Education Center

It is difficult for the current generation of Florida citrus growers to see, but there could be a silver lining to the cloud known as citrus greening.

Back in the 1980s, I was involved in research on production of transgenic crops that resulted in two patents that were licensed to a biotechnology firm. At the time I would have predicted that by 2007 citrus and most other crops would be engineered for resistance to various pests and pathogens and for improved characteristics. This prediction would have been wrong in that I would have failed to anticipate the considerable resistance to transgenics from a variety of sources including (1) many environmentalists are opposed to transgenics even though they offer obvious advantages for crop production with lower inputs, less pesticides, etc., (2) some European Union farmers are opposed to transgenics based primarily on using transgenics as a trade barrier, (3) many researchers agree that transgenics may be important in the distant future, but in the meantime they want to keep business as usual and defend their turf, and (4) some growers are opposed to molecular approaches which they consider to be pie in the sky and prefer simplistic field research.

On the world stage, citrus is considered to be a minor crop, but in countries with citrus industries considerable investments have been made in research and over a billion dollars were wasted on the canker boondoggle in Florida. Unfortunately most of these resources have been used for endless fine tuning of existing technologies. With the wolf at the door (greening) perhaps there should be significant changes in research priorities with more emphasis on molecular approaches.

Citrus greening has weakened opposition to transgenics as there is now something of a consensus that transgenic resistance to citrus greening is highly desirable, if not absolutely necessary, for economic production of citrus. The research needed will involve serious studies on the molecular biology of citrus leading to identification of genes that affect the susceptibility or resistance to greening. Amplification or suppression of selected genes through transgenics will result in plants resistant to the disease. Similar approaches can be used to engineer resistance to other pests and pathogens and to improve horticultural characteristics.

If the cloud of citrus greening results in significant increases of resources for research in molecular biology and transgenics then there could indeed be a silver lining. There has been some change in attitudes, but there is a lot of momentum for maintaining the status quo. As storm clouds continue to gather and it becomes obvious that the industry is in trouble, there may be more interest in getting serious about molecular studies, but by then it may be too little too late to save Florida citrus.
Citrus Greening Identification & Worker Survey Training

Presented by the Florida Cooperative Extension Service
Citrus Extension Agents

Program Agenda

9:30 AM    Registration
10:00 AM   Distribution of Citrus Greening & Citrus Psyllid Management
10:20 AM   Scouting Recommendations & Employee Safety Issues
10:40 AM   Citrus Greening Symptom Identification
11:00 AM   Hands-on Citrus Greening Identification Training
12:05 PM   Adjourn

Note: the Tavares location will cover the same topics but begin at 1:30 PM instead of 9:30 AM

Attendees will receive 2.5 Continuing Education Units (CEU’s) for the Restricted Pesticide and Certified Crop Advisor Licenses. In addition participants will receive a certificate of completion of Citrus Greening Identification Training.

Speakers, Multi-county citrus or horticultural agents:
Steve Futch    Mongi Zekri    Chris Oswalt
Lake Alfred, FL LaBelle, FL    Bartow, FL
863-956-1151   863-674-4092   863-519-8677 ext. 108

Ryan Atwood    Gary England
Tavares, FL    Bushnell, FL
352-343-4101   352-793-2728

Meeting locations of training in October, 2007:
Oct. 11      Bartow    1710 Highway 17 South    Polk Co. Ext. Stuart Center
Oct. 17      Arcadia  2250 NE Roan Street    Turner Exhibition Hall
Oct. 23      Immokalee 2686 SR 29 N    SW Fla. REC
Oct. 24      Tavares  1951 Woodlea Rd    Lake County Extension
Oct. 30      Sebring  4509 W. George Blvd    Highlands County Extension
Oct. 31      Ft. Pierce  2199 S Rock Rd    Indian River REC

To register for a specific location of the following locations, please contact:
Bartow – Polk County Extension Service, 863-519-8677
Arcadia – DeSoto County Extension Service, 863-993-4846
Immokalee – Hendry County Extension Service, 863-674-4092
Tavares – Lake County Extension Service, 352-343-4101
Sebring – Highlands County Extension Service, 863-402-6540
Ft. Pierce – St. Lucie County Extension Service, 772-462-1660
Flatwoods Citrus

☐ If you did not receive the Flatwoods Citrus newsletter and would like to be on our mailing list, please check this box and complete the information requested below.

☐ If you wish to be removed from our mailing list, please check this box and complete the information requested below.

Please send: Dr. Mongi Zekri
Multi-County Citrus Agent
Hendry County Extension Office
P.O. Box 68
LaBelle, FL 33975

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Subscriber’s Name:_______________________________________
Company:______________________________________________
Address:_____________________________________________________
City:______________________State:___________Zip:__________
Phone:_________________________
Fax:___________________________
E-mail:_________________________

Racial-Ethnic Background

__American Indian or native Alaskan          __White, non-Hispanic
__Asian American                          __Black, non-Hispanic
__Hispanic

Gender

__Female                                             __Male