

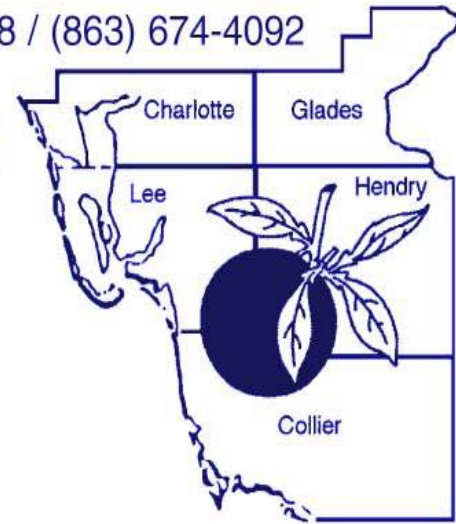


UNIVERSITY OF
FLORIDA

IFAS EXTENSION

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Flatwoods Citrus



Vol. 8, No. 10

October 2005

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Multi-County Citrus Agent, SW Florida



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U P C O M I N G E V E N T S

Update on the psyllid, citrus greening, and canker

Speaker: Drs. Phil Stansly, Ron Brlansky, and Xiaoan Sun

Date: Tuesday, October 18, 2005, 10:00 AM – 1:00 PM

The Institute for the Advanced Study of Emerging Pathogens (IASEP)

Speaker: Dr. Gail Wisler ([details on page 17](#))

Location: SW Florida Research & Education Center, Immokalee

2 CEUs for Pesticide License Renewal, 2 CEUs for Certified Crop Advisors

Sponsor: **John Motis, Chemical Containers, Inc.**

Following the seminar, we are planning a free lunch (Compliments of Chemical Containers, Inc.). To reserve lunch, call 863 674 4092 no later than 17 Oct. 2005.

**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**

51st Annual Meeting of the InterAmerican Society for Tropical Horticulture (ISTH), Date: October 10-14, 2005

Location: Hotel Hamaca Coral Hilton, at Boca Chica ten minutes from Santa Domingo International Airport, The Dominican Republic,

<http://www.cedaf.org.do/eventos/ISTH2005/index.htm>

For more information, contact Dr. Richard Campbell at rcampbell@fairchildgarden.org

FLC Training Workshop (details on page 18)

Date: October 20, 2005, Thursday

Location: Career Service Center of Collier County, 750 South 5th Street, Immokalee

WEATHER SCHOOL, 9:30 AM - 12:30 PM

Mark your calendar and contact the Extension Office near you in the following counties: Highlands (863-402-6540), Polk (863-519-8677), Lake (352-343-4101), St. Lucie (772-462-1660), Hendry (863-674-4092) or DeSoto (863-993-4846)

Dates & Locations:

- Oct. 25** – Sebring
- Nov. 3** – Bartow
- Nov. 8** – Apopka
- Nov. 15** – Immokalee
- Nov. 16** – Arcadia
- Nov. 17** – Ft. Pierce



Topics:

- Climate outlook (prediction for the winter)
- Principals of cold protection (include cultural practices)
- The FAWN cold protection tool kit
- Critical temperatures for citrus and other crops
- Agricultural forecasts
- Heat of fusion & evaporative cooling
- Starting and stopping your system (wet bulb shut off tool)
- Other FAWN information for cold nights



Following the program, we are planning a free lunch for all attendees.

Special Thanks to 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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SOIL ACIDITY AND LIMING

The optimum soil pH range for citrus trees is 6.0 to 7.0. Trifoliolate hybrid rootstocks such as citrumelos and citranges do better at the low end of this pH range. For sandy soils, one ton of liming material such as dolomite will raise the soil pH by about one unit. Liming acidic soils is economically sound and essential for profitable crop production. Soil pH must be monitored every year through soil testing because development of soil acidity is a continuous process that requires repeated applications of liming materials. Always test your soil before liming. Do not assume that lime is needed.



Problems in very acid soils

- *Aluminum (Al) toxicity to plant roots
- *Copper toxicity in soils that have received repeated Cu fungicide applications
- *Manganese toxicity to plants in continuously wet soils
- *Calcium & magnesium deficiencies
- *Molybdenum deficiency
- *Phosphorus tied up by iron (Fe) & Al
- *Poor bacterial growth
- *Reduced conversion of ammonium to nitrate

Problems in alkaline (high pH) soils

- *Iron deficiency
- *Manganese deficiency
- *Zinc deficiency
- *Excess salts (in some soils)
- *Phosphorus tied up by calcium (Ca) and magnesium (Mg)
- *Bacterial diseases and disorders

Fertilizers. Both organic and non-organic fertilizers may eventually make the soil more acid. For example, transformations of ammonium- (NH_4^+) and urea-based fertilizers into nitrate (NO_3^-) release H^+ that increases soil acidity. Therefore, fertilization with materials containing ammonium or even adding large quantities of organic matter to a soil will ultimately increase the soil acidity and lower the pH.

Raising soil pH (liming acid soils).

Soils are limed to reduce the harmful effects of low pH and to add calcium and magnesium to the soil. Lime reduces soil acidity (increases pH) by reducing the H^+ concentration through neutralization with carbonate (CO_3^{2-}) or hydroxide (OH^-). A Ca^{++} ion from the lime replaces two H^+ ions on the cation exchange complex. The hydrogen ions (H^+) are then reduced and changed into water (H_2O). An acid soil can become more acid as basic cations such as Ca^{2+} , Mg^{2+} , and K^+ are removed, usually by crop uptake or leaching, and replaced by H^+ .

Benefits of liming to correct soil acidity

- *Increased nutrient availability
- *Improved fertilizer use efficiency
- *Increased soil microbial activity
- *Higher nitrogen fixation by legumes
- *Reduced toxicity of copper

*Provision of additional amounts of calcium and magnesium

*Improved soil physical conditions

*Increased cation exchange capacity

*Improved herbicide activity

*Increased growth and crop yield

Lime placement. Since ground limestone is relatively insoluble in water, maximum contact with the soil is necessary to neutralize the soil acidity. Lime will not quickly move into the soil like water-soluble fertilizers. Even though it is usually recommended to thoroughly mix lime with the topsoil, it is not practical to incorporate it in a citrus grove. Therefore, it will take lime longer to raise soil pH in a grove compared with a field where it is incorporated. As soon as moisture is present, the lime will begin to react. Coarse lime particles react more slowly than very fine particles. Therefore, using very finely ground limestone is necessary to

achieve the desired soil pH change within 4 to 6 months after application.

Overliming. While a correct liming program is beneficial for plant growth, excessive liming can be detrimental because deficiencies and imbalances of certain plant nutrients may result. The practice of estimating lime requirement without a soil test is risky because it can lead to overliming.

Liming materials. The most common liming materials are calcitic or dolomitic agricultural limestone. Calcitic limestone is mostly calcium carbonate (CaCO_3). Dolomitic limestone is made from rocks containing a mixture of calcium and magnesium carbonates. Dolomitic limestone also provides magnesium. Not all materials containing calcium and magnesium are capable of reducing soil acidity. Gypsum (CaSO_4) does not reduce soil acidity.

Lime may be applied at any time during the year to Florida citrus groves.

Calcium sources

Source	Chemical formula	Calcium carbonate equiv. (pure form)
Burned lime (Quicklime)	CaO	179
Hydrated lime (Builder's lime)	Ca(OH)_2	135
Dolomitic lime	$\text{CaCO}_3 \bullet \text{MgCO}_3$	109
Calcitic lime	CaCO_3	100
Basic slag (by-product)	CaSiO_3	80
Marl (soft carbonates)	CaCO_3	70 to 90
Gypsum	CaSO_4	0
Calcium nitrate	$\text{Ca(NO}_3)_2$	20
Ordinary superphosphate	$\text{Ca(H}_2\text{PO}_4)_2 + \text{CaSO}_4$	0
Concentrated superphosphate	$\text{Ca(H}_2\text{PO}_4)_2$	0

Suggested Facility Security Practices



Awareness

- Conduct a security assessment of your facility.
- Use opening and closing security check lists; note any discrepancies or irregularities.
- Initiate or join your local “crime watchers” program.

Access

- Escort all customers or visitors in storage yards or near loading docks.
- Establish a uniform or ID badge system to distinguish employees.

Alarms

- Install alarms and use a security alarm monitoring service.
- Ensure that phone lines are protected or have a service interruption alarm.
- Locate exterior strobe lights with alarms where neighbors and law enforcement can see them.

Barriers

- Construct structural barriers, including steel doors and barred windows.
- Install fencing as a deterrent where appropriate; fencing should be such that law enforcement and passers-by can view the property.
- Install access gates where fencing is not appropriate.
- Install bollards and chains across driveways or block with trucks and other equipment during off-hours.

Community

- Establish a process for including neighbors and the community as part of facility security and emergency response planning.

Inventory Control

- Know your inventory.
- Establish an ongoing process for inventory control of materials stored at the facility.
- Do not allow unattended, loaded trailers on site.
- Record stored nurse tanks by identification number and weight of remaining product.
- Inspect tanks visually each morning.
- Keep bills of lading, blank forms and all shipping/receiving paperwork secured.

Law Enforcement

- Establish and maintain relationships with local law enforcement and emergency responders. Provide them with your emergency plans and keys to locked gates.
- Provide law enforcement dispatchers with current emergency contact information for the facility. Keep this information current.

- Immediately report unusual or suspicious persons, vehicles or activity to local law enforcement.

Lighting

- Contact your local power company for a lighting assessment and information on leasing lights for your property.
- Install sufficient exterior lighting for law enforcement and passers-by to see your property.
- Discuss your lighting plan with local law enforcement.

Locks

- Establish a procedure and responsibility for locking up at close of business.
- Use high-security locks for doors, enclosures and gates, following local fire code requirements. Keep padlocks locked on hasps while not in use to prevent your lock from being replaced by someone else’s.
- Use deadbolt locks on doors with a minimum of 1.5-inch throw.
- Implement key control for locked containers, equipment, hoppers, vehicles and vessels.

Signage

- Post alarm monitoring service signs in highly visible locations. Include signage for:
 - No trespassing
 - Private property
 - Closed circuit TV surveillance
 - Patrolled
 - No vehicles beyond this point
 - All visitors must check-in with front office
 - All visitors must be escorted

Surveillance

- Install CCTV surveillance cameras to monitor less visible or high-risk areas.

Training

- Involve employees in security planning.
- Train employees to spot suspicious individuals and behavior.
- Conduct periodic emergency drills, e.g. fire, evacuation and security, with employees.

Vendors

- Know vendors that service your facility.
- Require all vendors to check in.
- Escort vendors.

Visibility

- Assure an open area around the facility, unlimited by shrubs, trees, large signs or other barriers to open sight.

SUGGESTED CUSTOMER TRANSACTION PRACTICES

Awareness

- Heighten employee awareness of what constitutes an unusual customer and sales transaction.
- Heighten customer awareness of potential for criminal misuse of agricultural chemicals.
- Advise customers to contact law enforcement immediately with any concerns about unusual

persons, vehicles or activities in the vicinity of your facility or theirs.

Sales Transaction

- Know your customer.
- Follow all requirements for verification when selling restricted use pesticides.
- For all sales, record customer's name, address, telephone number. If in doubt ask for a driver's license.
- Make deliveries only when the customer or agent is available to take custody and sign for the material.
- Do not deliver tanks or other products to empty fields or other unattended locations.
- Make follow-up calls to verify receipt of materials by customer in quantity ordered.
- Be alert to those who:
 - ⚠ Pay in cash;
 - ⚠ Won't take delivery;
 - ⚠ Behave in an unusual manner;
 - ⚠ Hesitate when asked for ID to complete the sale;
 - ⚠ Don't know the product;
 - ⚠ Insist on certain products, such as ammonium nitrate, and will not consider other suggestions;
 - ⚠ Ask questions about product manufacturing;
 - ⚠ Aren't familiar with farming, pesticides or fertilizer products.
- If in doubt:
 - ⚠ Write down vehicle color, make, license number and state and a physical description of the individual;
 - ⚠ Retain papers the customer may have touched for fingerprints;
 - ⚠ Save this information in the event that it needs to be provided to law enforcement.

Certain agricultural inputs stored at your facility may warrant special security measures, such as anhydrous ammonia, ammonium nitrate, bulk urea and insecticides.

Alarms

- Install alarms near tanks.
- Install explosion-proof alarm systems near combustible material.

Awareness

- Be alert to those attempting to buy ammonia if they cannot state a legitimate, agronomic need for the product.
- Inspect tank and bulk storage areas daily.
 - Check for fresh tracks in mud or snow or disturbed ground around tanks and bulk storage areas;
 - Check to see if tank valves are closed tightly;
 - Look for suspicious items near tanks such as duct tape, garden hose, bicycle inner tubes, buckets and coolers;
 - Check for broken or missing wire ties or seals that you may have placed on valve wheels as markers.
- Make customers aware of the potential for theft or tampering with tanks and bulk ag chemicals.
- Remove hoses between tool bars and nurse tanks; relieve pressure with the bleed valves when left overnight. Encourage end-users to do the same.

Law Enforcement

- Work with local law enforcement to encourage frequent nighttime patrols.
- Contact local law enforcement immediately if you suspect tampering or theft at your facility or the presence of unusual persons, vehicles or activities.
- Do not disturb a potential crime scene.

Locks for Tanks

- Use brightly colored plastic ties or wire seals between the valve wheel and the roll cage to ease visual checks and to identify tampering.
- Use tamper resistant seals and locks.
- Use high-security locks.
- Use specialized tank locks for nurse tanks containing anhydrous ammonia.
- Paint tank locks red so law enforcement can identify anhydrous ammonia tanks.

Visibility

- Store tanks in well-lit areas with a clear line-of-sight.
- Store tanks with flow valves facing outward to speed visual inspections.
- Do not leave tanks in remote areas.

SUGGESTIONS FOR PARTNERING WITH YOUR CUSTOMERS ON SECURITY AND SAFETY

- Take delivery of tanks as close to time of application as possible.
- Position tanks in open, visible areas.
- Don't take delivery of tanks to unattended locations.
- Don't store tanks and tool bars inside buildings, near the farmhouse or livestock confinement houses.
- Remove hoses between tool bars and nurse tanks and relieve pressure with the bleed valves if tanks are left overnight. Store hoses and tool bars away from tanks.
- Don't leave tanks unattended for long periods of time.
- Inspect tanks every day, especially after a weekend when most thefts occur.
- Return tanks immediately after use.
- Inspect and record the condition of each nurse tank upon delivery and return.
- Store all agricultural chemicals, e.g. bulk, bagged, in a secured area.
- Where appropriate, use alarm systems to protect secured storage areas and chemicals.
- Be aware of and maintain inventory control.
- Lock any containers, equipment, hoppers, tanks and vessels containing product whenever possible.
- Be aware of signs of theft of anhydrous ammonia, ammonium nitrate or bulk urea.

Law Enforcement

- Urge customers to contact local law enforcement immediately if tampering or theft is suspected or suspicious persons or vehicles are seen.
- Do not approach or confront suspicious individuals.
- Do not disturb the area around a possible crime scene.

IRRIGATION, NUTRITION AND FRUIT QUALITY

Florida has the highest citrus fruit quality standards in the world. Fruit quality factors include juice content, soluble solids and acid concentrations, soluble solids-acid ratio, fruit size, and color. Florida citrus growers know that quality factors differ for the fresh and processing markets. For example, fruit size, shape, color, and maturity date are most important for fresh fruit, but high juice content and soluble solids are desired for processing fruit. Fruit quality is affected by several factors including cultivar, rootstock, climate, soil, pests, irrigation, and nutrition.



The effects of irrigation and nutrition on fruit quality are very important and should be understood and taken into consideration by citrus growers and production managers to increase their profitability and enhance their sustainability and competitiveness on a worldwide basis. In general, excessive irrigation and nutrition reduce fruit quality. Therefore, balanced nutrition with sound irrigation scheduling based on **IFAS** recommendations should be a high priority management practice for every grower. Citrus trees require a properly designed, operated, and maintained water management system and a balanced nutrition program formulated to provide specific needs for maintenance and for

expected yield and fruit quality performance. Irrigation contributes to the efficiency of fertilizer programs. Adequately watered and nourished trees grow stronger, have better tolerance to pests and stresses, yield more consistently, and produce good quality fruit. On the other hand, excessive or deficient levels of watering or fertilization will result in poor fruit quality. The most important management practices influencing fruit quality are irrigation and nitrogen, phosphorus, potassium, and magnesium nutrition. However, when any nutrient element is severely deficient, fruit yield and fruit quality will be negatively altered. Trends in fruit quality response to high nutrition and irrigation are described and summarized below.

Nitrogen (N)

- ❑ Increases juice content and color, total soluble solids (TSS), and acid content.
- ❑ Increases soluble solids per box and per acre. However, excessive N, particularly with inadequate irrigation, can result in lower yields with lower TSS per acre.
- ❑ Decreases fruit size and weight.
- ❑ Increases peel thickness and green fruit at harvest.
- ❑ Increases incidence of creasing and scab but decreases incidence of peel blemishes such as wind scar, mite russeting, and rind plugging.
- ❑ Reduces stem-end rot incidence and green mold of fruit in storage.

Phosphorus (P)

- ❑ Reduces acid content, which increases soluble solids-acid ratio. Phosphorus rates have no effect on soluble solids per box but may increase soluble solids per acre due to increase in fruit production in soils that are low in P.
- ❑ Increases number of green fruit but reduces peel thickness.

- Increases expression of wind scar but reduces that of russeted fruit.

Potassium (K)

- Potassium produces mostly negative effects on juice quality except soluble solids per acre. Potassium increases fruit production therefore producing more soluble solids per acre.
- Decreases juice content, soluble solids, ratio, and juice color.
- Increases acid content.
- Increases fruit size, weight, green fruit and peel thickness.
- Reduces incidence of creasing and fruit plugging. In storage, reduces stem-end rot.

Magnesium (Mg)

- Slightly increases soluble solids, soluble solids-acid ratio, soluble solids per box and soluble solids per acre.
- Slightly increases fruit size and weight but decreases rind thickness.

Irrigation

- Increases juice content and soluble solids-acid ratio.

- Reduces soluble solids and acid contents. Soluble solids per box will decrease, but soluble solids per acre may increase due to yield increase.
- Increases fruit size and weight, increases green fruit at harvest, but decreases rind thickness.
- Increases incidence of blemish from wind scar, scab and *Alternaria* brown spot, but reduces rind plugging.
- Reduces stem-end rot incidence but increases incidence of green mold in storage.

Specific effects on juice and external fruit qualities are summarized in the Table below. This summary is based on numerous field experiments conducted over many years, mostly on responses of oranges to irrigation and fertilizer practices. Most of these effects were consistently observed, but some of them appear to depend on local conditions and growing regions. These observations are useful in developing a strategy to improve fruit quality for a particular variety or location.

EFFECTS OF MINERAL NUTRITION AND IRRIGATION ON FRUIT QUALITY

Variable	N	P	K	Mg	Irrigation
<u>Juice Quality</u>					
juice content	+	0	-	0	+
soluble solids (SS) acid (A)	+	0	-	+	-
SS/A ratio	+	-	+	0	-
juice color	-	+	-	+	+
solids/box	+	0	-	?	0
solids/acre	+	0	-	+	-
	+	+	+	+	+
<u>External Fruit Quality</u>					
size	-	0	+	+	+
weight	-	0	+	+	+
green fruit	+	+	+	0	+
peel thickness	+	-	+	-	-

Increase (+), Decrease (-), No change (0), No information (?).

Quick Overview of the Federal Worker Protection Standard (WPS)



Key Definitions Relating to WPS

Agricultural establishment --- any farm, forest nursery or greenhouse.

Agricultural employer --- any person who hires or contracts for services of workers/handlers, for any type of compensation, to perform activities related to the production of agricultural plants, or any person who is an owner

or responsible for the management or condition of an agricultural establishment that uses workers/handlers.

Agricultural plant --- any plant grown or maintained for commercial or research purposes and includes, but is not limited to, food, feed, and fiber plants; trees; turfgrass; flowers; shrubs; ornamentals; and seedlings.

Handler --- any person, including a self employed person, who mixes, loads, transfers, applies, disposes pesticides or pesticide containers, cleans, adjusts, handles or repairs application equipment, acts as a flagger, etc.

Restricted entry interval (REI)--- the time after the completion of a pesticide application during which entry into the treated area is restricted.

Worker --- any person, including a self employed individual, who performs hand labor tasks, including weeding, harvesting, topping, sucker removal, packing produce in the field, thinning, etc.

What Employers Must Do for Both Workers and Handlers

Information at a central location

Information must be made available to workers and handlers at a central location where it can be easily accessed during normal business hours and must include the following information:

- EPA WPS Safety Poster
- Name, address and telephone number of the nearest medical facility
- Facts about each pesticide application (from before each application begins to 30 days after the REI)
 - Application list which includes the location and description of the area to be treated.
 - Product name, EPA registration number, and active ingredient(s) of the pesticide.
 - Time and date the pesticide is scheduled to be applied.
 - Restricted entry interval for the pesticide.

Pesticide Safety Training

Agricultural workers must be trained within the first 5 days of employment. Handlers must be trained before any handling activity is performed. Workers and handlers must each be trained at least once every 5 years.

Trainers must:

- Use written and/or audiovisual materials,
- Use EPA approved materials for training,
- Conduct the training orally and/or audiovisually in a manner the employees can understand with an opportunity to answer questions and
- Meet one of the following criteria to perform training:
 - Currently be a certified applicator of Restricted Use Pesticides (RUPs) or
 - Currently be designated by a State, Federal or Tribal agency having jurisdiction, as a trainer of pesticide applicators or
 - Have completed a pesticide safety Train the Trainer program conducted by a State, Federal or Tribal agency having jurisdiction.

Decontamination Supplies

Employers must establish a decontamination site within 1/4 mile of where workers and handlers are performing their duties. Handlers mixing pesticides must have a decontamination site at the mixing area.

The decontamination site must include:

- Enough water for routine washing and for eyeflushing,
- An adequate supply of soap and single use towels,
- Enough water to wash the entire body (for handlers only) and
- A clean change of clothes such as coveralls (for handlers only).



Employer/Commercial Applicator Information Exchange

Before any application, commercial handler employers must make sure the operator of the agricultural establishment where a pesticide will be applied is aware of:

- Specific location and description of area (s) to be treated,
- Time and date of application,
- Product name, EPA registration number, and active ingredient,
- Restricted entry interval for the pesticide,
- Notification requirements; oral/posting and
- Any other specific requirements for the protection of workers and other persons during or after the application.

Operators of agricultural establishments must make sure any commercial pesticide establishment operator they hire is aware of:

- Specific location and description of all areas on the establishment where pesticides will be applied or where an REI will be in effect while the commercial handler is on the establishment and
- Restrictions on entering those areas.

Emergency Assistance

Agricultural employers must make emergency transportation available for workers and handlers to an emergency medical facility. In the event of a suspected poisoning, they must also provide information to the victim and medical personnel about the pesticide including:

- product name, EPA registration number and active ingredients,
- all first aid and medical information from the label,
- description of how the pesticide was used and
- information about the victim's exposure.

Get your 140-page book of the **Worker Protection Standard for Agricultural Pesticides - How to Comply, What Employers Need To Know** from my office. \$3.00 each.

Additional Duties for Handler Employers

- Do not allow handlers to apply a pesticide so that it contacts, either directly or through drift, anyone other than trained and PPE equipped handlers.
- Make sight or voice contact at least every 2 hours with anyone handling pesticides with a skull and crossbones on the label.
- Make sure a trained handler equipped with labeling-specific PPE maintains constant voice or visual contact with any handler in a greenhouse who is doing fumigant-related tasks, such as application or air-level monitoring.
- Before any handling task, inform handlers, in a manner they can understand, of all pesticide labeling instructions for safe use.
- Keep pesticide labeling accessible to each handler during entire handling task.
- Before handlers use any assigned handling equipment, tell them how to use it safely.

Additional Duties for Worker Employers

- During any REI, do not allow workers to enter a treated area and contact anything treated with the pesticide to which an REI applies.

The Institute for the Advanced Study of Emerging Pathogens (IASEP)

A Collaborative Effort Across IFAS, CALS and the Health Center At the University of Florida

An exciting new Legislative Initiative on “Emerging Pathogens” is being proposed for the 2006-07 budget year for IFAS, the Health Center, and the College of Liberal Arts and Sciences at the University of Florida. Every aspect of our agriculture and state economy is threatened by new and emerging diseases that potentially enter our state on a daily basis. Many of Florida’s most important agricultural and natural resource industries, including citrus, tomato, strawberry, and tourism are facing the potential of enormous economic losses. IFAS will be a partner in UF’s proposed **Institute for the Advanced Study of Emerging Pathogens (IASEP)** by focusing on problems such as citrus diseases (canker, blight, greening), sudden oak death, soybean rust, Pierce’s disease of grapes, mosquito-borne animal pathogens and human pathogens present in vegetables, fruits, and seafood. We need the research capability to be prepared to prevent and control outbreaks caused by these pathogens. We need the teaching capability to train the next generation of scientists who will keep these pathogens at bay in the future. And we need the outreach capability to educate the people of Florida on steps they can take to avoid economic losses as growers and to avoid disease from food-borne pathogens as consumers. Florida’s natural and managed landscapes are under threat from pathogens such as sudden oak death which caused massive losses of landscape in peer states such as California.

Florida is especially vulnerable to invasive new diseases due to its tropical and sub-tropical climate, extensive coastline, and numerous ports of entry. Early detection and rapid diagnosis, coupled with new and novel strategies for disease management are critical needs to be addressed by this initiative.

The outcome of this effort will be a world-class institute for the study of emerging pathogens. The IASEP will be addressing major issues by applying molecular biology and new technology to solving the problems of emerging diseases. The IFAS component will be a world leader in the prevention and control of emerging diseases that affect crops, vegetables, and food. Recurring funds requested for IFAS from the state totals over \$2million.

Recent events (introduction of soybean rust and citrus greening into Florida) illustrate the potential for risk to both human and animal health in Florida and to Florida’s agriculture industries. In our discussions around the state with our commodity groups, we hope to receive input into the greatest concerns with regard to diseases that threaten our agriculture, natural resources and human health. These conversations will help us to develop our budget and goals for mitigating the impact of diseases that threaten our industries.

FLC Training Workshop

October 20, 2005, Thursday
Career Service Center of Collier County,
750 South 5th Street, Immokalee

AGENDA

Morning Session: Legal Compliance

8:30 to 12:00

Topics:

- State regulations concerning FLC requirements, minimum wage, transportation, and child labor – Fla. Dept. of Business and Professional Regulations
- Federal regulations concerning Fair Labor Standards Act, MSPS, and transportation – U.S. Dept. of Labor
- Human Trafficking – Collier County Sheriff's Dept.
- Grower and FLC relationships – employer panel

Afternoon Session: Farm safety

1:00 to 4:00

Topics

- Developing a work place safety culture
- Worker Protection Standards
- Field sanitation
- General farm safety and emergency response.

For additional information, please contact:

Fritz Roka
University of Florida – Southwest REC
Immokalee
(239) 658-3400

Cesar Asuaje
University of Florida – Palm Beach County
West Palm Beach
(561) 233-1727

Citrus Canker Eradication Program (CCEP) Compliance Agreement Revisions and Update



The Florida Department of Agriculture & Consumer Services Division of Plant Industry has revised the Citrus Canker Eradication Program (CCEP) Compliance Agreements by adding requirements that will help prevent citrus canker from spreading into additional citrus groves. All segments of the Florida citrus industry share in the responsibility of protecting it from harm. Support of and compliance with the CCEP by the industry is of signal importance if we are to successfully combat this unwanted, devastating citrus disease.

Two key areas where the Florida citrus industry can provide assistance are: (1) decontamination of personnel and equipment, and (2) self survey of citrus groves under their control for identification of citrus canker symptoms as a supplement to current CCEP inspections. Revisions to the CCEP compliance agreements address both of these issues.

The 2005-2006 CCEP grower compliance agreements are posted on the Department's website at www.doacs.state.fl.us/pi/canker. Other, updated compliance agreements (packer, processor, etc.) will be posted within the next week. In addition, to help explain the new requirements, packets are being sent to industry members who are currently in the Department's database. The packets will include copies of the compliance agreements and associated schedules, as well as information on upcoming training sessions for decontamination and self survey. The packets should be mailed out by the end of September. Following is a summary of the primary revisions to the CCEP compliance agreements:

Preparation of Business Plans: To properly identify and maximize industry support and compliance with CCEP regulatory requirements, each citrus industry business must prepare a written document (business plan) addressing how decontamination and self-survey activities will be conducted. The document need not be overly complex or lengthy, so long as it captures the key elements that the business is required to comply with and clearly explains how the business will properly carry out each initiative. Canker Program Grove/Caretaker Compliance Agreements must be renewed each year prior to harvesting fruit (beginning Aug. 1) by signing the most current revision of the agreement (in existence in August of each year) by Oct. 31 of the same calendar year.

These procedures must be attached to the Citrus Canker Compliance Agreement. Key sections of the business plans include:

- ***Decontamination requirements***

Business plans should describe the type of decontamination training program your business will provide. What training tools will be used (citrus canker video, flip charts, hands-on demonstrations, etc.) When will new employees be trained? Describe what specific steps are in place to ensure people comply

with plan and how you plan to ensure appropriate decontamination by those not in your direct employment. What action will be taken if employees or contractors are found violating the procedures? Compliance agreements include a proposed outline of decontamination procedures that each regulated business can complete, or you may devise your own outline or plan.

- ***Self Surveys***

To augment commercial citrus grove surveys currently conducted by the Canker Program, the CCEP is now requiring that growers implement some form of self inspection to help detect citrus canker as quickly as possible. This process, which has already been initiated, includes mandatory training in citrus canker symptom recognition for all citrus growers and citrus caretakers. Self surveys are expected to be conducted at regular intervals in accordance with the approved methods presented in the training programs provided by the University of Florida's Institute of Food & Agricultural Sciences (UF/IFAS) and CCEP staff. Quality assurance measures and how citrus canker suspects will be handled should also be included in business plans. An online grove self-survey submission system has been activated on the DPI Web site (www.doacs.state.fl.us/pi/canker). Paper copies of the survey forms can also be sent to the Department's headquarters in Gainesville:

FDACS/DPI

Attn: Grove Survey

1911 SW 34th Street

Gainesville, FL 32608

CCEP Compliance Agreement Numbers: Citrus industry businesses are now required to include the unique compliance agreement numbers for all citrus growers on all trip tickets, limited permits and harvesting permits. The numbers are maintained in a Department database that is currently not available to anyone outside of the agency. Access to this database may be available to citrus industry businesses in the future. For now, please call your local CCEP office for these compliance agreement numbers, and be sure to ask for the renewal date of the specific compliance agreement. The numbers must have been issued on August 15, 2005 or later to be valid.

Department and CCEP staffs are available to answer any questions that industry members may have about these compliance agreement revisions. Please contact area CCEP offices or call the toll-free helpline for more information.

FDACS/DPI Web Site:

[<http://www.doacs.state.fl.us/pi/canker>](http://www.doacs.state.fl.us/pi/canker)

Statewide CCEP Helpline: 800-282-5153

SAVE YOUR GROVE AND NURSERY FROM CITRUS CANCKER



1. Whenever possible lock the gates of the property and restrict access at all times.
2. Before entering and leaving groves or nurseries, equipment should be first cleaned of all plant material, debris and soil and then disinfected with approved decontamination products.
3. Prior to entering and leaving groves, blocks and nurseries, all workers should disinfect hands and shoes with antimicrobial soap or other approved disinfectants.
4. All workers including fruit picking personnel should wear freshly laundered clothes each day.
5. All grove and nursery traffic including personal vehicles, equipment and visitors should be limited as much as possible.
6. Exchange of personnel, vehicles and equipment between groves, blocks and nurseries should be limited as much as possible.
7. It is very important to require grove service contractors to practice stringent decontamination and sanitation procedures.
8. Restrict access of all personnel, vehicles, and equipment and movement in groves or nurseries when foliage is wet with rain or dew. Do not harvest fruit before the trees dry.
9. Restrict irrigation to nighttime hours to reduce worker exposure to wet foliage.
10. Before entering and leaving a grove, all harvesting equipment including trucks, trailers, tractors, "goats", ladders, tubs, boxes, picking bags and gloves must be decontaminated.
11. Do not collect canker specimens. Flag adjacent trees, map the location and immediately contact the DPI at 1 800 282 5153 or 1 800 850 3781.



FOLIAR FEEDING

Foliar feeding is becoming very common on many horticultural crops including citrus. Economic and environmental considerations require the utilization of more efficient methods for nutrient applications.

It is usually assumed that foliar feeding refers to nutrient applications to the plants' leaves. In fact, it has been shown that all aboveground parts of a plant can absorb nutrients, including twigs, branches, buds, fruit, flowers, and stems. However, since leaves usually represent the largest surface area, they are the most important structures.

Foliar feeding is not intended to completely replace soil-applied fertilization of the macronutrients (nitrogen, potassium, and phosphorous). Foliar applications of macronutrients can, however, be applied in sufficient quantities to influence both fruit yield and quality. Some crops, such as citrus, can have a large part of the annual nitrogen requirements met through foliar applications.

Foliar applications of other plant nutrients (calcium, magnesium, and sulfur) and micronutrients (zinc, manganese, copper, boron, and molybdenum) have proven for many crops to be an excellent means for supplying the plants' requirements.

Foliar feeding can be used as an integral part of the annual nutritional program. It can be used in other situations to help plants through short, but critical periods of nutrient demand, such as fruit set and bud differentiation. Foliar nutrition may also prove to be useful at times of soil or environmentally induced nutritional shortages. Heavy rains, for example, may waterlog soils, decreasing the ability of the plant to take up nutrients when there is a demand. Foliar feeding may be utilized effectively when a nutritional deficiency is

diagnosed. A foliar application is the quickest method of getting the most nutrients into plants. However, if the deficiency can be seen, the crop might have already lost some potential yield.

Foliar fertilization is also efficient since it increases the accuracy of nitrogen application. Applications made to the soil can be subject to leaching and volatilization losses and/or being tied up by soil particles. Not all of the nitrogen applied is utilized by the plants. However, essentially all of the nitrogen in a foliar application that stays on the leaf is taken into the plants. This means that it may be an economically more beneficial method, as nearly all of the nitrogen that is paid for is utilized by the plants.

While foliar feeding has many advantages, it can burn plants at certain rates under certain environmental conditions. It is important, therefore, to foliar feed within the established guidelines. There are a number of conditions that can increase the chances of causing foliar burn. A plant under stress is more susceptible to damage. Stressful conditions include drying winds, disease infestations, poor soil conditions, etc. The environmental conditions at the time of application are also important factors. Applications when the weather is warm (above 80°F) should be avoided. This means that during warm seasons, applications should be made in the morning or evening. Additionally, applications should not be at less than two-week intervals to give the plant sufficient time to metabolize the nutrients and deal with the added osmotic stress.

Another important factor when applying nutrient foliarly is to ensure that the pH of the material is in the proper range. The pH range of the spray solution should be between 6 and 7. Attention should be paid to the pH of the final spray solution. This is significant in areas where water quality is poor.

FLATWOODS CITRUS NEWSLETTER

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

Subscriber's Name: _____

Company: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____

Fax: _____

E-mail: _____

Racial-Ethnic Background

__ American Indian or native Alaskan

__ Asian American

__ Hispanic

__ White, non-Hispanic

__ Black, non-Hispanic

Gender

__ Female

__ Male