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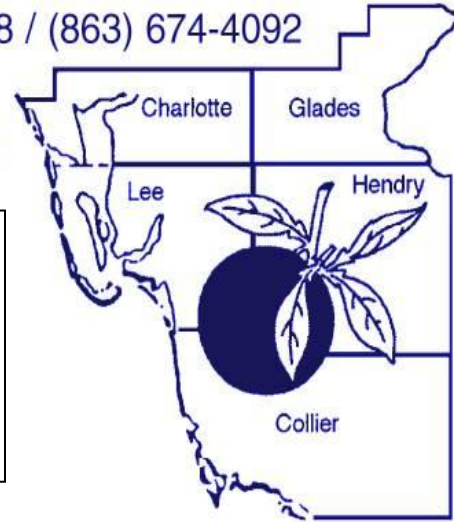
Hendry County Extension / P.O. Box 68 / LaBelle, Florida 33875-0068 / (863) 674-4092

Flatwoods Citrus

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Dr. Mongi Zekri
Multi-County Citrus Agent, SW Florida



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

Very Important Statewide Citrus Industry Meetings on new guidelines and regulations for the citrus health response program (Page 25)

CITRUS EXPO *IN FORT MYERS*

Wednesday, August 22 &
Thursday, August 23, 2007



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

How to earn \$50.00 per acre (flat rate) up to \$450,000 by following a USDA NRCS irrigation water management plan? See pages 17 & 18 for details.

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New Study Shows Citrus Juices Have the Highest Nutrient Content

The Florida Department of Citrus



In a time when consumers are flooded with so many confusing beverage health claims, 100 percent pure orange juice and Ruby Red grapefruit juice once again stand out as nutritional champions.

A new study shows citrus juices provide more nutrients per calorie than other commonly consumed 100 percent fruit juices such as apple, grape, pineapple and prune. The nutrient-density study, published in the May 2007 issue of the "Journal of Food Science," offers another compelling reason why citrus juices deliver the most bang for the nutritional buck.

"Fruit juices vary considerably in the quantity of nutrients per calorie," explains author Gail Rampersaud of the University of Florida. "The study uncovered just how much better the nutrient profiles of 100 percent grapefruit and orange juice are than other commonly consumed fruit juices."

Citrus juices earned the highest nutrient-density scores because compared to other juices in the analysis they are lower in calories and higher in essential nutrients including:

-- Vitamin C: Orange and grapefruit juices have the highest level of one of the most powerful

antioxidants, vitamin C. The vitamin works to neutralize free radicals to help fight cell and tissue damage that could lead to diseases. -- Potassium: After prune juice, citrus juices have the highest level of potassium which plays an important role in cardiovascular health. -- Folate: Orange juice contained the highest amount of folate. Folate has been associated with reducing the risk for certain birth defects and may help lower homocysteine levels in the body. Homocysteine, an amino acid in the blood, has been associated with an increased risk for cardiovascular disease and cognitive impairment, when high levels exist.

Citrus fruit juices tended to be equal to or higher in vitamin A, thiamin, and phosphorous when compared to other juices in the analysis.

The study, co-funded by the University of Florida and the Florida Department of Citrus, used six methodologies to quantify the nutrient density of seven commonly consumed 100 percent juices including apple, grape, orange, pineapple, pink (Ruby Red) grapefruit, prune and white grapefruit. Pink grapefruit juice had the highest nutrient-density score based on all methods except one, where orange juice had a slightly higher score. Orange juice ranked second in all other methods. White grapefruit juice ranked third in all six methods.

Why Nutrient-Dense?

Since many Americans consume more calories than they need without meeting recommended intakes for a number of nutrients, the USDA 2005 Dietary Guidelines encourage consumers to eat more nutrient-dense foods. According to the guidelines, these foods offer important benefits such as reduction of risk for a number of chronic diseases, normal growth and development of children, and health promotion for people of all ages.

The Florida Department of Citrus is an executive agency of Florida government charged with the marketing, research and regulation of the Florida citrus industry. Its activities are funded by a tax paid by growers on each box of citrus that moves through commercial channels. The industry employs approximately 90,000 people, provides a \$9 billion annual economic impact to the state, and contributes hundreds of millions of dollars in tax revenues that help support Florida's schools, roads and health care services.

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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**NOAA PREDICTS ABOVE NORMAL 2007 ATLANTIC HURRICANE SEASON
 13 to 17 Named Storms Predicted**



May 22, 2007 — Experts at the [NOAA Climate Prediction Center](#) are projecting a 75 percent chance that the [Atlantic Hurricane Season](#) will be above normal this year—showing the ongoing active hurricane era remains strong. With the start of the hurricane season upon us, [NOAA](#) recommends those in hurricane-prone regions to begin their preparation plans.

"For the 2007 Atlantic hurricane season, NOAA scientists predict 13 to 17 named storms, with seven to 10 becoming hurricanes, of which three to five could become major hurricanes of Category 3 strength or higher," said retired Navy Vice Adm.

[Conrad C. Lautenbacher](#), Ph.D., undersecretary of commerce for oceans and atmosphere and NOAA administrator. An average Atlantic hurricane season brings 11 named storms, with six becoming hurricanes, including two major hurricanes.

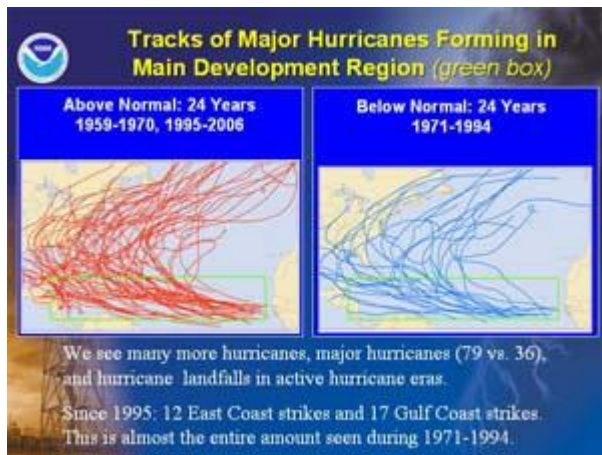
Climate patterns responsible for the expected above normal 2007 hurricane activity continue to be the ongoing multi-decadal signal (the set of ocean and atmospheric conditions that spawn increased Atlantic hurricane activity), warmer-than-normal sea surface temperatures in the Atlantic Ocean and the [El Niño/La Niña](#) cycle.

Last year, seasonal hurricane predictions proved to be too high when an unexpected El Niño rapidly developed and created a hostile environment for Atlantic storms to form and strengthen. When storms did develop, steering currents kept most of them over the open water and away from land.

"There is some uncertainty this year as to whether or not La Niña will form, and if it does how strong it will be," said Gerry Bell, Ph.D., lead seasonal hurricane forecaster at the NOAA Climate Prediction Center. "The Climate Prediction Center is indicating that La Niña could form in the next one to three months. If La Niña develops, storm activity will likely be in the upper end of the predicted range, or perhaps even higher depending on how strong La Niña becomes. Even if La Niña does not develop, the conditions associated with the ongoing active hurricane era still favor an above-normal season."



Bell also noted that pre-season storms, such as Subtropical Storm Andrea in early May, are not an indicator of the hurricane season ahead. "With or without Andrea, NOAA's forecast is for an above normal season."



"With expectations for an active season, it is critically important that people who live in East and Gulf coastal areas as well as the Caribbean be prepared," said Bill Proenza, [NOAA National Hurricane Center](#) director. "Now is the time to update your hurricane plan, not when the storm is bearing down on you." **(Click NOAA image for larger view of tracks of major hurricanes forming in the main development region as indicated by the green box over a 24-year period. Please credit "NOAA.")**

The Atlantic hurricane season runs from June 1 through November 30, with peak activity occurring August through October. The NOAA Climate Prediction Center will issue an updated seasonal forecast in August just prior to the historical peak of the season.

The Atlantic Hurricane Seasonal Outlook is an official forecast product of the NOAA Climate Prediction Center. Instituted in 1998, this outlook is produced in collaboration with NOAA scientists at the NOAA Climate Prediction Center, NOAA National Hurricane Center, [NOAA Hurricane Research Division](#) and the [NOAA Hydrometeorological Prediction Center](#). The NOAA National Hurricane Center has hurricane forecasting responsibilities for the Atlantic as well as the East Pacific basins. The NOAA Climate Prediction Center, NOAA National Hurricane Center and the NOAA Hydrometeorological Prediction Center are three of the NOAA National Weather Service's nine NOAA National Centers for Environmental Prediction, which provides the United States with first alerts of weather, climate, ocean and space weather events.

NOAA, an agency of the [U.S. Commerce Department](#), is celebrating [200 years of science and service](#) to the nation. From the establishment of the Survey of the Coast in 1807 by Thomas Jefferson to the formation of the Weather Bureau and the Commission of Fish and Fisheries in the 1870s, much of America's scientific heritage is rooted in NOAA. NOAA is dedicated to enhancing economic security and national safety through the prediction and research of weather and climate-related events and information service delivery for transportation, and by providing environmental stewardship of the nation's coastal and marine resources. Through the emerging Global Earth Observation System of Systems ([GEOSS](#)), NOAA is working with its federal partners, more than 60 countries and the European Commission to develop a global monitoring network that is as integrated as the planet it observes, predicts and protects.

Relevant Web Sites

- [NOAA Atlantic Seasonal Hurricane Outlook \(Technical Product\)](#)
- [NOAA 2007 Tropical Eastern North Pacific Hurricane Outlook](#)
- [NOAA National Hurricane Center](#)
- [NOAA Hurricanes Portal](#)
- [Behind the Scenes: The North Atlantic Hurricane Seasonal Outlook](#)

Media Contact:

[Carmeyia Gillis](#), [NOAA Climate Prediction Center](#), (301) 763-8000 ext. 7163 or [Greg Romano](#), [NOAA National Weather Service](#), (301) 713-0622

INFORMATION RESOURCES

CITRUS HEALTH RESPONSE PROGRAM - COMPLIANCE AGREEMENT ATTACHMENT - SCHEDULE 10

Current information regarding the Citrus Health Response Program (CHRP) and quarantine areas may be found at the following local offices or the FDACS and USDA citrus canker Web sites listed below:

Main Regulatory Office

3027 Lake Alfred Road
Winter Haven, FL 33881-5219
TEL: 863-298-7777
FAX: 863-291-5219

Brevard (south of SR 520), St. Lucie, Indian River, Martin and Okeechobee

4244 Bandy Boulevard
Fort Pierce, FL 34981
TEL: 772-429-2000
FAX: 772-429-2009

Collier, Hendry, Lee, Charlotte, Broward, Miami-Dade, Monroe, Sarasota, Palm Beach, Broward and Glades

424 E Market Road, Unit 10
Immokalee, FL 34142
TEL: 239-658-3684
FAX: 239-658-3692

Highlands, Hardee and De Soto

3397 US Hwy 27 South
Avon Park, FL 33825
TEL: 863-314-5900
FAX: 863-314-5911

Alachua, Brevard, (north of ST 520), Citrus, Flagler, Hernando, Lake, Marion, Orange, Pasco, Putnam, Seminole, Sumter, Volusia and All northern counties)

4129 Country Road 561
Tavares, FL 32778
TEL: 352-253-4547
FAX: 352-253-4549

Polk, Osceola, Pinellas, Manatee and Hillsborough

3027 Lake Alfred Road
Winter Haven, FL 33881-5219
TEL: 863-298-7777
FAX: 863-291-5219

University of Florida-IFAS, CREC, Lake Alfred 863-956-1151

Citrus Health Response Program Help Line: 800-282-5153 (all other Florida counties)

USDA-APHIS-PPQ: 301-734-8645

Div. Fruit & Vegetables: 863-291-5820

Citrus Health Response Program Offices Web site: www.doacs.state.fl.us/pi/pec/pec-dist-map.html

FDACS DPI Citrus Health Response Program Web site: www.doacs.state.fl.us/chrp/

USDA APHIS Citrus Health Response Program Web site: <http://www.aphis.usda.gov/ppq/pdmp/index.html>

Florida Department of Citrus: <http://www.floridajuice.com/growers.php>

UF/IFAS Office Locator: <http://solutionsforyourlife.ufl.edu/map/index.html>

Revised 10-April-2007 [Schedule 10 - <http://doacs.state.fl.us/canker/schedules/CCinfo.pdf>]



Florida Department of Agriculture and Consumer Services
 Division of Plant Industry

**CITRUS HEALTH RESPONSE PROGRAM
 APPLICATION FOR PARTICIPATION**

**CHARLES H. BRONSON
 COMMISSIONER**

Section 581.184, F.S.

3027 Lake Alfred Road, Winter Haven, Florida 33881-1438 / Tel: 863-298-7777 Fax: 863-291-5219

Name of Owner: _____ Grower C/A#: _____

Mailing Address: _____
 Number Street City Zip County

Property Address: _____
 Number Street City Zip County

Contact Person: _____ / Title: _____ Tel: _____

List of Grove Properties to be considered for participation in the Fresh Fruit Pre-Harvest Certification Program:

<u>TWP</u>	<u>RGE</u>	<u>SEC</u>	<u>Grove Name / Block#</u>	<u>Acres</u>	<u>Varieties – List All in Grove</u>	<u>PICS M-BLK</u>	<u>Harvest Date Each Variety</u>	<u>Tentative Destination</u>
_____	_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____	_____
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Please use one application per physical property address so that Program personnel can locate your grove for survey purposes.
 Please attach a map from a county plat, aerial or *PICS Survey Map* outlining the grove(s) you wish to have considered.
This form may be duplicated to provide additional pages, if required. Gray areas will be completed by CHRP personnel.

Date received by FDACS
 / DPI in Winter Haven:

Submitted by: _____ Date: _____

Owner: /or Agent: Firm: _____

PREPARING FOR A HURRICANE



Hurricane season is upon us once again. While hurricanes may develop any time during the June to November hurricane season, they are most likely to occur between August and October. In order to best protect yourself and your groves or nursery, it is essential to develop a hurricane plan and prepare in advance.

Although there is not much that can be done to prevent damage to trees and fruit from the wind, rain has the potential to cause the most severe and longest lasting damage to citrus. There are precautions that can be taken to help minimize damage and protect your grove or nursery.

Be "Water Wise"

- Clean and pump down ditches and grade areas to help maximize drainage and water removal efforts after the storm.

- Irrigate trees and remove water from reservoirs. Dismantle irrigation risers.
- Provide for portable water storage.
- Fill additional fuel tanks, sprayers and portable containers with water.
- Turn off water, natural and propane gas and electricity.

Non-Water Preparations

- Make sure all emergency equipment is on hand and in good, working condition. This includes generators, chain saws, torches and air compressors.
- Ensure radios are in working order. Have hand-held portable radios with extra batteries, or direct truck-to-truck radio communication available in case of downed phone lines.
- Secure all hazardous materials.
- Fill fuel, fertilizer and other liquid material tanks so they won't move in the wind and rain, and to ensure sufficient fuel is available for the recovery process.
- Establish personnel assignments. Make a list of all tasks that will need to be performed and whose responsibility they will be following the storm so there are no last-minute surprises. Keep an updated list of contact information for workers at their place of safety so that you can communicate with them following the storm.
- Keep a list of emergency contact information for agencies that you may need assistance from during or after the storm.

Emergency Contact Phone Numbers and Websites

Florida Emergency Information Line - 800-342-3557

FEMA Disaster Assistance - 800-621-3362

FDACS - 800-435-7352

National Hurricane Center - www.nhc.noaa.gov

National Weather Service - www.nws.noaa.gov/oh/index.html

Florida Hurricane Reports - <http://iwin.nws.noaa.gov/iwin/fl/hurricane.html>

LEAF AND SOIL SAMPLING AND ANALYSES TO ADJUST FERTILIZER PROGRAMS

Optimum growth and yield of high quality fruit cannot be obtained without adequate nutrition. The most successful fertilizer program should be based on tissue analysis, knowledge of soil nutrient status through soil analysis combined with university recommendations. The deficiency or excess of an element will cause disturbance in plant metabolism and lead to poor performance.

Plant analysis

Used in conjunction with other data and observations, tissue analysis aids in evaluating the nutrient elements of the soil-plant system. It has proven useful in confirming nutritional deficiencies, toxicities or imbalances, identifying “hidden” toxicities and deficiencies where visible symptoms are not manifested, and evaluating the effectiveness of fertilizer programs.

Leaf Sampling

For reliable results and useful interpretation of lab analysis reports, citrus growers, production managers, and consultants must follow the proper procedures for leaf sampling and sample handling because improperly collected leaf samples will provide misleading information about the nutritional status of the trees and the fertilizer programs.

Considerable care is needed in taking samples. Chemical analysis values can only be useful if the samples obtained are representative of the blocks they were taken from. The proper sampling, preparation and handling would affect the reliability of the chemical analysis, data interpretation, nutritional recommendations, and adjustment of fertilizer programs.

Leaf samples must also be taken at the proper time because nutrient levels within leaves are continually changing. However, leaf mineral concentrations of most nutrients are relatively stable within 4 to 6 months after emergence of the spring flush. Therefore, for mature tree blocks, the best time would be in July and August to collect four- to six-month-old spring flush leaves. If taken later in the season, the summer flush would probably be confused with the spring flush.

Each leaf sample should consist of about 100 leaves taken from non-fruiting twigs of 15- 20 uniform trees of the same variety and rootstock, and under the same fertilizer program. Clean brown paper bag should be used. Information sheets from the testing lab should be completed for each sample as this information helps when interpreting the results. The sample bag and the corresponding information sheet should each be carefully labeled with the same identity so that samples and sheets can be matched in the laboratory.

Sampling techniques for leaves

- ◆ Immature leaves should be avoided because of their rapidly changing composition.
- ◆ Abnormal-appearing trees, trees at the edge of the block and trees at the end of rows should not be sampled because they may be coated with soil particles and dust or have other problems.
- ◆ Do not include diseased, insect damaged, or dead leaves in a sample. Use good judgment.

- ◆ Select only one leaf from a shoot and remove it with its petiole (leaf stem).

Diagnosing growth disorders

- ◆ Collect samples from both affected trees as well as normal trees.
- ◆ Trees selected for sampling should be at similar stage of development and age.

◆ Whenever possible, confine the sampling area to trees in close proximity to each other.

Handling of leaf samples

- ◆ Samples should be collected in clean paper bags and clearly identified.
- ◆ They should be protected from heat and kept dry and cool (stored in portable ice chests), and placed in a refrigerator for overnight storage if they cannot be washed and oven dried the same day of collection.
- ◆ For macronutrient analysis, leaves usually do not need to be washed.
- ◆ Leaves should be dried in a ventilated oven at 60-70°C.

Preparation for analysis

- ◆ Leaves that have been recently sprayed with micronutrients for fungicidal (Cu) or nutritional (Mn, Zn) purposes should not be analyzed for those micronutrients because it is unlikely to remove all surface contamination from sprayed leaves.
- ◆ For accurate Fe and B or other micronutrient determination, samples would require hand washing, which is best done when leaves are still in a fresh condition.



Soil analysis

Soil analysis is an important method for gaining basic information regarding the chemical status of the soil.

Soil analysis is particularly useful when conducted over several years so that trends can be seen.

Unlike leaf analysis, there are various methods and analytical procedures of soil analysis used by laboratories. In Florida, soil tests for the relatively mobile and readily leached elements such as N and K are of no value. Soil tests are mainly important for pH, P, Mg, Ca, and Cu. For Florida sandy soils, using the Mehlich-1 or double acid (hydrochloric acid + sulfuric acid) extraction procedure adopted by the University of Florida analytical lab, 40-60 lbs/acre (20-30 ppm) of P, 70-120 lbs/acre (35-60 ppm) of Mg, 500-800 lbs/acre (250-400 ppm) of Ca, and 5-10 lbs/acre (2.5-5 ppm) of Cu are considered adequate for citrus. A Ca:Mg ratio of 7:1 seems desirable and ratios of higher than 10 may induce Mg deficiency problems. Copper levels higher than 50 lbs/acre may be toxic to citrus trees if the soil pH is below 6.

Soil sampling

The accuracy of a fertilizer recommendation depends on how well the soil sample on which the recommendation was based represents the area of the grove. In Florida, if soil samples were to be collected once a year, the best time would be at the end of the summer rainy season and prior to fall fertilization, usually during September and October. However, soil sampling may be conducted at the same time as leaf sampling to save time and reduce cost.

Standard procedures for proper sampling, preparation and analysis have to be followed for meaningful interpretations of the test results and accurate recommendations. Each soil sample should consist of 15-20 soil cores taken at the dripline of 15-20 trees within the area wetted by the irrigation system to a depth of 6 inches. The area sampled should be uniform in terms of soil and tree

characteristics and correspond to the area from which the leaf sample was taken. Individual cores should be mixed thoroughly in a plastic bucket to form a composite sample. Subsample of appropriate size should be taken from the composite mixture and put into labeled paper bags supplied by the lab. Soil samples should be air-dried but not oven-dried before shipping to the testing laboratory for analysis.

Conclusion

Tissue and soil analyses are a powerful tool for confirming nutrient deficiencies, toxicities and imbalances, identifying "hidden hunger," evaluating fertilizer programs, studying nutrient interactions. However, if initial plant and soil sampling, handling, and analysis of the sample were faulty, the results would be misleading.

If properly done, tissue and soil analyses can point the way toward more economical and efficient use of fertilizer materials, avoiding excessive or inadequate application rates.



Standard Table for Assessing Nutritional Status and Adjusting Fertilizer Programs for Citrus

Leaf analysis standard for assessing current nutrient status of citrus trees based on concentration of mineral elements in 4- to 6-month-old-spring-cycle leaves from non-fruiting terminals.

Element	Deficient less than	Low	Satisfactory	High	Excess more than
Nitrogen (N) (%)	2.2	2.2-2.4	2.5-2.8	2.9-3.2	3.3
Phosphorus (P) (%)	0.09	0.09-0.11	0.12-0.17	0.18-0.29	0.30
Potassium (K) (%)	0.7	0.7-1.1	1.2-1.7	1.8-2.3	2.4
Calcium (Ca) (%)	1.5	1.5-2.9	3.0-5.0	5.1-6.9	7.0
Magnesium (Mg) (%)	0.20	0.20-0.29	0.30-0.50	0.51-0.70	0.80
Sulfur (S) (%)	0.14	0.14-0.19	0.20-0.40	0.41-0.60	0.60
Chlorine (Cl) (%)	-----	-----	less than 0.5	0.5-0.7	0.7
Sodium (Na) (%)	-----	-----	less than 0.2	0.2-0.5	0.5
Iron (Fe) (ppm)	35	35-59	60-120	121-200	250
Boron (B) (ppm)	20	20-35	36-100	101-200	250
Manganese (Mn) (ppm)	18	18-24	25-100	101-300	500
Zinc (Zn) (ppm)	18	18-24	25-100	101-300	300
Copper (Cu) (ppm)	4	4-5	6-16	17-20	20
Molybdenum (Mo) (ppm)	0.06	0.06-0.09	0.1-1.0	2-50	50

Honey Bee Colony Collapse Disorder

Introduction

Beekeepers around the United States have reported higher-than-usual colony losses since the fall of 2006. This new problem "colony collapse disorder" (CCD) threatens the beekeeping industry. Some beekeepers, in states reporting CCD, have lost fifty to ninety percent of their colonies, often within a matter of weeks. In a country where honey bees contribute billions of dollars in added revenue to the agriculture industry, these bee losses cannot be taken lightly.



What is Colony Collapse Disorder?

Colonies with CCD can appear healthy as few as three weeks prior to collapse. However, the adult bees soon disappear from the colonies--hence the historic nickname, "disappearing disease." The disappearing bees leave behind a box full of honey, pollen, capped brood, a queen, and maybe a few worker bees.

Beekeepers report that in colonies with CCD, dead bees are not found in the hive or on the ground outside of the colonies. The adult bees simply disappear. The final symptom is that small hive beetles, wax moths, and other nearby honey bees ignore the empty hive even though the hive contains foodstuffs on which they ordinarily feed.

Collapsing Colonies

- an insufficient number of bees to maintain the amount of brood in the colony,
- the workforce is composed largely of younger adult bees,
- the queen is present, and
- the cluster is reluctant to consume food provided to them by the beekeeper.

Collapsed Colonies

- complete absence of adult bees in colonies, with few or no dead bees in or around colonies,
- the presence of capped brood, and
- the presence of food stores--both honey and bee bread--that are not robbed by other bees or typical colony pests such as small hive beetles or wax moths. If robbed, the robbing is delayed by a number of days.

What Causes CCD?

The cause of CCD is under investigation. At this point, almost every conceivable and realistic cause remains a possibility. The leading candidates and a brief explanation of their potential role are listed below. This is not a comprehensive list, and the candidates occur in no particular order. It is important to note that this list may change as new information on CCD becomes available. Such changes could result in the addition or exclusion of any of the following potential causes.

- **Traditional bee pests and diseases.** These include American foulbrood, European foulbrood, chalkbrood, nosema, small hive beetles, and tracheal mites. Although considered potential causes, "traditional" bee maladies--those that are nearly-cosmopolitan throughout the U.S.

and globally--likely are not responsible for causing CCD because they do not have a history of promoting CCD-like symptoms. However, traditional bee pests and diseases may exacerbate the disorder, so scientists have not abandoned experiments investigating them.

- **Style of feeding bees and type of bee food.** The style of feeding bees and types of bee food used to feed bees vary considerably among beekeepers reporting CCD losses. As such, no correlation has been found between what colonies were fed and their likelihood of survival. Despite this, many beekeepers have abandoned the practice of feeding high fructose corn syrup to bees due to indications that it can form byproducts that are harmful to bees.
- **Bee management.** Management style is a broad category, but it can include the type of income pursued with bees (e.g., honey production, pollination services) or the routine colony management that beekeepers perform (e.g., splitting hives, swarm control, chemical use). Both of these vary considerably among beekeepers, so this possible cause of CCD is given less attention. That said, poor management can make any colony malady worse.
- **Queen source.** Scientists are investigating the lack of genetic diversity and lineage of bees--both related to queen quality--as possible causes of CCD. Relatively few breeder queens (numbering in the hundreds) are used to produce the millions of queen bees--and therefore all bees--used throughout the U.S. Geneticists refer to this as a genetic bottleneck. This lack of genetic biodiversity can make bees

increasingly susceptible to any pest or disease that invades the system.

- **Chemical use in bee colonies.** Like farmers in other agricultural sectors, beekeepers often attempt to chemically control the various maladies affecting their honey bees. Investigators recently discovered that these chemicals have a variety of sub-lethal effects on all honey bees--workers, queens, and drones--even when the chemicals were used according to label and in accordance with best management practices suggested by specialists. These sub-lethal effects have led some to consider the role of in-hive chemical use in the CCD paradigm.
- **Chemical toxins in the environment.** Another chemically-oriented theory is that toxins in the environment are responsible for CCD. Because pesticides are used widely in cropping systems in an effort to kill herbivorous insects, one is left to consider the potential for non-target chemical effects on foraging bees. In addition to being exposed to toxins while foraging, honey bees also may encounter toxins by drinking water contaminated with chemical runoff, encountering various household or commercial chemicals outside of the hive, or via direct inhalation.
- **Genetically modified crops.** Some people have proposed that genetically modified crops may be responsible for the widespread bee deaths. Interestingly, many seeds from which genetically modified crops are grown are dipped first in systemic insecticides that later may appear in the plants' nectar and pollen. This makes genetically modified plants suspect because of their chemical treatment history, not because of their modified genetics.

Scientists have begun initial investigations into both theories, but no conclusive data have been collected.

- **Varroa mites and associated pathogens.** Even with the concerns surrounding CCD, varroa mites remain the world's most destructive honey bee killer. As such, varroa and the viruses they transmit have been considered as possible causes of CCD. Further, varroa often are controlled chemically by beekeepers, so it has been considered a potential indirect cause of CCD because the mite itself is damaging, transmits viruses to bees, and can elicit chemical responses from beekeepers. Despite this, there have been instances of colonies showing symptoms of CCD when their varroa populations were under control.
- **Nutritional fitness.** Scientists have proposed nutritional fitness of adult bees as a potential cause of CCD. This topic is being investigated although little information exists currently to either support or refute the role of nutrition. Malnutrition causes stress to bees, possibly weakening the bees' immune systems. Weak immune systems can affect bees' ability to fight pests and diseases.
- **Undiscovered or new pests and diseases.** Finally, undiscovered or unidentified pests and pathogens are considered possible causes of CCD. Some believe that a new pest or disease may have been introduced into the U.S. and is causing CCD. For example, *Nosema apis*--a microsporidian that lives in the digestive tract of honey bees--has been present in the U.S. for many years. In 2006, scientists discovered and identified a new nosema species, *Nosema ceranae*, present in some

colonies displaying symptoms of CCD. *Nosema ceranae* also has been found in bee samples dating back to 1995. When this disease is present in bees in elevated levels, the bees leave their colonies, never to return. Although the role of *N. ceranae* in the CCD complex is not understood, it and other new pathogens may play an important role in elevated bee deaths.

Many scientists believe that CCD is caused by some combination of the factors above. For example, some dead bees showing symptoms of CCD have had elevated levels of normally-benign pathogens in their bodies, possibly indicating a compromised immune system. In theory, any stress or combination of stresses--such as chemicals, genetic bottlenecks, or varroa--can suppress a bee's immune system. Considering synergistic effects as a potential cause of CCD makes the disorder increasingly harder to study.

How Will CCD Affect the General Public?



The benefits of honey bee pollination are not to be taken lightly. The simple act of beekeepers moving honey bees around the country ensures the U.S.'s food supply. One

estimate suggests that one-third of the world's food production is directly dependent on honey bee pollination, meaning that one out of every three bites of food a person eats comes from the hard work of honey bees. Agriculture needs honey bees.

Fortunately, no one believes that honey bees will disappear, even with the concerns over CCD. Instead, the average American will experience increased food prices and decreased food availability if honey bees continue to die at the current rates.

Signs of Environmental Problems

The benefits of honey bees are undeniable and often under-appreciated. The rapid loss of colonies initiated by CCD in the U.S. and around the globe is alarming because the loss of bees could signal a decline in the health of our environment. Honey bees are biological indicators, meaning that their status is a reflection of the health of the general environment. Some fear that bee losses may be a symptom of a much greater environmental problem.

What Can Beekeepers Do to Avoid CCD?

Although the primary cause or causes of colony collapse disorder is not yet known or understood, the following recommendations--based on information from the CCD Working Group--may provide beekeepers with some control options.

- **Do not combine collapsing colonies with otherwise healthy ones.** Since the cause of CCD has not been identified, it is possible that combining a sick colony with a healthy one could "contaminate" or "infect" the healthy colony.
- **If you find abandoned hive equipment and the cause of bee**

death is suspicious, store the equipment in a manner that prohibits other bees from accessing it. Do not let neighboring colonies rob equipment that has hived collapsed colonies. Do not reuse the equipment if the colony displayed symptoms of CCD. Such equipment should be stored securely until the disorder is better understood.

- **All beekeepers may want to consider feeding bees Fumagillan in sugar water in spring and fall.** Although nosema (*Nosema apis*) is not considered the causative agent of CCD, investigators have found a new nosema (*Nosema ceranae*) in the U.S. Both species can be considered stressors that may promote CCD.
- **If you ordinarily treat with an antibiotic to prevent or control American or European foulbrood, use Terramycin rather than Tylan.** Tylan has been adopted only recently by the beekeeping industry, and it does not have a very long track record. Unless you encounter foulbrood resistant to Terramycin, Terramycin is recommended because it has a longer history of use in bee colonies.
- **Use an integrated pest management (IPM) approach for varroa control in honey bee colonies.** This approach can minimize the need for chemical use in bee colonies, reducing bee exposure to potentially-toxic chemicals. Use approved miticides, not off-label home remedies.
- **Keep colonies strong by practicing best management practices.**

Environmental Quality Incentive Program (EQIP) Irrigation Water Management (IWM) Incentive Payment

INTERVIEW CHECKLIST

RATE:

\$50.00 per acre (flat rate) up to EQIP \$450,000 funding cap

Maximum IWM financial assistance = 3 years

LANDUSE APPLICABLE:

Citrus groves

Fruit & Nuts

Sod operations

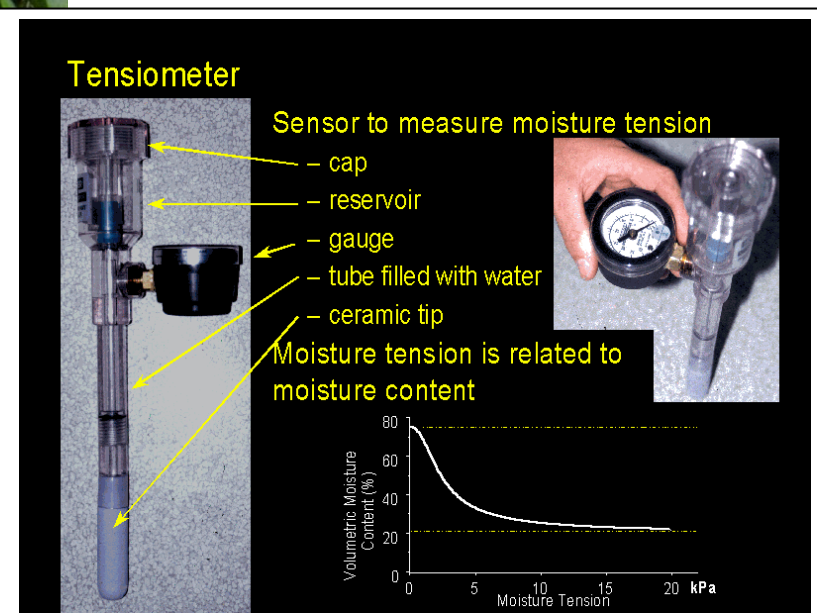
Nurseries (containerized stock NOT eligible)

Vegetables (must be irrigating 9 out of 12 months)

IWM SCHEDULE:

Agrees to follow a USDA NRCS irrigation water management plan

Call Bob Beck, soil conservationist with NRCS in LaBelle at 863 674 5700



PAPERWORK:

Applicant: (provide application with copy of IWM data form)

- record on-site rainfall (every time a rainfall event occurs)
- log soil moisture monitoring device readings (every time irrigation system is utilized, readings shall be taken on a average of 1.5 times per week)
- document pumping hours (every time irrigation system is utilized)
- implement Irrigation Water Management Plan developed by USDA NRCS

Field office staff:

FL-ENG 449

Provide application job sheet on various soil moisture monitoring devices
Irrigation Water Management Plan

SOIL MOISTURE MONITORING DEVICE:

tensiometer

water monitoring well

solid state soil moisture monitoring device

NUMBER OF SOIL MOISTURE MONITORING DEVICES REQUIRED:

One unit per irrigation unit.

Example: Citrus soil moisture monitor device unit = two tensiometers (one 6", one 18")

LIQUIDATED DAMAGES:

If applicant does not agree to follow IWM plan or record necessary field data, liquidated damages are possible.

LAND ELIGIBILITY

Only land that has been irrigated for two of the last five years prior to application. Applicant must sign written statement, verifying irrigation requirements. If land has received cost share for IWM during previous years of the 2002 Farm Bill Programs, then the land is NOT eligible for cost share again.

GOAL:**First year of contract:**

Applicant install soil moisture monitoring devices – one unit per irrigation unit

Applicant documents all necessary field data (rainfall, moisture readings, pump hours)

Applicant is aware of IWM plan and following Irrigation Water Management Plan

Field office staff documents they reviewed the applicants field data

Field office staff documents they saw required soil moisture monitoring devices installed

Field office completes FL-ENG-49

Field office develops and monitors Irrigation Water Management Plan

Second and third year of contract

Applicant maintains soil moisture monitoring devices – one unit per irrigation unit

Applicant documents all necessary field data (rainfall, moisture readings, pump hours)

Applicant follows USDA NRCS Irrigation Water Management Plan

Field office staff documents they reviewed the applicants field data

Field office staff documents they saw required soil moisture monitoring devices

Field office completes FL-ENG-49

Field office fine tunes and monitors NRCS Irrigation Water Management Plan

Florida Gulf Citrus Growers Association



The Gulf Citrus Growers Association is a trade association representing the citrus growers of Southwest Florida. Its geographical service area includes

Charlotte, Collier, Glades, Hendry and Lee Counties. "Gulf Citrus" addresses key issues of economic importance to the sustainable growth and development of the citrus industry in the region. These issues include land and water use, environmental regulation, farm worker relations, transportation, marketing, domestic and international trade programs. The association also serves as the "Gulf" citrus industry voice on other issues impacting the area's agricultural industry. Go to <http://www.gulfcitrus.org> and become a member or an associate member.



GULF CITRUS GROWERS ASSOCIATION SCHOLARSHIP FOUNDATION, INC.



Membership:

Membership in the Scholarship Foundation is open to all Gulf Citrus Growers Association (GCGA) members for just \$25 per year. Members are able to vote for and serve on the Board of Directors for the Foundation.

Donations:

Donations are a crucial source of funding for scholarship awards and may be made to the Foundation at any time during the year in any denomination, **regardless of membership status**. Checks should be made payable to the Foundation. For more details, please call the GCGA office at **863 675 2180**.

The GCGA Scholarship Foundation is a non-profit corporation operating under Section 501 © (3) of the Internal Revenue Code. Contributions are tax deductible as allowed by law.



Gulf Citrus Growers Association Scholarship Foundation, Inc.

P. O. Box 1319, LaBelle, Florida 33975 (863) 675-2180 / Fax: (863) 675-8087 / Email: gulfcitruscapron@earthlink.net

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.

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 an AA degree.

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.

*****APPLICATION DEADLINES ARE JULY 31 & DECEMBER 31*****



Gulf Citrus Growers Association Scholarship Foundation, Inc.

P. O. Box 1319, LaBelle, Florida 33975 (863) 675-2180 / Fax: (863) 675-8087 / Email: gulfcitruscapron@earthlink.net

Scholarship Application

Personal Data

Name: _____ Student # or SS #: _____

Home Address: _____

City/State: _____ Zip: _____ Phone: _____

Mailing Address: _____

City/State: _____ Zip: _____ Phone: _____

E-mail: _____

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 (completed):

Courses (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.

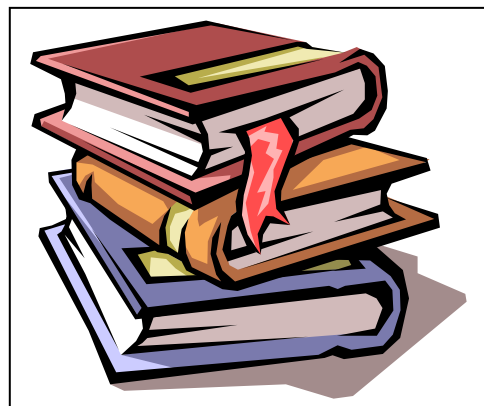
Applicant's Signature

Date

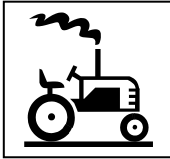
*****APPLICATION DEADLINES ARE DECEMBER 31 AND JULY 31*****

Please return this application to:

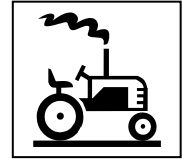
Gulf Citrus Growers Association Scholarship Foundation, Inc.
Dr. Mongi Zekri, Application Coordinator
Hendry County Extension Office
P. O. Box 68
LaBelle, FL 33975
(863) 674-4092 / Fax: (863) 674-4636
E-mail: maz@ifas.ufl.edu



THE SEVENTEENTH ANNUAL FARM SAFETY DAY HELD ON SATURDAY 2 JUNE 2007 WAS A SUCCESS.



Over the past few years, The Farm Safety Day has been proven to be a very effective way in providing an educational opportunity for farm equipment operators and workers.



Certificates of appreciation were sent to the
2007 Farm Safety Day Committee Members, Helpers, Speakers & Sponsors

Diamond Sponsor: \$500

John R. Alexander, *Alico, Inc.*

Platinum Sponsor: \$300

Everett D. Loukonen, *Barron Collier Partnership*

Gold Sponsor: \$200

Michael Murphy, *CPI/Ranch One Co.*

Silver Sponsors: \$100

Mark Creel, *Creel Tractor Company*

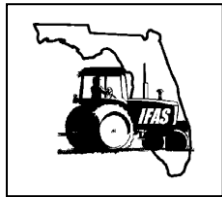
David Wheeler, *Wheeler Farms, Inc.*

TOPICS AND SPEAKERS

1. **Tractor and Equipment Safety** – Gene McAvoy & Cesar Asuaje, UF/IFAS
2. **Wildfires and Fire Safety** - Gerry LaCavera, Florida Department of Forestry
3. **Snakes, Venomous Insects and other Dangerous Critters** - Kiley Harper, UF/IFAS
4. **CPR Basics for Farm Workers** - Russ Garner, Hendry County Health Department & Cesar Asuaje, UF/IFAS

The Seventeenth Annual Farm Safety Day

Saturday, June 2, 2007



Committee Assignment

Mongi Zekri, Overall Coordinator (Treasurer, sponsorship, program evaluation, food service, CEUs, CCAs)

Julie Carson, Coordinator Assistant (Hats, badges, trophies, plaques, door prices)

Gene McAvoy Morning Program Coordinator
*Assisting **Buddy Walker** (Audio & visual aid equipment)
Cesar Asuaje (Program assistance)
Ralph Mitchell (Program assistance)
Leslie Baucum (Program assistance)
Robert Halman (Program assistance)

Fritz Roka Afternoon Program Coordinator

1. **Steve Taylor** Rodeo Course Design/Set-up, Outdoors facilities, Parking
2. **Fritz Roka** Rodeo Rules, Judges & Judging
*Assisting **Mickey Pena**
3. **Cesar Asuaje & Gene McAvoy** Rodeo Master of Ceremonies (Awards & sponsor recognition)

Bob Rouse/Barbara Hyman/Mickey Pena Registration Coordinators
(Registration & program materials, duplication, distribution & mail out)

*Assisting **Ralph Mitchell** Registration the day of the meeting
Lorenzo Daetz
Robert Halman

Citrus Industry Meeting Announcement

The Florida Department of Agriculture and Consumer Services, in cooperation with the University of Florida's Institute of Food and Agricultural Sciences (UF/IFAS) will be hosting statewide information sessions on new guidelines and regulations for the Citrus Health Response Program.

When and Where?

Tuesday, July 17, 2007
UF/IFAS Stuart Building
1710 US Highway 17-98S
Bartow, FL 33830
9 – 11:30 a.m.

Tuesday, July 24, 2007
Indian River Education Center
2199 South Rock Road
Fort Pierce, FL 34945
9 – 11:30 a.m.

<http://www.irrec.ifas.ufl.edu/>

(click on *map & driving directions* in lower left corner)

Wednesday, July 25, 2007
Southwest Florida Research and Education Center
2686 State Road 29 N
Immokalee, FL 34142
10 – 12:30 p.m.

<http://www.irrec.ifas.ufl.edu/>

(click on '*location*' in the menu bar on the left side of the page for directions to facility)

Who should attend?

Citrus grove owners/managers, citrus nursery owners/managers, grove caretakers

The purpose of these workshops is to provide information on the new guidelines and regulations for growing and shipping Florida citrus. Agenda will include a CHRP program overview videotape covering nursery requirements, budwood certification, decontamination, survey techniques for greening and canker, and best management guidelines for citrus diseases. There will also be presentations on disease suppression techniques for the Asian citrus psyllid, citrus greening and citrus canker. Agriculture officials and UF/IFAS staff will be in attendance to answer questions in a panel discussion format.

These workshops are being held to assist growers, nursery owners, and caretakers understand the new guidelines and regulations and provide tools to help effectively manage citrus production.

For more information, contact:

Denise Feiber, APR, 352-372-3505 x102 feiberd@doacs.state.fl.us
Ellen Dyck, 352-372-3505 x100 dycke@doacs.state.fl.us

Florida Department of Agriculture & Consumer Services
Charles H. Bronson, Commissioner

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

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