

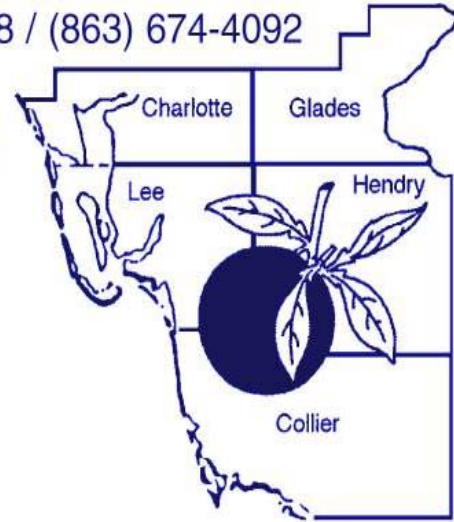


UNIVERSITY OF
FLORIDA

IFAS EXTENSION

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

Flatwoods Citrus



Vol. 9, No. 9

September 2006

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



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

SCOUTING AND DIAGNOSIS OF CITRUS GREENING

Speakers: Holly Chamberlain and Drs. Michael Irely & Mongi Zekri

Location: Immokalee IFAS Center

Date: Tuesday, 19 September 2006, **Time:** 10:00 AM – 12:00 Noon

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

Sponsor: Robert Gregg, Syngenta

There is no registration fee and lunch is free (Compliments of **Syngenta**). However,

RSVP is required. To RSVP, call 863 674 4092 no later than Monday morning,

September 18, 2006 or send an e-mail to maz@ifas.ufl.edu

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

CANKER/GREENING CLASSES IN OCTOBER 2006

What we can learn from Brazil about managing exotic citrus diseases?

Time: 9 AM- 12 noon

9:00-9:20 Citrus canker and canker management
9:20-9:40 Citrus greening and greening management
9:40-10:00 Scouting program for the Asian citrus psyllid
10:00-10:20 Overview of Asian citrus psyllid control
10:20-10:40 Break
10:40-11:00 Other citrus diseases of importance in Brazil and their management
11:00-11:30 Compliance agreements
11:30-12 noon Canker and greening training as required under CHRP

Speakers: Brlansky, Chamberlain, England, Estes, Futch, Oswald, Rogers, Rouse, Stansly, Zekri, and others.

6 locations in Florida

October 3, Polk County Extension Service Office, Bartow
October 4, Highlands County Extension Service Office, Sebring
October 5, Indian River REC, Ft. Pierce
October 11, Turner Exhibition Hall, Arcadia
October 25, Lake County Extension Service Office, Tavares
October 26, SW Florida IFAS Research & Education Center, Immokalee

There is no registration fee. RSVP is required. To reserve a seat, call your citrus extension agent.

For the Immokalee location, the program sponsor is **Rachel Walters** with **Bayer CropScience**. Free lunch will be served (Compliments of **Bayer CropScience**). However, **RSVP is required**. To RSVP, call 863 674 4092 no later than Monday morning, 24 October 2006 or send an e-mail to maz@ifas.ufl.edu

PESTICIDE LICENSE TRAINING/TESTING

Monday, 9 October & Tuesday, 10 October 2006

**Location: University of Florida, IFAS,
Hendry County Extension Office, LaBelle**

For more information and/or registration, call 863 674 4092

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.

Susan S. Thayer



8400 Lake Trask Rd.
P.O. Box 1849, Dundee, FL 33838
Phone: 800 881 6994

Brian Creel

brian@creeltractor.com

Creel Tractor Company

www.creeltractor.com

Phone: 239 694 2185 ext 223
Nextel: 158*24799*4

Dan Brunetti

The KeyPlex People

Morse Enterprises Limited, Inc.

Phone: 800 433 7017

Fax: 305 577 0692

keyplex@keyplex.com

Chip Giles

Dow AgroSciences

Nextel 158*17*15098

Phone: (239) 693-1351

Mobile: (239) 707-0197

imgiles@dow.com

FIRST BANK

P.O. Box 697

LaBelle, FL 33975

LaBelle Phone: 863 675 4242

Fax: 863 675 1099

Moore Haven: 863 946 1515

Ed Early

DuPont Ag. Products

5100 S. Cleveland Ave.,
Suite 318-368

Fort Myers, FL 33907

Phone: 239 994 8594

Robert F. Gregg

SYNGENTA

Office Phone: 239 561 8568

Cell Phone: 239 410 0084

robert.gregg@syngenta.com

Donald Allen

AGLIME SALES, INC.

1375 Thornburg Road

Babson Park, FL 33827-9549

Mobile: 863 287 2925

Agnet # 52925

GeoAg Solutions

David Summers (863) 441 1200

dsummers@geoagsolutions.com

Neal Horrom (239) 369 9806

nhorrom@geoagsolutions.com

www.geoagsolutions.com

John Frieden – Manager
Abacus (abamectin)
Rotam USA LLC
4610 Ridgeview Circle
Valdosta, GA 31602
Phone: 229 253 1646
Johnfr@rotam.com

Bart Hoopingarner
Cerexagri-Nisso, LLC
3605 162nd Ave East
Parrish, FL 34219
Phone: 941 737 7444
Ag Net: 158*17*9485

Nufarm Agriculture USA
Craig Noll
Office-239 549 2494
Mobile-239 691 8060
craig.noll@us.nufarm.com
Gary Simmons
Phone: 772 260 1058

Jay Hallaron
Chemtura Corporation
Phone: 407 256 4667
Fax: 407 523 1097
Cell: 321 231 2277
jay.hallaron@chemtura.com

MONSANTO
Mike Prescott
Phone: 863 773 5103
Nextel Agnet: 886
Thad G. Boatwright
Phone: 561 478 4970
Nextel Agnet: 10556

Ward Gunter

CitriBlen[®]
The Scotts Company
Phone: 772 473 3987
ward.gunter@scotts.com

Wayne Simmons
SIMMONS CITRUS NURSERY
1600 Hwy 29 South
LaBelle, FL 33935
Phone: 863 673 1370
Fax: 863 675 6766

FARM CREDIT
SOUTHWEST FLORIDA
330 N. Brevard Ave.
Arcadia, FL 34266
Phone: 800 307 5677
Fax: 863 494 6460

Rachel M. Walters
***BAYER* CropScience**
Phone/Fax: 941 575 5149
Mobile: 239 707 1198
Nextel 158*17*41198
rachel.walters@bayercropscience.com

Gaylon D. Pfeiffer
BASF Corporation
11806 Marblehead Drive
Tampa, FL 33626
Phone: 813 967 0024
Fax: 813 818 8694
pfeiffg@basf-corp.com

ALGAE



Algae are in the plant kingdom, but maybe they're not really plants!

In Florida's freshwaters, algae are what make the water green, or even "slimy". However, green water is not necessarily undesirable, and neither are algae. In fact, algae are essential to the ecosystem and to life as we know it, and must be treated with respect.

Algae are a diverse group of organisms, which survive in all different types of habitats. They range in size from microscopic to meters in length and in complexity from single-celled to complex organisms that would rival even large plants. Though these organisms may look like the true, "higher", plants, they are anything but, since they do not have roots or true stems and leaves.

Algae are one of the first steps of the food web. There are microscopic algae, like phytoplankton, and there are macroalgae, algae that can be seen by the naked eye. Algae occur naturally in all types of systems and may be considered indicators of ecosystem condition. Even the mere presence of a species can give an indication

of the amount and type of nutrients that run through the system. Algae provide food for all types of animals, including fish, insects, mollusks, zooplankton (microscopic animals), and humans.

What causes an algae bloom?

At times algae can grow so quickly and densely that they form a "bloom". Many people don't like the "look" of a bloom, though blooms can be a natural occurrence. Blooms are not necessarily green, though that is the most common color. They can be blue-green, brown, red, and even violet.



Some blooms turn the water a certain color; this is usually a bloom associated with phytoplankton (microscopic algae). Other blooms form clumps or mats that float on top of the water, or that grow attached to the bottom or to plants. Still others can form dense mats that cover the water surface. Algae need nutrients, such as nitrogen and phosphorous, and light to grow. The level of growth or productivity is often dependent on the amount of nutrients in a system. There is a classification for productivity of a system; it ranges from oligotrophic (low productivity and nutrients) to hypereutrophic (very high nutrients). Also, since algae need light to photosynthesize, how far light penetrates the water is also another limiting factor.

Blooms can have far reaching effects on the environment. Some can become so dense they can ultimately cause a problem with [low oxygen](#) levels. A decrease in oxygen causes hypoxia (low oxygen) or anoxia (no oxygen) and the other organisms in the

water that need oxygen to survive, such as fish, become stressed and may die. Other blooms may release toxins that can be harmful to animals.

There is a general consensus that rapidly growing human development, and increased human use and disposal of nutrients over the past few centuries, has increased the frequency and intensity of algal blooms in many regions of the world. This has created a global effort to control harmful blooms.

Controlling blooms

The most direct way to control blooms is to reduce the availability of nutrients. Most water management organizations throughout the world are actively pursuing a variety of nutrient control strategies. However, for some aquatic ecosystems nutrient control is impractical, ineffective or simply too costly. For some cases chemical or biological treatments can be helpful alternatives.

Chemical Treatments

Copper sulfate (bluestone) and **chelated copper compounds** such as Cutrine-Plus, Algae Pro, and K-TEA, as well as Endothall are common chemical treatments used to kill algae. Chemical compounds that shade out the light for algae growth, e.g. Aquashade, are also used to control blooms. Each chemical has its own restrictions and toxicity to animals. Read the directions carefully before application.

Biological Treatments

The main biological treatment that is employed today is the use of various carp fish species to control submersed and floating algae. **Grass carp** (*Ctenopharyngodon idella*) is mainly used for aquatic weeds and attached submersed algae, such as *Nitella* sp., and *Chara* sp. Where they do not prefer filamentous algae to eat, grass carp will eat *Lyngbya*. The

silver carp (*Hypophthalmichthys molitrix*) has been shown to be an effective treatment for controlling filamentous algae, including blue-green algae.

Both species are non-native species and there are many restrictions to employing them as a means of weed control; some states prohibit their use altogether. When they are allowed, the use is restricted to **triploid carp**. Triploid carp have an extra set of chromosomes that render the fish sterile, therefore prohibiting a population explosion if the fish escapes into an uncontrolled area.

Physical Treatments

Physical treatments for algae in ponds include [aeration and airlifts](#). While aeration does not kill or remove algae from the water, it oxygenates and stirs the water column, and can create conditions to shift from toxic and smelly blue-green algae to preferred green algae species. The resultant algal population is usually not as dense or as toxic to other organisms in the ponds.

Mechanical Treatments

Harvesters are sometimes used to skim dense mats of blue-green lyngbya alga from the surface of lakes and rivers. Lyngbya normally grows in dense mats at the bottoms of nutrient enriched lakes. These mats produce gasses during photosynthesis that often causes the mats to rise to the surface. At the surface, winds pile the algal mats against shorelines or in navigation channels; these mats can be several acres in size. Managers have developed a process called "grubbing" whereby harvesting machines lift the mats off of submersed plants such as native eelgrass, without cutting the eelgrass. By removing the blanket of lyngbya from the eelgrass, the plants grow and expand. Eelgrass is an important food source for manatees in the Crystal and Homossassa Rivers.

ATTENTION ALL CITRUS PRODUCERS

IMPORTANT REQUIREMENTS FOR 2006-2007 SEASON



Shipping Fresh Citrus Fruit

The attached fresh fruit movement application must be completed and returned to the address on the bottom of the application **prior to July 14, 2006** if you intend to harvest citrus for the fresh market. Our goal is to continue to ship fresh citrus that is free of citrus canker to as many markets as possible. The following are important points to keep in mind:

- USDA regulations are being changed to prohibit the shipment of fresh citrus to other citrus producing states and U.S. territories. At this time, it is not known when the new rules will be published in the Federal Register or the effective date.
- In order to be eligible for fresh citrus to be shipped to non-citrus producing states, a harvesting permit must be obtained from the program. The grove block must be

inspected 30 days prior to the issuance of a harvesting permit and certified free of citrus canker. There may be a federal requirement that the block has been free for the past two years, but this needs to be clarified.

- The USDA is in the process of negotiating phytosanitary requirements for shipping to Europe and Japan. If you list these markets on your application, you will be advised of those requirements as soon as they are finalized. They should be no more restrictive than this past season. You are required to submit a map of the grove blocks to be certified with your application. Once these blocks have been identified, the boundaries cannot be changed nor can the block be subdivided.



- Only submit those blocks where you are certain you intend to harvest for the fresh market. Program resources are limited, and applications will be processed in the order received depending on the estimated date of harvest.
- It is highly recommended that you conduct a self inspection of the

grove block prior to the program inspection.

- Prior to harvesting and once you have received your harvest permit, you will need to contact your local program office. Harvesting operations will be monitored to verify that harvesting is only taking place in the certified block
- There are no requirements for fresh fruit sold in Florida or for processed fruit above self survey and decontamination as listed in the Compliance Agreement. With the exception that grower compliance agreement numbers must be written on trip tickets for all harvested fruit.

New Compliance Agreements

Attached are the revised compliance agreements that must be signed and returned to the Citrus Pest Management Program by August 1, 2006. Significant changes are outlined below.

The compliance agreements have been modified to reflect the changes from the Citrus Canker Eradication Program to the Citrus Pest Management Program. Significant changes include:

- Business plans for self survey and decontamination are recommended but not required as part of the compliance agreement. Keep these plans for your own use as needed but do not send a copy to the program.
- Decontamination is only required when departing a grove, but

growers may require people to decontaminate prior to entering as an added precaution.

If you have any questions, please contact your local program office or Mark Estes at 863-298-7777.



CITRUS COMPLIANCE AGREEMENTS

UPDATED Go to this website:

<http://www.doacs.state.fl.us/pi/canker/complianceagree.html>

Compliance Agreements for the 2006-2007 growing season are schedule to be mailed by July 31st.

If you do not receive a compliance agreement in the mail by the dates below please contact our helpline at 800-282-5153.

- **Grower/Caretaker - August 5th**
- **Harvester, Processor or Packer - August 5th**
- **If you request a compliance agreement from the helpline be sure to tell the operator what type of compliance agreement(s) you are missing.**



AgClimate

The Southeast Climate Consortium released today its latest climate outlook for the season. A review of current conditions in the SE US, a general climate outlook for the next few months and an update on the hurricane season. To view the details go to www.agclimate.org and click on the link to "Late summer climate outlook".

SECC Late Summer Climate Outlook

Date Issued: August 1, 2006

Neutral conditions, or sea surface temperatures near normal in the tropical Pacific Ocean, will continue for the foreseeable future - After a brief period of La Niña-like conditions (colder than normal ocean temperatures) during the previous winter and spring, sea surface temperatures in the tropical Pacific Ocean returned to normal (Neutral) in April and should remain in the normal range for the rest of the summer and into fall. Neutral conditions generally correspond to variable temperature and rainfall patterns that may or may not average out to close to normal over the course of the season.

While the mild La Niña played a role in drying out the Southeast during the late winter and spring, it dissipated at the end of April and has not been a player in our climate patterns the last two months.

Current Conditions - After the decay of La Niña, dryness persisted in the Southeast into the early summer months. Fortunately, the well-timed tropical storm Alberto brought widespread relief and beneficial rains to much of Florida and southeast Georgia. Since that time, seasonal summer rains have persisted over south and central Florida resulting in a fairly moist climate. Unfortunately, Alberto rains missed the Florida Panhandle and Alabama and the seasonal thunderstorms have been very scattered and inconsistent in these areas and in most of Georgia. Between the La Niña winter and spring and the very dry early summer, year-to-date rainfall deficits are high, even approaching 20 inches or more in locations like Mobile and Pensacola. Such deficits have resulted in critical soil moisture levels for agriculture and other interests. The images below show the latest 180-day and 30-day deficits for the area. For more information on recent weather conditions in the Southeast, follow the links below the images:

[Florida Automated Weather Network](#)
[Southeast Regional Climate Center](#)

General Climate Outlook for the Late Summer - Predicting the summer climate for the Southeast as hot and humid is usually a pretty safe bet. However, summer rainfall amounts can be highly variable, both in the year-to-year totals and in the spatial coverage. While monitoring the state of the Pacific Ocean (whether it is El Niño, La Niña, or Neutral) gives us a solid basis for predicting the climate of the winter and spring seasons, the influence of the Pacific is generally much weaker during the summer months.

For the remainder of the summer expect conditions to remain relatively stable. Specifically, the Florida peninsula should continue to see regular thundershowers, while the panhandle, Alabama, and Georgia may remain relatively dry. With summer evapotranspiration rates typically exceeding precipitation in these areas, expect soil moisture, surface, and groundwater levels to remain low even with a return to normal rainfall. Also, look for the tropics to begin heating up and bring beneficial rainfall to all or parts of the region. While everyone hopes to avoid a direct hit from a damaging hurricane, rainfall from tropical systems is a vital element of our late summer and fall climate. Summer temperatures are closely tied with precipitation patterns. Frequent rain and cloudiness tend to moderate temperatures, while clear skies and drier weather will allow afternoon temperatures to rise. For detailed rainfall and temperature predictions for individual counties, see the *climate risk tool* at AgClimate: [Climate Risk Tool](#)

Hurricane Season Forecast - The 2006 tropical season has gotten off to a slow start compared to last year, but is likely to be another active one, according to Dr. William Gray and experts at NOAA. While an active season is expected, it is highly unlikely that 2006 will equal the record-setting year of 2005. Conditions favoring an active season include above average sea surface temperatures in the tropical Atlantic Ocean and Caribbean Sea, favorable wind shear, the absence of El Niño, and the continued active phase of the 30-50 year cycle. The slow start of the 2006 season is typical of the usual tropical season, where activity usually begins in earnest in August and especially September. You may reference our hurricane season discussion here: [Hurricane Season Forecast](#)

Hurricane Forecasts

Presented here are the seasonal hurricane forecasts for the Atlantic basin produced by Dr. William Gray at Colorado State University and NOAA, along with our own discussion of the 2006 season.



2006 Season Predictions			
	Named Storms	Hurricanes	Major Hurricanes
Dr. Gray	17	9	5
NOAA	13-16	8-10	4-6
Long-term Average	10	6	2

PHYTOPHTHORA FOOT ROT AND ROOT ROT

Foot rot results from infection of the scion near the ground level, producing bark lesions, which extend down to the budunion on resistant rootstocks.



Crown rot results from infection of the bark below the soil line when susceptible rootstocks are used. Root rot occurs when the cortex of fibrous roots is infected, turns soft and appears water-soaked. Fibrous roots slough their cortex leaving only white thread-like stele.



When managing Phytophthora-induced diseases, consider integration of cultural practices (e.g., disease exclusion through use of Phytophthora-free planting stock, resistant rootstocks, proper irrigation practices) and chemical control methods.

Cultural practices. Field locations not previously planted with citrus are free of citrus-specific *P. nicotianae*. Planting stock should be tested free of Phytophthora in the nursery and inspected for fibrous root rot in the nursery or grove before planting. In groves with a previous history of foot rot, consider use of Swingle citrumelo for replanting. Swingle citrumelo is resistant to foot rot and roots do not support damaging populations once trees are established.

Cleopatra mandarin should be avoided because it is prone to develop foot rot when roots are infected in the nursery or when trees are planted in flatwoods situations with high or fluctuating water tables and fine-textured soils. Trees should be planted with the budunion well-above the soil line and provided with adequate soil drainage. Overwatering, especially of young trees, promotes buildup of populations in the soil and increases risk of foot rot infection.

Prolonged wetting of the trunk, especially if tree wraps are used on young trees, should be avoided by using early to midday irrigation schedules. Control of fire ants prevents their nesting under wraps and causing damage to tender bark.

Sampling for *P. nicotianae*. Population densities of the fungus in grove soils should be determined to assist in decisions to treat with fungicides. Soil samples containing fibrous roots should be collected during the spring through fall (March to November) from under-canopy within the tree dripline. Individual small amounts of soil from 20 to 40 locations within a 10-acre area are composited into

one resealable plastic bag to retain soil moisture. Samples must be kept cool but not refrigerated for transport to the analytical laboratory. Currently, populations in excess of 10 to 15 propagules per cm³ soil are considered damaging. The same soil sample could be tested for populations of nematodes, to assess whether they occur at damaging levels.

Chemical control.

Use of fungicides in young groves should be based on rootstock susceptibility, likelihood of Phytophthora infestation in the nursery, and history of Phytophthora disease problems in the grove. For susceptible rootstocks, such as Cleopatra mandarin and sweet orange, fungicides may be applied to young trees on a preventive basis for foot rot. For other rootstocks, fungicide treatments should commence when foot rot lesions develop. The fungicide program for foot rot should be continued for at least one year for tolerant rootstocks, but may continue beyond for susceptible stocks.



In mature groves, the decision to apply fungicides for root rot control is based on

yearly soil sampling to indicate whether damaging populations of *P. nicotianae* occur in successive growing seasons. Time applications to coincide with periods of susceptible root flushes in late spring and late summer or early fall. Soil application methods with fungicides should be targeted to under canopy areas of highest fibrous root density. To avoid leaching from the root zone, soil-applied fungicides should not be followed by excessive irrigation. Aliette and Ridomil are both effective, but alternation of the materials should be practiced to minimize the risk of the development of fungicide resistance.



Foliar spray with Aliette: It is recommended to buffer the spray solution to pH 6 or higher to avoid phytotoxicity when copper has been used prior to or with Aliette. For nonbearing trees, use 5lb/100 gal. For bearing trees, use 5 lb in 100-150 gal/acre. Soil application with Ridomil Gold 4EC: Apply 1 quart/treated acre or soil drench by applying 5 gallons of solution (1 quart/100 gal) in water ring. For more details and product selection and rates, get your copy of the 2006 Florida Citrus Pest Management Guide or go to: <http://edis.ifas.ufl.edu/CG009>

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

EXTENSION EDUCATIONAL PROGRAM QUESTIONNAIRE

Dear “Flatwoods Citrus” newsletter subscriber:

We would appreciate it if you fill out this survey and return it to: **Mongi Zekri**,
P.O. Box 68, LaBelle, FL 33975 E-mail: maz@ifas.ufl.edu Fax: 863 674 4636

Why do growers attend IFAS Extension Seminars & Workshops?

Please identify the level of importance for each of the following factors that influence you to participate in an Extension Educational Program.

	Not Important ▼	Slightly Important ▼	Somewhat Important ▼	Moderately Important ▼	Very Important ▼
CEUs & CCAs are offered					
Topics are relevant to your needs . .					
Includes a field day or a site visit . .					
Hands on activities are included . . .					
Production topics are emphasized . .					
Business and marketing topics are emphasized					
Regulatory topics are emphasized. .					
Day of the week and time of the day for the workshop					
Limited to 2-4 hours (1/2 day)					
Workshop occupies a full day (5-8 hours)					
Finding information on workshop in local media outlets					
Learning about workshop from other growers					
The Extension Agent who organizes the workshop					
Providing a brief description of the intended workshop speakers					
The workshop is free					
Refreshment and meals are provided at the workshop					

Other factors, please specify _____

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