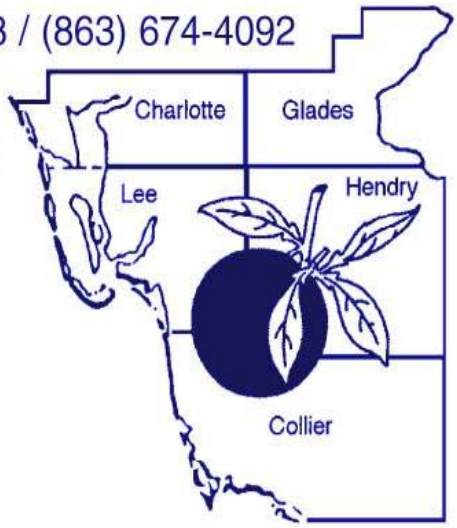
UNIVERSITY OF FLORIDA | IFAS EXTENSION

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

Flatwoods Citrus



Vol. 7, No. 12 **December 2004**

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

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

Immokalee IFAS Center

Freeze protection, the weather, flower bud induction, and winter foliar application of urea and phosphorous acid to increase flowering, fruit set, and fruit yield.

Date: Tuesday, 14 December 2004, 10:00 AM – 12:00 Noon
Location: SW Florida Research & Education Center, Immokalee
Speakers: Drs. Larry Parsons and Gene Albrigo
2 CEUs for Certified Crop Advisors
Sponsor: Robert Murray, Florida Favorite Fertilizer
Following the seminar, we are planning a free lunch (Compliments of Florida Favorite Fertilizer). To reserve lunch, call 863 674 4092 no later than Monday, 13 December 2004.

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

Hendry County Extension Office, LaBelle

Workshop on scouting for citrus insect pests and diseases. CEUs day!
Date: Tuesday, January 11, 2005, 9:00 AM – 3:00 PM
Speakers: Drs. Pete Timmer, Steven Rogers, and Phil Stansly
5 CEUs for Pesticide License Renewal, 5 CEUs for Certified Crop Advisors
Sponsor: Craig Noll and Gary Simmons, Nufarm Agriculture USA
Registration is required. Registration form is enclosed.

Immokalee IFAS Center

Update on PFD, scab, Alternaria, melanose, and canker
Date: Tuesday, 18 January 2005, 10:00 AM – 12:00 Noon
Location: SW Florida Research & Education Center, Immokalee
Speakers: Dr. Pete Timmer and Holly Chamberlain
2 CEUs for Pesticide License Renewal, 2 CEUs for Certified Crop Advisors
Sponsor: Bob Gregg, Syngenta

SCOUTING FOR PESTS AND DISEASES

Florida citrus industry uses sustainable production practices. Florida citrus growers help preserve environmental quality by using many sound cultural practices including integrated pest management (IPM) strategies. IPM depends on grove scouting and close observations to determine the need and timing for pesticide applications as well as modification of cultural practices to minimize damage. Scouting for early warnings of pests and diseases is becoming very important in citrus operation. Scouting not only helps growers control pests more efficiently, but also lowers the use of pesticides and the chances of pesticide resistance. In most cases, there is no way to predict on a seasonal basis the incidence and severity of pests. However, based on grove history and frequent observations, many situations can be reasonably assessed. With most citrus pests, the pressure must be high before economic damage levels on the processing fruit crop are experienced. Pest populations should be suppressed only when high levels of infestation threaten tree vigor and productivity. There are several techniques and procedures for scouting and there are many things to know before scouting. To learn more, you need to attend the workshop on scouting for citrus insect pests and diseases scheduled on Tuesday, 11 January 2005.

Indian River Citrus Seminar

January 25, 2005 from 8:00 AM to 4:30 PM.
January 26, 2005 from 8:00 AM to noon.
For registration information, contact Florida Grower Magazine at:
Phone: 407 539 6552, Fax: 407 539 6544, Email: indianriver@meistermedia.com

Special Thanks **to the sponsors of the Flatwoods Citrus newsletter for their generous contribution and support. If you would like to be among them, contact me at 863 674 4092.**

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CHART SUMMARIZING

FLORIDA NRCS ANNOUNCES EQIP, WHIP and GRP SIGNUP CUTOFF DATE

Applicants are encouraged to visit or call the Natural Resources Conservation Service (NRCS) Service Center in N. Ft. Myers before December 15, 2004, to obtain more information about cost share and planning assistance that will be available through the Environmental Quality Incentives Program (EQIP), Wildlife Habitat Incentive Program (WHIP) and Grassland Reserve Program (GRP). These Farm Bill programs offer financial and technical assistance to eligible participants to install or implement structural and management practices on eligible agriculture land. Limitations for EQIP are $450,000 per participant/entity with WHIP typically limited to 20,000. Cost share will include such items as well plugging, structures for water control, irrigation reservoir, microirrigation, pumping plant, tail water recovery systems, pest management, brush management, prescribed burning, fencing, water conveyance pipelines, trough, fencing, pasture planting, tree/shrub planting, etc. EQIP may pay up to 50 percent of approved cost rates on those practices while WHIP is cost shared at the 75% level. Actual cost share rates and incentive payments will be determined at the State and local level and in some cases may be less than 50%. All FARM Bill activities must be carried out according to a Conservation Plan of Operations, which details the practice(s) to be implemented. The plans are developed in conjunction with the producer and address the producer's objectives and the identified natural resource concerns. Practices must be carried out according to NRCS standards and specifications. Eligible land includes cropland, rangeland, pasture, private non-industrial forestland, and other farm or ranch lands. The signup period for FY2005 funds will effectively end on December 15. Applications received after that date will be deferred to the following fiscal year (2006). For additional information you may visit the following website: http://www.nrcs.usda.gov/programs/farmbill/2002/products.html Please contact Tim Eckert or Kendal Hicks for a complete discussion of these FARM Bill programs at (239) 995-5678 (Ext. 3) or visit the Service Center at 3434 Hancock Bridge Pkwy, Suite 209B, in N. Ft. Myers, Florida, 33903.

CITRUS PEST MANAGEMENT COURSE OFFERED IN SPRING at CREC. Detailed information is enclosed.

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Institute of Food and Agricultural Sciences

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Flatwoods Citrus

TOPICS DISSCUSSED IN THE FLATWOODS CITRUS NEWSLETTER -YEAR 2004-

Month	Topic
January	pesticide resistance, scouting for pests and diseases, cold hardiness and cold protection, cold protection
February	fertilizer management, nutrition of citrus trees, nutrition of citrus trees, postbloom fruit drop (PFD)
March	factors affecting bloom, fruit production and quality, pruning citrus trees, fungicide effectiveness, the alter-rater suggested threshold scores, alternaria brown spot, postbloom fruit drop (PFD), citrus scab, irrigation
April	management options for citrus growers, Diaprepes, Diaprepes root weevil emergence, facts from your pharmacist, the facts about potential drug interactions with grapefruit juice, mechanical harvesting vs. hand picking, foliar potassium applications to enhance fruit size
May	the citrus psyllid, the citrus leafminer, citrus rust mites, greasy spot, Florida citrus - health and nutrition from the Florida department of citrus, the annual farm safety day, the gulf citrus growers association
June	weed control in citrus groves, acidification to remove mineral deposits in irrigation systems, chlorination to control algae and bacteria in irrigation systems, more studies needed in drug grapefruit juice interaction, citrus peel can cut cholesterol, new update on greasy spot control, goal of the BMP program in Florida
July	citrus nutrition in relation to soil acidity and calcareous soils, importance of tissue and soil sampling and analyses in adjusting fertilizer programs
August	citrus greening, agriculture officials intensify inspection efforts in response to international citrus budwood smuggling activities, the citrus expo, gulf citrus growers association scholarship foundation, oranges good for your eyes, tristeza, fertigation, microirrigation and fertigation,
September	flooding injury, hurricane charley, citrus brown rot, spray tank mixing, the use of adjuvants, phytophthora foot rot and root rot
October	save your grove and nursery from citrus canker, citrus inventory preliminary report from the Florida agricultural statistics, citrus fruits 2004 summary, soil acidity and liming, citrus reset management
November	comprehensive report on citrus canker eradication program in Florida, increasing efficiency and reducing cost of nutritional programs, the 2004-05 Florida orange forecast, Florida citrus production statistics, 2003-2004 southwest Florida citrus production, southwest Florida citrus acreage and tree numbers, gulf citrus growers association scholarship foundation
December	flower bud induction overview and advisory #1 for 2004-2005, winter weather watch, the Florida Automated Weather Network (FAWN), freeze protection

Winter Weather Watch

From the winter 1970/71 through the winter 1995/96, citrus growers in central Florida used a system based on an electronic answering machine to obtain weather forecasts, extended outlooks, a collection of current conditions on freeze nights and educational information to assist them in coping with cold weather. The information obtained through the system was originated from the National Weather Service (NWS) and retrieved at the Lake County Extension Office by John Jackson and at the Polk County Extension Office by Tom Oswalt. A decision by the NWS administrators in 1996 eliminated the agricultural weather program, which has forced the Extension Service to move to private sources. Since the 1996/97 winter, the Extension Service has started utilizing several private agricultural meteorologists to obtain accurate and reliable weather information. For more information, call John Jackson (352 343 4101) in Lake County or Chris Oswalt (863 533 0765) in Polk County. The Winter Weather Watch starts in mid-November and continues through mid-March. There is a subscription fee of $100 to get telephone access to the daily weather recordings. The fee for the program goes towards telephone lines rental fees, long distance calls, equipment, weather service fees, and repairs. Weather forecasts are updated daily, seven days a week throughout the winter season. If temperatures of 35F or lower are predicted, the afternoon forecast is recorded also. This service provides timely information to help growers and farmers minimize their damage from frosts and freezes. There is an unlisted telephone number available to subscribers. Subscribers are asked not to give out the telephone number to others outside of their organization. If willing to subscribe, fill out the attached form entitled weather watch to be sent to Bartow and enclose your check in the amount of $100.

The Florida Automated Weather Network (FAWN)

It is another tool to provide a reliable source of real-time agricultural weather information from the UF main campus in Gainesville, 10 UF/IFAS Research Centers including the Southwest Florida Research and Education Center in Immokalee, and over 20 more sites that are part of the Network. Because of the importance of weather in agriculture, every effort is made to make the information available to the grower and other potential groups as soon as possible. Data are collected every 15 minutes and available through the Internet (**http://fawn.ifas.ufl.edu**) and a voice data system by calling the toll free number (**(866) 754-5732**). The FAWN management tools provide decision support functions to growers, using historical weather data and crop modeling technology to help in both short and long term planning. The Brunt minimum temperature calculator uses the temperatures at sunset to estimate the lowest temperature for any given night. FAWN also offers several management tools for evapotranspiration calculations, irrigation management, and microirrigation scheduling for citrus. Learn more about them in the download area. FAWN will offer more management tools in the near future as IFAS Information Technology developers build cooperative relationships with University of Florida researchers and extension agents.

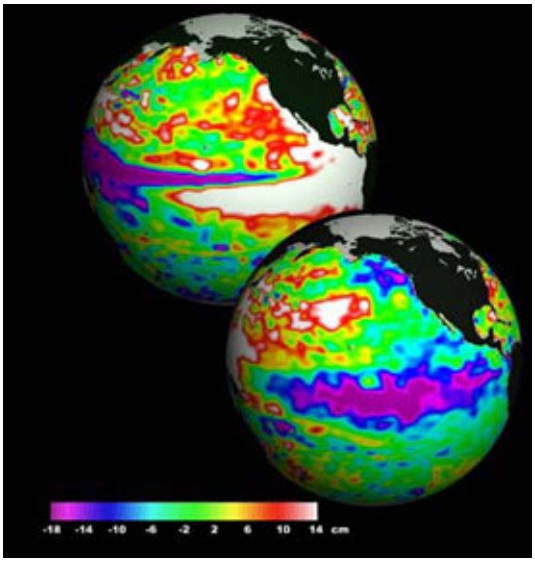
El Niño Spotlight

El Niño, a periodic warming of ocean temperatures over a large portion of the eastern and central tropical Pacific, and the opposite phase La Niña, have a profound influence on the climate of many parts of the earth. These seasonal climate variations are particularly strong in the Southeast United States and gives us the ability to predict seasonal rainfall and temperature trends with greater skill than ever before. This climate predictability is of primary importance to agriculture and **AgClimate** will give farmers the tools to take advantage of this emerging science.

Climate Phase Forecast
Neutral climate conditions, indicating near normal sea surface temperatures in the eastern tropica Pacific (neither El Niño or La Niña), will control the overall climate of the Southeast United States through the remainder of 2004. Neutral conditions are also likely to persist through the first half of 2005. For further information, please see the Climate Phase Forecast.

What is El Niño?
El Niño, La Niña, and Neutral phases are related to variability in Eastern Pacific Ocean sea surface temperatures. For more information, please see What is El Niño? To view a history of past El Niño events, please see the El Niño History section.

Climate Impacts
El Niño and La Niña affect the location and strength of the jet stream over North America, impacting seasonal variations in climate across the United States. For specific details on how El Niño and La Niña impact the climate of the United States and the Southeast region, please see the U.S. Impacts and Southeast Impacts sections of AgClimate.



FAWN Focus: Cold Protection

Contributed by: ***John Jackson, FAWN***

Winters in Florida are generally very pleasant with afternoon temperatures in the 70's and minimums ranging from the 40's to 60's. These temperatures are the reason Florida produces winter vegetables, citrus, strawberries, ornamental plants, ferns, and many other crops that cannot be grown in other states during this time of the year. However, Florida is not free from frosts and freezes and many growers must have a cold protection plan in place to deal with the sporadic arrival of cold air. Generally speaking, Central and South Florida growers are more concerned with freeze/frost events than those in the Northern or Western part of the state.

Several methods of cold protection are used in Florida. In a few isolated situations heaters are used to protect high cash crops. A few citrus growers use wind machines during calm nights to mix warm air with cold air that has settled next to the ground. More and more growers are using "heat blankets" to capture heat which has been stored in the ground during the day and is radiated back to the sky at night. This method of cold protection

works well with low growing crops, but must be removed in a relatively short period to avoid damaging the plants.

By far the most widely used method of cold protection is the application of water. Some crops such as ferns and strawberries utilize relatively large amounts of water to protect the entire crop, while citrus uses much smaller application rates per acre to protect the tree trunk and scaffold limbs. When using water the grower must determine what are the critical temperatures for the crop(s) and then turn systems on and off to keep from reaching damaging levels while at the same time minimizing water use.

FAWN has two management tools to assist growers that utilize cold protection methods. The first is the Brunt Minimum Temperature guide that can be helpful determining if critical temperatures could be reached on a given night. Read the background material to understand the limitations and rational behind this tool. The second aid is for growers using water for cold protection. The Wet Bulb Irrigation Cutoff Tool should be used by every grower using water for cold protection. If will provide a safe cut off temperature based on the moisture content of the air. This tool will save growers millions of dollars and reduce water demand by billions of gallons. Read more about this simple, but critical management tool.

FAWN is working on additional cold protection aids. The wet bulb tool will be tailored for individual crops this season. Forecast information from National Weather Service will be incorporated into the FAWN data package as we move to provide a complete and comprehensive cold protection program for Florida growers.

We have provided some valuable links below. They can help you better understand frost/freeze probabilities and how to deal with cold weather.

http://fawn.ifas.ufl.edu/focus/cold_protection.asp

FAWN Station Sites Expansion

FAWN has received a state emergency management grant for expansion of the FAWN system to 32 stations. The additions will be placed primarily in the panhandle to give more complete coverage for the entire state. FAWN data is used by emergency management operations to assist in public safety decisions made by the staff.

Management Tools

Potato Late Blight Predictor
: given a location and "green row" date, the tool suggests a course of action based on FAWN data.

Post Bloom Fruit Drop Calculator
: aids in timing of fungicide sprays.

Frost Protection Tool
predicts frost events.

Database Tools

FAWN is implementing a method for software developers to access FAWN data. FAWN data is available via the web at http://fawn.ifas.ufl.edu/scripts/FAWNDataServer.asp. If you do not specify a sql string to execute, the data server returns the latest readings from all stations. Details of the format for the query string and for the data returned is available at FAWN Data Server.

Minimum Temperature Estimator based on the Brunt equation

http://fawn.ifas.ufl.edu/scripts/brunt.asp

Minimum Temperature Estimator
based on the Brunt equation

Sunset time for today, 11/5/2004, is 5:45pm EST.

After sunset, a table of minimum temperatures for all FAWN stations will be displayed here. Temperature information that FAWN uses is not available until sunset. You may use the manual calculator with data from your area.

Air Temperature °F

Dew point Temperature °F

Minimum Temperature °F

Miniumum Temperature (muck soil) °F

To use the manual calculation method, enter air and dew point temperatures for your area and click on calculate.

Safe Cutoff Temperature Estimator

http://fawn.ifas.ufl.edu/scripts/wetbulb.asp

Safe Cutoff Temperature Estimator
for irrigation systems used in cold protection
all temperature in degrees Fahrenheit

Critical Temperature

34 Go

11/5/2004 4:32:36 PM		page automatically refreshes every five minutes because the values will change as air and wet bulb temps change.		
Station	**SAFE CUTOFF TEMP**	**Airtemp**	**Wetbulb**	**Dewpoint**
ALACHUA	**44**	66	56	48
APOPKA	**45**	70	59	52
AVALON	**45**	70	59	52
BALM	**46**	70	58	50
BELLE GLADE2	**36**	72	69	68
BRADENTON	**45**	70	59	52
BRONSON	**44**	68	58	50
BROOKSVILLE	**44**	68	58	50

CARRABELLE	**46**	68	56	46
CITRA	**46**	70	58	50
DOVER	**45**	70	59	52
FORT LAUDERDALE	**39**	75	70	68
FT PIERCE	**38**	68	64	63
HASTINGS	**42**	66	59	54
HOMESTEAD	**37**	73	71	70
IMMOKALEE	**42**	73	65	61
JAY	**46**	64	53	43
KENANSVILLE	**43**	72	63	57
LAKE ALFRED	**45**	70	59	52
LIVE OAK	**44**	66	56	48
MACCLENNY	**45**	68	57	48
MARIANNA	**50**	68	52	37
MONTICELLO	**44**	79	69	64
OCKLAWAHA	**44**	68	58	50
OKAHUMPKA	**45**	70	59	52
ONA	**46**	72	60	52
PALMDALE	**44**	73	63	57
PIERSON	**42**	66	58	52
PUTNAM HALL	**44**	68	58	50
QUINCY	**47**	66	54	43
SEBRING	**46**	73	61	54
TAVARES	**45**	70	59	52
UMATILLA	**45**	70	59	52

http://fawn.ifas.ufl.edu/

FAWN Interactive Voice Response System

When you travel or are away from your computer, access to the FAWN data is available through your telephone. The Dial-up System is designed to provide you with the following weather information:

Air temperature (°F at 2 meters)

Dewpoint Temperature (°F at 2 meters)

Relative Humidity (percent)

Wind Speed (mph at 10 meters)

Wind Direction (N, NE, E, ... NW)

To use the FAWN Dial-up system:

- Dial the toll-free phone number,
- Press one (1) for the latest weather,
- Enter the three digit weather station number shown in the table to select a location,
- Listen to the latest weather data from FAWN.
  -- OR --
- Press two (2) for the complete station ID listing,

In-State, Toll-Free Voice Response Phone Number

(866) 754-5732

Site	County	Station ID
ALACHUA	ALACHUA	**260**
APOPKA	ORANGE	**320**
AVALON	ORANGE	**304**
BALM	HILLSBOROUGH	**350**
BELLE GLADE2	PALM BEACH	**410**
BRADENTON	MANATEE	**370**
BRONSON	LEVY	**230**
BROOKSVILLE	HERNANDO	**310**
CARRABELLE	FRANKLIN	**150**
CITRA	MARION	**250**
DOVER	HILLSBOROUGH	**360**
FORT LAUDERDALE	BROWARD	**420**
FT PIERCE	ST LUCIE	**430**
HASTINGS	ST JOHNS	**270**
HOMESTEAD	DADE	**440**
IMMOKALEE	COLLIER	**450**
JAY	SANTA ROSA	**110**
KENANSVILLE	OSCEOLA	**340**
LAKE ALFRED	POLK	**330**
LIVE OAK	SUWANEE	**170**
MACCLENNY	BAKER	**180**
MARIANNA	JACKSON	**130**
MONTICELLO	JEFFERSON	**160**
OCKLAWAHA	MARION	**280**
OKAHUMPKA	LAKE	**303**
ONA	HARDEE	**380**
PALMDALE	GLADES	**460**
PIERSON	VOLUSIA	**290**
PUTNAM HALL	PUTNAM	**240**
QUINCY	GADSEN	**140**
SEBRING	HIGHLANDS	**470**
TAVARES	LAKE	**301**
UMATILLA	LAKE	**302**

FREEZE PROTECTION

As a means of cold protection, overhead, high-volume sprinklers have been used successfully in citrus nurseries and low-volume microsprinklers have been used to protect young trees in groves. However, success can vary with the type

of system, application rates, type of freeze (advective vs. radiative), and severity of the freeze. An advective or windy freeze occurs when a cold air mass moves into an area bringing freezing temperatures. A radiation frost occurs when a clear sky and calm conditions allow an inversion to develop and temperatures near the surface drop below freezing. Inversion occurs on a clear night during which heat continues to radiate out into the space. The temperature drops significantly and cool air collects at the surface. The temperature increases with altitude (height), which is the inverse of normal conditions.

Water protects young trees by transferring heat to the tree and the environment. The heat is provided from two sources, sensible heat and the latent heat of fusion. Most irrigation water comes out of the ground at 68° to 72°F, depending on the depth of the well. In fact, some artesian wells may provide water of 80°F or more. As the water is sprayed into the air, it releases this stored (sensible) heat. However, by the time the water reaches the tree it has lost most of its energy, particularly for low volume microsprinkler systems. Consequently, the major source of heat from irrigation is provided when the water changes to ice (latent heat of fusion). As long as water is constantly changing to ice the temperature of the ice-water mixture will remain at 32°F. The higher the rate of water application to a given area, the greater is the amount of heat energy that is applied.

The major problems in the use of irrigation for cold protection occur when inadequate amounts of water are applied or under windy (advective) conditions. Evaporative cooling, which removes 7.5 times the energy added by heat of fusion, may cause severe reductions in temperature under windy conditions, particularly when inadequate amounts of water are used. It should be kept in mind that most irrigation systems will not protect the upper portion of tree canopies. Because water can provide protection in one situation and cause damage in another, it is important to know what principles are involved and understand the dew point and what can happen when using water during a freeze.

What's the "Dew Point?" It is the temperature at which dew begins to form or the temperature at which water vapor condenses to liquid water. It is also the temperature at which air reaches water vapor saturation. A common example of condensation is the water that forms on the outside of a glass of ice water. This happens because the temperature of the glass surface is lower than the dew point temperature of the ambient air in the room. Hence, some of the water vapor in the surrounding air condenses on the outside of the cold glass. When referring to cold protection, the dew point is one of the better ways to describe the humidity or amount of water vapor in the air. When the dew point is below 32°F, it is often called the frost point because frost can form when the temperature is below freezing. The dew point is important on freeze nights because water vapor in the air can slow the rate of temperature fall.

With a relatively high dew point on a cool night, radiant heat losses from a grove are reduced, and the temperature may be expected to fall slowly. But if the dew point is quite low, the temperature may be expected to fall rapidly. Water vapor absorbs infrared radiation. Water droplets or fog are an even more effective radiation absorber than water vapor. Hence, fog can reduce the rate of temperature drop on a frost night. Dew point temperatures are commonly higher on the coasts than they are inland. In addition to affecting the rate of radiation loss, the dew point is often a "basement" temperature, and the air temperature will not go much below it unless drier air moves in. The reason for this is that when dew condenses or ice forms, heat is given off.

A sling psychrometer is a convenient portable gauge for measuring relative humidity and dew point. It is an important tool to determine when to stop irrigating during freezing conditions. This instrument compares the temperatures of a dry bulb thermometer and a wet bulb thermometer. The psychrometer is spun around rapidly for a few minutes and readings are taken for the dry and wet bulb temperatures. The scale on the back of the unit and the chart that comes with the unit allow deriving the dew point and relative humidity. In the morning, when the temperature warms up, it is recommended to use the **"Safe Cutoff Temperature Estimator"** (see page 10) to turn off the irrigation system safely and economically or when the wet bulb temperature is above 33°.

It is generally advisable to place the emitter northwest of the tree, about 1 to 2 feet away from the trunk. Emitters should be attached to risers for greatest tree trunk protection. Improper placement or inadequate spray coverage will greatly lessen the effectiveness of the irrigation. A 90° to 180° spray pattern, which concentrates the water on the trunk and lower limbs, gives more protection than a 360° pattern. Inverted cone sprinklers positioned above the wrap in the tree also give adequate protection. The volume of water applied depends on the amount of cold protection required. Generally, 10 gallons per hour applied directly to the trunk in a 90° pattern will provide adequate protection during most freezes.

It is very important to know the critical temperature at which freezes can damage the grown crop. Minimum-temperature-indicating thermometers are not expensive and are a wise investment for any grower concerned with freeze/frost protection. Several thermometers should be placed in several blocks. Placement and number of thermometers should depend on the area and grower's interest. Some factors to be considered include elevation, scion/rootstock cultivars, tree size, and irrigation systems. Some growers place one thermometer in the coldest spot and organize their protection strategy around the worst possible case. This is acceptable, but most of the area will receive more protection than it needs which will waste water and fuel and cost the grower money. Thermometers should be placed at a height of 42 inches (4.5 ft) on a stand sheltered at the top and facing north.

FLOWER BUD INDUCTION OVERVIEW and ADVISORY #1 for 2004-2005-11/01/04

Dr. Gene Albrigo, Lake Alfred CREC

Overview of flower bud induction in Florida - It is time to start following citrus flower bud induction conditions for the coming year's bloom. Low temperatures first stop growth and then promote induction of flower buds as more hours of low temperatures accumulate. A period of 5-12 days of high temperatures in winter can then initiate bud differentiation, which after sufficient days of warm springtime temperatures leads to bloom. The meteorologists predict that this winter in Florida will be a weak to moderate El Niño year, cooler and wetter than normal. Even if this winter is only slightly cooler than normal, enough hours of low temperatures below 68 degrees F should accumulate to induce a moderate to good level of flower buds.

Under normal Florida conditions, sufficient flower bud induction should be achieved when total uninterrupted, accumulated hours of low temperatures exceed 850 hours below 68 degrees F if the current crop is heavy. If the crop load is light, sufficient flower bud induction can occur after 750 hours of accumulated low temperatures. A warm period of 7 to 12 days, with maximum temperatures > 75 to 80 degrees F, after some low temperatures have accumulated can trigger growth (bud swelling). Fewer days of higher temperatures and lower daytime highs are required to stimulate growth if the accumulated cool temperature hours are high later in the winter. Current and previous seasons weather information is available on the Florida Automated Weather System (fawn.ifas.ufl.edu) for locations near you. The 8-day forecast from the National Weather Service predicts Florida weather for several sites around the citrus belt and is linked to http://www.crec.ifas.ufl.edu/crechome/crecweather.HTML

Some flower buds will be induced in the range of 300 to 600 accumulated hrs < 68 degrees F. Warm events after these levels of induction result in weak flowering intensity, and therefore many buds remain that can be induced by later cool periods. This situation results in multiple blooms. During the years from 1963 to 2002, multiple blooms occurred in over half of the years. Historically, the time period in which a warm 7-12 day period can lead to some bud growth and then result in multiple blooms is roughly Thanksgiving to Christmas.

Presently, the only management tool available to eliminate or reduce the chance of multiple blooms is to promote water stress by stopping irrigation before these predicted warm periods occur. If the warm periods(s) are of the typical 7 to 10 day duration, mild water stress will have little impact on current crop development or quality. Mild water stress may be interpreted as leaf wilt observed by 10 or

11 am, but leaves recovering by early the next morning. If no rains interrupt a mild stress condition of citrus trees, buds will not grow in response to high temperatures. If an extended warm period has passed, trees again can be watered to minimize current crop water stress. Although no weather prediction is guaranteed, rains in the winter usually come on the fronts of cool periods. Therefore, the chances of being able to use water stress to prevent an early flower bud differentiation event is reasonably good for most warm periods. A difficulty that occurred 3 years ago, which resulted in a very small crop, was that daytime high temperatures were continuous through the fall until December 18th. If trees were allowed to be water stressed for this extended period, this could lead to low photosynthesis, little fruit growth or sugar accumulation and probably excessive fruit drop.

In the shallow soils of bedded groves, it is relatively easy to create sufficient water stress to suppress growth by withholding irrigation for a few days if no rains occur. In deeper sandy soils, 2 or more weeks without irrigation or rainfall may be required. To minimize the time required for soil to dry sufficiently to initiate water stress, the soil should be allowed to dry out by mid-November so that trees show wilt by mid-day. For bedded groves, minimum irrigation can then be applied at low rates as needed until a weather prediction indicates a warm period is expected. At this time, irrigation should be shut down. For deep sands, the soil needs to be dried out and kept nearly dry below 6 to 8 inches of depth until at least Christmas so that no growth can occur. Minimum irrigations that re-wet perhaps the top 6 inches of the root zone may minimize excessive drought, while allowing quick return to a water stress condition if a high temperature period is forecast. This may be risky for 'Hamlin' or other early maturing cultivars not yet harvested that tend to drop fruit near harvest.

Previous 3-year's results – In the winter of 2001-2002 cool temperature accumulation was very slow, warm temperatures persisted and many buds started to grow by 20 December, heavily to vegetative buds. This resulted in few buds remaining for a second flowering wave and a small crop occurred. In the winter of 2003-2003 by late December we had 850 hours of uninterrupted cool inductive temperatures with a low current crop on the trees. The following warm period initiated almost all the buds on all of the spring and summer flush to differentiate and bloom in early March. We had a fairly leafy bloom of very short duration (slightly more than 2 weeks). In spite of the high temperatures during and following bloom, a good fruit set occurred in other round oranges resulting in the highest October crop forecast for Florida that FASS has ever predicted. Last year (2003-2004), there was good flower bud induction and reasonably good fruit setting conditions, although the heavy previous crop probably reduced flowering levels and set somewhat. Even though fruit size was small, it looked like we were headed for a mid-200 million box orange yield before the hurricanes.

The new season's situation – If you have citrus that was not in the path of the hurricane, two years of heavy to moderately heavy crops means that a high level of induction is desired to produce adequate flower buds for next year's crop. If the block was in the path of one to three hurricanes, then many scenarios exist and most of my conclusions are guess work, but here they are:

If you lost fruit but not many leaves, the trees may need less inductive

temperatures, but fruit losses were after most of the summer drain on carbohydrates had occurred. If fall temperatures stay in the mid-70s to low 80s, trees may build up carbohydrate reserves under a low crop situation providing good bud condition for flower induction.

If many leaves were lost along with the crop, then trees may have fairly low carbohydrate levels and need high levels of inductive temperatures to produce a good bloom.

If heavy fruit and leaf loss was followed but many buds stimulated to flush this fall, then fewer buds are available on last year's spring and summer flush for flowering. However, if these fall flushes matures sufficiently before bud growth stimulation occurs (usually in early to late December), then their buds can become flower buds. I think that 2 to 2 ½ months for flush development may be necessary for this to happen.

Therefore, best results this fall-winter may come from reasonable development temperatures until mid-November followed by above average cool temperature accumulation (> 850 hrs).

So far this Fall, little cool weather has occurred to slow down or stop vegetative growth on mature trees, only about 110 to 160 hr < 68 degrees F, from southern to northern districts. Also, the National Weather Service (NOAA) predicts that there will be about 80 more hours below < 68 degrees F during the next 8 days. To view specific FAWN data for a location near you in the citrus growing areas, use (www.crec.ifas.ufl.edu) and click on FAWN or for NOAA's 8-day forecast go to Weather Links on our CREC homepage and then 8 day forecast.

The major concerns for the next 60 days are the possibility of 1) continuous warm weather that will push vegetative buds to grow as occurred 3 winters ago or 2) an extended warm period, 10 to 12 days with max. temperatures > 75 to 80 degrees F, following an inductive period of 300 to 500 hrs < 68 degrees F that will initiate differentiation of easily induced flower buds. The first condition will lead to low flowering and the second to multiple blooms. By next week the 200 to 250 total hours will be ½ way to a weak bloom potential.

Continued accumulation of cool temperatures or prevention of growth during a winter warm spell is important to a good start to the 2005-06 harvest season. Therefore, keep irrigation amounts low to moderate (if fruit are still present) to minimize growth possibilities. Prepare to keep groves relatively dry, keep track of induction hours in your area and watch for the next advisory.

FLOWER BUD INDUCTION ADVISORY #2 for 2004-2005- 11/08/04

Please review the background information in the first advisory if you have not already done so.

Current status:

So far this Fall, cool weather has reached 150 to 200 hr < 68 degrees F., from southern to northern citrus districts. Also, the National Weather Service (NOAA) predicts that there will be about 80-90 additional hours below < 68 degrees F. during the next 8 days. To view specific FAWN data for a location near you in the citrus growing areas, use http://www.crec.ifas.ufl.edu/crecweather.HTML and click on FAWN or for NOAA's 8 day forecast or go to Weather Links on our CREC homepage and then 8 day forecast.

This week's cool weather should bring buds to a rest stage and by the end of next week our major concern will be the possibility of an extended warm period, 10 to 12 days with max. temperatures > 80-85 degrees F, occurring before we have reached an ideal amount of cool temperature flower bud induction. An extended warm spell after an inductive period of 300 to 500 hrs < 68 degrees F will initiate differentiation of easily induced flower buds, and this would lead to an overall weak flowering wave with an early bloom date. Continued accumulation of cool temperatures and prevention of growth initiation during a winter warm spell are important to a good start to the 2005-06 harvest season. Therefore, keep irrigation amounts low to moderate (if fruit are still present) to minimize growth possibilities. Prepare to keep groves relatively dry, keep track of induction hours in your area and watch NOAA's 8-day forecast for possible warm weather that could force initiation of bud growth. Remember this protocol is advised at least until Christmas.

(**Request for potential cooperators)** – Establishing mild drought stress when warm periods occur through mid-January also might benefit growers by delaying bloom date into mid- to late March as well as compressing the flowering period. Although rains this past winter negated attempts to use water stress to delay bloom in many areas and collection of meaningful yields was severely disrupted by the hurricanes, we are still interested in tests to delay bloom by managing irrigation to delay initiation of flower bud growth. I have received one new positive response to putting some blocks into this protocol. If you are interested in putting one or more blocks or a few rows of grapefruit, 'Hamlin' or 'Valencia' trees under this protocol, please let me know albrigo@crec.ifas.ufl.edu or phone 863-956-1151).

FLOWER BUD INDUCTION ADVISORY #3 for 2004-2005-11/15/04

Current status: As predicted last week, accumulated cool weather has now reached 200 to 300 hr < 68 degrees F. from southern to northern citrus districts, respectively. Also, the National Weather Service (NOAA) predicts that there will be about 80-90 additional hours below < 68 degrees F. during the next 7 days. This means that all areas will be in the low flowering potential level by next week. To view specific FAWN data for a location near you in the citrus growing areas, use (www.crec.ifas.ufl.edu) and click on FAWN or for NOAA's 8 day forecast go to Weather Links on our CREC homepage and then 8 day forecast.

Up to this week, cool temperature accumulation has been about average compared to the last 4 years. The predicted rate of accumulation for the next 8 days is also average, but an extended warm period the last week of November or in early December would lead to an overall weak flowering wave which would have an early bloom date. Continued accumulation of cool temperatures and prevention of growth initiation during a winter warm period are important to a good start to the 2005-06 harvest season. Therefore, keep irrigation amounts low to moderate (if fruit are still present) to minimize growth potential during a warm period. Prepare to keep groves relatively dry, keep track of induction hours in your area and watch NOAA's 8-day forecast for possible warm weather that could force initiation of bud growth. Remember this protocol is advised at least until Christmas.

Please email or phone me if you have any questions (albrigo@crec.ifas.ufl.edu or phone 863-956-1151).

Scouting for Citrus Insect Pests & Diseases Workshop

Location: Hendry County Extension Office, LaBelle
Date: Tuesday, January 11, 2005
5 CEUs for Pesticide License Renewal
5 CEUs for Certified Crop Advisors

Diseases (9:00 AM - 11:00 AM)
By ***Dr. Pete Timmer***

Scouting Tips, Techniques, and Models
Foliar and Fruit Production Diseases
- Alternaria Brown Spot
- Greasy Spot
- Citrus Scab
- Melanose
- Postbloom Fruit Drop
- *Phytophthora* Brown Rot
- *Phytophthora* foot and root rot
- Citrus Canker

"MSI: Mite Scene Investigations" (11:00 AM -12:00 Noon)
By ***Dr. Steven Rogers***

Mites & Insect Pests (1:00 PM - 3:00 PM)
By ***Dr. Phil Stansly***

Principals of Entomology and IPM
Mite Pests of Citrus
Sucking Insect Pests of Citrus
Soil Inhabiting Pests
Citrus Leafminer and Misc. Insects

12:00 Noon - 1:00 PM: Lunch

Program Sponsored by Nufarm Agriculture USA – Craig Noll & Gary Simmons

********** DETACH**********

REGISTRATION FORM
(Registration is required)

Registration Deadline: Tuesday, January 4, 2005

Name: .....

Company: .....

Address: .....

Phone: .....

Mail completed registration form and check for $10.00* per person to:
Dr. Mongi Zekri, Hendry County Extension Office, P.O. Box 68, LaBelle, FL 33975-0068. Checks should be made payable to: Hendry County Extension.

*****The registration fee of $10.00 includes refreshments, lunch, and handouts.
Registration fee at the door, the day of the meeting, is $15.00.

2004 - 2005 WINTER WEATHER WATCH PROGRAM

NOVEMBER 15, 2004 TO MARCH 15, 2005
REGISTRATION FEE: $100.00

It's once again time to register for the upcoming 2004 - 2005 Winter Weather Watch Program. Upon receiving your $100.00 registration payment, you will be sent an unlisted telephone number with which you can retrieve the latest **Ag Forecasts**, 24 hours a day. **Please do not give this number to others**. The *Winter Weather Watch Program* is funded by the registration fees to pay for telephone equipment rentals, long distance calls, repairs and meteorologist. This year we will run a Pilot Program using text messaging to communicate forecast updates. PLEASE include your Nextel radio number and phone number.

2004 - 2005 Winter Weather Watch Program

NAME: _____PHONE NUMBER:_____

COMPANY:_____

NEXTEL TEXT MESSAGING: RADIO NO. _____ NEXTEL PHONE NO._____

MAILING ADDRESS:_____

CITY:_____ZIP CODE:_____

REGISTRATION FEE $100.00

PLEASE RETURN THIS REGISTRATION FORM AND YOUR CHECK PAYABLE TO:

POLK COUNTY CITRUS ADVISORY COMMITTEE
PO BOX 9005, DRAWER HS03
BARTOW, FL 33831-9005

UNIVERSITY OF FLORIDA

Institute of Food and Agricultural Sciences

Citrus Research and Education Center

Date: November 17, 2004
University of Florida/Institute of Food and Agricultural Sciences (UF/IFAS)
Citrus Research and Education Center (CREC)
700 Experiment Station Rd., Lake Alfred, FL 33850. Tel. (863) 956-1151; Fax (863) 956-4631

Contact: Dr. Larry Duncan, Tel. (863) 956-1151 or E-mail: lwdn@crec.ifas.ufl.edu

CITRUS PEST MANAGEMENT COURSE OFFERED IN SPRING

Citrus Pest Management (PMA 5205, section no. 2563) will be offered at the University of Florida/IFAS Citrus Research and Education Center (CREC) in Lake Alfred for the Spring 2005 term. Citrus Pest Management is a graduate-level course (3.0 units) for students and citrus industry personnel working in the area of pest management. The course reviews the latest tactics and strategies available to manage diseases and arthropod, nematode and weed pests of citrus. Emphasis is given to techniques by which pest and disease organisms are monitored and how this information is used to effectively manage pests with the least risk to the environment.

Course topics include:

- Identification and biology of citrus pests and diseases
- Pest and disease monitoring
- Ecological and economic principles as a basis for pest management
- Economic thresholds and pest management models
- Integrated pest management in citrus

The course is coordinated by Dr. Larry Duncan, Professor of Nematology, University of Florida/IFAS
University credit (3.0) or audit credit. CEU's will be offered.

Dates/Time: Thursdays, Jan. 6 – April 28, 2005, 3 - 6 p.m.

Location: University of Florida/IFAS Citrus Research and Education Center, Ben Hill Griffin, Jr. Citrus Hall Teaching Laboratory, 700 Experiment Station Road, Lake Alfred, Florida.
Tel. (863) 956-1151.

Textbook: *Citrus Health Management* (APS Press). L.W. Timmer and Larry W. Duncan, editors. Written by 26 citrus specialists, *Citrus Health Management* was designed specifically for this course.

Registration: Registration cost for Citrus Pest Management (PMA 5205; Section no. 2563) is **$**685.44 for Florida residents. Regular and non-degree registration is Jan. 3. Students must complete the registration procedures outlined on the UF/IFAS Distance Education website: **www.cals.ufl.edu/distance**.

For registration assistance, contact Monica Lewandowski at Tel. (863) 956-1151 or E-mail: mmlew@crec.ifas.ufl.edu.

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