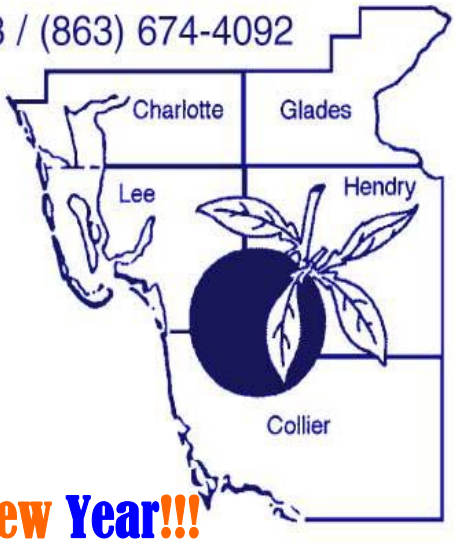
UNIVERSITY OF FLORIDA | IFAS EXTENSION

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

Flatwoods Citrus



Vol. 10, No. 1 **January 2007**

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

Have a Happy Holiday Season and a Productive New Year!!!

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

WORKSHOPS ON SCOUTING FOR PESTS AND DISEASES IN LABELLE & IMMOKALEE

Speakers: **Drs. Stansly & Timmer**
3 CEUs for Pesticide License Renewal, 3 CEUs for Certified Crop Advisors
Registration is required. Registration form is enclosed.

in Spanish
Date & time: January 9, 2007, 9 AM- 12:00
Location: LaBelle Extension Office

in English
Date & time: January 16, 2007, 9 AM- 12:00
Location: Immokalee IFAS Center

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

MECHANICAL HARVESTING WORKSHOP AND FIELD DAY

January 17, 2007, 7:30 AM - 12:00 Noon, Polk County Extension Office, Bartow, FL.

Mechanical Harvesting & Tree Health
Enhancing Mechanical Harvesting Systems
Field Demonstrations

Demonstration of Tractor Drawn Canopy Shaker and Pick-Up Machine
Discussion of Grove/Tree Preparation

For further information or to RSVP, please contact Barbara Hyman at (239) 658-3415 or email brh@ifas.ufl.edu

THE INDIAN RIVER CITRUS SEMINAR

INDIAN RIVER CITRUS SEMINAR

January 24-25 at the St. Lucie County Fairgrounds, will focus on production trends and techniques and issues impacting the citrus market. For information and/or registration, visit **www.floridagrower.net**

The Indian River citrus seminar agenda and detailed information are included in the enclosed brochure.

EXOTIC CITRUS DISEASES NOT HERE YET IN FLORIDA

Citrus variegated Chlorosis (CVC)
Leprosis
Stem Pitting Tristeza
Black spot

Speakers: **Drs. Ron Brlansky, Carl Childers, and Pam Roberts**
Date & time: February 20, 2007, 10 AM- 12:00 Noon
Location: Immokalee IFAS Center.
2 CEUs for Pesticide License Renewal, 2 CEUs for Certified Crop Advisors

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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CURRENT FLOWER BUD INDUCTION

L. Gene Albrigo, Horticulturist, Citrus Research & Education Center, Lake Alfred

Please review the background information in the first advisory if you have not already done so.
http://www.crec.ifas.ufl.edu/extension/fb/index.htm

ADVISORY #6 for 2006-2007-12/14/06

ADVISORY #6 for 2006-2007-12/14/06

Cool temperature accumulation has continued at a favorable pace in spite of temperatures being higher than expected, particularly as this is supposed to be an El Niño winter. According to the Flowering Monitor System the citrus districts have now accumulated 610 to 1050 hrs < 68 degrees F., from southern to northern areas. Also, the National Weather Service (NOAA) predicts that there will be an additional 84 hours below < 68 degrees F. during the next 8 days. The 8 day forecast does not indicate that any significant warming trend is anticipated in the next week. However, trees are now ready to initiate bud growth if a week-long warm period did occur and the buds may initiate growth if daily highs continue to be near 80 degrees F. This is because nearly two

weeks of such weather have already occurred. To view specific FAWN data for a location near you in the citrus growing areas, use (www.crec.ifas.ufl.edu) go to Weather and click on FAWN or NOAA's 8 day forecast. See this season's first advisory for how to access the Flower Monitor System on the Internet.
This week, the Flowering Monitor Program still does not indicate the initiation of a flowering event in any area except Umatilla, which has 1050 accumulated cool hours. Balm data appears to be in error (over 1000 cool hours) and therefore shows initiation of flower bud growth. Next week we plan to check for bud swell of the first two buds at the terminal end of last year's summer shoots. You can check your trees before Christmas to see if any bud swell is evident. If there is, please email that information so we can adjust the model. If you had stopped irrigation and the soil was sufficiently dry to prevent growth during the past 2 weeks, you should not have any bud swell. You should continue

to keep the soil relative dry and stop irrigating if a warm period is predicted by NOAA. It is particularly advised to manage irrigation by using small applications so that quick initiation of drought stress will occur if you stop irrigation. This protocol should be considered to prevent growth until after Christmas .

'Plan ahead' It is time to start thinking about flower induction enhancing sprays (urea or phosphorous acid (PO3)). These sprays will be most useful if a warm period is predicted from near to shortly after Christmas and the total hours < 68 degrees F. has not reach 800 hours if you have a moderate to low crop and 900-1000 hours if you have a heavy crop. These conditions would most likely exist in the southern citrus growing areas. If you are anticipating spraying one of these products, be sure you have material on hand. For urea, you need 53 to 60 lbs of urea available per acre you plan to treat. For a PO3 product you need 3 pints to 2 quarts per acre depending on which product you use (60 % P (3pts) or if 26 % P (2 qts) product). If a warm period occurs immediately following next week, it may be advisable to spray trees with a good to heavy crop no later than 3 to 4 days into the warm period.

(Request for potential cooperators) – If you are interested in delaying the main bloom date by putting a block or a few rows of grapefruit, 'Hamlin' or 'Valencia' trees under a soil water deficit protocol, please contact me (albrigo@crec.ifas.ufl.edu or phone 863-956-1151). We will visit your site to help set up the tests. Those that are following this protocol should continue to allow water stress when warm weather is predicted until the end of January.

UREA

Urea is a white crystalline substance with the chemical formula $CO(NH_2)_2$. It is highly water-soluble and contains 46% nitrogen (N). Urea is considered an organic compound because it contains carbon.

Advantage of urea for foliar application of N

Urea is the best source of nitrogen for aerial application. Use of urea compared to other nitrogen fertilizers offers several advantages. Urea is taken up rapidly by plants. Research has shown that up to 50% of the urea can be taken up within 30 minutes. Second, there is reduced foliar burn due to salt injury because the nitrogen is organic rather than a fertilizer salt.

Guidelines for foliar applications of urea

Urea uptake is increased under mildly acidic conditions so the pH of the solution should be buffered to about 5.5 to 6.5 for maximum uptake. When the pH of the solution exceeds 7, the possibility of free ammonia exists, and the potential for leaf burn increases dramatically. Low-biuret urea solution specifically manufactured for foliar application can be buffered to eliminate free ammonia and a special dye can be added to act as a visual indicator of the solution pH. For citrus, the quantity of nitrogen applied at one time should not exceed 28 lbs (60 lbs of urea) per acre. ***Winter application (6 to 8 weeks before bloom) of low biuret urea at 10-15 gal (18-28 lbs N) per acre can increase flowering and fruit set.***

Application time should be just as the warm period is starting, when daytime highs are in the 70-80 degree range, and may continue for up to a week. Sprayed trees will often bloom up to a week earlier than unsprayed controls.

UNIVERSITY OF FLORIDA
Institute of Food and Agricultural Sciences

FAWN Florida Automated Weather Network

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

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 aloft 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 (click on **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.

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

Critical Temperature
28 Go

12/18/2006 10:40:31 AM		Values will change as air and wet bulb temperatures change. Page automatically refreshes every five minutes.		
Station	**SAFE CUTOFF TEMP**	**Airtemp**	**Wetbulb**	**Dewpoint**
ALACHUA	**33**	66	62	59
BELLE GLADE2	**35**	77	70	66
FT PIERCE	**35**	75	68	64
IMMOKALEE	**34**	75	69	66
LAKE ALFRED	**34**	73	67	64
PALMDALE	**33**	75	70	68
PIERSON	**33**	72	67	64
SEBRING	**34**	75	69	66

UNIVERSITY OF FLORIDA
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FAWN Florida Automated Weather Network

Database | Climate | Tools | Focus | News | Tour

Wet Bulb Safe Irrigation Cutoff Tool Background

Using Wet Bulb Temperature to Determine When to Turn Off Irrigation Systems Used for Cold Protection

John Jackson, Larry Parsons, & David Martsolf

Shutting down irrigation based on the wet bulb temperature can save a substantial amount of water and money! *Wet bulb temperature is the lowest temperature to which air can be cooled by evaporating water into it.*

There is always a risk when using water systems, micro-sprinkler or conventional sprinkler, for cold and/or frost protection. Low humidity and wind can produce evaporative cooling which can chill plant surfaces to the wet bulb temperature. Dry and windy conditions can result in wet bulb temperatures 5F to 6F degrees lower than air temperature. Therefore, wetted plant surfaces that experience evaporation would be 5F to 6F degrees cooler than air temperature. Evaporative cooling may result in plant damage when water is used for cold protection during dry windy

conditions. Evaporative cooling should always be taken into consideration.
It is possible that, on nights when temperatures are close to critical levels, introduction of water could produce more damage than would result if no action was taken!

Wet bulb temperature can be used to determine when it is safe to shut down irrigation systems used for cold protection. According to IFAS Circular 348 by Harrison, Gerber, and Choate, "When the wet bulb temperature is 32°F or higher, the irrigation system can be stopped without danger to any part of the plant."

Moisture content in the air does not change dramatically over a relatively large area. On the other hand, air temperature can vary several degrees over a small area. The Safe Irrigation Cutoff Calculator, which uses wet bulb temperature, provides a fairly accurate and safe air temperature at which to shut down irrigation systems. The calculator actually uses a wet bulb temperature of 34F, a built-in safety factor of 2F. In any case, it is not necessary to continue irrigation until all ice has melted from the plant. When the wet bulb temperature rises above 34°F, irrigation systems may be shut down safely.

DATABASE | CLIMATE | TOOLS | FOCUS | NEWS | TOUR

Minimum Temperature Estimator
based on the Brunt equation

Sunset time for today, 12/18/2006, is 5:30pm 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.

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**
ARCADIA	DeSoto	**490**
AVALON	ORANGE	**304**
BALM	HILLSBOROUGH	**350**
BELLE GLADE2	PALM BEACH	**410**
BRONSON	LEVY	**230**
BROOKSVILLE	HERNANDO	**310**
CARRABELLE	FRANKLIN	**150**
CITRA	MARION	**250**
DOVER	HILLSBOROUGH	**360**
FORT LAUDERDALE	BROWARD	**420**
FROSTPROOF	Polk	**390**
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**
UMATILLA	LAKE	**302**

LIVING WITH CITRUS CANKER AND CITRUS GREENING

What has been working in Brazil in reducing the spread of citrus greening and citrus canker and in coping with these and other exotic diseases?

Successful strategies:

Nurseries

- Isolated citrus nurseries surrounded with windbreaks
- Nursery stock protection in enclosed structures including screenhouses to exclude the citrus psyllid, the citrus leafminer, other insects and insect vectors
- Soil applied systemic pesticides
- Frequent (weekly) sprays for insect control

Groves

1. ***Greening***
   - Frequent survey/inspection of trees (4 times/year)
   - Frequent spray of pesticides for psyllid control (6-10 times/year)
   - Soil applied systemic pesticides (2 times/year)
   - Immediate removal of trees showing visual leaf symptoms

Citrus greening

To learn more about greening and to get help in identifying and scouting for citrus greening, the University of Florida, IFAS, prepared DVDs, field identification cards, laminated ID sheets, articles, and other publications and reports in English and Spanish. IFAS is also offering educational programs including seminars, workshops, field days, and training sessions. For more information, call Holly Chamberlain at Lake Alfred CREC (863 956 1151) or your Citrus Extension Agent.

Citrus canker

2. ***Canker***
   - Personnel and equipment decontamination
   - Restrictions in planting canker sensitive cultivars such as Hamlin
   - Frequent copper sprays in combination with windbreaks
   - Frequent sprays for leafminer control
   - Pruning infected branches

BMP Development

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

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

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

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

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

Take advantage of the BMP cost share program (up to 75%). See enclosed sheet.

For more information and application forms go to:
http://citrusbmp.ifas.ufl.edu/gulfcoast/index.html

For grove evaluations, BMP checklist, BMP recommendations, cost-share funding, employee training, and to sign up, contact:

Geovanne (Gio) Stinghen, UF-IFAS BMP Implementation Team Leader
2150 NE Roan St, Arcadia, FL 34266, Cell phone: 863 634 7830
Nextel: 162*327299*6 Office: 863 993 4846 E-mail: stinghen@ufl.edu

FACTORS AFFECTING BLOOM, FRUIT PRODUCTION AND QUALITY

In subtropical regions during the winter months, the temperature normally falls below 70 °F for several months. This causes growth to cease and trees to become dormant for about 3 months. This dormancy, among other things, induces flowering when warmer temperatures in the early spring cause resumption of vegetative growth. In a tropical climate, there is no period of cold temperature to induce dormancy. However, with periods of less than ample soil moisture, flushes of bloom and vegetative growth normally follow periods of drought.

It is well known that vegetative growth is competitive with fruit growth for available nutrients such as sugars and minerals. Flushes of heavy vegetative growth will reduce the solids available to developing fruit, while a period of dormancy will increase solids. This competition for nutrients between vegetative growth and fruit development is one of the reasons reducing solids concentration often found in oranges produced in the tropics as compared with those produced in subtropical regions.

Fruit production and quality is influenced by many factors including climatic conditions and production practices. Within fairly broad parameters of adequate soil and reasonably good cultural and crop protection practices, climate is the most important component of the climate-soil-culture complex causing differences in fruit quality among commercial citrus production areas.

CLIMATE

There is considerable diversity among citrus cultivars in their response to climate, especially as regards to market quality of the fruit. For example, 'Navel' develops its best eating and eye-appeal qualities in a Mediterranean type climate with cool, wet winters and hot, dry summer. In wet, tropical regions, it tends to be large, with poorly colored rinds, and low total soluble solids and acid in the juice. However, 'Valencia' is adapted to a broad range of climates, producing excellent to acceptable fruit quality in most of the important citrus regions. Unlike 'Navel', most grapefruit cultivars develop optimum internal quality in warm climates with little winter chilling.

Cultural practices cannot completely overcome these differences. For example, there is no known cultural practice that allows California (with Mediterranean climate) to produce low-acid, thin-peel Florida world top quality grapefruit.

Worldwide, climate has a significant effect on citrus yield, growth, fruit quality, and economic returns. In growing regions where the average temperatures remain high all year, chlorophyll levels remain high for oranges and tangerines and the fruit peel stays green, while the peel color of oranges and mandarins is more intense and of greater eye-appeal at maturity in the cold-winter subtropical climates.

In lowland tropical areas, due to the high respiration rate at warm temperatures, the fruit mature fast, do not have sufficient time to accumulate high soluble solids levels and acidity declines so rapidly that the soluble solids/acid ratio increases sharply and the fruit quickly become insipid and dry. Total soluble solids (TSS) in the fruit accumulate most slowly in cool coastal areas. Maximum levels of TSS are usually attained in the mid-tropics and in humid subtropical regions with warm winters. Total acid (TA) levels are generally greatest in semiarid or arid subtropical and coastal regions and decline more slowly than in other regions. This decrease in TA is primarily a function of temperature (heat unit accumulation) and the rapid respiration of organic acids at those temperatures.

GROWTH REGULATORS

Application of plant growth regulators can provide significant economic advantages to citrus growers when used in appropriate situations. Depending on cultivar and timing, plant growth regulators may improve fruit set, increase fruit size by reducing cropload, extend the harvest season by delaying rind aging, and reduce preharvest fruit drop.

Gibberellic acid (GA) is recommended for citrus hybrids that are weakly parthenocarpic and without sufficient cross-pollination to improve fruit set. Applied from full bloom to two-third petal fall, GA can effectively set and produce an excellent crop of seedless Robinson, Nova, Orlando, Minneola, or other self-incompatible mandarin hybrids. Application of GA to citrus fruit approaching maturity enhances peel firmness and delay peel senescence.

Application of GA in the fall often increases juice extraction from sweet oranges. It is likely that GA enhances juice extraction efficiency because increased peel firmness provides better mechanical support for fruit within extraction cups.

Applied in winter during floral induction to cultivars that routinely flower heavily but set poor crops such as Navel, Ambersweet, and Ortanique, GA reduces flowering and often results in increased fruit set. A combination of GA and 2,4-D has been used in many fresh fruit growing regions to enhance peel strength and extend the harvest seasons for grapefruit and oranges.

Naphthaline acetic acid (NAA) is used to reduce the number of fruit with excessive set. The advantage of NAA thinning in heavily cropping trees is increased fruit size. The greatest response has been shown when the average fruit diameter is around half an inch, which typically occurs 6 to 8 weeks postbloom. Thinning of Murcott and Sunburst tangerine with NAA was found to increase fruit size, mean fruit weight, and percent packout through improved fruit appearance.

CULTIVAR/ROOTSTOCK

The most important determinant of fruit production and quality under the control of the grower is the selected cultivar. Under comparable conditions, ‘Hamlin’ orange always has poorer juice color and lower soluble solids than ‘Midsweet’ or ‘Valencia’ orange. On the other hand, ‘Hamlin’ produces higher, more consistent yields per acre than any other sweet orange cultivar. ‘Valencia’ is worldwide known to produce premium quality fruit. Its internal quality is excellent. The fruit has high sugars, superior flavor, and deep orange juice color at maturity.

Beside the cultivar, many horticultural characteristics are influenced by the rootstock including tree vigor and

size, fruit yield, fruit size, maturity date, and fruit quality. One of the best known examples is the small fruit size of 'Valencia' budded on Cleopatra mandarin rootstock. Cleopatra mandarin is well suited for use with tangerines, Temple, and tangerine hybrids. Cleo is not widely used for grapefruit and 'Valencia'. Sweet orange and grapefruit cultivars on Cleo generally produce small fruit and are not precocious. Low yield results from poor fruit set and size and fruit splitting. Scions on Cleo are most productive on heavier soils.

Larger fruit with thicker, rougher peel, and lower concentrations of soluble solids and acids in the juice are generally associated with cultivars budded on fast-growing vigorous rootstocks such as rough lemon, Volkamer lemon, *Citrus macrophylla*, and Rangpur lime. However, these rootstocks impart high vigor to the scion and induce high yield. Tangerine fruit from trees grown on vigorous rootstocks tends to be puffy, hold poorly on the tree, and have high incidence of granulation.

Cultivars budded on slower-growing rootstocks, generally do not produce vigorous vegetative growth, but tend to produce small to medium size fruit with smooth peel texture and good quality fruit with high soluble solids and acid contents in the juice. This latter group of rootstocks includes trifoliate orange and some of its hybrids (citranges and citrumelos). Sweet oranges budded on Carrizo have been among the most profitable combinations over the long term in Florida. Planted on the right soils, trees on Swingle are very productive at high-density plantings.

IRRIGATION AND NUTRITION

Although citrus trees develop largely in response to their genetic endowment and the climate, good production practices can have favorable influences on fruit production and quality. Cultural practices that attempt to cope with climatic or weather problems include irrigation and nutrition. Irrigation is of particular importance during the spring, which coincides with the critical stages of leaf expansion, bloom, fruit set, and fruit enlargement.

Irrigation increases fruit size and weight, juice content and soluble solids-acid ratio. Soluble solids per acre may increase due to yield increase. However soluble solids per box and acid contents are reduced. Through its tendency to stimulate vegetative growth, irrigation in the dry fall and winter may reduce soluble solids in the fruit. Decline in total acid levels can also be aggravated by excessive irrigation.

Citrus trees require a good water management system and a balanced nutrition program formulated to provide specific needs for maintenance and for expected yield and fruit quality performance. Adequately watered and nourished trees grow stronger, have better tolerance to pests and stresses, yield more consistently, and produce good quality fruit. On the other hand, excessive or deficient levels of watering or fertilization will result in low fruit yield and oversize fruit with poor quality and diluted soluble solids content.

The most important nutrients influencing fruit quality are nitrogen, phosphorus, and potassium. However, when any other nutrient is deficient or in excess, fruit yield and quality are negatively altered. Nitrogen (N) increases juice content, TSS per box and per acre, and acid content. However, excessive N can induce excess vigor and promote a vegetative rather than a flowering tree and can result in lower yields with lower TSS per acre. In contrast, low N levels promote extensive flowering but fruit set and yields are poor.

Phosphorus reduces acid content, which increases soluble solids-acid ratio. Potassium (K) increases fruit production, fruit size, green fruit and peel thickness. Foliar spray of potassium nitrate or monopotassium phosphate in the spring often increases fruit size of tangerine and grapefruit, and fruit size and total pound solids of 'Valencia' orange. Foliar application (6 to 8 weeks before bloom) of low biuret urea can increase flowering and fruit set.

SUNLIGHT AND PRUNING

Even though citrus trees can tolerate shade and still flower and fruit, maximum flowering occurs when leaves are fully exposed to the sun. Therefore, pruning including topping and hedging to avoid crowding is extremely important for optimum flowering. The amount of fruit that is set has a very significant effect on fruit quality. There is a positive correlation between the number of fruit per tree and fruit quality. When the number of fruit per tree is low, the peel texture, shape of fruit, and often fruit color are poor. Quality of individual fruit varies significantly, even on the same tree. Inside heavily shaded fruit have less total soluble solid than outside exposed fruit. Insufficient light contributes to reduced total soluble solid concentration of inside fruit nourished by heavily shaded leaves.

Pruning is also an important factor affecting fruit production and quality. Crowded conditions result in poor light accessibility and reduction in fruit yield, size, and external quality. Therefore, good management dictates the need to prune before the occurrence of these undesirable effects.

It is well established that shoots with fruit do not flower the following year. A heavy fruit crop tends to deplete carbohydrates and results in a small crop and increased vegetative growth the following year. Pruning after a heavy crop additionally stimulates vegetative growth and reduces fruit yield the following year. Pruning after a light crop and before an expected heavy crop can increase fruit size and help reduce alternate bearing. Pruning or topping and hedging usually increase fruit size and packout of fresh-market fruit by reducing cropload, thus increasing net cash returns to growers.

PESTS AND DISEASES

The improvement in fruit quality that a grower can achieve through choice of rootstocks, irrigation/nutrition management, and other grove practices may easily be overwhelmed by pests, diseases, and other injuries. Excessive leaf loss will noticeably reduce flowering the following spring and fruit production. The primary causes of leaf loss are freeze and hurricane injury, salt and water stress problems including drought stress and flooding injuries, mites, greasy spot, herbicides and pesticide phytotoxicities. Excessive leaf loss in the fall and in early winter is the worst thing that can happen to citrus trees. It will reduce flowering, fruit set, and fruit yield.

SCOUTING WORKSHOPS

Scouting for PFD, canker, greening, mites, leafminer, and psyllid

REGISTRATION FORM (Registration is required)

Registration Deadline: Thursday, January 4, 2007

Please mark your choice Spanish or English

☐ **In Spanish**
Location: Hendry County Extension Office, LaBelle
Date: Tuesday, January 9, 2007

☐ **In English**
Location: SW Florida Research & Education Center, Immokalee
Date: Tuesday, January 16, 2007

Diseases (9:00 AM - 10:30 AM)
By ***Dr. Pete Timmer***
Scouting Tips and Techniques
Postbloom Fruit Drop (PFD)
Citrus Canker & Greening

Mites & Insects (10:30 AM - 12:00 Noon)
By ***Dr. Phil Stansly***
Mite Pests of Citrus
Citrus Leafminer & Citrus Psyllid

12:00 Noon - 1:00 PM: Lunch

Name(s): .....

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 4-H

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

Please note: 2 different dates at 2 different locations in 2 languages.

Flatwoods Citrus

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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