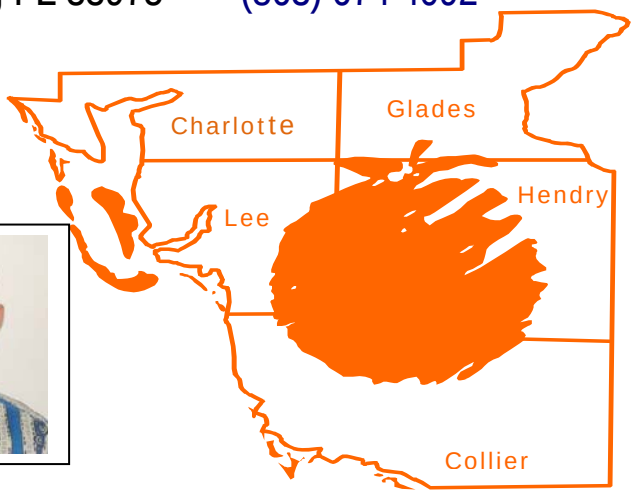
UF UNIVERSITY of FLORIDA
IFAS Extension

EXTENSION

Institute of Food and Agricultural Sciences

Hendry County Extension, P.O. Box 68, LaBelle, FL 33975 (863) 674 4092

Flatwoods Citrus



Vol. 17, No. 1 **January 2014**

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

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

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Previous issues of the Flatwoods Citrus newsletter can be found at:
http://citrusagents.ifas.ufl.edu/agents/zekri/index.htm
http://irrec.ifas.ufl.edu/flcitrus/

I M P O R T A N T E V E N T S

Potential Cost Share Programs for Improved Soil & Water Management Best Management Practices – Improving the farms bottom line

Date: January 8, 2014, 10:00 AM- 12:00 Noon
Location: Southwest Florida Research and Education Center, Immokalee, FL 34142
Coordinators: Mongi Zekri and Gene McAvoy, UF-IFAS

A complimentary lunch will be provided. Advance registration is required for an accurate meal count. Call 863 674 4092, or send an e-mail to Dr. Mongi Zekri at maz@ufl.edu

10:00 AM – Introduction – **Dr. Phil Stansly**, Interim Center Director

Factors to Consider When Managing Water and Nutrient in the Soil – **Dr. Kelly Morgan**
- Soil Water Retention Factors
- Nutrient Availability
- How Soils Impact Production Practices
- Potential for Improved Yields

Soil Water Relationship and Irrigation Scheduling – **Dr. Sanjay Shukla**
- Soil water relationships (Field capacity, wilting point, plant available water)
- Crop water requirement (ET)
- Examples of Irrigation Scheduling

Understanding Soil Quality and its Impact on Citrus and Vegetable Production - **Dr. Monica Ozores-Hampton**
- What is soil quality and its principles?
- How can we improve soil quality for citrus and vegetable production: compost, cover crops, surfactants, etc...?
- Assessing the impact of soil quality on growers profits

Accessing Cost Share Available for Improving Soil Quality and Water Use on Farms – **Callie Walker**
- Cost share opportunities through FDACS, NRCS, and water management districts
- Application Process

12:00 Noon - Lunch

2 CEUs for Certified Crop Advisors (CCAs)

Program sponsor: Locher Environmental

All You Need to Know About Scouting and Management of Citrus Insect Pests

Plus get a free copy of the Florida Citrus Pest Management Guide

Program Coordinator: Dr. Mongi Zekri, UF-IFAS
Program Sponsor: Stacey Howell, Bayer CropScience
Date: Thursday, January 16th, 2014, Time: **10:00 AM** – 12:20 PM
Location: Southwest Florida REC (Immokalee)
UF-IFAS Southwest Florida Research and Education Center
2685 SR 29, Immokalee, FL 34142
See: http://www.imok.ufl.edu/ for directions

Agenda

10:00 AM – 10:50 AM

1. Scouting Citrus for Pests and Beneficials- **Dr. Phil Stansly**

10:50 AM – 11:00 AM - Break

11:00 AM – 11:50 AM

2. Effectiveness of Insecticidal Control of Asian Citrus Psyllid- **Dr. Jawwad Qureshi**

11:50 AM – 12:20 PM

3. Results of Citrus Psyllid and Citrus Leafminer Insecticide Trials- **Mr. Barry Kostyk**

2 CEUs for Pesticide License Renewal
2 CEUs for Certified Crop Advisors (CCAs)

Pre-registration is required. No registration fee and lunch is free Thanks to **Stacey Howell with Bayer CropScience.** To reserve a seat, call 863 674 4092, or send an e-mail to Dr. Mongi Zekri at: maz@ufl.edu

Pesticide license training on 29, 30, and 31 January, and 5 February 2014 at the Hendry County Extension Office in LaBelle. For more information or to reserve a seat, call Debra at 863 674 4092.

2014 Florida Citrus Show

Wednesday, January 29, 2014
Thursday, January 30, 2014

Annual Certified Pile Burners Course in SW Florida

Pre-registration is required to attend, and class size is limited to the first 50 people.

REGISTRATION FORM MUST BE COMPLETELY FILLED OUT

PRE-REGISTRATION WILL NOT BE ACCEPTED WITHOUT PAYMENT OF THE REGISTRATION FEE

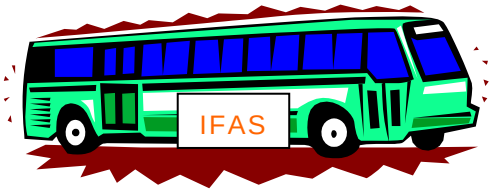
Coordinator: Dr. Mongi Zekri, UF-IFAS

Date & time: Tuesday, 4 February 2014, 7:30 AM – 4:30 PM.

Location: Immokalee IFAS Center

For more details and pre-registration, send an e-mail to maz@ufl.edu or go to: http://www.freshfromflorida.com/content/download/32006/788162/Certified_Pile_Burner_Class-2014.pdf

HENDRY COUNTY EXTENSION AG TOURS



Saturday, 8 February 2014
Saturday, 8 March 2014
For more information or to sign up, call Debra at 863 674 4092

Annual workshop on fungal disease management

Thursday, Feb 20, 2014, 10:00 AM - Noon, Immokalee IFAS Center

Coordinator: Dr. Mongi Zekri, UF-IFAS

Sponsor: Cody Hoffman, Syngenta

Speakers: **Dr. Megan Dewdney** and **Dr. Pamela Roberts**, UF-IFAS

1. **Alternaria brown spot and citrus scab symptoms and managements**
2. **Melanose and greasy spot symptoms and management**
3. **The copper model**
4. **Citrus black spot and Pytophthora management**

Pre-registration is required. No registration fee and lunch is free Thanks to **Cody Hoffman with Syngenta.** To reserve a seat, call 863 674 4092, or send an e-mail to Dr. Mongi Zekri at: maz@ufl.edu

Citrus BMPs Field Day – Immokalee IFAS Center

Wednesday, January 8, 2014, 10:00 AM – Noon, Immokalee IFAS Center

Coordinator: Dr. Mongi Zekri, UF-IFAS

Speakers: **Dr. Kelly Morgan, Dr. Sanjay Shukla, Dr. Monica Ozores-Hampton, UF-IFAS and Callie Walker, FDOACS**

Program sponsor: AgTronix

2014 ANNUAL FLORIDA CITRUS GROWERS' INSTITUTE

Date & Time: Tuesday, 8 April 2014, 8:00 AM – 3:45 PM

Location: Avon Park Campus of South Florida Community College

Coordinators: Citrus Extension Agents, UF-IFAS

Special Thanks to 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 or maz@ufl.edu

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SCOUTING FOR PESTS

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 pests on 16 January 2014.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

2013 WATER WATCH

Keeping an Eye on Water Resources

District-Wide Conditions for December 17, 2013

The South Florida Water Management District (SFWMD) is issuing the following briefing:

After heavy rainfall at the start of December along South Florida's east coast, the 16-county area has been experiencing below-average rainfall during the past two weeks. Water levels across the region are declining in the midst of the dry season, but the water supply at this time remains adequate.

The District continues to operate the water management system to maximize water storage for the remainder of the dry season.

Water Levels in Key Locations (December 17)		
Location	**Today's level**	**Target for this date**
East Lake Tohopekaliga	57.01 feet	58.00 feet
WCA-2	12.53 feet	11.75 feet
WCA-3	10.14 feet	10.50 feet

Water Conservation

- South Florida is under the District's Year-Round Landscape Irrigation Rule that limits residential and business landscape irrigation to two or three days per week.
  - To determine watering days and times in your area, contact your local government or visit www.sfwmd.gov/2days.
- Permitted water users such as nurseries, agriculture, golf courses and utilities can find water use conditions in their permits online at www.sfwmd.gov/ePermitting.
- For tips and information about water conservation, visit www.savewaterfl.com.

Lake Okeechobee Operations

- The U.S. Army Corps of Engineers manages Lake Okeechobee water levels based on its regulation schedule and the best available science and data provided by its staff and a variety of partners, including SFWMD.
  - SFWMD makes an operational recommendation each week based on conditions. The most recent Operational Position Statement is available at www.sfwmd.gov/opsreports.

Lake Okeechobee Levels	
Today (Dec. 17)	**14.42** feet
Historical Average for Today	**14.72** feet
This Date One Year Ago	**15.17** feet

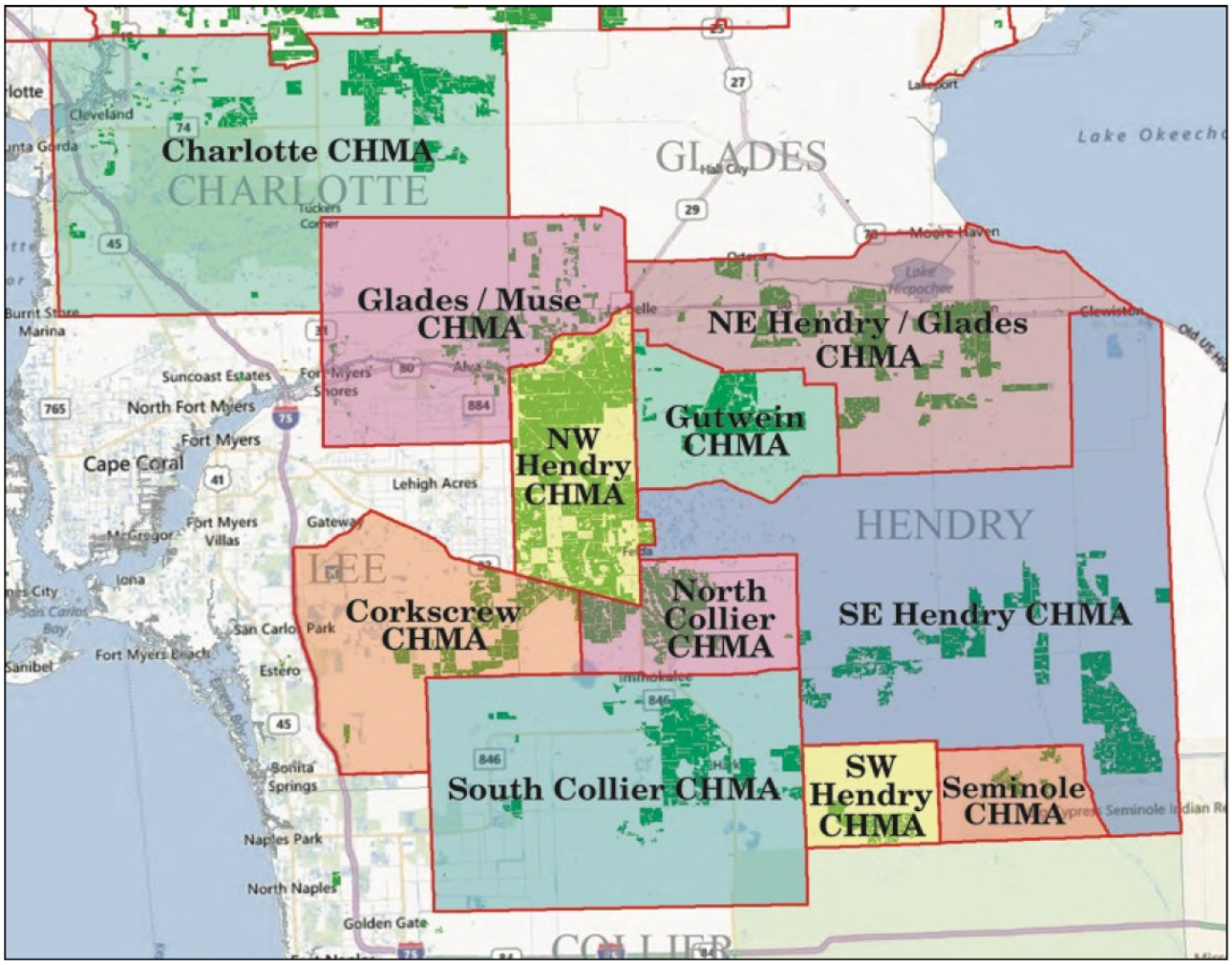
Navigation

- Information on navigational locks can be found at www.sfwmd.gov/recreation.

# # #

Media inquiries can be directed to:
Gabe Margasak
South Florida Water Management District
Office: (561) 682-2800 or Cellular: (561) 670-1245

ATTENTION "Gulf" CITRUS GROWERS!!!
2013 – 2014 ACP "Fight" Begins!



"Gulf" CHMAs DORMANT SPRAYS FOR PSYLLIDS!

"The two 'dormant' sprays, one before and the other after Christmas, are the most important sprays of the year," says Dr. Phil Stansly, UF/IFAS entomologist and member of the GCGA "CHMAs Team". "If we can get this done right, Asian citrus psyllids (ACPs) will be more manageable throughout the year," he added. "The best way is for everyone in the CHMAs to spray at the same time, so aerial sprays are recommended. However, ground sprays within the same window will do. As before, an organo-phosphate such as dimethoate or Imidan is recommended for the first spray, and a pyrethoroid (Danitol or Mustang) for the second. The order can be reversed if that works better with your harvest schedule.

"The division of the giant 'Gulf CHMA' into 11 smaller CHMAs, each with its own 'Team Captain', should help improve our regional coordination and number of cooperative sprays we are able to conduct each year," Says Dr. Stansly.

PLEASE PARTICIPATE!

The "Gulf" citrus production region has been divided into 11 CHMA's. Each CHMA will be coordinated by volunteer Team Captain(s), who will follow-up with citrus growers within their respective CHMA to implement the plan. **The "CHMA's", respective "Team Captains" AND their CONTACT INFORMATION are as follows:**

CHARLOTTE		
Steve Farr	(863) 528-1273	sfarr@bhgriffin.com
GLADES / MUSE		
Danny Pool	(863) 673-2832	Dannypool73@yahoo.com
NE HENDRY / GLADES		
Jim Snively	(863) 228-0002	jsnively@southerngardens.com
GUTWEIN		
Bryan Beer, II	(863) 675-1663	beerlgm@labellegrovemgt.com
NW HENDRY		
Rob Atchley	(863) 673-1515	Rob.Atchley@duda.com
Joby Sherrod	(863) 675-0545	Joby.Sherrod@duda.com
SE HENDRY		
Mike Stewart	(863) 441-1399	mstewart@cclpcitrus.com
SW HENDRY		
Danny Sutton	(863) 673-4162	dksutton@alicoinc.com
CORKSCREW		
Tom Kirschner	(239) 340-4729	kirschnertfk@yahoo.com
NORTH COLLIER		
John Hoffman	(239) 825-3286	jhoffman@barroncollier.com
SOUTH COLLIER		
Paul Meador	(239) 860-4600	Paul.meador@evergladesharvesting.com

AERIAL APPLICATORS will also serve as "key contacts" throughout the plan's implementation. They will be making contacts on their current "grower customers", as well as on growers within the "Sub-Regions" based on efficient aerial logistics. **AERIAL APPLICATORS are: Steve Fletcher, Fletcher Flying Service (239) 860-2028 and Jeff Summersill, TRS AG Services (561) 722-4502.**

"Pre" and "Post" testing for Psyllids will be coordinated through UF/IFAS'/ SWFREC scientists and FDACS/DPI staff as to measure our program's effectiveness. Their phone numbers are: **Dr. Phil Stansly – Office (239) 658-3400, Cell (239) 464-7395; Dr. Mongi Zekri – Office (863) 674-4092 and Paul Mears – Office (239) 658-3684.**

PLEASE CONTACT THE TEAM CAPTAIN(S) NEAREST YOUR GROVE, AND YOUR AERIAL APPLICATOR TO PARTICIPATE IN OUR EFFORTS!
YOUR SUPPORT AND PARTICIPATION WILL MAKE OUR EFFORT A SUCCESS!

Citrus Health Management Areas (CHMAs)

Go To: http://www.crec.ifas.ufl.edu/extension/chmas/index.shtml

Citrus Health Management Areas (CHMA's): Developing a psyllid management plan

Michael E. Rogers, Philip A. Stansly and Lukasz L. Stelinski

Effective control of the Asian citrus psyllid (*Diaphorina citri* Kuwayama) is an important component of Huanglongbing (HLB) management programs. Over the past several years, experience in Florida has shown that the most efficient way to control psyllids is for citrus growers to work together on an area-wide basis. The need for area-wide control of psyllids is due to the dispersal behavior of this pest which has been shown to move repeatedly between commercial citrus groves. When differences in timing of psyllid control programs exist within an area, the back and forth movement of psyllids could result in rapid re-infestations, despite the repeated attempts of individual growers to maintain psyllid populations at low levels. *Successful psyllid management is a team effort with all citrus growers as participants.*

Establishment of Citrus Health Management Areas (CHMAs) has been proposed as an important strategy for reducing the spread of HLB. The primary goal of the formation of CHMAs is to coordinate psyllid control efforts to reduce the effect of psyllid movement between commercial citrus operations and thus reduce the need for repeated back-to-back insecticides applications for maintaining psyllid populations at low levels. Due to the limited number of pesticide modes of action available for controlling psyllids, CHMAs could also serve an important function in slowing pesticide resistance development in psyllid populations by coordinating applications of pesticides with similar modes of action.

Two key time slots and two more possible time slots are identified where grower coordination of psyllid control efforts are likely to be most effective in reducing overall psyllid populations. The first coordinated spray identified is during the month of November, just after the fall flush period has ended. Use of an organophosphate insecticide is recommended which would be appropriate for growers who do not plan on harvesting fruit during this time of the year. Blocks that will be harvested within 7 days of the coordinated spray could be treated with a pyrethroid. The next coordinated spray in January would be made in those blocks with an OP while the rest of the area would be rotated to a pyrethroid. For any additional coordinated sprays conducted, growers are encouraged to rotate between these two pesticide modes of action. Use of organophosphate and pyrethroid insecticides for coordinated sprays is suggested because of 1) their general effectiveness in controlling all life stages of psyllids present when applications are made 2) there are multiple product choices within each mode of action and 3) these products can be applied using various application methods. As a result, these products provide flexibility to growers with different financial constraints making widespread participation in the program more likely to occur. Between the two optimal and two additional times identified for coordinated sprays, guidance is given for selecting additional products for psyllid control where growers choose to incorporate additional products into their overall psyllid management program.

by Dr. Phil Stansly

Spray Options for Pest Management as of Sep 2013

Criteria

Efficacy
Adults/nymphs
Secondary pests

Resistance management
Frequency of use
Rotation MOAs

Conservation of beneficials
Broad-spectrum vs Selective

Cost!

Dormant ← → Growing

Months	Nov-Dec	Jan	Feb-Mar	Apr	May -June	July - Aug	Sep-Oct
Products	OP (e.g. Imidan, Dimethoate, chlorpyrifos)	Pyrethroid (Mustang Danitol)	Movento[1] Portal[2] Closer[3] Micromite[4] Intrepid[5]	Oil Portal[2] Closer[3] Micromite[4]	Movento[1] Delegate[6] Abamectin[7] AgriFlex[8] Voliam Flexi[9] Knack[10]	OIL	Movento[1] Portal[2] Closer[3] Micromite[4]
Pests Controlled	ACP Weevils	ACP Weevils	ACP adults[3] ACP nymphs[1,2,3,4] Mites[1,2,4] Leafminer[4,5] Weevils[4] Scales[1] Aphids[1,3]	ACP adults[3] ACP nymphs[2,3,4,] Mites[2,4] Leafminer[4] Weevils[4] Aphids[1,3]	ACP adults[6,9] ACP nymphs[1,6,8,9] Rustmite[1,7,8] Leafminer[6,7,8,9] Scales[1,8,9,10]	Everything	ACP adults[3] ACP nymphs[1,2,3,4] Rustmite[1,2,4] Leafminer[4] Weevils[4] Scales[1] Aphids[3]

[1-10] Specify insecticides recommended for this slot.
Best not to repeat any chemical mode of action in any particular year

by Dr. Phil Stansly

Example Insecticide Programs for ACP and other pests in Florida

	Insecticide Sprays per year (excluding oil alone)					Other pests Controlled	MOA**
	One	Two	Four	Five	Eight		
Jan	Pyrethroid	Pyrethroid	Pyrethroid	Pyrethroid	Pyrethroid	weevils	3
Feb			Movento*^	Movento*^	Movento *^	rustmite, scales	23
Mar					Portal^	spidermites rustmites	21
Apr	Oil	Oil	Oil	Oil	Oil	leafminer rustmite	
May			Delegate*	Delegate*	Delegate*	Leafminer	5
Jun					Abamectin*^ or (AgriFlex)*	leafminer (rustmite)	6 (4)
Jul	Oil	Oil	Oil	Oil	Closer	Aphids	
Aug							
Sep				Micromite*^	Micromite*^	leafminer rustmite weevils	15
Oct							
Nov-Dec		OP	OP	OP	OP	weevils	1B

*Generally applied with oil or another surfactant ǂ May not be necessary due to low populations

^ Primarily for control of nymphs ** www.irac-online.org

by Dr. Phil Stansly

New insecticides for ACP control in Florida Citrus

Product	MOA*	Label	Rate (Oz/ac	PHI	Bees	Other Pests
Closer	4c	Now	2.75-5.75	1 d	Advisory	Aphids, CRS
Sivanto	4(abcd?)	Jun 14?	10-14	1 d	Advisory	Aphids thrips scales mealybugs whiteflies
Exirel	28	Jul 13 ?	13.5-20.5	1 d	Toxic	CLM
Apta	21	Sep 13?	14-27	14 d	Toxic	CRM

*4: Nicotinoid
28: Diamid
21: METI (Mitochondrial electron transport inhibitor)

by Dr. Phil Stansly

Spray Options for Citrus Pest Management Including products not yet labeled Sep 2013

Dormant ← → **Growing**

Months	Nov-Dec	Jan	Feb-Mar	Apr	May - June	July - Aug	Sep-Oct
Products	OP	Pyrethroid	Movento[1] Portal[2] Closer[3] Micromite[4] Intrepid[5] Exirel[11]	OIL Portal[2] Closer[3] Micromite[4] Exirel[11] Apta[12] Sivanto[13]	Movento[1] Delegate[6] Abamectin[7] Knack[10] Exirel[11] Apta[12] Sivanto[13]	Oil Closer[3] Sivanto[13]	Movento[1] Closer[3] Delegate[6] Apta[12] *Sivanto[13]*
Pests	ACP Weevils	ACP Weevils	ACP[1,2,3,6,11] Mites[1,2,4] Leafminer[4,5,6,11] Weevils[4] Scales[1] Aphids[3]	ACP[2,3,11,12,13] Mites[2,4,12] Leafminer[4,11] Weevils[4] Aphids[3,13]	ACP[1,6,8,9,11,12,13] Rustmite[1,7,12] Leafminer[6,7,11] Scales[1,10,13]	ACP[3,13]	ACP[1,3,6.12,13] Leafminer[6] Rustmite[12] Scales[1,13] Aphids[3,13] Mealybugs[1]

[1-13] Specify insecticides. Products in red not labeled for citrus as of Sep 2013.
Best not to repeat any chemical mode of action in any particular year

HEDGING AND TOPPING CITRUS TREES

Hedging and topping is an important cultural grove practice during late fall and winter. Severe hedging or topping of citrus trees during the winter can reduce cold hardiness. Trees with exposed internal scaffold wood and new tender growth are more susceptible to cold injury.

In general, tree response to hedging and topping depends on several factors including variety, tree age, vigor, growing conditions, and production practices. No one system or set of rules is adequate for the numerous situations encountered in the field. Growers are encouraged to gain a clear understanding of the principles involved in hedging, topping, and to take advantage of research results as well as consulting knowledgeable colleagues and custom operators for their observations.

Hedging should be started before canopy crowding becomes a problem that would cause cutting of small branches. Removal of a significant portion of the tree will result in excessive vegetative growth and a drastic reduction in subsequent yield. Hedging is usually done at an angle, with the boom tilted inward toward the treetops so that the hedged row middles are wider at the top than at the bottom. This angled hedging allows more light to reach the lower skirts of the tree. Hedging angles being used vary from 0 to 25 degrees from vertical, with 10 to 15 degrees being more commonly used.

Topping should be done before trees have become excessively tall and should be an integral part of a tree size maintenance program. Long intervals between toppings increases the cost of the operation due to heavy cutting and more brush disposal. Excessively tall trees are more difficult and expensive to harvest and spray. Topping trees will increase fruit quality and size. Some common topping heights are 12 to 14 ft at the shoulder and 15 to 16 ft at the peak.

Excessive nitrogen after severe hedging or topping will produce vigorous vegetative growth at the expense of fruit production. Therefore, nitrogen applications should be adjusted to the severity of hedging and/or topping. Reducing nitrogen applications avoids an imbalance when heavy pruning is done. Reducing or omitting a nitrogen application before and possibly after heavy hedging will reduce both costs and excessive vegetative growth. However, light maintenance hedging should not affect fertilizer requirements.

Large crops tend to deplete carbohydrates and results in a reduced 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 is recommended because it can help reduce alternate bearing which can be a significant problem in Valencia and Murcott production.

Severe hedging stimulates vigorous new vegetative growth, especially when done before a major growth flush. This happens because an undisturbed root system is providing water and nutrients to a reduced leaf area. The larger the wood that is cut, the larger is the subsequent shoot growth. Severe pruning reduces fruiting and increases fruit size.

The best time of year to hedge and/or top depends on variety, location, severity of pruning, and availability of equipment. Since pruning is usually done after removal of the crop, early maturing varieties are generally hedged before later maturing varieties. Many prefer to hedge early before bloom, but they may also get more vegetative regrowth, which may not be desirable. Pruning could begin as early as November in warmer areas. Valencia trees may be hedged in the late fall with only minimal crop reduction when the hedging process removes only a small amount of vegetative growth. In cases where excessive growth is to be removed, the trees are usually harvested before hedging is conducted. Light maintenance pruning can be done throughout the summer and until early fall with little or no loss in fruit production. Moderate to severe pruning should not continue into the winter in freeze-prone areas, as trees with tender regrowth are more susceptible to cold injury. With the finding of citrus greening disease, selecting the best time for hedging and topping is becoming more complicated. New growth flushes promoted by hedging and topping in late spring, during the summer, and early fall can increase the population of psyllids and aggravate the spread of citrus greening.

FACTORS AFFECTING CITRUS FRUIT PRODUCTION AND QUALITY

Citrus fruit production and quality are influenced by many factors including climatic conditions and production practices.

In subtropical climates, the temperature usually falls below 70 °F for several months during winter. This period of cool temperatures causes growth to cease and citrus trees to become dormant for about 3 months. The cool temperatures during this dormant period promote floral induction. When warm spring temperatures, among other things, stimulate the resumption of vegetative growth, induced buds grow and produce flowers. In tropical climates, there is no period of cold temperature to induce dormancy. However, with periods of less than ample soil moisture (drought stress), flushes of bloom and vegetative growth normally follow these drought periods.

It is well documented that vegetative and reproductive (fruit) growth compete for available resources, such as carbohydrates (sugars) and mineral nutrients. Flushes of heavy vegetative growth will reduce the resources available to developing fruit, resulting in fruit with lower total soluble solids (TSS). A period of dormancy, during which there is little or no vegetative growth, reduces this competition for resources and results in fruit with increased TSS. The competition for resources between vegetative and reproductive growth is one of the reasons that citrus fruit grown in tropical climates tend to have lower TSS than those grown in subtropical climates.

CLIMATE

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.

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

Some, but not all of these climate-induced differences can be overcome with cultural practices. For example, there is no known cultural practice that allows California (a Mediterranean climate) to produce low-acid, thin-peel grapefruit similar to the world’s top quality grapefruit grown in Florida (a humid subtropical climate).

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 (tropical climates), fruit peel chlorophyll does not degrade and oranges and tangerines remain green, whereas in cool-winter subtropical climates oranges and tangerines develop more intense orange peel color and greater eye-appeal at maturity.

In lowland tropical areas, due to high respiration rates at warm temperatures, fruit mature quickly and do not have sufficient time to accumulate high TSS and acidity declines rapidly so that the soluble solids/acid ratio increases sharply and the fruit quickly become insipid and dry. TSS in 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 climates and decline more slowly as fruit mature compared with other climates. Decrease in TA is primarily a function of temperature (heat unit accumulation) and the rapid respiration of organic acids at those higher temperatures.

GROWTH REGULATORS

Application of plant growth regulators (PGRs) can provide significant economic advantages to citrus growers when used in appropriate situations. Depending on cultivar and timing, PGRs 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 delays 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 sweet oranges.

Naphthalene acetic acid (NAA) is used to thin fruit when excessive set occurs. Thinning heavily cropping trees with NAA increases fruit size. The greatest thinning response to NAA has been shown to occur when applications are made when the average fruit diameter is about 1/2 inch, which typically occurs 6 to 8 weeks post bloom. Thinning of ‘Murcott’ and ‘Sunburst’ tangerines with NAA was found to increase fruit size, average fruit weight, and percent packout through improved fruit appearance.

CULTIVAR/ROOTSTOCK

The most important determinant of fruit production and quality under the grower’s control is cultivar selection. Under comparable conditions, ‘Hamlin’ orange always has poorer juice color and lower TSS than ‘Midsweet’ or ‘Valencia’ orange. On the other hand, ‘Hamlin’

produces higher, more consistent yields per acre than any other sweet orange cultivar. Worldwide, 'Valencia' produces premium quality fruit with excellent internal quality, high sugars, superior flavor, and deep orange juice color at maturity.

Besides cultivar, many of the horticultural characteristics of cultivars are influenced by the rootstock, including tree vigor and size, and fruit yield, size, maturity date, and quality. One of the best-known examples is the small fruit size of 'Valencia' budded on 'Cleopatra' mandarin (Cleo) rootstock. Cleo is well suited for use with 'Temple' orange, tangerines and tangerine hybrids. Sweet orange and grapefruit cultivars on Cleo generally produce small fruit and are not precocious, thus it is not commonly used for these varieties. Low yield associated with Cleo rootstock is the result of 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 TSS and acid in the juice are generally associated with cultivars budded on fast-growing vigorous rootstocks such as rough lemon, 'Volkamer' lemon, *Citrus macrophylla*, and 'Rangpur'. However, these rootstocks impart high vigor to the scion and induce high yield. Tangerine fruit from trees grown on vigorous rootstocks tend to be puffy, hold poorly on the tree, and have high incidence of granulation.

Cultivars 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 TSS and acid content in the juice. This latter group of rootstocks includes trifoliate orange and some of its hybrids (citranges and citrumelos). Sweet oranges budded on 'Carrizo' citrange have been among the most profitable combinations over the long term in Florida. Planted on the right soils, trees on 'Swingle' citrumelo 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.

Proper 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 water or fertilizer 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 (6-8 weeks before bloom) of 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 trees are grown in full sun and light penetration through the canopy is maximized. 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. Heavily shaded fruit borne on the interior of the canopy have less TSS than fruit on the exterior of the canopy. Insufficient light contributes to reduced TSS concentration of interior fruit nourished by heavily shaded leaves.

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 crop load, thus increasing net cash returns to growers.

CONCLUSION

The improvement in citrus fruit production and quality that a grower can achieve through choice of scion/rootstock combinations, good irrigation management, balanced nutrition, and proper pruning may easily be overwhelmed by pests, diseases, and other injuries. Excessive leaf loss will noticeably reduce flowering the following spring and subsequent fruit production. The primary causes of leaf loss are freeze, tropical storm injury, salt and water stress problems including drought stress and flooding injuries, mites, greasy spot, herbicides and pesticide toxicities. Excessive leaf loss in the fall and in early winter is the worst thing that can happen to citrus trees. It will reduce accumulation of carbohydrates affecting flowering, fruit set, and fruit yield. Therefore, good practices in citrus groves should be adapted to minimize negative plant physiological stresses, improve tree health and performance, and enhance citrus trees to produce high yield of good fruit quality.

Organic Agriculture

http://usda.gov/wps/portal/usda/usdahome?contentidonly=true&contentid=organic-agriculture.html

USDA is committed to helping organic agriculture grow and thrive. To help meet Secretary Vilsack's goal of increasing the number of certified organic operations, USDA is delivering results through its many programs which serve the growing organic sector. October 2012 marked the 10th anniversary of the USDA Organic Seal, and we are proud that it has become a leading global standard.

What is Organic Agriculture?

Organic agriculture produces products using methods that preserve the environment and avoid most synthetic materials, such as pesticides and antibiotics. USDA organic standards describe how farmers grow crops and raise livestock and which materials they may use.

Organic farmers, ranchers, and food processors follow a defined set of standards to produce organic food and fiber. Congress described general organic principles in the Organic Foods Production Act, and the USDA defines specific organic standards. These standards cover the product from farm to table, including soil and water quality, pest control, livestock practices, and rules for food additives.

Welcome to the National Organic Program

What is organic?

Organic is a labeling term that indicates that the food or other agricultural product has been produced through approved methods that integrate cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity. Synthetic fertilizers, sewage sludge, irradiation, and genetic engineering may not be used. Consumer Information.

Our Mission

Ensuring the integrity of USDA organic products in the U.S. and throughout the world.
About Us | USDA Organic Seal

Organic Standards

Regulations and guidance on certification, production, handling, and labeling of USDA organic products. Learn more.
Organic Regulations | Program Handbook | Draft Guidance
Rulemaking & Notices | National List & Petitioned Substances

National Organic Standards Board

Members of the organic community appointed to advise USDA on substances and other regulatory topics. Learn more.
Recommendations | Meetings | Members

Organic Certification & Accreditation

Third-party agents around the world certify operations to USDA organic standards. Learn more.
List of Certified Operations | List of Certifying Agents
Getting Certified | Financial Assistance | Training
Info for: Organic Operations | Certifying Agents
State Organic Program | International Trade Partners

Becoming a Certified Operation

How can my operation become certified to the USDA organic standards?

Organic certification verifies that your farm or handling facility located anywhere in the world complies with the USDA organic regulations and allows you to sell, label, and represent your products as organic. These regulations describe the specific standards required for you to use the word “organic” or the USDA organic seal on food, feed, or fiber products. The USDA National Organic Program administers these regulations, with substantial input from its citizen advisory board and the public. Organic Certification Fact Sheet

Organic Literacy Initiative: connecting you with USDA resources

Who Certifies Farms or Businesses?

Your farm or handling facility may be certified by a private, foreign, or State entity that has been accredited by the USDA. These entities are called certifying agents and are located throughout the United States and around the world. Certifying agents are responsible for ensuring that USDA organic products meet all organic standards. Certification provides the consumer, whether end-user or intermediate processor, assurance of the organic product’s integrity. List of Certifying Agents

What Can I Be Certified to Produce?

The USDA organic regulations recognize four categories of organic products:

Crops: A plant that is grown to be harvested as food, livestock feed, fiber, or used to add nutrients to the field.

Livestock: Animals that can be used for food or in the production of food, fiber, or feed.

Processed products: Items that have been handled and packaged (i.e. chopped carrots) or combined, processed, and packaged (i.e. soup).

Wild crops: Plants from a growing site that is not cultivated.

Do I need to be certified?

Most farms and businesses that grow, handle, or process organic products must be certified. Overall, if you make a product and want to claim that it or its ingredients are organic, your final product probably also needs to be certified.

Who Needs to Be Certified? | Overview: Getting Certified

Is There a Transition Period?

Yes. Any land used to produce raw organic commodities must not have had prohibited substances applied to it for the past three years. Until the full 36-month transition period is met, you may not:

Sell, label, or represent the product as “organic”

Use the USDA organic or certifying agent’s seal

USDA provides technical and financial assistance during the transition period through its Environmental Quality Incentives Program (EQIP).

How Much Does Organic Certification Cost?

Actual certification costs or fees vary widely depending on the certifying agent and the size, type, and complexity of your operation. Certification costs may range from a few hundred to several thousand dollars. Before you apply, it is important to understand your certifier’s fee structure and billing cycle. Typically, there is an application fee, annual renewal fee, assessment on annual production or sales, and inspection fees.

Once you are certified, the USDA Organic Certification Cost-Share Programs can reimburse you up to 75 percent of your certification costs. USDA Financial Assistance Programs

Can I Use the USDA Organic Seal?

All raw certified organic products may be labeled with the USDA organic seal. Learn more about organic labeling, including which processed or multi-ingredient products may use the

USDA organic seal: Organic Labeling

How Do I Get Certified Organic?

To become certified, you must apply to a USDA-accredited certifying agent. They will ask you for information, including:

A detailed description of the operation to be certified.

A history of substances applied to land during the previous three years.

The organic products grown, raised, or processed.

A written Organic System Plan describing the practices and substances to be used.

Organic Certification Process:

Producer or handler adopts organic practices; submits application and fees to certifying agent

Certifying agent reviews applications to verify that practices comply with USDA organic regulations

Inspector conducts an on-site inspection of the applicant's operation

Certifying agent reviews the application and the inspector's report to determine if the applicant complies with the USDA organic regulations

Certifying agent issues organic certificate

Annual Recertification Process:

Producer or handler provides annual update to certifying agent

Inspector conducts an on-site inspection of the applicant's operation

Certifying agent reviews the application and the inspector's report to determine if the applicant still complies with the USDA organic regulations

Certifying agent issues organic certificate

Additional Resources

Guide for Organic Crop Producers

Guide for Organic Livestock Producers

Guide for Organic Processors

Guide to Organic Certification

Regulations and Resources

Those seeking certification will need to become familiar with the following resources:

USDA Organic Regulations. 7 CFR Section 205 includes all USDA organic standards, including prohibited practices, requirements, and the National List of Allowed and Prohibited Materials.

Program Handbook. This compilation of guidance documents, policy memos, and instructions is intended to clarify policies and assist those who own, manage, or certify organic operations with complying with USDA organic regulations. Prospective certified operations should refer to NOP 2601: Five Steps to Certification, which provides general instruction on the certification process.

Draft Guidance Documents. Before being finalized and included in the Program Handbook, draft guidance documents are typically open for public comments and amended as needed.

Use of the USDA Organic Seal. This page discusses the appropriate use of the USDA organic seal and provides versions of the seal at both print and screen resolution.

Organic Foods Production Act of 1990 (OFPA) (PDF). The Act that established the NOP and its authority to enforce agricultural products sold, labeled, or represented as "organic" within the U.S.

REGISTRATION FORM
Florida's Certified Pile Burner Program

Tuesday, February 4th, 2014

Immokalee IFAS Center

Registration is required to attend and class size is limited to the first 50 people.

Registration fee: $50

The $50 fee covers the training sessions, a booklet with all the presentations in color, other handouts, refreshments, and lunch

Please send this form and a check for **$50.00**, payable to **Hendry County 4-H** to:

Dr. Mongi Zekri
University of Florida IFAS
Hendry County Extension Office
P.O. Box 68
LaBelle, FL 33975-0068

Name

Mailing address

Email address

Phone Number

Division OF Forestry Customer Number

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:_____

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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