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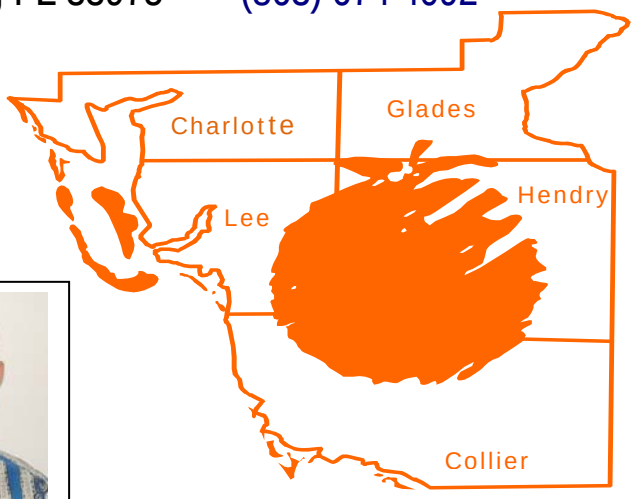
EXTENSION

Institute of Food and Agricultural Sciences

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

Flatwoods Citrus



Vol. 16, No. 1 **January 2013**

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

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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

The Florida Citrus Show in Fort Pierce, January 23-24 2013

Havert L. Fenn Center, Ft. Pierce, FL

For more information and registration, go to: http://www.citrusshow.com/

3rd International Research Conference on HLB

February 4-8, 2013, Caribe Royale Orlando All-Suites Hotel and Convention Center. **For more information, visit http://irchlb.org**

Pesticide license training at the Hendry County Extension Office in LaBelle

February 7-8, 2013

For registration, call Debra at 863 674 4092

Florida's Certified Pile Burner Program

Tuesday, February 12th, 2013, 8:00 AM - 4:30 PM

UF-IFAS Southwest Florida Research and Education Center

2685 SR 29, Immokalee, FL 34142

Detailed information on registration and attendance was included in the December 2012 issue of this newsletter.

If you still need a registration form, send an e-mail to Dr. Mongi Zekri at maz@ufl.edu

Scouting for Citrus Pests & Pest Management

1. Scouting Citrus for Pests and Beneficials- Dr. Phil Stansly
2. Extension Model to Improve Asian Citrus Psyllid Control in CHMAs- Dr. Moneen Jones
2. Testing Insecticides against Psyllids, Leafminers and Rust mites in Citrus- Mr. Barry Kostyk
4. Biological Control and Selective Insecticides for Citrus Pest Management- Dr. Jawwad Qureshi

Date: Thursday, February 14th, 2013, Time: **9:00 AM** – 12:00 Noon

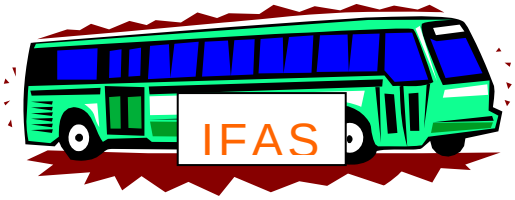
Location: Southwest Florida REC (Immokalee)

3 CEUs for Pesticide License Renewal; 3 CEUs for Certified Crop Advisors (CCAs)

Pre-registration is required. To reserve a seat, call 863 674 4092, or send an e-mail to Dr. Mongi Zekri at maz@ufl.edu

Lunch Sponsor: Cody Hoffman, Syngenta

HENDRY COUNTY EXTENSION AG TOURS

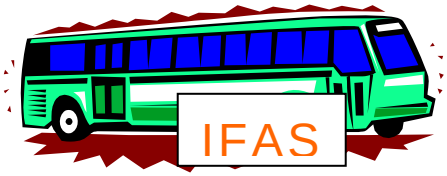


Saturday, 9 March 2013
For more information or to sign up,
call Debra at 863 674 4092

Scouting and Management of Citrus Fungal Diseases

Dr. Megan Dewdney
Date: Tuesday, March 12th, 2013, Time: 10:00 AM – 12:00 Noon
Location: Southwest Florida REC (Immokalee)
2 CEUs for Pesticide License Renewal
2 CEUs for Certified Crop Advisors (CCAs)
Pre-registration is required. To reserve a seat, call 863 674 4092, or send an e-mail to Dr. Mongi Zekri at maz@ufl.edu

COLLIER COUNTY EXTENSION AG TOUR



Wednesday, 20 March 2013
For more information or to sign up,
call Robert Halman at 239 353 4244

ANNUAL FLORIDA CITRUS GROWERS' INSTITUTE

Date & Time: Tuesday, 2 April 2013, 8:00 AM – 3:30 PM
Location: Avon Park Campus of South Florida Community College

2013 Aquatic Weed Control Short Course!
May 6-9, 2013, Coral Springs, FL

Earn up to 20 CEUs and fully re-certify in Florida for Aquatics, Natural Areas, or Right-of-Way!

www.conference.ifas.ufl.edu/aw

Farm Safety Day, Saturday, May 18, 2013, 7:30 AM – 1:30 PM

Location: Southwest Florida REC (Immokalee)

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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United States Department of Agriculture
National Agricultural Statistics Service

CITRUS JANUARY FORECAST MATURITY TEST RESULTS AND FRUIT SIZE

Cooperating with the Florida Department of Agriculture & Consumer Services
2290 Lucien Way, Suite 300, Maitland, FL 32751
(407) 648-6013 · (407) 648-6029 FAX · www.nass.usda.gov/fl

January 11, 2013

All Orange Production Down 3 Percent from December
Non-Valencia Orange Production Down 1 Percent
Valencia Orange Production Down 4 Percent
All Grapefruit Production Unchanged
All Tangerine Production Unchanged
Tangelo Production Unchanged
FCOJ Yield Unchanged at 1.61 Gallons per Box (42° Brix)

FORECAST DATES – 2012-2013 SEASON	
[Release time 12:00 p.m. EDT]	
February 8, 2013	May 10, 2013
March 8, 2013	June 12, 2013
April 10, 2013	July 11, 2013

Citrus Production by Type and State – United States

Crop and State	Production [1]			2012-2013 Forecasted Production [1]	
	2009-2010	2010-2011	2011-2012	December	January
	(1,000 boxes)	(1,000 boxes)	(1,000 boxes)	(1,000 boxes)	(1,000 boxes)
Non-Valencia Oranges [2]					
Florida	**68,600**	**70,300**	**74,200**	**67,000**	**66,000**
California	42,500	48,000	45,500	46,500	46,500
Texas	1,360	1,700	1,108	1,130	1,220
United States	112,460	120,000	120,808	114,630	113,720
Valencia Oranges					
Florida	**65,100**	**70,200**	**72,400**	**79,000**	**76,000**
California	15,000	14,500	13,500	13,000	13,000
Texas	275	249	311	286	286
United States	80,375	84,949	86,211	92,286	89,286
All Oranges					
Florida	**133,700**	**140,500**	**146,600**	**146,000**	**142,000**
California	57,500	62,500	59,000	59,500	59,500
Texas	1,635	1,949	1,419	1,416	1,506
United States	192,835	204,949	207,019	206,916	203,006
Grapefruit					
Florida-All	**20,300**	**19,750**	**18,850**	**18,000**	**18,000**
White	**6,000**	**5,850**	**5,350**	**5,000**	**5,000**
Colored	**14,300**	**13,900**	**13,500**	**13,000**	**13,000**
California	4,500	4,310	4,400	4,000	4,000
Texas	5,600	6,300	4,800	5,280	5,280
United States	30,400	30,360	28,050	27,280	27,280
Lemons					
California	21,000	20,500	20,500	20,500	20,500
Arizona	2,200	2,500	750	1,700	1,800
United States	23,200	23,000	21,250	22,200	22,300
Tangelos					
Florida	**900**	**1,150**	**1,150**	**1,100**	**1,100**
Tangerines					
Florida-All	**4,450**	**4,650**	**4,290**	**3,800**	**3,800**
Early [3]	**2,250**	**2,600**	**2,330**	**2,000**	**2,000**
Honey	**2,200**	**2,050**	**1,960**	**1,800**	**1,800**
California [4]	9,900	10,600	10,900	11,800	11,800
Arizona [4]	350	300	200	200	200
United States	14,700	15,550	15,390	15,800	15,800

[1] Net pounds per box: oranges in California-80 (75 prior to the 2010-2011 crop year), Florida-90, Texas-85; grapefruit in California-80 (67 prior to the 2010-2011 crop year), Florida-85, Texas-80; lemons-80 (76 prior to the 2010-2011 crop year); tangelos-90; tangerines and mandarins in Arizona and California-80 (75 prior to the 2010-2011 crop year), Florida-95.
[2] Navel and miscellaneous varieties in California. Early (including Navel) and midseason varieties in Florida and Texas. Includes small quantities of tangerines in Texas and Temples in Florida.
[3] Fallglo and Sunburst varieties.
[4] Includes tangelos and tangors.

All Oranges 142.0 Million Boxes

The 2012-2013 Florida all orange forecast released today by the USDA Agricultural Statistics Board is 142.0 million boxes, down 3 percent from December and 3 percent less than last season's production. The total is comprised of 66.0 million boxes of the non-Valencia oranges (early, midseason, Navel, and Temple varieties) and 76.0 million boxes of Valencia oranges. The Navel orange forecast is increased 300,000 boxes to 2.2 million boxes, 3 percent of the non-Valencia total.

The hurricane seasons of 2004-2005 and 2005-2006 have been excluded from the usual 10-year regression analysis and from comparisons of the current season to previous seasons. For those previous 8 seasons, the January forecast has deviated from final production by an average of 2 percent with 4 seasons above and 4 below, with differences ranging from 3 percent below to 9 percent above. All references to "average" or "minimum" refer to the previous 8 non-hurricane seasons unless otherwise noted.

Non-Valencia Oranges 66.0 Million Boxes

The forecast of non-Valencia production is lowered by 1.0 million boxes to 66.0 million boxes. Final size is close to the minimum, requiring 274 pieces of fruit to fill a 90-pound box; final droppage at 18 percent is the highest recorded since the 1969-1970 season. The Navel forecast, included in the non-Valencia forecast, is increased by 300,000 boxes to 2.2 million boxes. Navel harvest is relatively complete for the season, dropping to an estimated 27,000 boxes harvested the last week of December.

Valencia Oranges 76.0 Million Boxes

The forecast of Valencia production is lowered by 3.0 million boxes to 76.0 million boxes. Current fruit size is near the minimum and is projected to be near the minimum at harvest. Current droppage continues to be about average and is projected to be about average at harvest.

All Grapefruit 18.0 Million Boxes

The forecast of all grapefruit production is unchanged at 18.0 million boxes. The white grapefruit forecast continues at 5.0 million boxes; the colored grapefruit forecast remains at 13.0 million boxes. Current fruit size for both white and colored grapefruit is below the minimum and is expected to be below the minimum at harvest. Current droppage for both white and colored grapefruit is above the maximum and is projected to be well above the maximum at harvest.

All Tangerines 3.8 Million Boxes

The forecast of all tangerine production remains at 3.8 million boxes. The early tangerine forecast (Fallglo and Sunburst) is unchanged at 2.0 million boxes. The forecast of the later maturing Honey variety continues at 1.8 million boxes. Early tangerine estimated utilization reached over 1.9 million boxes as of January. Fallglo tangerine harvest is complete, while Sunburst estimated utilization dropped below 40,000 boxes during the last two weeks of December. Projected Honey fruit size is slightly above the minimum while the droppage rate is slightly below the maximum.

Tangelos 1.1 Million Boxes

The forecast of tangelo production is unchanged at 1.1 million boxes. The Row Count survey conducted December 26-27, 2012 showed 23 percent of the rows were harvested. Components were final last month with size below average and droppage above the maximum.

FCOJ Yield 1.61 Gallons per Box

The projection for frozen concentrated orange juice (FCOJ) remains 1.61 gallons per box of 42° Brix concentrate. First yield projections for the components are 1.50 gallons per box for the early-midseason portion, and 1.71 for the late (Valencia) portion. Last season's final yield for all oranges was 1.628480 gallons per box, as reported by the Florida Department of Citrus.

Forecast Components, by Variety — Florida: January 2013

[Survey data is considered final in December for Navels, January for early-midseason oranges, February for grapefruit, and April for Valencias]

Type	Bearing trees	Fruit per tree	Droppage	Fruit per box
	(1,000 trees)	(number)	(percent)	(number)
ORANGES				
Early-midseason	23,741	1,032	18	274
Navel	1,013	409	27	137
Valencia	32,049	661	16	228
GRAPEFRUIT				
White	1,314	550	22	122
Colored	3,581	492	22	122

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

2013 WATER WATCH

Keeping an Eye on Water Resources

District-Wide Conditions for January 14, 2013

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

As the dry season continues, the District is averaging about half of its normal rainfall for this time of year. Since the beginning of November, the District is averaging 2.61 inches of rain, which is below the normal of 5 inches. However, water levels remain adequate for this time of year as cooler temperatures minimize evaporation rates.

Year-round water conservation is key to reducing demand on freshwater sources. The District is storing as much water as possible and maintaining canals at seasonally appropriate levels.
For more information:

- SFWMD Weather/Rainfall Data
- National Weather Service Dry Season Forecast
- Climate Prediction Center Precipitation Forecast

Lake Okeechobee Levels

Today	**14.98** feet
Historical Average for Today	**14.71** feet
This Date One Year Ago	**13.50** feet
One Month Ago	**15.17** feet
One Week Ago	**14.95** feet

Water Levels in Key Locations

LOCATION	CURRENT WATER LEVEL	ONE MONTH AGO	HISTORICAL AVERAGE FOR TODAY
Lake Istokpoga	**39.46** feet	**39.47** feet	**39.11** feet
WCA-1	**16.63** feet	**16.77** feet	**16.08** feet
WCA-2	**12.36** feet	**12.65** feet	**12.22** feet
WCA-3	**10.16** feet	**10.58** feet	**9.85** feet
Lake Kissimmee	**50.85** feet	**51.27** feet	**50.88** feet
For a map of dry season rainfall totals in all District basins, click here.			

Other Actions

Navigation

- All Kissimmee River navigation locks are available for boat traffic.
- The S-193 Lock, located on Taylor Creek on the north shore of Lake Okeechobee, is closed due to ongoing renovation work to refurbish the lock and ensure continued reliable service.

Water Conservation Measures

- 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 based on location.
  - To determine watering days and times in your area, contact your local government or visit www.sfwmd.gov/2days.
  - The City of Lake Worth now allows lawn watering up to three days per week, consistent with most of Palm Beach County.
- Permitted water users such as nurseries, agriculture, golf courses and utilities should continue following the water use conditions in their permits.
  - Permit details can be found in the Application/Permit records search online at www.sfwmd.gov/ePermitting.
- For information about water conservation, visit www.savewaterfl.com.

# # #

Media inquiries can be directed to:
Randy Smith
South Florida Water Management District
Office: (561) 682-2800 or Cellular: (561) 389-3386

FAWN (Florida Automated Weather Network)

Go to http://fawn.ifas.ufl.edu/
Click on Tools, then click on Cold Protection Toolkit or go directly to
http://fawn.ifas.ufl.edu/tools/coldp/ Then Select a Tool.
New! **Graphic Forecast data for FAWN sites**
National Weather Service (NWS) forecast data for next 96 hours. Updated hourly.
Minimum Overnight Temperature
Estimates based on the Brunt equation and the air & dew point temperatures at sunset.
Evaporative cooling potential
Determining the risk of using irrigation for cold protection, and see the risk calculated at FAWN stations. 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 Based Irrigation Cutoff Temperature
The safe cutoff temperature based on current FAWN conditions.

Flower Bud Induction Overview and Advisory

http://www.crec.ifas.ufl.edu/extension/flowerbud/index.htm

Gene Albrigo, Horticulturist Emeritus
Citrus Research & Education Center, Lake Alfred, FL

FLOWER BUD INDUCTION ADVISORY #4 for 2012-2013-01/02/13

Current Status:The accumulated hours below the threshold for induction, <68 o F, through January 1st were 800 to 1400 from southern to northern citrus areas. Another 100+ hours are predicted for the next week. All citrus areas will have adequate induction levels after another 7 days. Except for the River District, all areas have one to 3 cohorts of flower buds developing at this time with bloom dates predicted from late January until March 1st. Since cooler weather is usual in January the actual bloom dates will probably be later, but potentially still earlier than normal. At this time, I don't recommend any flowering enhancement sprays since induction levels are good. Don't forget that winter freezes often occur up to 15-20 January. Freezes usually occur when a southern dip occurs in the Jetstream over the mid-West allowing cold arctic air to rapidly travel south before it can warm up. There are no immediate freeze warnings, therefore so far so good.

If you have any questions, please contact me at (albrigo@ufl.edu).

FLOWER BUD INDUCTION ADVISORY #5 for 2012-2013-01/11/13

Current Status: With the warm weather this week, flower bud induction is most likely ended for this season. Except for the Indian River district with only one flower bud growth initiation event, all other citrus areas have 2 to 3 cohorts of flower buds in some stage of growth. The first cohort of flower buds was initiated with about 650 accumulated hours below the threshold for induction, <68 o F. Umatilla had another 100 hours while Ft. Pierce did not have initiation of growth in this period. Projected full bloom dates for this cohort of flower buds is the last week in January. It appears that this cohort is small and that the second will be a stronger bloom. This second cohort initiated growth after 800 to 900 hours of induction and the full bloom date is projected for mid-February, 15th to 21st. The third or last wave has 850 to 1100 hours of induction and the full bloom date is predicted for the first week in March. The least induction has occurred in the Indian River and south Florida areas with about 850 hours, which still should be adequate. Also this should be an early bloom year.

The early bloom makes the trees much more susceptible to a late freeze. Freezes usually occur when a southern dip occurs in the Jetstream over the mid-West allowing cold artic air to rapidly travel south before it can warm up. The only dip in the Jetstream is in the northwest so there are no immediate freeze warnings. Two more weeks should get us past the most likely freeze period, but even a light frost in mid to late February could be damaging to the flowers that should be developed by then.

If you have any questions, please contact me at (albrigo@ufl.edu).

Brazil Ending Topsy-Turvy Citrus Season

By KEVIN BOUFFARD

TheLedger.com January 15, 2013 11:49 PM
WINTER HAVEN

The citrus industry in Brazil is finishing a difficult 2012-13 season marked by low farm prices, declining production and high orange juice inventories, which resulted in an estimated 40 million boxes of oranges left unharvested on the tree.

Despite the global trade in orange juice, however, the oversupply in Brazil has not yet affected farm prices in Florida or retail OJ prices in the U.S., judging by trading on the U.S. futures market.

"It seems like the futures market doesn't assimilate Brazilian data," said Tom Spreen, emeritus professor of agricultural economics at the University of Florida in Gainesville and a leading authority on citrus economics. "Events there do not seem to move the market as much as here (Florida)."

The Brazilian orange harvest runs roughly from June to December or early January while the Florida citrus harvest runs from October to June.

Brazil accounts for about half the annual global orange crop and OJ production, while Florida supplies about a third of the world's orange juice.

Normally a high global inventory would put downward pressure on the farm price of oranges in both countries, which would also drive down retail OJ prices.

But a small 2012-13 Florida orange crop of just 142 million boxes, a 3 percent decline from the previous season, has kept farm prices strong and retail OJ prices near record highs. The opposite happened in Brazil.

A Jan. 8 report from the Center for Advanced Studies on Applied Economics (CEPEA) is Sao Paulo, which monitors Brazilian agriculture, put the 2012-13 orange crop at 364 million boxes, a 15 percent decline from the previous season.

Despite the smaller crop, Brazilian farm prices fell.

"The 2012-13 Brazilian orange season has been characterized by low prices paid to producers and large fruits losses," the report said. "This scenario is attributed to the high inventories of orange juice of Brazilian processors, which reduced the demand (for) the fruit."

Spreen and Matt Salois, chief economist at the Bartow-based Florida Department of Citrus, attributed the topsy-turvy Brazilian market to the government's orange price support programs, which set minimum farm prices for the country's oranges, similar to grain support programs in the U.S.

In return for the price supports, Spreen said, the government required OJ processors to hold larger inventories, a strategy to bolster OJ demand.

The effect in 2012-13 was to push Brazilian OJ inventories to unprecedented high levels, Spreen and Salois said.

CEPEA reported Brazilian processors have current estimated inventories of 662,400 metric tons of frozen concentrated orange juice.

That's equivalent to one year's OJ production in Florida, Spreen and Salois agreed.

Because of those high inventories, Brazilian processors told growers they could not use much of the 2012-13 crop, particularly Hamlin oranges, which are picked in the early months of the season.

Florida growers also grow Hamlins, which are picked from October to March.

The U.S. Department of Agriculture estimated 40 million boxes of Brazilian Hamlins were left unharvested last year for lack of a buyer. That was unprecedented for Brazilian growers, said Tom Stopyra, a crop adviser working in Fort Pierce who previously lived in Brazil and worked in citrus there.

"A friend of mine said never, ever have they (processors) told us they don't have room for our fruit," Stopyra said.

Another Brazilian friend, a medium-sized grower, told Stopyra he sold his Hamlins only because he had a long-term contract with a processor. But Stopyra's friend also told him the processor reneged on the contract price and paid a lower amount.

The Brazilian orange market recovered toward the end of the 2012-13 season because processors bought all the late-season Valencia oranges, which have a higher quality juice, CEPEA and Stopyra agreed.

But prices for mid-season oranges were still the lowest since 2001, the CEPEA report said.

Western citrus mostly dodges freeze damage

Jan. 15, 2013 **Cary Blake**

Western fresh citrus growers have largely escaped major crop damage from the prolonged, below-freezing cold snap expected to end mid this week in California and Arizona. Four days and nights of cold temperatures will cause some damage to citrus," says Paul Story of California Citrus Mutual. Arizona lemon growers largely dodged the impact of the temperatures since about 75 percent of the harvest was complete.

Western fresh citrus growers have largely escaped major crop damage from the prolonged, below-freezing cold snap which was expected to end in mid January in California and Arizona. "With four days and nights of cold temperatures we'll see some damage to citrus," said Paul Story, director of grower services with California Citrus Mutual (CCM), Exeter. Temperatures in some citrus-growing areas dropped to 27-28 degrees Fahrenheit overnight Sunday into Monday morning. "The traditionally warm areas in the 'old-time-citrus belt' from Clovis to the Kern County line along the foothills was fairly warm," Story said. "The areas to the north, south, and especially to the west – the Lindsay-Porterville areas west of Highway 65 - were two-to-three degrees colder. We'll probably see more damage in these areas. "There has been little impact on fresh citrus prices so far. Navel oranges largely deflected the cold temperatures. "Minimal damage is expected in Navel oranges," Story told *Western Farm Press* Jan. 14, largely due to the fruit's advanced maturity, thick skin, and high Brix (sugar) content." "Most of our (Navel) fruit for the market will be fine." Story says some significant damage is expected in Mandarin citrus, including Murcott and Tango, in selected blocks; not the entire valley. Mandarin varieties are more susceptible to the cold due to its thinner, easy-to-peel skin. The good news is the Clementine harvest was completed before the stretch of freezing temperatures arrived. CCM says the California citrus industry spent more than $17 million dollars during the cold snap on frost protection efforts including wind machines and irrigation. The worst freeze in recent California history occurred in 1990 when temperatures in the mid teens ruined the entire citrus crop. California is the second-largest citrus producer in the U.S. behind Florida. Most California citrus is grown for the fresh market. Arizona is the nation's fourth-largest citrus producer. The state's largest citrus production belt is located in Yuma County where mostly lemons are grown. Luckily about 75 percent of the lemon harvest was complete when the cold blast arrived.

"We're probably in as good of shape as California or perhaps a little better," said Glenn Wright, University of Arizona tree fruit specialist, Yuma. Wright says temperatures fell as low as 25 degrees F. in some areas. Damage to lemons can occur when temperatures drop to 28 degrees F. or lower for four to six hours or more.

"Freezing temperatures are 'the 800-pound gorilla in the room' for citrus," Wright said.

A combination of irrigation, wind machines, cloud cover, and light winds reduced the impact of the freezing temperatures.

Perhaps the most citrus damage occurred in the greater Phoenix area where temperatures fell to about 22 degrees. Oranges, Minneola's, grapefruit, and lemons are grown in the area.

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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 competes 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.

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.

Developing a CHMA psyllid management plan

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Month	Timing	Product[3]	Comments
November / December	After last flush of the season	Organophosphate[1]	*Optimal time for coordinated spray*; first dormant spray; serves as a clean up spray to eliminate adult ACP going into the overwintering period.
January / February	Prior to first flush of season	Pyrethroid[2]	*Optimal time for coordinated spray*; second dormant spray; prior to first flush in spring control ACP that overwintered as adults or reproduced on unexpected winter flushes.
March (bloom period)	Depending on pest pressure	several options	Do not use pyrethroid since previously used. Do not use an organophosphate which is planned for the next application. Products that can be sprayed during bloom include Micromite and Portal but should only be applied when new flush is present since these products only control psyllid nymphs (not adults).
April	Immediately post bloom	Organophosphate[1]	*Possible time for coordinated spray using an OP*; this time is the first opportunity to control adult psyllids that developed on flush associated with bloom when most insecticides cannot be applied due to label restrictions preventing application during bloom. Growers in CHMAs not participating in a coordinated spray at this time may choose to use a product with a different mode of action.
May	Depending on pest pressure	Various options	Could use a pyrethroid since not previously used. Other options include Movento, Delegate (if leafminer present) or carbaryl.
June	1st summer oil spray	Various options	Depending on the product used in the previous spray, numerous products (see Table 2) could be added to the summer oil sprays as well as tank mixed with other products depending on the life stages of psyllid controlled by each product and other pests requiring control such as leafminer or rust mites. During this time it may be difficult to coordinate sprays with the same mode of action, but coordination of the timing of summer oil sprays by growers within a CHMA could still be a feasible goal.
July	2nd summer oil spray	Various options	
August / September	Prior to fall flush	Pyrethroid[2]	*Possible time for coordinated spray using a pyrethroid*; Control psyllids that may have developed on sporadic summer flushes prior to the fall flush period when psyllid populations can rapidly increase. Growers in CHMAs not participating in a coordinated spray at this time may choose to use a product with a different mode of action.
October	Depending on pest pressure	Various options	Do not use pyrethroid since previously used. Do not use an organophosphate which is planned for next application. Options include Movento, Delegate, and carbaryl.

[1] Organophosphate insecticides that can be used for psyllid control include Dimethoate, Imidan, Lorsban, Malathion and various generic formulations of these products.

[2] Pyrethroid insecticides currently registered for use in Florida citrus include Danitol and Mustang.

[3] Refer to Table 2 for information on product rates, application methods, psyllid life stages controlled and effective application methods.

Pesticide use information for developing CHMA psyllid management programs.

Chemical class	Active ingredient	Product	Rate/A	Recommended in Pest Management Guide	Application methods[1]	REI	PHI	Comments
Products that control all psyllid life stages (eggs, nymphs and adults)								
Carbamates	carbaryl	Sevin XLR	1.5 qts	No	Air, lv, ss	12 hrs	5 days	Short residual; fresh fruit for export should avoid use due to European MRL issues.
	oxamyl	Vydate	2 qts	No	ss	48 hrs	7 days	Short residual; fresh fruit for export should avoid use due to European MRL issues.
Organophosphates	chlorpyrifos	Lorsban	5 pts	Yes	Air, lv, ss	5 days	21 days	
	dimethoate	Dimethoate 4E	1 pt	Yes	Air, lv, ss	10 days	15-45 days	Consult label for buffering instructions when pH is greater than 7.
	malathion	Malathion 5	2 pts	No	Air, lv, ss	12 hrs	7 days	
	phosmet	Imidan	1.0 lb	Yes	Air, lv, ss	24 hrs	7 days	Consult label for buffering instructions when pH is greater than 7.
Pyrethroids	fenpropathrin	Danitol 2.4EC	1 pt	Yes	Air, lv, ss	24 hrs	1 day	
	zeta-cypermethrin	Mustang	4.3 fl oz	Yes	Air, lv, ss	12 hrs	1 day	
Neonicotinoids	clothianidin	Belay 50 WDG	3.2 oz	Yes	Soil drench	12 hrs	0 day	Important to minimize use of foliar applications to prevent insecticide resistance development to maintain use for young tree care.
	imidacloprid	Admire Pro 4.6F	7-14 fl oz	Yes	Soil drench	12 hrs	0 day	
	imidacloprid	Provado 1.6F	10-20 fl oz	Yes	ss	12 hrs	0 day	
	thiamethoxam	Actara 25 WG	4.0-5.5 fl oz	Yes	ss	12 hrs	0 day	
	thiamethoxam	Platinum 75 SG	1.83-3.67 fl oz	Yes	Soil drench	12 hrs	0 day	
Spinosyns	spinetoram	Delegate WG	4 oz	Yes	lv, ss	4 hrs	1 day	Apply with 2% oil v/v. Also controls leafminer
Products that control psyllid immature stages only (eggs and/or nymphs)[2]								
Benzoylureas (growth regulator)	diflubenzuron	Micromite 80 WGS	6.25 oz	No	lv, ss	12 hrs	21 days	Apply with 2% oil v/v. Also provides control of leafminer and rustmites.
METI insecticides	fenpyroximate	Portal	4.0 pts	No	ss	12 hrs	14 days	Provides suppression of rustmites.
Petroleum distillates	petroleum oil	numerous	2% v/v	No	ss	12 hrs	0 days	Provides suppression of leafminer and rustmites.
Tetramic acid derivatives	spirotetramat	Movento 240 SC	10 fl oz	Yes	ss	24 hrs	1 day	Systemic activity provides extended control of nymphal populations. Must use surfactant.

[1] air=aerial application; lv=low volume application; ss=speed sprayer / traditional airblast application.
[2] To obtain control of adult psyllids, these products may be combined with products listed above.

Revised August 2012

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YOUNG TREE CARE

Michael Rogers[1]

September 2012

- Protecting the next generation of citrus trees from becoming HLB infected prior to reaching bearing age is critical for the survival of the Florida citrus industry.

- Young trees flush more often and are more prone to becoming infested with psyllids throughout the year compared to mature trees.

- The frequent flushing patterns makes relying solely on foliar insecticide sprays with short residuals unfeasible.

- Soil-applied systemic insecticides (neonicotinoids) which provide 6-8 weeks of psyllid control are the most effective tool for managing psyllids (and leafminer) on young trees.

- Currently three neonicotinoid products are registered for use in citrus: Admire Pro 4.6F (imidacloprid*), Platinum 75 SG (thiamethoxam), and Belay 50 WDG (clothianidin**)

- Although psyllids must first insert their mouthparts into the treated plant to contact the insecticide, the presence of these insecticides in the plant cause the psyllids to immediately quit feeding, thus reducing the chances of a tree becoming infected with HLB.

*various generic formulations are also available
** currently Belay 50 WDG (clothianidin) is only registered on non-bearing citrus

RATE PER ACRE (single application)
(Based on 140 trees/A)

	New Reset (2-3' height)	1-2 yrs (3-5' height)	3-5+ yrs (5-9' height)
Admire Pro 4.6F	3.5 fl oz (4 apps)	7 fl oz (2 apps)	14 fl oz (1 app)
Platinum 75 SG	1.835 oz (2 apps)	1.835 oz (2 apps)	3.67 oz (1 app)
Belay 50 WDG*	3.2 fl oz (4 apps)	3.2 fl oz (4 apps)	Currently non-bearing only

* Currently Belay can only be applied to nonbearing trees

RATE PER TREE

	New Reset (2-3' height)	1-2 yrs (3-5' height)	3-5+ yrs (5-9' height)
Admire Pro 4.6F	0.025 fl oz	0.05 fl oz	0.1 fl oz
Platinum 75 SG	0.0131 oz	0.0131 oz	0.026 oz
Belay 50 WDG	0.0229 fl oz	0.0229 fl oz	Currently non-bearing only

1. Michael E. Rogers, associate professor, Department of Entomology and Nematology, Citrus REC, Lake Alfred, Florida; Cooperative Extension Service, Institute of Food and Agricultural Sciences; University of Florida; Gainesville, FL 32611.

SEASON-LONG ACP CONTROL ON YOUNG TREES

Tree size	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Reset (<3')	P		A	A		B	B		A	A		P
1-2 yr (3-5')	P		A	B		B	B		B	A		P
3-5 yr (5-9') bearing				P				A				

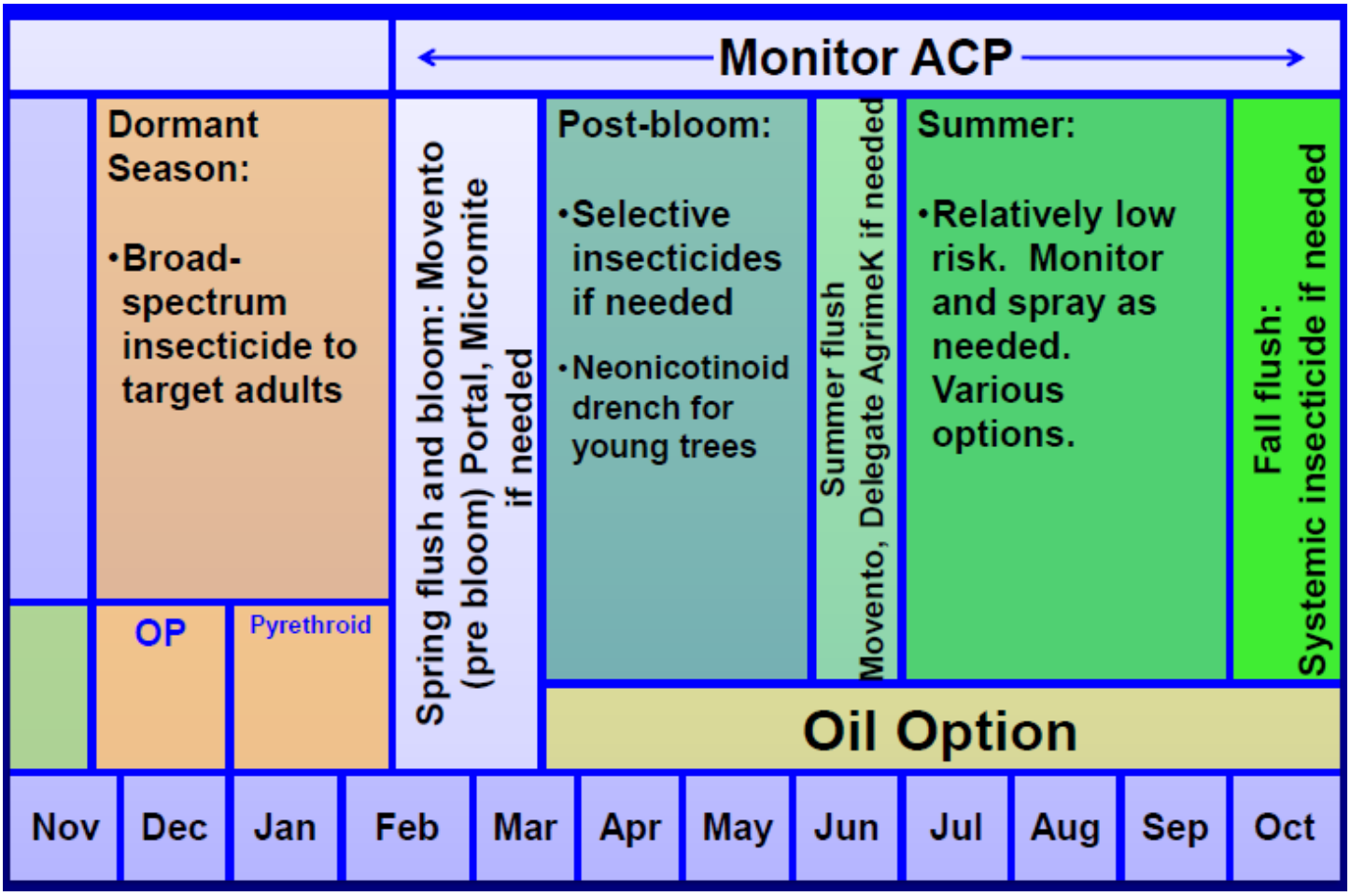
A= Admire (imidacloprid); B=Belay (clothianidin); P=Platinum (thiamethoxam); timing of foliar applications with different modes of action to prevent pesticide resistance to neonics depicted by orange boxes.

Resets (< 3')

1-2 yr (3-5')

3-5+ yr (5-9')

One of the Psyllid Management Programs by Dr. Phil Stansly



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Flatwoods Citrus

TOPICS DISCUSSED IN THE FLATWOODS CITRUS NEWSLETTER -YEAR 2012-

January	Freeze Damage to Citrus Trees; Using Citrus Leaf Freezing Information to Determine Critical Temperature; Hedging and Topping Citrus Trees; Factors Affecting Citrus Fruit Production and Quality
February	Climate Prediction; Nutrition of Citrus Trees; Importance of Fertilizer Spreader Calibration and Maintenance; More information on Citrus Nutrition; Boron; Foliar Feeding; Fungicide Effectiveness
March	Drought; Plant Growth Regulators (PGRs); Spider Mites; Management of Citrus Black Spot; Citrus Fruits May Lower Women's Stroke Risk; Irrigation
April	Importance of Sprayer Calibration; Pesticide Recordkeeping; Florida Citrus Forecast; Increasing Efficiency and Reducing Cost of Nutritional Programs; Rod Santa Ana: Spinach Genes May Stop Deadly Citrus Disease
May	Prepare and Stay Aware!; Pre-Storm Preparation; Management of Greasy Spot Fungicide Effectiveness; Citrus Rust Mites; Citrus Psyllid Control; The Citrus Copper Application Scheduler; Florida Subtropical Peaches
June	Aerial Application of Pesticides; Flooding Injury; Water Table Measurement and Monitoring; How to Reduce Drift; Weed Management in Citrus Groves; Leaf and Soil Sampling and Analyses to Adjust Fertilizer Programs; Honeybee Decline Linked to Killer Virus
July	Brown Rot; Prepare for Tropical Storms; Magnesium Nutrition; Frequently Asked Questions About Biosolids; Citrus Black Spot
August	Danger of Heat Stress; Managing Heat Stress; Spray Drift of Pesticides; Spray Tank Mixing; Nitrogen Management and Water Quality; Algae
September	Quick Overview of the Federal Worker Protection Standard (WPS); Water Reuse; Soil Acidity & Liming; Suggested Facility Security Practices; Fertilizer Formulations and Applications; Irrigation, Nutrition and Fruit Quality
October	2011-2012 Citrus Production; 2012 Commercial Citrus Acreage and Tree Number; Approval of Registration Requested for Admire Pro; Dormant Spray Program for Psyllid; 2012-2013 Orange Crop Forecast
November	SECC Fall Climate Outlook; CHMA-Developing a Psyllid Management Plan; Flower Bud Induction; FAWN; Cold Hardiness and Cold Protection
December	Citrus December Forecast-Drastic Change; Numeric Nutrient Criteria in the State of Florida; November 2012 Water Watch—FAWN; South Florida Water Management District; Flower Bud Induction

Flatwoods Citrus

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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