

Citrus Notes



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Inside this Issue:

Annual Citrus Employee Safety Training Program and Tractor Rodeo	2
Citrus Research and Education Center Rootstock Field Day	2
NOAA Winter Weather Outlook	2
Weak El Nino Predicted this Winter	3
2014-15 Winter Weather Watch Program	4
USDA Releases New Rootstocks	4
Operation Cleansweep is Back	4
Agricultural Tax Planning - The Tree Assistance Program (TAP) - Florida Citrus Greening	4
Syngenta Summer Intern Recruiting	6
Pesticide News & Information	7

Dear Growers,

The following are grower events planned for the near future:

November 6th Citrus Employee Safety Training & Tractor Rodeo

December 3rd Citrus Research and Education Center Rootstock Field Day

Enjoy the issue,

Chris Oswalt
Citrus Extension Agent
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Annual Citrus Employee Safety Training Program and Tractor Rodeo

I have included the program flyer along with a registration

form at the end of this citrus newsletter. The annual safety training program will be held on Thursday, November 6, 2014 in Bartow at the Stuart Conference Center.

Citrus Research and Education Center Rootstock Field Day



We will again be holding a grower field day with the

UF/IFAS Citrus Research and Education Center in Lake Alfred. This year we will again be visiting Dr. Jude Grosser's, St. Helena rootstock trial near Waverly. We are planning on having a schedule of bus departures from the Center starting at 8:00 a.m. By scheduling our departures this way, we can keep our groups smaller while providing you the opportunity to choose a time that best fits your travel schedule. We have also added an additional 15 minutes to each stop so you will have more time in the grove. Choosing your time is based on a first come, first served, basis and please register early to ensure you get the departure time you would like. Registration is now open. Eventbrite, email and phone registrations will be prioritize based on time received. Enclosed is a flyer with additional registration information and field day details.

NOAA Winter Weather Outlook

(Excerpted from: http://www.noaanews.noaa.gov/stories2014/20141016_winteroutlook.html)

Below average temperatures are favored in parts of the south-central and southeastern United States, while above-average temperatures are most likely in the western U.S., Alaska, Hawaii and New England.

While drought may improve in some portions of the U.S. this winter, California's record-setting drought will likely persist or intensify in large parts of the state. Nearly 60 percent of California is suffering from exceptional drought – the worst category – with 2013 being the driest year on record. Also, 2012 and 2013 rank in the top 10 of California's warmest years on record, and 2014 is shaping up to be California's warmest year on record. Winter is the wet season in California, so mountainous snowfall will prove crucial for drought recovery. Drought is expected to improve in California's southern and northwestern regions, but improvement is not expected until December or January.

“Complete drought recovery in California this winter is highly unlikely. While we're predicting at least a 2 in 3 chance that winter precipitation will be near or above normal throughout the state, with such widespread, extreme deficits, recovery will be slow,” said Mike Halpert, acting director of NOAA's Climate Prediction Center.

El Niño, an ocean-atmospheric phenomenon in the Tropical Pacific that affects global weather patterns, may still develop this winter. Climate Prediction Center forecasters announced on Oct. 9th that the ocean and atmospheric coupling necessary to declare an El Niño has not yet happened, so they continued the El Niño Watch with a 67 percent chance of development by the end of the year. While strong El Niño episodes often pull more moisture into California over the winter months, this El Niño is expected to be weak, offering little help.



The Precipitation Outlook favors above-average precipitation across the southern tier, from the southern half of California,

across the Southwest, South-central, and Gulf Coast states, Florida, and along the eastern seaboard to Maine. Above-average precipitation also is favored in southern Alaska and the Alaskan panhandle. Below-

average precipitation is favored in Hawaii, the Pacific Northwest and the Midwest.

Last year's winter was exceptionally cold and snowy across most of the United States, east of the Rockies. A repeat of this extreme pattern is unlikely this year, although the Outlook does favor below-average temperatures in the south-central and southeastern states.



In addition, the Temperature Outlook favors warmer-than-average temperatures in the Western U.S., extending from the west coast through most of the inter-mountain west and across the U.S.-Canadian border through New York and New England, as well as Alaska and Hawaii.

The rest of the country falls into the "equal chance" category, meaning that there is not a strong enough climate signal for these areas to make a prediction, so they have an equal chance for above-, near-, or below-normal temperatures and/or precipitation.

Weak El Nino Predicted This Winter

The National Weather Service's, Climate Prediction Center is forecasting El Nino conditions this winter. Further estimates are of a slow development that will likely result in weak El Nino conditions this winter.

Figure 1 illustrates the average number of freezes during the winter months at four Florida locations. In December, in all four locations the average number of freezes during a weak El Nino winter is below average for the month. In January, the average number of freezes in a weak El Nino is close to the monthly average for Lakeland. In Tampa, Sarasota and Ft. Myers the average number of freezes during a weak El Nino winter is above average. In February and March the average number of freezes in a weak El Nino is similar to the monthly average. The seasonal average number of freezes during a weak El Nino winter is

lower for Lakeland, higher for Tampa and about the same for Sarasota and Ft. Myers.

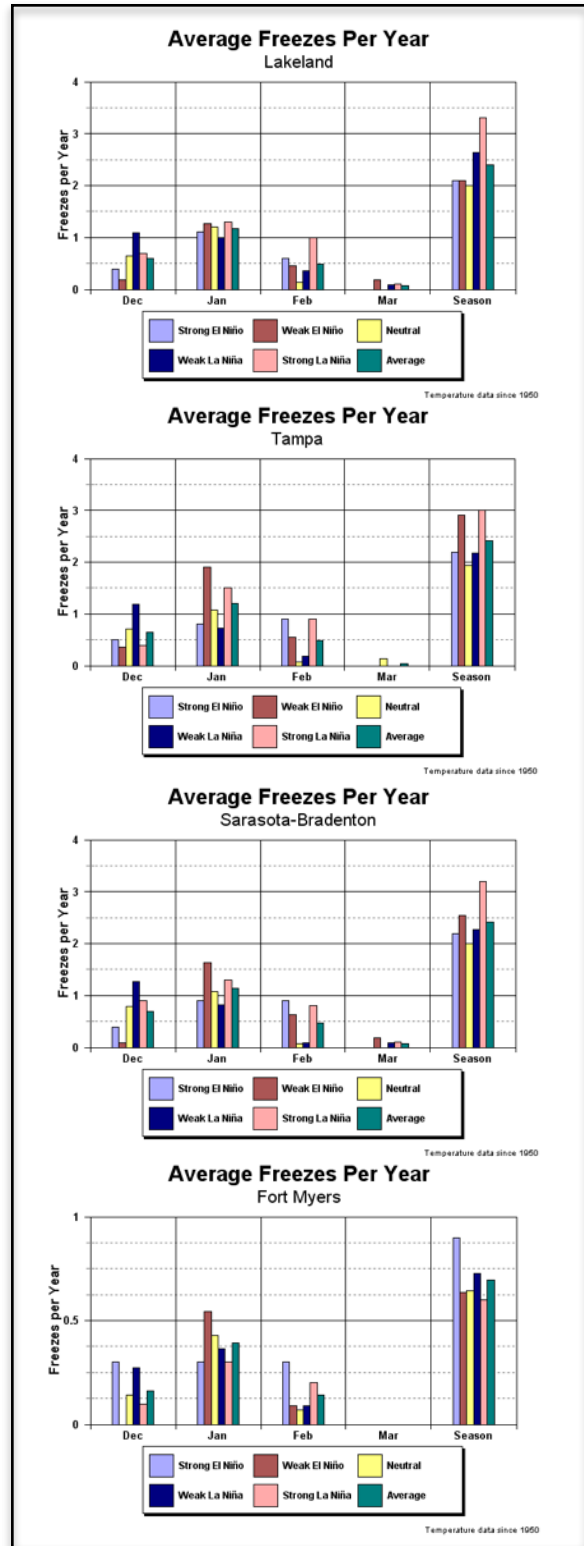


Figure 1. Average number of freezes by location.

Next month we will look at monthly and seasonal rainfall patterns for the four locations.

2014-15 Winter Weather Watch Program



The 2014-15 edition of the Polk County Winter Weather Watch will begin on November 15, 2014. This local winter weather program provides daily weather forecasts, 6 to 14 day outlooks, a weekly outlook by our Meteorologist Fred Crosby, along with special weather narratives by Fred on freeze nights and minimum temperature predictions using the modified Brunt equation. Your \$100 subscription will provide you phone access by an unlisted number to these forecast products, along with a copy of the 2014-15 Winter Weather Watch manual. The registration form is included at the end of this newsletter.

In addition, again this year the Polk County Extension Citrus Advisory Committee has, at this time, five additional weather stations located throughout Polk County providing realtime weather measurements from citrus production areas. These locations include: Lake Henry Rd. near Lake Henry, Alturas, Green Swamp, Prine near Haines City and Mountain Lake. **This winter season growers subscribing to the 2014-15 Winter Weather Watch will be able to have access to these additional weather stations via a smart phone app for the entire winter season (Nov. 15, 2014 to Mar. 15, 2015) as part of your subscription.**

A Winter Weather Watch registration form and additional information is enclosed at the end of the newsletter.

USDA Releases New Rootstocks

Attached to the end of the emailed version of the newsletter are the official release notices for a number of new USDA citrus rootstocks. These rootstocks came from the USDA, ARS, USHRL citrus breeding program in Ft. Pierce. Please read the descriptions carefully since many of these rootstocks demonstrate a variation in performance between grove sites. If you receive the newsletter regular mail please call the office for the printed copies.

Operation Cleansweep is Back

The purpose of Operation Cleansweep is to offer a safe, convenient, and cost effective mechanism for agricultural operations, golf courses, and pest control companies to properly dispose of canceled, suspended, and unusable pesticides (CSUP).

The 2000 Florida Legislature appropriated \$300,000 and authorized the Florida Department of Environmental Protection (DEP) to implement a program to collect and dispose of CSUP. The 2001 Legislature again appropriated \$300,000 for fiscal year July 1, 2001 - June 30, 2002. The 2002 Legislature appropriated \$200,000 to continue the program from July 1, 2002 - July 31, 2003. The 2003, 2004, 2005, 2006, 2007, 2008, 2009 and 2010 Legislature appropriated \$100,000 each fiscal year to maintain the program. The 2011, 2012 and 2013 Legislature did not appropriate any funds to maintain the program.

The 2014 Legislature has appropriated \$100,000 to fund the program, with the funds going directly to the Florida Department of Agriculture and Consumer Services (FDACS) to hire a contractor and implement the program in accordance with these Program Guidelines. In-kind services from the staff of DEP and FDACS will also be directed to this program.

A flyer outlining this program and information on participation is included.

Agricultural Tax Planning - The Tree Assistance Program (TAP) - Florida Citrus Greening

(Author: Thomas J. Bryant, CPA is Senior Tax Partner, Beasley, Bryant & Company, CPA's, P.A., Lakeland, Florida (863) 646-1373).

The Tree Assistance Program (TAP) is one of a number of permanent disaster assistance programs authorized under the 2014 U.S. Farm Bill. The TAP and other related disaster programs are administered by the Farm Service Agency (FSA). The TAP, in general, provides financial assistance to orchard growers to replant or rehabilitate trees, vines etc. damaged or lost by natural disasters. **In September of 2014, Florida was approved under TAP to recognize citrus greening as an eligible cause for loss.**

Eligibility

Eligible orchard or citrus trees are those used to produce an annual crop for commercial purposes including fruit, nut, ornamental and Christmas trees. Trees used for pulp and timber production are not eligible. Applications for losses occurring on or after October 1, 2011 through the end of 2014 must be submitted the later of January 31, 2015, or 90 calendar days after the disaster/disease event, or the date the loss is apparent. For losses occurring in 2015 and subsequent years, applications must be submitted the later of 90 calendar days of the disaster/disease event, or the date when the loss is apparent.

To qualify for this program, citrus growers must have suffered qualifying tree losses in excess of 15% mortality (adjusted for normal mortality) from an eligible natural disaster/disease for the individual stand; have owned the trees when the natural disaster/disease occurred, but not required to own the land; and trees must be replaced within 12 months from the date the application is approved. The total acres for which payments are received cannot exceed 500 acres per year.

Reimbursements

For tree replacement, replanting and/or rehabilitation the payment is the lesser of:

- “65 percent of the actual cost of replanting, in excess of 15 percent mortality (adjusted for normal mortality), and/or 50 percent of the actual cost of rehabilitation, in excess of 15 percent damage or mortality(adjusted for normal tree damage and mortality), or
- The maximum eligible amount established for the practice by FSA.”

The losses must have occurred on or after October 1, 2011. There are some limits. In particular, individuals or entities with average gross income exceeding \$900,000 are ineligible for payments. For 2012 and subsequent program years no legal entity except general partnerships or joint ventures may receive more than \$125,000 total in payments under TAP. For 2011 no legal entity other than joint ventures or general partnerships may receive more than \$125,000 total in the 2011 program year in payments under TAP, when at least \$25,000 of such total 2011 program payments is from

TAP, for losses from October 1, 2011 through December 31, 2011.

Federal Tax Implications

Under IRC SEC. 263A and/or the new capitalization rules restoration costs generally must be capitalized. Certain clean-up costs associated with the restoration may be expensed. Citrus trees are included on the IRS list of crops that require capitalization of preproductive costs. An election under Section 179 provides an expense that is not subject to Section 263A capitalization, but that expense for 2014 is limited to \$25,000 in total.

On the brighter side, cash basis farmers may elect to defer reporting insurance proceeds (which include USDA agricultural disaster payments) to the following year. The deferral election is attached to the farmer’s Form 1040 for the year the damage occurred. However, farmers are not permitted to defer to the following year, government disaster payments received in a year subsequent to the year of damage. Thus, farmers receiving payments under this current TAP in 2014 for claims filed for previous years cannot defer recognition of those payments until 2015.

Deferral elections may be made on amended returns, thus farmers may wish to file the tax return without the election and await future developments. If tax rates increase or the taxpayer has higher income in the following year, deferral may not be the best option. For involuntary conversions, the replacement period is normally 2 years. Also farm income averaging should be considered. There are a number of options that should be considered regarding income deferral and these should be explored by your tax professional before any election or deferral is made.

Summary

Citrus growers interested in this new TAP should contact their local Farm Service Agency for more information and help on applying for the government assistance payments. Growers applying for the TAP will be given a FSA startup packet. The information on the TAP was taken from the USDA Fact Sheet on the program that was issued in September and only covers selected information from the Fact Sheet. As for federal income tax implications you may contact us or your tax professional. The above is presented to introduce you to this new Citrus TAP and bring to your attention

some of the tax rules that may come into play if you receive assistance payments under this program.

For more information on this topic and other tax planning for farming, please contact me at (863) 640-2008 or Tom@beasleybryantcpa.com and/or Ryan Beasley at (863) 646-1373 or Ryan@beasleybryantcpa.com.

For information on other relevant topics visit our website at www.beasleybryantcpa.com. We at Beasley, Bryant & Company, CPA's, P. A. are experienced in agricultural business problems, tax issues or concerns, and are here to help you.

Syngenta Summer Intern Recruiting

Syngenta is currently recruiting for up to seven intern positions with an approximate start date of May 11, 2015 and an approximate end date of August 14, 2015.

There are two types of summer intern positions available within the programs seven openings. One of those positions will be focused on managing a soil bioassay lab to screen for Phytophthora at the Vero Beach Research Center. The second type of position available is the field pest and disease scout.

Please have all interested candidates email their resumes directly to cody.hoffman@syngenta.com. Cody will be available to interview interested candidates now through the end of December 2014, at which time he hopes to have all candidate selections complete.



Pesticide News & Information

Soluble Phosphorus in Ohio

Imposing a 25 percent tax on phosphorus, used as a fertilizer primarily on corn, could reduce soluble phosphorus (P) concentrations in Ohio watersheds by about 8 percent, according to an analysis led by Brent Sohngen, a professor at Ohio State University. Sohngen has studied the economics of conservation programs and nonpoint-source pollution, or pollution from diffuse sources such as farmland. Although water flows indicate that there have been more large rainfall events in the past 15 years than previously, and that these may have increased soluble phosphorus in the water, phosphorous pricing also impacted water P values greatly. Higher

prices, both for corn and for phosphorus itself, appear to have the largest impact on water quality, Sohngen said. As a result of higher phosphorus prices in 2005 to 2010, farmers applied less phosphorus to the land, and up to a 20 percent reduction in phosphorus occurred in water relative to what it would have been. While Sohngen admits that imposing such a tax on phosphorus fertilizer is an idea farmers would understandably resist, he suggests they may prefer it over possible stringent regulations on phosphorus use. "A tax is less invasive, and farmers would still have a choice," he said. "They can pay the tax and apply as much phosphorus as they want, or not. "A few farmers will pay the tax and apply that phosphorus, but others will decide not to, and that will be just enough to make a difference." (AGProfessional, 9/30/14).

Crop Biotechnology

Crop biotechnology has reduced the amount of chemical pesticide spraying worldwide by 474 million kilograms, or 9 percent, over the past 15 years, according to a report by PG Economics, a UK-based advisory and consultancy services provider specializing on plant biotechnology, agricultural production systems, agricultural markets and policy. The reduction is equivalent to the total amount of pesticide active ingredient applied to arable land in member countries of the European Union over a period of one-and-a-half crop years, the report noted. As a result, this has decreased the environmental impact associated with pesticide use on the area planted to biotech crops by 18.1 percent. The report also pointed out that crop biotechnology has contributed to significantly reducing the release of greenhouse emissions from agricultural practices due to the reduced use of fuel and additional soil carbon storage from reduced tillage with biotech crop varieties. In 2011, this was equivalent to removing 23 billion kilograms of carbon dioxide from the atmosphere or equal to removing 10.2 million cars from the road for one year. (Inquirer, 10/17/14).

Belay Section 18

The Florida Department of Agriculture and Consumer Services' (FDACS) request for the use of Belay (clothianidin) under specific exemption of FIFRA Section 18 for the control of Asian citrus psyllid in citrus has been issued by the U.S. EPA. The current emergency exemption will expire at the end of October. (FDACS letter, 10/6/14).

Citrus Safety Training & Tractor Rodeo



Polk County Agricultural Center - Stuart Conference Center
1710 Highway 17/98 South, Bartow, Florida 33830

Thursday, November 6, 2014

Annual Citrus Employee Safety Training

Polk County Extension—UF/IFAS invites you and your employees to attend the 2014 Polk County Citrus Safety Training Program. This program is designed to help growers with regulatory compliance by providing annual safety training for their employees. Topics include proper safety measures in the grove and on the highway. Pre-registration is required. Please indicate if each participant would like to be in the English or Spanish sessions.

Completed registration forms are due in the Extension Office no later than **Friday, October 31, 2014**

Annual Tractor Rodeo Rules

In order to compete in the team competition, the completed pre-registration form must be received in the Extension Office by October 31, 2014.

This year's tractor rodeo will feature three separate competitions. Your employees can compete in the Sprayer Operator Competition, Herbicide Operator Competition and the Fertilizer Spread-Off Competition. Participants are allowed to participate as a team member or as an individual, but teams must be pre-registered to compete.



Tractor Rodeo Competitions

The **Sprayer Operator Competition** will test precession, safety awareness, and attention to detail required for safe pesticide applications using a tractor with a sprayer.

The **Herbicide Operator Competition** will test for the above mentioned skills on a tractor with a boom sprayer.

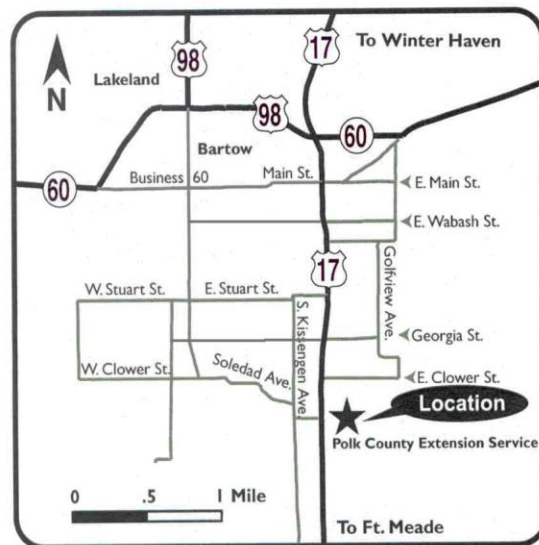
In the **Fertilizer Spread-Off**, operators will simulate fertilizer applications to resets scattered randomly through a grove. The operator will be provided with an all-terrain utility vehicle (ATV), bucket of simulated fertilizer, and cups to apply the fertilizer. Judging will be based on precision of the fertilizer application, time, and vehicle operation skills.

For more information about any competition, contact Chris Oswald at (863) 519-1052.



Agenda

- 7:30 Check-In
- 8:00 Welcome
- 8:15 Agricultural Crimes
- 8:35 Grove Equipment Road Safety
- 8:55 First Aid
- 9:15 Decontamination Procedures
- 9:35 Break (*Separate into English or Spanish Sessions*)
- 9:55 WPS
- 10:45 Tractor Safety
- 11:05 Break (*English and Spanish sessions reconvene*)
- 11:25 Jeopardy Review
- 12:00 Lunch



In accordance with the provisions of ADA, auxiliary aids and services will be provided upon request with a 3-day notice. Contact Gail Crawford at (863) 519-1042. This material is available in an alternate format upon request.

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Citrus Worker Safety Training Program Registration

This registration and a fee of \$15 per person, which includes lunch, are due by Friday, October 31, 2014.

Safety Training Program (Please print participants names)	English	Spanish
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Tractor Rodeo Team (Participants must be registered in the safety training program)	
Herbicide Operator	1.
Herbicide Operator	2.
Fertilizer Spread-Off	1.
Fertilizer Spread-Off	2.
Sprayer Operator	1.
Sprayer Operator	2.

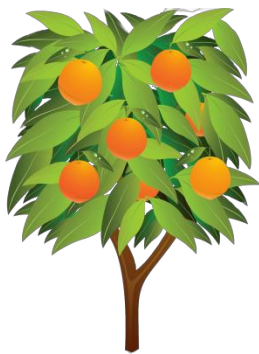
Individual Participants (Participants must be registered in the safety training program)	
Herbicide Operator	
Herbicide Operator	
Fertilizer Spread-Off	
Fertilizer Spread-Off	
Sprayer Operator	
Sprayer Operator	

Contact Name: _____ Phone Number: _____

Company Name and Address: _____

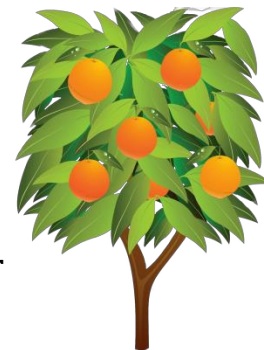
Please detach and mail this form with your check made payable to: *Polk County Citrus Advisory Committee*

Gail Crawford, Polk County Extension
PO Box 9005, Drawer HS03, Bartow, Florida 33831-9005



Rootstock Field Day

Wednesday, December 3, 2014



University of Florida, IFAS, Citrus Research and Education Center
700 Experiment Station Road, Lake Alfred, Florida

SCHEDULE

<u>GROUP</u>	<u>DEPART CREC</u>	<u>ARRIVE AT GROVE</u>	<u>DEPART GROVE</u>	<u>ARRIVE AT CREC</u>
1	8:00 am	8:30 am	9:45 am	10:15 am
2	9:15 am	9:45 am	11:00 am	11:30 am
3	10:30 am	11:00 am	12:15 pm	12:45 pm

Grove location is Orié Lee's St. Helena Grove

*Each group will be limited to 50 participants

*Registration and light refreshments will be between 7:30 am and 10:30 am

*A boxed lunch will be available upon arrival to CREC after grove visit

**Registration will open
October 20th. Early
registration will not be
accepted.**

Four Easy Ways to Register

1. Online at rootstockfieldday.eventbrite.com
2. Fax the registration form below to 863-956-4631
3. Call Anne Burrage at 863-956-8643
4. Email completed registration form to Anne Burrage at amburr@ufl.edu

**Pre-Registration is required
by Wednesday, November 26th**



REGISTRATION FORM

Rootstock Field Day
Wednesday, December 3, 2014

Submit form to: Anne Burrage, amburr@ufl.edu Phone: 863-956-8643 Fax: 863-956-4631



Participant Name: _____ Company Name: _____

Mailing Address: _____

Phone: _____ Fax: _____

Email: _____

Please rank your group
preference by 1st, 2nd, and 3rd.

	8:00 am Departure Time
	9:15 am Departure Time
	10:30 am Departure Time

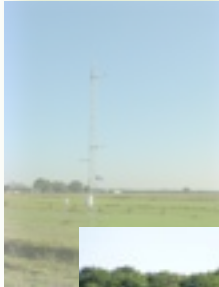
**Pre-registration required by
Wednesday, November 26, 2014.
Registration will be confirmed
with group departure time via
email (if provided).**

**Boxed Lunch Preference
(please select one)**

	Roast Beef
	Ham
	Turkey
	Vegetarian

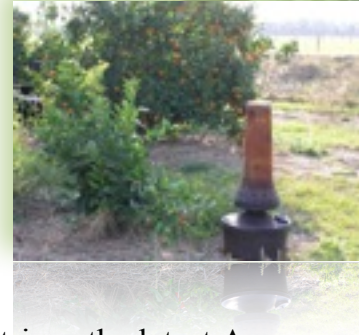
2014 – 2015 WINTER WEATHER WATCH PROGRAM

NOVEMBER 15, 2014 TO MARCH 15, 2015
REGISTRATION FEE: \$100.00



It's once again time to register for the upcoming 2014 - 2015 Winter Weather Watch Program. Upon receiving your \$100.00 registration payment, you will be sent an unlisted telephone

number with which you can retrieve the latest **Ag Forecasts**, 24 hours a day. **Please do not give this number to others.** The *Winter Weather Watch Program* is funded by the registration fees to pay for telephone equipment rentals, long distance calls, repairs and our meteorologist.



2014 - 2015 Winter Weather Watch Program

NAME: _____ PHONE NUMBER: _____

COMPANY: _____

MAILING ADDRESS: _____

EMAIL ADDRESS: _____

CITY: _____ ZIP CODE: _____

REGISTRATION FEE \$100.00

PLEASE RETURN THIS REGISTRATION FORM AND YOUR CHECK PAYABLE TO:

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

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Washington, D.C.

RELEASE OF US-1279, Citrus Rootstock

The Agricultural Research Service, U.S. Department of Agriculture hereby releases to nurserymen and growers the US-1279 citrus rootstock. This rootstock selection originated from a 1995 cross of Changsha mandarin (*Citrus reticulata*) × Gotha Road #6 Trifoliolate Orange (*Poncirus trifoliata*) made at the A.H. Whitmore Foundation Farm by Dr. Kim D. Bowman of the USDA, ARS, USHRL, Florida. Field testing of US-1279 was planned and conducted by Dr. Kim Bowman, in collaboration with or support from industry partners, including Florida Citrus Research Foundation, Florida Citrus Production Research Advisory Council, Florida Citrus Research and Development Foundation, and Mid-Florida Citrus Foundation. Dr. Greg McCollum (also of USDA, ARS, USHRL) collaborated in the evaluation of fruit quality from field trials. During field testing, this hybrid rootstock was identified by code numbers BS95-V3-11 or US-1279. The major positive attributes of this new rootstock are induction of superior fruit productivity and fruit quality on sweet orange trees grown in the Florida flatwoods and infected with *Candidatus Liberibacter asiaticus* (Las), the causal agent of huanglongbing (HLB). This rootstock is being released for commercial use in Florida because of the urgent need for new citrus rootstocks that have improved tolerance to HLB.

Field testing of the US-1279 rootstock has been primarily at two locations (three trials) and with 'Hamlin' sweet orange scion. The longest field test involving this rootstock is a replicated trial in St. Lucie County Florida at the USHRL research farm in Ft. Pierce. The site is typical Florida flatwoods with a soil characterized as Riviera fine sand, and trees were planted in double row beds at 3.0 m x 7.6 m spacing and irrigated by microjet. In this trial, seven 'Hamlin' sweet orange trees on US-1279 were compared with a similar number of trees on 25 other rootstocks planted in 2000 and using a randomized complete block statistical design. Trees in this trial were damaged by hurricanes Frances and Jeanne in 2004, and both HLB and citrus canker (*Xanthomonas citri* subsp. *citri*) began to affect the trees in 2007-8. Fruit production of 'Hamlin' on US-1279 in this trial was first measured in the 2006 and 2007 harvest seasons, before HLB symptoms were widespread. During the 2006 and 2007 seasons, fruit production on US-1279 was found to be numerically higher than production of trees on Swingle, the most common rootstock used in Florida, but the difference was not statistically significant. In the following years, Las spread rapidly throughout the trial, and overall tree health declined. From 2008 to 2012, cropping on all rootstocks declined from the pre-HLB yields, but cropping on Swingle rootstock suffered more dramatically than cropping on US-1279 and some other rootstocks. The average fruit production during this period on US-1279 was measured at 2.2 times the fruit production on Swingle. As a result of increased application of plant nutrients, overall tree health in the trial improved during 2012-14. In the 2013 harvest season, trees on US-1279 produced 61 kg fruit per tree, or about 80 percent of the annual crop produced on those trees during the 2006 and 2007 seasons (before HLB impact). In comparison, trees on Swingle rootstock in the 2013 harvest season continued a very low fruit production, yielding 19 kg fruit per tree, or about 17 percent the annual crop produced on those trees during the 2006 and 2007 seasons. The

significantly higher fruit production of trees on US-1279 than trees on Swingle following tree infection with Las, and also following the implementation of an improved nutritional program, indicates a greater tolerance of US-1279 to HLB disease.

Fruit quality was assessed on samples from the replicated trial at the USHRL farm in St. Lucie County just before harvest in December 2012 and 2013. Average fruit weight from trees on US-1279 rootstock was 159 g and significantly higher than the 115 g fruit on Swingle in 2012. During the 2013 season, fruit from trees on US-1279 were again numerically heavier than fruit on Swingle, but differences among the rootstocks were not significant. During both the 2012 and 2013 seasons, fruit total soluble solids were numerically higher for trees on US-1279 than for trees on Swingle, but these differences were not statistically significant. During both the 2012 and 2013 seasons, TSS:acid ratios were significantly higher for trees on US-1279 than for trees on Swingle. Significant differences among the rootstocks for other fruit quality traits, such as juice color, were not observed. Two characteristics of fruit quality, fruit size and TSS:acid ratio, were significantly better for trees on US-1279 in comparison to trees on Swingle.

Canopy size was measured on the trees in the replicated trial at the USHRL farm in St. Lucie County in August 2014. Canopy height and width were not significantly different for trees on US-1279 and Swingle. However, calculation of canopy area and canopy volume showed that canopy size was significantly larger for trees on US-1279. To assess whether measured differences in performance of 'Hamlin' trees on US-1279 and Swingle rootstocks were due to differences in infection rate with Las or bacterial titer in plant tissues, trees were tested by canopy sampling and PCR in August 2014. All trees on all rootstocks in the trial were observed to be PCR positive for Las at that time. The amount of Las (Las genome copy number per gram of plant tissue) detected in random leaf samples from the canopy of trees on US-1279 and Swingle were not significantly different. It can be inferred that improved yield and other traits of trees on US-1279 in comparison with Swingle were not because of an induction of increased resistance to Las infection or reduced Las growth in the scion tissues, but rather to an increased tolerance of the tree to HLB following Las infection.

The rootstock US-1279 was tested in a trial with 'Hamlin' scion planted in 2002 at the Water Conserv II research grove in Orange County, Florida. The trial contained 12 trees on each rootstock and was planted in a randomized complete block statistical design. This site is on soil characterized as Candler fine sand, and trees were planted at 4.5 m x 7.5 m, and irrigated with microjets. Crop yield measurements were taken from the trial between 2005 and 2013. By 2013, the effects of HLB and reduced tree care in this trial resulted in declining yields for all rootstocks, in comparison to 2009. Cumulative and individual year crop yields of trees on US-1279 were not statistically different than those on Swingle in this trial. It can also be noted that the rootstock US-942 (released by USDA in 2010) performed better at this ridge site with HLB than US-1279, and cumulative yields of trees on US-942 were significantly higher than trees on Swingle.

The rootstock US-1279 was also tested in a second trial with 'Hamlin' scion planted in 2003 at the Water Conserv II research grove in Orange County, Florida. The trial contained 5-6 trees on each rootstock and was planted in a randomized statistical design. This site is on soil characterized as Candler fine sand, and trees were planted at 4.5 m x 7.5 m, and irrigated with

microjets. Crop yield measurements were taken from the trial in 2009, 2011, and 2013. By 2013, the effects of HLB and reduced tree care in this trial resulted in declining yields for all rootstocks, in comparison to 2009. Cumulative and individual year crop yields of trees on US-1279 were not statistically different than those on Swingle or Carrizo in this trial.

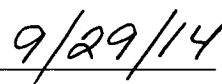
The comparison of results from the three trials suggest that US-1279 is clearly superior to Swingle rootstock for use on a Florida flatwoods site with HLB, but is not superior to Swingle or Carrizo at a Florida ridge site with HLB. Further definition of the advantages and faults of US-1279 rootstock will be resolved through additional field testing.

For field testing, US-1279 was propagated by cuttings. It is anticipated that US-1279 will produce nucellar seed that can be used for uniform nursery propagation, but a mature seed source is not available and nursery performance of seedlings has not been assessed. Source plant material for US-1279 has been tested and found free of Las and CTV. Source plant material for US-1279 has been provided to the Florida Bureau of Citrus Budwood Registration clean budwood program (3027 Lake Alfred Road - Highway 17, Winter Haven, Florida 33881) and will be distributed, following USDA release, according to Florida Department of Agriculture and Consumer Services regulations. Plant tissue for research and additional information on US-1279 may be obtained from Kim D. Bowman, USDA, ARS, USHRL, 2001 South Rock Road, Ft. Pierce, Florida 34945 (kim.bowman@ars.usda.gov). Genetic material of this release will be deposited in the National Plant Germplasm System where it will be available for research purposes, including development and commercialization of new cultivars. Appropriate recognition should be made if this germplasm contributes to the development of a new breeding line or cultivar.

Signature:



Deputy Administrator, Crop Production and Protection
Agricultural Research Service, U.S. Department of Agriculture



Date

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Washington, D.C.

RELEASE OF US-1281, Citrus Rootstock

The Agricultural Research Service, U.S. Department of Agriculture hereby releases to nurserymen and growers the US-1281 citrus rootstock. This rootstock selection originated from a 1995 cross of Cleopatra mandarin (*Citrus reticulata*) × Gotha Road #6 Trifoliolate Orange (*Poncirus trifoliata*) made at the A.H. Whitmore Foundation Farm by Dr. Kim D. Bowman of the USDA, ARS, USHRL, Florida. Field testing of US-1281 was planned and conducted by Dr. Kim Bowman, in collaboration with or support from industry partners, including Florida Citrus Research Foundation, Florida Citrus Production Research Advisory Council, Florida Citrus Research and Development Foundation, and Mid-Florida Citrus Foundation. Dr. Greg McCollum (also of USDA, ARS, USHRL) collaborated in the evaluation of fruit quality from field trials. During field testing, this hybrid rootstock was identified by code numbers BS95-V5-10 or US-1281. The major positive attributes of this new rootstock are induction of superior fruit productivity and fruit quality on sweet orange trees grown in the Florida flatwoods and infected with *Candidatus Liberibacter asiaticus* (Las), the causal agent of huanglongbing (HLB). This rootstock is being released for commercial use in Florida because of the urgent need for new citrus rootstocks that have improved tolerance to HLB.

Field testing of the US-1281 rootstock has been primarily at two locations and with 'Hamlin' sweet orange scion. The longest field test involving this rootstock is a replicated trial in St. Lucie County Florida at the USHRL research farm in Ft. Pierce. The site is typical Florida flatwoods with a soil characterized as Riviera fine sand, and trees were planted in double row beds at 3.0 m x 7.6 m spacing and irrigated by microjet. In this trial, seven 'Hamlin' sweet orange trees on US-1281 were compared with a similar number of trees on 25 other rootstocks planted in 2000 and using a randomized complete block statistical design. Trees in this trial were damaged by hurricanes Frances and Jeanne in 2004, and both HLB and citrus canker (*Xanthomonas citri* subsp. *citri*) began to affect the trees in 2007-8. Fruit production of 'Hamlin' on US-1281 in this trial was first measured in the 2006 and 2007 harvest seasons, before HLB symptoms were widespread. During the 2006 and 2007 seasons, fruit production on US-1281 was numerically higher than production of trees on Swingle, the most common rootstock used in Florida, but the difference was not statistically significant. In the following years, Las spread rapidly throughout the trial, and overall tree health declined. From 2008 to 2012, cropping on all rootstocks declined from the pre-HLB yields, but cropping on Swingle rootstock suffered more dramatically than cropping on US-1281 and some other rootstocks. The average fruit production during this period on US-1281 was measured at 2.2 times the fruit production on Swingle. As a result of increased application of plant nutrients, overall tree health in the trial improved during 2012-14. In the 2013 harvest season, trees on US-1281 produced 52 kg fruit per tree, or about 66 percent of the annual crop produced on those trees during the 2006 and 2007 seasons (before HLB impact). In comparison, trees on Swingle rootstock in the 2013 harvest season continued a very low fruit production, yielding 19 kg fruit per tree, or about 17 percent the annual crop produced on those trees during the 2006 and 2007 seasons. The significantly higher fruit

production of trees on US-1281 than trees on Swingle following tree infection with Las, and also following the implementation of an improved nutritional program, indicates a greater tolerance of US-1281 to HLB disease.

Fruit quality was assessed on samples from the replicated trial at the USHRL farm in St. Lucie County just before harvest in December 2012 and 2013. Fruit weight from trees on US-1281 rootstock was 161 g and significantly higher than the 115 g fruit on Swingle in 2012. During the 2013 season, fruit from trees on US-1281 were numerically heavier than fruit on Swingle, but differences among the rootstocks were not significant. During both the 2012 and 2013 seasons, fruit total soluble solids were numerically higher for trees on US-1281 than for trees on Swingle, but differences between US-1281 and Swingle were not statistically significant. During both the 2012 and 2013 seasons, TSS:acid ratio were significantly higher for trees on US-1281 than for trees on Swingle. Significant differences among the rootstocks for other fruit quality traits, such as juice color, were not observed. Two characteristics of fruit quality, fruit size and TSS:acid ratio, were significantly better for trees on US-1281 in comparison to trees on Swingle.

Canopy size was measured on the trees in the replicated trial at the USHRL farm in St. Lucie County in August 2014. Canopy height, canopy width, canopy area, and canopy volume were slightly larger for trees on US-1281 than trees on Swingle, but the differences were not significant. To assess whether measured differences in performance of 'Hamlin' trees on US-1281 and Swingle rootstocks were due to differences in infection rate with Las or bacterial titer in plant tissues, trees were tested by canopy sampling and PCR in August 2014. All trees on all rootstocks in the trial were observed to be PCR positive for Las at that time. The amount of Las (Las genome copy number per gram of plant tissue) detected in random leaf samples from the canopy of trees on US-1281 and Swingle were similar and not significantly different. It can be inferred that improved yield and other traits of trees on US-1281 in comparison with Swingle were not because of an induction of increased resistance to Las infection or reduced Las growth in the scion tissues, but rather to an increased tolerance of the tree to HLB following Las infection.

The rootstock US-1281 was also tested in a trial with 'Hamlin' scion planted in 2003 at the Water Conserv II research grove in Orange County, Florida. The trial contained 5-6 trees on each rootstock and was planted in a randomized statistical design. This site is on soil characterized as Candler fine sand, and trees were planted at 4.5 m x 7.5 m, and irrigated with microjets. Crop yield measurements were taken from the trial in 2009, 2011, and 2013. By 2013, the effects of HLB and reduced tree care in this trial resulted in declining yields for all rootstocks, in comparison to 2009. In all years, crop yield of trees on US-1281 were numerically higher than those on Swingle and Carrizo, but these differences were not statistically significant. The comparison of results from the two trials suggest that US-1281 is clearly superior to Swingle rootstock for use on a Florida flatwoods site with HLB, but not clearly superior to Swingle at a Florida ridge site with HLB. Further definition of the advantages and faults of US-1281 rootstock will be resolved through additional field testing.

For field testing, US-1281 was propagated by cuttings. It is anticipated that US-1281 will produce nucellar seed that can be used for uniform nursery propagation, but a mature seed source is not available and nursery performance of seedlings has not been assessed. Source plant

material for US-1281 has been tested and found free of Las and CTV. Source plant material for US-1281 has been provided to the Florida Bureau of Citrus Budwood Registration clean budwood program (3027 Lake Alfred Road - Highway 17, Winter Haven, Florida 33881) and will be distributed, following USDA release, according to Florida Department of Agriculture and Consumer Services regulations. Plant tissue for research and additional information on US-1281 may be obtained from Kim D. Bowman, USDA, ARS, USHRL, 2001 South Rock Road, Ft. Pierce, Florida 34945 (kim.bowman@ars.usda.gov). Genetic material of this release will be deposited in the National Plant Germplasm System where it will be available for research purposes, including development and commercialization of new cultivars. Appropriate recognition should be made if this germplasm contributes to the development of a new breeding line or cultivar.

Signature:

K Simmons

Deputy Administrator, Crop Production and Protection
Agricultural Research Service, U.S. Department of Agriculture

9/29/14

Date

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Washington, D.C.

RELEASE OF US-1282, Citrus Rootstock

The Agricultural Research Service, U.S. Department of Agriculture hereby releases to nurserymen and growers the US-1282 citrus rootstock. This rootstock selection originated from a 1995 cross of Cleopatra mandarin (*Citrus reticulata*) × Gotha Road #6 Trifoliolate Orange (*Poncirus trifoliata*) made at the A.H. Whitmore Foundation Farm by Dr. Kim D. Bowman of the USDA, ARS, USHRL, Florida. Field testing of US-1282 was planned and conducted by Dr. Kim Bowman, in collaboration with or support from industry partners, including Florida Citrus Research Foundation, Florida Citrus Production Research Advisory Council, Florida Citrus Research and Development Foundation, and Mid-Florida Citrus Foundation. Dr. Greg McCollum (also of USDA, ARS, USHRL) collaborated in the evaluation of fruit quality from field trials. During field testing, this hybrid rootstock was identified by code numbers BS95-V5-78 or US-1282. The major positive attributes of this new rootstock are induction of superior fruit productivity and fruit quality on sweet orange trees grown in the Florida flatwoods and infected with *Candidatus Liberibacter asiaticus* (Las), the causal agent of huanglongbing (HLB). This rootstock is being released for commercial use in Florida because of the urgent need for new citrus rootstocks that have improved tolerance to HLB.

Field testing of the US-1282 rootstock has been primarily at one location with 'Hamlin' sweet orange scion. This field test is a replicated trial in St. Lucie County Florida at the USHRL research farm in Ft. Pierce. The site is typical Florida flatwoods with a soil characterized as Riviera fine sand, and trees were planted in double row beds at 3.0 m x 7.6 m spacing and irrigated by microjet. In this trial, seven 'Hamlin' sweet orange trees on US-1282 were compared with a similar number of trees on 25 other rootstocks planted in 2000 and using a randomized complete block statistical design. Trees in this trial were damaged by hurricanes Frances and Jeanne in 2004, and both HLB and citrus canker (*Xanthomonas citri* subsp. *citri*) began to affect the trees in 2007-8. Fruit production of 'Hamlin' on US-1282 in this trial was first measured in the 2006 and 2007 harvest seasons, before HLB symptoms were widespread. During the 2006 and 2007 seasons, fruit production on US-1282 was found to be significantly higher than production of trees on Swingle, the most common rootstock used in Florida. In the following years, Las spread rapidly throughout the trial, and overall tree health declined. From 2008 to 2012, cropping on all rootstocks declined from the pre-HLB yields, but cropping on Swingle rootstock suffered more dramatically than cropping on US-1282 and some other rootstocks. During this period, trees on US-1282 yielded more fruit than any other rootstock. The average fruit production during this period on US-1282 was measured at 3.1 times the fruit production on Swingle. As a result of increased application of plant nutrients, overall tree health in the trial improved during 2012-14. In the 2013 harvest season, trees on US-1282 produced 63 kg fruit per tree, or about 78 percent of the annual crop produced on those trees during the 2006 and 2007 seasons (before HLB impact). In comparison, trees on Swingle rootstock in the 2013 harvest season continued a very low fruit production, yielding 19 kg fruit per tree, or about 17 percent the annual crop produced on those trees during the 2006 and 2007 seasons. The significantly higher fruit production of trees on US-1282 than trees on Swingle following tree infection with Las, and also following the implementation of an improved nutritional program, indicates a greater tolerance of US-1282 to HLB disease.

Fruit quality was assessed on samples from the replicated trial at the USHRL farm in St. Lucie County just before harvest in December 2012 and 2013. Fruit weight from trees on US-1282 rootstock was 161 g and significantly higher than the 115 g fruit on Swingle in 2012. During the 2013 season, fruit from trees on US-1282 were again numerically heavier than fruit on Swingle, but differences among the rootstocks were not significant. During both the 2012 and 2013 seasons, fruit total soluble solids were numerically higher for trees on US-1282 than for trees on Swingle, but only in 2013 were these differences statistically significant. During both the 2012 and 2013 seasons, TSS:acid ratios were significantly higher for trees on US-1282 than for trees on Swingle. Significant differences among the rootstocks for other fruit quality traits, such as juice color, were not observed. Three characteristics of fruit quality, fruit size, TSS, and TSS:acid ratio, were significantly better for trees on US-1282 in comparison to trees on Swingle.

Canopy size was measured on the trees in the replicated trial at the USHRL farm in St. Lucie County in August 2014. Canopy height and width were not significantly different for trees on US-1282 and Swingle. However, calculation of canopy area and canopy volume showed that canopy size was significantly larger for trees on US-1282. To assess whether measured differences in performance of 'Hamlin' trees on US-1282 and Swingle rootstocks were due to differences in infection rate with Las or bacterial titer in plant tissues, trees were tested by canopy sampling and PCR in August 2014. All trees on all rootstocks in the trial were observed to be PCR positive for Las at that time. The amount of Las (Las genome copy number per gram of plant tissue) detected in random leaf samples from the canopy of trees on US-1282 and Swingle were similar and not significantly different. It can be inferred that improved yield and other traits of trees on US-1282 in comparison with Swingle were not because of an induction of increased resistance to Las infection or reduced Las growth in the scion tissues, but rather to an increased tolerance of the tree to HLB following Las infection. The results from the trial suggest that US-1282 is clearly superior to Swingle rootstock for use on a Florida flatwoods site with HLB. Further definition of the advantages and faults of US-1282 rootstock will be resolved through additional field testing.

For field testing, US-1282 was propagated by cuttings. It is anticipated that US-1282 will produce nucellar seed that can be used for uniform nursery propagation, but a mature seed source is not available and nursery performance of seedlings has not been assessed. Source plant material for US-1282 has been tested and found free of Las and CTV. Source plant material for US-1282 has been provided to the Florida Bureau of Citrus Budwood Registration clean budwood program (3027 Lake Alfred Road - Highway 17, Winter Haven, Florida 33881) and will be distributed, following USDA release, according to Florida Department of Agriculture and Consumer Services regulations. Plant tissue for research and additional information on US-1282 may be obtained from Kim D. Bowman, USDA, ARS, USHRL, 2001 South Rock Road, Ft. Pierce, Florida 34945 (kim.bowman@ars.usda.gov). Genetic material of this release will be deposited in the National Plant Germplasm System where it will be available for research purposes, including development and commercialization of new cultivars. Appropriate recognition should be made if this germplasm contributes to the development of a new breeding line or cultivar.

Signature:



Deputy Administrator, Crop Production and Protection
Agricultural Research Service, U.S. Department of Agriculture

Date 9/29/14

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Washington, D.C.

RELEASE OF US-1283, Citrus Rootstock

The Agricultural Research Service, U.S. Department of Agriculture hereby releases to nurserymen and growers the US-1283 citrus rootstock. This rootstock selection originated from a 1995 cross of Ninkat mandarin (*Citrus reticulata*) × Gotha Road #6 Trifoliolate Orange (*Poncirus trifoliata*) made at the A.H. Whitmore Foundation Farm by Dr. Kim D. Bowman of the USDA, ARS, USHRL, Florida. Field testing of US-1283 was planned and conducted by Dr. Kim Bowman, in collaboration with or support from industry partners, including Florida Citrus Research Foundation, Florida Citrus Production Research Advisory Council, Florida Citrus Research and Development Foundation, and Mid-Florida Citrus Foundation. Dr. Greg McCollum (also of USDA, ARS, USHRL) collaborated in the evaluation of fruit quality from field trials. During field testing, this hybrid rootstock was identified by code numbers BS95-V6-14 or US-1283. The major positive attributes of this new rootstock are induction of superior fruit productivity and good fruit quality on sweet orange trees grown in the Florida flatwoods and infected with *Candidatus Liberibacter asiaticus* (Las), the causal agent of huanglongbing (HLB). This rootstock is being released for commercial use in Florida because of the urgent need for new citrus rootstocks that have improved tolerance to HLB.

Field testing of the US-1283 rootstock has been primarily at two locations and with 'Hamlin' sweet orange scion. The longest field test involving this rootstock is a replicated trial in St. Lucie County Florida at the USHRL research farm in Ft. Pierce. The site is typical Florida flatwoods with a soil characterized as Riviera fine sand, and trees were planted in double row beds at 3.0 m x 7.6 m spacing and irrigated by microjet. In this trial, seven 'Hamlin' sweet orange trees on US-1283 were compared with a similar number of trees on 25 other rootstocks planted in 2000 and using a randomized complete block statistical design. Trees in this trial were damaged by hurricanes Frances and Jeanne in 2004, and both HLB and citrus canker (*Xanthomonas citri* subsp. *citri*) began to affect the trees in 2007-8. Fruit production of 'Hamlin' on US-1283 in this trial was first measured in the 2006 and 2007 harvest seasons, before HLB symptoms were widespread. During the 2006 and 2007 seasons, fruit production on US-1283 was found to be significantly higher than production of trees on Swingle, the most common rootstock used in Florida. In the following years, Las spread rapidly throughout the trial, and overall tree health declined. From 2008 to 2012, cropping on all rootstocks declined from the pre-HLB yields, but cropping on Swingle rootstock suffered more dramatically than cropping on US-1283 and some other rootstocks. The average fruit production during this period on US-1283 was measured at 2.3 times the fruit production on Swingle. As a result of increased application of plant nutrients, overall tree health in the trial improved during 2012-14. In the 2013 harvest season, trees on US-1283 produced 67 kg fruit per tree, or about 80 percent of the annual crop produced on those trees during the 2006 and 2007 seasons (before HLB impact). In comparison, trees on Swingle rootstock in the 2013 harvest season continued a very low fruit production, yielding 19 kg fruit per tree, or about 17 percent the annual crop produced on those trees during the 2006 and 2007 seasons. The significantly higher fruit production of trees on US-

1283 than trees on Swingle following tree infection with Las, and also following the implementation of an improved nutritional program, indicates a greater tolerance of US-1283 to HLB disease.

Fruit quality was assessed on samples from the replicated trial at the USHRL farm in St. Lucie County just before harvest in December 2012 and 2013. Fruit weight from trees on US-1283 rootstock was 153 g and significantly higher than the 115 g fruit on Swingle in 2012. During the 2013 season, fruit from trees on US-1283 were again numerically heavier than fruit on Swingle, but differences among the rootstocks were not significant. During both the 2012 and 2013 seasons, fruit total soluble solids and TSS:acid ratio were numerically higher for trees on US-1283 than for trees on Swingle, but differences between US-1283 and Swingle were not statistically significant for either trait in either year. Significant differences among the rootstocks for other fruit quality traits, such as juice color (Table 5), were not observed.

Canopy size was measured on the trees in the replicated trial at the USHRL farm in St. Lucie County in August 2014. Canopy height and width were not significantly different for trees on US-1283 and Swingle. However, calculation of canopy area and canopy volume showed that canopy size was significantly larger for trees on US-1283. To assess whether measured differences in performance of 'Hamlin' trees on US-1283 and Swingle rootstocks were due to differences in infection rate with Las or bacterial titer in plant tissues, trees were tested by canopy sampling and PCR in August 2014. All trees on all rootstocks in the trial were observed to be PCR positive for Las at that time. The amount of Las (Las genome copy number per gram of plant tissue) detected in random leaf samples from the canopy of trees on US-1283 and Swingle were nearly identical. It can be inferred that improved yield and other traits of trees on US-1283 in comparison with Swingle were not because of an induction of increased resistance to Las infection or reduced Las growth in the scion tissues, but rather to an increased tolerance of the tree to HLB following Las infection.

The rootstock US-1283 was also tested in a trial with 'Hamlin' scion planted in 2002 at the Water Conserv II research grove in Orange County, Florida. The trial contained 12 trees on each rootstock and was planted in a randomized complete block statistical design. This site is on soil characterized as Candler fine sand, and trees were planted at 4.5 m x 7.5 m, and irrigated with microjets. Crop yield measurements were taken from the trial between 2005 and 2013. By 2013, the effects of HLB and reduced tree care in this trial resulted in declining yields for all rootstocks, in comparison to 2009. In all years, crop yield of trees on US-1283 were numerically higher than those on Swingle, but only in 2009 was this difference statistically significant. There was not a significant yield advantage of US-1283 over Swingle at this ridge site. It can also be noted that the rootstock US-942 (released by USDA in 2010) performed better at this ridge site with HLB than US-1283, and cumulative yields of trees on US-942 were significantly higher than trees on Swingle. The comparison of results from the two trials suggest that US-1283 is clearly superior to Swingle rootstock for use on a Florida flatwoods site with HLB, but is not clearly superior to Swingle at a Florida ridge site with HLB. Further definition of the advantages and faults of US-1283 rootstock will be resolved through additional field testing.

For field testing, US-1283 was propagated by cuttings. It is anticipated that US-1283 will produce nucellar seed that can be used for uniform nursery propagation, but a mature seed source

is not available and nursery performance of seedlings has not been assessed. Source plant material for US-1283 has been tested and found free of Las and CTV. Source plant material for US-1283 has been provided to the Florida Bureau of Citrus Budwood Registration clean budwood program (3027 Lake Alfred Road - Highway 17, Winter Haven, Florida 33881) and will be distributed, following USDA release, according to Florida Department of Agriculture and Consumer Services regulations. Plant tissue for research and additional information on US-1283 may be obtained from Kim D. Bowman, USDA, ARS, USHRL, 2001 South Rock Road, Ft. Pierce, Florida 34945 (kim.bowman@ars.usda.gov). Genetic material of this release will be deposited in the National Plant Germplasm System where it will be available for research purposes, including development and commercialization of new cultivars. Appropriate recognition should be made if this germplasm contributes to the development of a new breeding line or cultivar.

Signature:

K Simmons

Deputy Administrator, Crop Production and Protection
Agricultural Research Service, U.S. Department of Agriculture

9/29/14

Date

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Washington, D.C.

RELEASE OF US-1284, Citrus Rootstock

The Agricultural Research Service, U.S. Department of Agriculture hereby releases to nurserymen and growers the US-1284 citrus rootstock. This rootstock selection originated from a 1995 cross of Ninkat mandarin (*Citrus reticulata*) × Gotha Road #6 Trifoliolate Orange (*Poncirus trifoliata*) made at the A.H. Whitmore Foundation Farm by Dr. Kim D. Bowman of the USDA, ARS, USHRL, Florida. Field testing of US-1284 was planned and conducted by Dr. Kim Bowman, in collaboration with or support from industry partners, including Florida Citrus Research Foundation, Florida Citrus Production Research Advisory Council, Florida Citrus Research and Development Foundation, and Mid-Florida Citrus Foundation. Dr. Greg McCollum (also of USDA, ARS, USHRL) collaborated in the evaluation of fruit quality from field trials. During field testing, this hybrid rootstock was identified by code numbers BS95-V6-24 or US-1284. The major positive attributes of this new rootstock are induction of superior fruit productivity and fruit quality on sweet orange trees grown in the Florida flatwoods and infected with *Candidatus Liberibacter asiaticus* (Las), the causal agent of huanglongbing (HLB). This rootstock is being released for commercial use in Florida because of the urgent need for new citrus rootstocks that have improved tolerance to HLB.

Field testing of the US-1284 rootstock has been primarily at two locations and with 'Hamlin' sweet orange scion. The longest field test involving this rootstock is a replicated trial in St. Lucie County Florida at the USHRL research farm in Ft. Pierce. The site is typical Florida flatwoods with a soil characterized as Riviera fine sand, and trees were planted in double row beds at 3.0 m x 7.6 m spacing and irrigated by microjet. In this trial, seven 'Hamlin' sweet orange trees on US-1284 were compared with a similar number of trees on 25 other rootstocks planted in 2000 and using a randomized complete block statistical design. Trees in this trial were damaged by hurricanes Frances and Jeanne in 2004, and both HLB and citrus canker (*Xanthomonas citri* subsp. *citri*) began to affect the trees in 2007-8. Fruit production of 'Hamlin' on US-1284 in this trial was first measured in the 2006 and 2007 harvest seasons, before HLB symptoms were widespread. During the 2006 and 2007 seasons, fruit production on US-1284 was found to be significantly higher than production of trees on Swingle, the most common rootstock used in Florida. In the following years, Las spread rapidly throughout the trial, and overall tree health declined. From 2008 to 2012, cropping on all rootstocks declined from the pre-HLB yields, but cropping on Swingle rootstock suffered more dramatically than cropping on US-1284 and some other rootstocks. The average fruit production during this period on US-1284 was measured at 2.4 times the fruit production on Swingle. As a result of increased application of plant nutrients, overall tree health in the trial improved during 2012-14. In the 2013 harvest season, trees on US-1284 produced 63 kg fruit per tree, or about 75 percent of the annual crop produced on those trees during the 2006 and 2007 seasons (before HLB impact). In comparison, trees on Swingle rootstock in the 2013 harvest season continued a very low fruit production, yielding 19 kg fruit per tree, or about 17 percent the annual crop produced on those trees during the 2006 and 2007 seasons. The significantly higher fruit production of trees on US-

1284 than trees on Swingle following tree infection with Las, and also following the implementation of an improved nutritional program, indicates a greater tolerance of US-1284 to HLB disease.

Fruit quality was assessed on samples from the replicated trial at the USHRL farm in St. Lucie County just before harvest in December 2012 and 2013. Average fruit weight from trees on US-1284 rootstock was 153 g and significantly higher than the 115 g fruit on Swingle in 2012. During the 2013 season, fruit from trees on US-1284 were again numerically heavier than fruit on Swingle, but differences among the rootstocks were not significant. During both the 2012 and 2013 seasons, fruit total soluble solids and TSS:acid ratio were numerically higher for trees on US-1284 than for trees on Swingle, but differences between US-1284 and Swingle were not statistically significant for either trait in either year. Significant differences among the rootstocks for other fruit quality traits, such as juice color, were not observed.

Canopy size was measured on the trees in the replicated trial at the USHRL farm in St. Lucie County in August 2014. Trees on US-1284 had the largest canopy height and width in the trial, and were significantly larger than trees on Swingle. Calculation of canopy area and canopy volume confirmed that canopy size was significantly larger for trees on US-1284 as compared with trees on Swingle. To assess whether measured differences in performance of 'Hamlin' trees on US-1284 and Swingle rootstocks were due to differences in infection rate with Las or bacterial titer in plant tissues, trees were tested by canopy sampling and PCR in August 2014. All trees on all rootstocks in the trial were observed to be PCR positive for Las at that time. The amount of Las (Las genome copy number per gram of plant tissue) detected in random leaf samples from the canopy of trees on US-1284 and Swingle were not significantly different. It can be inferred that improved yield and other traits of trees on US-1284 in comparison with Swingle were not because of an induction of increased resistance to Las infection or reduced Las growth in the scion tissues, but rather to an increased tolerance of the tree to HLB following Las infection.

The rootstock US-1284 was also tested in a trial with 'Hamlin' scion planted in 2002 at the Water Conserv II research grove in Orange County, Florida. The trial contained 12 trees on each rootstock and was planted in a randomized complete block statistical design. This site is on soil characterized as Candler fine sand, and trees were planted at 4.5 m x 7.5 m, and irrigated with microjets. Crop yield measurements were taken from the trial between 2005 and 2013. By 2013, the effects of HLB and reduced tree care in this trial resulted in declining yields for all rootstocks, in comparison to 2009. Cumulative crop yields of trees on US-1284 were numerically higher than those on Swingle, but only in 2009 was this difference statistically significant. There was not a significant yield advantage of US-1284 over Swingle at this ridge site. It can also be noted that the rootstock US-942 (released by USDA in 2010) performed better at this ridge site with HLB than US-1284, and cumulative yields of trees on US-942 were significantly higher than trees on Swingle. The comparison of results from the two trials suggest that US-1284 is clearly superior to Swingle rootstock for use on a Florida flatwoods site with HLB, but is not clearly superior to Swingle at a Florida ridge site with HLB. Further definition of the advantages and faults of US-1284 rootstock will be resolved through additional field testing.

For field testing, US-1284 was propagated by cuttings. It is anticipated that US-1284 will produce nucellar seed that can be used for uniform nursery propagation, but a mature seed source is not available and nursery performance of seedlings has not been assessed. Source plant material for US-1284 has been tested and found free of Las and CTV. Source plant material for US-1284 has been provided to the Florida Bureau of Citrus Budwood Registration clean budwood program (3027 Lake Alfred Road - Highway 17, Winter Haven, Florida 33881) and will be distributed, following USDA release, according to Florida Department of Agriculture and Consumer Services regulations. Plant tissue for research and additional information on US-1284 may be obtained from Kim D. Bowman, USDA, ARS, USHRL, 2001 South Rock Road, Ft. Pierce, Florida 34945 (kim.bowman@ars.usda.gov). Genetic material of this release will be deposited in the National Plant Germplasm System where it will be available for research purposes, including development and commercialization of new cultivars. Appropriate recognition should be made if this germplasm contributes to the development of a new breeding line or cultivar.

Signature:

K Simmons

Deputy Administrator, Crop Production and Protection
Agricultural Research Service, U.S. Department of Agriculture

9/29/14

Date

OPERATION CLEANSWEEP 2014

Statewide Pesticide Pick-up

Operation Cleansweep is a mobile pesticide collection program that provides a safe way to dispose of cancelled, suspended, and unusable pesticides at **NO COST** for the first 500 lbs. for:

- ⇒ Farms/Groves ⇒ Nurseries ⇒ Pest Control Services
- ⇒ Greenhouses ⇒ Forestry ⇒ Golf Courses

Pesticide manufacturers/distributors can participate at the contracted rate.



Pick Up!



FOR MORE INFORMATION CONTACT: SHANNON TURNER
FLORIDA DEPARTMENT OF AGRICULTURE
AND CONSUMER SERVICES

TOLL-FREE NUMBER: (877) 851-5285

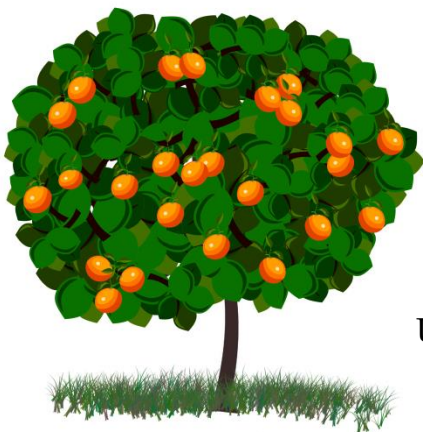
EMAIL: CLEANSWEEP@FRESHFROMFLORIDA.COM

CLEANSWEEP WEBSITE: <http://www.dep.state.fl.us/waste/categories/cleansweep-pesticides/>

Examples of Cleansweep Partners and Representatives:

Florida Peanut Producers Association
Florida Farm Bureau
Florida Fruit & Vegetable Association
Certified Pest Control Operators Assoc. of FL
Florida Nursery, Growers & Landscape Association
Florida Forestry Association
Florida Landscape Maintenance Association
FL Dept. of Agriculture and Consumer Services
Florida Golf Course Superintendents Association

Florida Turf Grass Association
Florida Fertilizer and Agrichemical Association
Turf Grass Producers of Florida Cooperative
Florida Pest Management Association
Florida Tomato Committee
Florida Citrus Mutual
Florida Department of Environmental Protection
UF Institute of Food and Agricultural Sciences



Advanced Citrus Production Systems (ACPS) Field Day

Wednesday, November 5, 2014

University of Florida, IFAS, Indian River Research and Education Center
2199 South Rock Road, Ft. Pierce, Florida
IRREC Main Auditorium

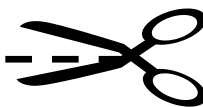
PROGRAM

- 8:45 am Check-in begins
- 9:00 am Grapefruit Production System Trials at IRREC (Dr. Barrett Gruber, UF-IRREC, Fort Pierce)
- 9:30 am Research to Develop Sustainable HLB-Free Fresh Fruit Production Systems-an Update from the CREC (Dr. Arnold Schumann, UF-CREC, Lake Alfred)
- 10:00 am Irrigation and Fertigation Considerations for Containerized Citrus Plantings (Dr. Brian Boman, UF-IRREC, Fort Pierce)
- 10:30 am Insights on Rootstocks and Planting Density: A Grower-Scale Cooperative Project (Dr. Bill Castle, UF-CREC, Lake Alfred)
- 11:00 am Visit to Field Sites at IRREC (Corner of Picos Road and Campbell Road)
Cost Considerations for Enclosed Structures for Growing Fresh Citrus (Parker Platts, University of Florida, St. Lucie County Extension)
- 12:15 pm Lunch at UF-IFAS-IRREC

Four Easy Ways to Register

1. Online at <https://acpsfieldday.eventbrite.com>
2. Fax the registration form below to 863-956-4631
3. Call Anne Burrage at 863-956-8643
4. Email completed registration form to Anne Burrage at amburr@ufl.edu

Pre-registration is required by October 30th



REGISTRATION FORM

ACPS Field Day

Wednesday, November 5, 2014

Submit form to: Anne Burrage, amburr@ufl.edu Phone: 863-956-8643 Fax: 863-956-4631

Participant Name: _____

Company Name: _____

Mailing Address: _____

Phone: _____ Fax: _____

Email: _____

Pre-registration required by Thursday, October 30, 2014

Please choose one.	
<input type="checkbox"/>	Attending seminar only
<input type="checkbox"/>	Attending seminar and field tour
<input type="checkbox"/>	Attending seminar, field tour, and lunch