

# WINTER CITRUS PRODUCTION PRACTICES

By Laurie Hurner, Gary England, Steve Futch, Cami Esmel McAvoy, Chris Oswald, Parker Platts and Mongi Zekri

Citrus production practices are generally at a slower pace during the winter season; however, it provides a respite for planning and preparation of production practices for the coming year.

Huanglongbing (HLB), also known as citrus greening, is caused by *Candidatus Liberibacter asiaticus* (CLAs) and has greatly increased the stress on the citrus tree, making it more challenging to maintain productivity. The citrus tree with its compromised vascular and root system is more susceptible to stress associated with cold, drought, foliar and soil pests, and poor nutrition. These stresses are magnified during the winter season.

Several production program components should be addressed for use in planning and decision-making in light of HLB-compromised trees. These components of the citrus production program need to be considered when planning the coming year's program. They are not all inclusive, but do focus on prime needs. These components should challenge the manager to look at large and small things that affect the big picture.

## WEATHER

The National Oceanographic and Atmospheric Association (NOAA) Climate Prediction Center is predicting El Niño conditions continuing



Use of under-canopy microsprinkler irrigation for freeze protection.

through 2015. This translates to cooler-than-average air temperatures and above-average precipitation this winter. The Subtropical Jet Stream will establish a zonal flow across Mexico, the Gulf of Mexico and southern Florida.

Based on the NOAA prediction, Florida should receive above-average rainfall and cooler than average temperatures this winter. It will not mean there will be more or fewer freezes, but lower-than-average air temperatures. The lower average

temperatures should allow citrus trees to better acclimate and tolerate colder temperatures.

## COLD PROTECTION

Field observations indicate that HLB-stressed trees could be more susceptible to cold temperatures; hence, cold-protection management is critical. Growers should make sure preparations are made to cold protect both young and mature trees. Irrigation systems should be thoroughly evaluated and repairs made to prevent failures on cold nights. Fuel tanks should be filled to ensure adequate fuel for several nights of potentially damaging temperatures.

Some growers are still using soil banks for cold protection, especially on grove resets. Soil banks should generally be built by mid to late November and removed in late February or early March, depending on the location in Florida. Special care should be given to proper soil banking. If done improperly, soil banking can lead to a Phytophthora problem on the scion. Growers using microsprinklers for cold protection on young trees should continue to check emitters frequently to be sure they are operating properly. It is generally advisable to place the emitter northwest of the tree, about 1 to 2 feet from the trunk of young trees. A narrower (90-degree to 180-degree) spray pattern, which is angled upward into the lower branches, will



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concentrate the water on the trunk and lower limbs, providing greater protection than a 360-degree pattern. Emitters that need to be repositioned should be moved in mid to late November and repositioned in late February or early March, again depending on the grove's location within Florida.

A good set of tools for growers using irrigation for cold protection are on the Florida Automated Weather Network (FAWN) website (<http://fawn.ifas.ufl.edu/>). Several tools are available for growers to use during cold events: National Weather Service (NWS) Forecast – Interactive Map; Minimum Overnight Temperature; Forecast Tracker; Evaporative Cooling Potential; and Wet-Bulb Based Irrigation Cutoff Temperature. Growers can also sign up for the FAWN Freeze Alert Tool and receive texts and/or e-mail messages when certain temperature conditions are met at the nearest FAWN site. This is especially useful if a grower has groves in different areas of the state. The system will also let a grower know when a critical temperature (determined by the grower) has been reached within the selected area.

On the FAWN website, there are additional non-FAWN weather

stations owned and maintained by other growers and governmental agencies. The site gives a grower a chance to observe real-time temperatures in multiple locations in an area.

Frost and freeze warnings are available from the NWS, several private weather forecasting services, and through citrus Extension agents who offer a subscription-based cold weather forecast service. Contact your local Extension office for more information. Decisions should be made early on how one wants to track and react to approaching cold fronts.

Temperatures within the citrus grove should be monitored on cold nights to aid in determining when to start and stop cold-protection measures. A good minimum recording thermometer, placed in a properly designed and covered box with an open front, can provide good local area data. Thermometers should be protected from the sky, 5 feet above the ground facing north and placed at critical locations throughout the grove. Thermometers should be checked annually for accuracy prior to placing them in the grove during the late fall. Temperatures observed in a grove on cold nights can be compared with other areas through the FAWN network.

On cold nights, growers can track temperatures in surrounding areas using decision-making programs to run irrigation for cold protection. FAWN tools and local grove air and wet bulb temperatures can significantly aid the decision to turn a system on or off to limit fuel and water consumption.

Growers should accurately read irrigation meters to report consumptive water use related to cold protection versus irrigation. These reports need to be submitted to the appropriate water management district immediately following the freeze event.

## PEST MANAGEMENT

It is critical to keep citrus trees as healthy as possible by controlling the Asian citrus psyllid (ACP), the insect vector of HLB.

During the latter part of the year, growers should plan a management program for ACP in the upcoming year. Keeping psyllid populations low results in less infection of young citrus trees and uninfected growth on a mature citrus tree already infected with HLB. Most growers are using eight to 12 sprays per year timed to minimize the psyllid population.

It is beneficial for growers to participate in a citrus health management area (CHMA) program to control ACP. The nature of the psyllid is such that it can move from a grove being treated to adjacent groves during the spray and readily return to the sprayed grove. Growers who coordinate sprays with their neighbors experience greater population reduction and slower recovery of psyllid populations.

Most areas in Florida where commercial citrus is grown are divided into CHMAs. Each CHMA has a volunteer coordinator who assists in planning coordinated sprays for the year, tracks psyllid populations and helps decide when to time an essential coordinated spray. Usually the coordinator helps line up spray applicators for a custom low-volume or aerial application in the general area; of course, a grower can make his own application. Material selection helps avoid resistance when growers choose the same chemicals or mode of action (MOA).

During the late fall, CHMA coordinators usually meet with growers in the CHMA and consult with research entomologists to outline a series of CHMA sprays for the coming year. Attention is given to application timing and rotating MOA to avoid pesticide resistance. More information regarding CHMAs can be found at <http://www.crec.ifas.ufl.edu/extension/chmas/index.shtml>, including a suggested

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calendar for material scheduling on a month-by-month basis. Using this approach, a grower can basically plan sprays a year in advance to control psyllids and suppress the transmission of HLB. The grower can also plan for management of other diseases and pests such as citrus canker, greasy spot, mites and leafminer throughout the year. Once the plan is in place, it will be easier to monitor psyllid surveys and evaluate the psyllid control program.

Winter and post-bloom psyllid sprays are important to reduce adult psyllid populations down to near zero before the spring flush emergence. In CHMAs where growers have been coordinating sprays for several years with a high level of participation, growers are reporting healthier trees with greater production.

### ROOT DENSITY

In recent months, a lot of information has become available regarding root mass. Several research faculty with the University of Florida-IFAS (UF-IFAS) have begun to assess the loss of root mass associated with HLB. An estimate of somewhere above 30 percent or more root loss has been observed. Reduced root mass is thought to be associated with tree decline and fruit drop. The loss of roots due to HLB is exacerbated by impacts from pests (Phytophthora root rot, *Diaprepes* and nematodes) known to attack citrus roots, lowering their resource use efficiency and effectiveness.

It is possible for growers to do some assessment of root mass by randomly taking some root/soil cores and assessing the size and location of the root ball. This can help to determine if irrigation and fertigation are being applied in the most effective zone where roots are most concentrated. It may also be helpful to dig some roots up to look for signs of *Diaprepes* damage and take root samples for nematode and Phytophthora assay.

Soil and irrigation water should also be tested for bicarbonates. If the values are high, a strategy for mitigating bicarbonates in soil and irrigation water should be considered.

Soil water measuring devices used in conjunction with information from weather stations that collect temperature and rainfall data can increase the effectiveness and efficiency of one's irrigation system. Some cost-share money from the Florida Department of Agriculture and Consumer Services and the Natural Resource Conservation Service is available for

installing weather stations. Contact: Highlands Soil and Water Conservation District, Susie Bishop, executive director, office: 863-402-7020, fax: 863-385-7028, sbishop@highlandsswcd.org for more information. Growers in the Southwest Florida Water Management District may be eligible for similar funding through the Facilitating Agricultural Resource Management Systems (FARMS) and mini-FARMS program.

### WEED MANAGEMENT AND FRUIT DROP

UF-IFAS researchers are trying to get a handle on the fruit drop issue with both early- and late-maturing orange trees. Fruit drop can be associated with herbicides applied too close to fruit maturity if those products contact fruit surfaces. Although weed management is not typically done in the winter months, it is a time when a grower can look at his or her weed management program from the point of evaluating both materials selected and timing on weed control and possible fruit drop interaction. Herbicides, bicarbonates, irrigation management and plant growth regulators are being looked at in trying to promote healthy trees and minimize fruit drop.

It is obvious that under non-HLB conditions many of these factors may cause some loss of production or tree vigor, but the tree can overcome them. With a compromised tree and root system, all negative impacts are magnified. Managing the ACP to minimize infection and reinfection of

trees is essential to all other needs of the citrus tree.

### CONCLUSION

The winter months can be a very stressful time for the citrus tree. Attention to all the above factors is essential to promote the tree in overcoming the stress. Winter is a good time to evaluate, assess and plan for a successful year.

*Laurie Hurner, Gary England, Steve Futch, Cami Esmel McAvoy, Chris Oswalt, Parker Platts and Mongi Zekri are Extension agents with the University of Florida-IFAS.* 🍊

## Hall of Fame nominations sought

Nominations are being sought through November 1 for potential inductees to The Florida Citrus Hall of Fame. The induction ceremonies will occur at a luncheon on March 6, 2015 at Florida Southern College in Lakeland. The event is co-sponsored by Florida Citrus Mutual and the Florida Department of Citrus.

Nomination forms are available by contacting Brenda Eubanks Burnette at (561) 351-4314, e-mailing BBurne1003@aol.com, or visiting www.FloridaCitrusHallofFame.com, the Hall of Fame website.

More information is available from John Jackson at jackson71344@yahoo.com or from Burnette.



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