Grower trials

FACING THE FACTS OF CITRUS GREENING/HLB

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The following article discusses issues growers are frequently debating as it relates to citrus greening or HLB (*Huanglongbing*) in Florida citrus. These 10 items come quickly to mind when discussing greening in Florida and are by no means an exhaustive list.

Growers need to be proactive in establishing programs that properly address citrus greening. The old saying that "an ounce of prevention is worth a pound of cure" easily applies to citrus production in the era of greening.

GREENING AND DENIAL: It would be wise to accept the fact that with greening being found in all major citrus producing counties in Florida, it is highly likely you, too, will have greening infected trees within your grove. Even if you do not yet have greening, it is only a matter of time before it is found in all groves throughout Florida. Denial will not keep greening infected trees out of a grove location. Therefore, it is better to try to control greening when the infection level is low than when it has already spread to a large number of trees within a given location.

SCOUTING: Scouting the entire grove is the only method currently available to determine if greening is present. Scouting methods will vary with location, tree size and grove conditions. For young trees, scouting by walking, riding or traveling in all-terrain vehicles (ATVs) has been successful in identifying greening infected trees. For large trees, scouting from an elevated platform allows the scouts to see the entire tree canopy and increases their ability to find infected trees at an early stage in the infection process. In fact, in many locations visual symptoms of greening may be found in the top of the trees prior to the lower canopy areas showing symptoms. From studies in Brazil, symptom identification increases greatly with the use of elevated platforms when scouting large trees compared with walking or riding in ATVs.

SCOUTING FREQUENCY: Scouting frequency should be up to four times per year. At least two scouting operations should be conducted during the fall and winter seasons, when symptoms are easiest to detect. Groves with a significant number of trees with greening may benefit from more frequent inspections. While symptoms are most easily seen during fall and winter, they can be found year round. During periods when the trees are actively flushing, it is very hard to find visual symptoms as those symptomatic leaves are located within the tree canopy behind the most current flush. The latency period of the bacteria within the tree or the time between infection and actual visual symptoms being expressed is unknown, thus necessitating multiple inspections per year.

Asian citrus psyllid, the citrus greening disease vector. Photo courtesy of Michael Rogers, UF-IFAS.

TREE REMOVAL: Tree removal is practiced to reduce the disease level within a grove. Without tree removal, greening infected trees will serve as a source for future infection of healthy trees. Currently, there are no methods available to suppress the bacterium in the plant or to make the vector acquisition of the bacteria impossible. In areas where a very large number of positive trees are located, growers are faced with very difficult decisions as to tree removal and its economic impact. Tree removal is a disease suppression method. With high infection levels, tree removal may not be effective to prevent spread of a disease.

DELAYING TREE REMOVAL: In early stages of greening progression, refraining from or delaying tree removal until you can harvest another crop should be avoided. When known positive trees remain in the grove, they serve as a ready source of inoculum for future infection. It is impossible to have complete psyllid control all year. At certain times of the year, chemical applications are limited due to the adverse impact they may have on bees or beneficial insects within a given location. Leaving infected trees only increases the inoculum for additional infection of greening to non-infected, healthy trees.

STUMP AND ROOT SPROUTS: When removing trees, it is very important to assure that any plant material, including roots and stumps, will not sprout after tree removal. In infected trees, all tree parts (leaves, stems, roots) contain the bacteria and the entire plant acts as an inoculum source for future infection. Clipping trees off above the soil line has been proven to be an effective tree removal method over the past 10 years. However, when trees are clipped, it is important to treat the cut stump surface with an herbicide material to kill the root system and inhibit trunk or root sprouts, as these resprouts will carry the greening disease and serve as an inoculum source. Delaying treatment of the stump by hours or days will reduce the effectiveness of the selected herbicide to inhibit regrowth from the remaining stump.

VECTOR MANAGEMENT: Vector management is necessary in combination with tree removal to suppress the disease. Integrated pest management (IPM) strategies using cultural, biological and chemical controls should be practiced to suppress the citrus psyllid and

thereby slow the spread of greening. It is well known that the complete eradication of the psyllid is impossible under Florida conditions. Furthermore, at certain times of the year, chemical applications are limited due to the potential adverse impact that these applications may have on bees and other beneficial insects. When choosing pesticides to control psyllids, follow the label directions with regard to application volume, application frequency, harvest interval and worker re-entry. Growers must make sure that all their pesticide applications comply with current pesticide regulations and label requirements.

LIFE STAGES OF THE VECTOR: When controlling the vector, it is essential to control as many stages of the vector as possible, including nymphs and adults. When trees are flushing, targeting adult psyllids will offer only a limited control because of the presence of nymphs on those flushes. Sprays targeted at adults prior to the spring growth flush have been shown to be effective at over-wintering populations with minimal effect on beneficial insects. Reducing the adults during the winter will impact the number of eggs laid on the subsequent flushes. Materials that control only adults will reduce the adult population while the remaining nymphs develop in as little as one week during the warmer period of the year, thereby allowing quick increases in the adult populations. Nymphs that feed on greening infected trees will acquire the bacteria which will multiply inside the psyllid. Once the bacterium has been acquired, the psyllid will remain capable of transmitting the greening disease for the duration of its life.

REPLANTING/RESETS: When replanting groves, your chance to bring the grove into production improves where you plant an entire area as compared to replanting individual trees scattered over a large area among older trees. The reason is that it will be easier to effectively care for young trees when they are grouped together, making pest management more efficient. Also, remember that young trees will flush more frequently and could support higher psyllid population over a longer period of time as compared to a solid mature grove. It would be difficult and costly to spray the entire mature grove based upon the flushing patterns of young trees, as they do not flush in sequence with mature trees. The best option for psyllid control in young trees is to use soil applied systemic materials to provide a longer pest control period as compared to foliar sprays.

EDUCATION/INFORMATION: Become a highly informed grower by attending meetings where greening and psyllid management programs are discussed. Control practices are continually being modified with time as everyone is learning more about the pathogen, vector and control strategies. Be cautious of unproven practices or of using non-registered products in your citrus production programs.

Growers and researchers are constantly learning new facts about the control of greening in Florida. With time, new and innovative programs will be developed and conducted to suppress psyllid populations and manage greening. With everyone working together, control strategies to aid in the battle with this disease are being implemented to enhance the Florida citrus industry.

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