Ten programs to manage psyllids

By Tim Hurner

Grower trials, tribulations and observations

There has never been a more pressing need in the Florida citrus industry than the one to control the Asian citrus psyllid (*Diaphorina citri* Kuwayama). We do not need to control the psyllid because its feeding causes direct feeding damage on the citrus plant, but rather due to its status as the vector of Huanglongbing (HLB), commonly referred to as citrus greening. Citrus greening disease bacterium, (*Candi-datus* Liberibacter spp.) is fatal to the citrus plant.

This pest issue is similar to the brown citrus aphid (*Toxoptera citricida*), which in recent years became established in Florida. The brown citrus aphid was very effective in transmitting the Citrus trestiza virus (CTV) among citrus trees. The major difference is that CTV only led to the demise of citrus trees on sour orange rootstock; HLB can result in the decline of all varieties of citrus trees.

As the incidence of HLB in citrus groves increases, it brings to light the need to effectively manage the citrus psyllid as the first step in slowing the spread of HLB. In the few short years we have been dealing with the psyllid, it is fortunate that we have determined which pesticides are capable of managing this pest. The issue now is how to be effective, yet efficient, in citrus psyllid management while avoiding negative impacts on beneficial predators and parasites and minimizing the potential for chemical resistance.

Several excellent psyllid management strategies have been developed by IFAS scientists and offered to the industry. Growers have adopted and modified these strategies to suit their local situations with the primary goal to be effective, efficient and economical. At best, the management of the psyllid is a dynamic process undergoing constant change.

Ten citrus growers in Central Florida were surveyed to determine their strategies for psyllid management. Each program was matched

Ten Programs to Manage Citrus Psyllid

Grower Program	Greening Intensity (1)	Winter	January	Post Bloom	Summer Oil I	Summer Oil II	Fall
		Nov./Dec.	Dec./Jan.	March/April	May/June	June/July	Sept./Oct.
1	4	Aldicarb (Temik)	Fenpropathrin (Danitol)	Zeta-Cypermethrin (Mustang)	Abamectin (Agri-Mek, Abacus) / Oil	Imidacloprid (Provado) plus oil	Spirodiclofen (Envidor)
2	4		Aldicarb (Temik), plus Imidacloprid (Admire Pro), or Fenpropathrin (Danitol)	Carbaryl (Sevin) or Abamectin (Agra-Mek, Abacus) / Oil, or Difubenzuron (Micromite)		Abamectin (Agri-Mek, Abacus) / Oil, or Dimethoate	Dimethoate plus, Imidacloprid (Danitol)
3	2	Aldicarb (Temik)	Fenpropathrin (Danitol), or Zeta-Cypermethrin (Mustang)		Abamectin (Agri-Mek, Abacus) / Oil	Abamectin (Agri-Mek, Abacus) / Oil	
4	4		Aldicarb (Temik) Fenpropathrin (Danitol), or Zeta-Cypermethrin (Mustang), plus Dimethoate (late org.), or Fenpropathrin (Danitol) (early and mids)	Fenpropathrin (Danitol) (late org.) Dimethoate (early and mids)	Imidacloprid (Provado) plus sulfur	Imidacloprid (Provado) plus Oil	Chlorpyrifos (Lorsban)
5	1		Aldicarb (Temik) Fenpropathrin (Danitol), or Zeta-Cypermethrin (Mustang)	Carbaryl (Sevin)	Zeta-Cypermethrin (Mustang), or Abamectin (Agri-Mek, Abacus) /Oil, plus copper	Zeta-Cypermethrin (Mustang), or Abamectin (Agri-Mek, Abacus) / Oil plus copper	Imidacloprid (Provado) / Oil
6	1		Aldicarb (Temik)	OIl every 12-15 weeks, Copper every other spray	Oil every 12-15 weeks Copper every other spray	Oil every 12-15 weeks Copper every other spray	Oil every 12-15 weeks
7	4	Aldicarb (Temik)	Imidacloprid (Admire Pro)	Carbaryl (Sevin), or Abamectin (Agri-Mek, Abacus) / Oil		Abamectin (Agri-Mek, Abacus) / Oil	Dimethoate plus Imidacloprid (Admire Pro)
8	3		Fenpropathrin (Danitol)	Carbaryl (Sevin), or Diflubenzuron (Micromite)	Abamectin (Agri-Mek, Abacus) / Oil	Imidacloprid (Provado) plus Oil	
9	1	Aldicarb (Temik)	Fenpropathrin (Danitol)	Abamectin (Agri-Mek, Abacus) / Oil	Oil, plus copper	Oil	
10	2		Fenpropathrin (Danitol), or Zeta-Cypermethrin (Mustang)	Diflubenzuron (Micromite)	Oil, plus copper	Oil, plus copper	

(1). Intensity of greening positive trees removed from grove(s), 1= none, and 5= highest (>20%)

w: Ten programs to Manage Citrus Psyllid (3) 07 28 08

with the grower's evaluation of the pressure of HLB in the grove.

The accompanying table (previous page) summarizes each of the grower strategies. Each grower surveyed rated his intensity of greening, which is in column 2. It appears that growers with a low incidence of HLB in their groves were less intense in their psyllid management program.

SURVEY RESULTS REVIEW

There are similarities among grower psyllid management programs, yet differences when other pests were considered.

Most growers applied aldicarb (Temik) on blocks, where possible, avoiding areas where limitations on use of Temik (proximity to drinking water wells) was an issue. Temik applications were primarily in November through January. The two criteria for application of Temik were 1) to apply it prior to receiving rainfall to activate the material, making it available for uptake in the plant; and 2) to try and apply Temik late enough to extend its effectiveness into the spring, providing control where it could be effective on other pests. Watching the extended weather forecast during the winter months for prediction of rainfall was important.

Fenpropathrin (Danitol) and zeta-cypermethrin (Mustang) and Imidacloprid were used in January to minimize adverse effect on beneficials. The winter use of all three products was designed to keep psyllid populations to near zero, at this time of year, and to delay the rapid buildup of psyllids on the spring flush.

Due to label restrictions preventing application of most insecticides during bloom due to pollinator hazards, grower programs were designed to get psyllids under control prior to bloom and then follow up with a post bloom spray to control the psyllid populations which developed in the flush associated with bloom. The post bloom spray showed significant variation, which reflected the grower's preference as to management of other pests. Most often, the grower made his selection considering other pests that were present at that time. Danitol and Mustang were commonly used in the post bloom spray. Carbaryl (Sevin), diflubenzuron (Micromite), or abamectin (Agri-Mek, Abacus, Clinch, Reaper) were also used when other citrus pests needed to be considered.

The summer sprays were primarily oil and copper. Growers made decisions based on psyllid management and considered greasy spot, other pests and canker. Although two oil sprays were for the most part planned, an additional oil spray was added if needed. Abamectin, Imidacloprid, Mustang or Danitol were also used based on the population of psyllid numbers and the presence of other citrus pests.

The fall spray varied the most among growers and seemed to be based on the level of psyllids and the need to control other pests. Dimethoate, chlorpyrifos (Lorsban), and Imidacloprid were all used again based upon the presence of other pests.

SUMMARY

Suffice it to say that each grower felt his psyllid management program was dynamic in nature and was constantly being modified or changed to address the effectiveness of previous sprays, the recovery of the psyllid after a pesticide application, and the introduction of new materials.

Most of the growers felt that regional sprays had a lot of merit and participated when the opportunity presented itself. Several growers were interested in pursuing fogging, which is not legally available at this time. Growers are hoping they can reduce pesticide rates and/or spray volumes within the limits set on the pesticide label. A few growers were conducting trials on small blocks with other materials and strategies.

The growers surveyed were concerned about the impact of these intense spray programs on the beneficial pests and parasites. All were seeing increases in selected scales and mite numbers. They were hopeful that an effective biological agent would be found against the psyllid, but were concerned about how to establish such a beneficial in the presence of these current spray regimens. One grower wondered how we would re-establish the traditional beneficials, should we find a way to manage the psyllid with biological agents.

Growers varied in their concern for citrus canker. Most felt it was not significantly affecting their production, but all acknowledged that the past few years have not had ideal conditions to increase canker intensity and spread.

Growers must realize that to minimize losses to HLB, they must aggressively control the psyllid until better strategies are available. Ignoring the psyllid because HLB is not evident in a grove is a recipe for disaster. Recent research shows that it takes about eight months from infection with HLB before a plant tests positive. Several months may pass before visual symptoms are detected. In the meantime, the infected tree is a source for the bacterium from which additional trees can become infected if the bacterium is present.

Virtually all of those interviewed for this article agreed that a healthy tree was the first line of defense; hence tree nutrition, water and weed management were all essential to total tree health.

For more information on the management of the Asian citrus psyllid and citrus greening, growers should reference the "2008 Florida Citrus Pest Management Guide," SP 43, which can be ordered from the IFAS Bookstore at (352) 392-1764, or http://www.ifasbooks.com.

Pest management guide sections are also available on the Web at http://edis.ifas.ufl.edu.

Tim Hurner is a citrus extension agent.