

Calendar vs. threshold spraying for citrus psyllid

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Tom Burfield



Research examines what is better for timing Asian citrus psyllid sprays: calendars or thresholds?

There's no doubt that spraying selected insecticides can help control populations of Asian citrus psyllids, which are responsible for transmitting citrus greening disease or huanglongbing. The question is, how should growers schedule their spraying regimens?

Some base their spray program on the calendar, applying insecticides at consistent intervals. Others spray only when psyllid counts in their groves reach a threshold.

Which method works better? That depends, says Phil Stansly, professor of entomology at the University of Florida's Southwest Florida Research and Education Center in Immokalee.

If trees already are infected with HLB, the goal no longer is prevention but rather to reduce reinoculation to give trees a chance to gain strength, he says.

Determining how much psyllid suppression will maximize profits is what Stansly and his research team are trying to figure out. They've launched a three-year study to determine the economic threshold for insecticide spraying in HLB-infected groves,

Defining terms

Economic threshold is defined as "the density of a pest population below which the cost of applying control measures exceeds the losses caused by the pest."

When pest densities are less than the economic threshold, additional sprays will increase pest management costs more than the benefits obtained from reduced damage, Stansly says.

When pest densities are greater than the economic threshold, additional sprays will reduce damage more than the increased pest management costs.

"The goal of the present project is to establish economic thresholds in groves with high incidence of HLB under different juice price scenarios that optimize returns on investment in groves with high incidence of HLB," he says.

Two three-year field experiments are under way under four scenarios. They are citrus blocks with no insecticide spraying, blocks with monthly applications, blocks where applications are made when the threshold reaches 0.2 psyllid per tap and others with a threshold of 0.7 psyllid per tap.

(Tap refers to a sampling method described below.)

Tolerance level

The goal is to find the threshold—or numbers of psyllids—that a grower can tolerate based on the amount and cost of spray compared to market price, says Cesar Monzo Ferrer, post-doctoral associate working on the project.

"Market price matters," he says. The higher the price you'll get for your citrus, the more spraying you'll be able to afford. Although researchers are experimenting with thresholds of 0.2 and 0.7 psyllid per tap, Monzo says the actual threshold maybe lower, depending on the price you receive for your citrus.

A positive aspect of calendar spraying so far has been increased citrus yields, he says. No differences were seen among treatments in juice quality during the first year of the study, and the higher yields about covered the cost of increased insecticide.

However, that might change down the road, due to impacts of spraying on beneficial organisms and the resulting upsurge of secondary pests, such as leafminers, mites and scales.

'Non-targets' suffer

When a grower sprays to reduce the psyllid population, he also hurts the other non-target organisms. They include beneficial insects that prey on psyllids and other destructive pests, such as leafminers, says Jawwad Qureshi, research assistant professor at the center.

Studies have shown that mostly, you'll see more beneficials in untreated blocks and fewer in treated blocks.

The researchers hope to determine an acceptable psyllids threshold that will trigger a spray rather than "just going blindly and spraying every month," he says.

Qureshi encourages growers to attempt to suppress the psyllid during the winter by continuing to make their dormant spray applications at that time.

When the growing season approaches, "do the sampling and try to be more careful with your applications," he suggests. "We want to discourage calendar applications after the dormant season because these are not based on the actual population of the psyllid in the field."

A helping hand

Ralph Jordan, farm manager for Miami-based Moreno Farms, is grateful for the help Stansly and his team have provided as he supervises 350 acres of juice oranges in the Immokalee area.

The researchers have been monitoring the psyllid count in the groves and provide Jordan with an up-to-date count when it comes time to spray.

"He's saved us a lot of money," Jordan says. He estimates that he's been able to reduce spraying by 25 percent annually for a savings of \$6,000 or more per year.

Jordan applies a nutrient spray every six weeks, and he checks the psyllid count to determine whether he should also spray for psyllids. He tries to clean up the groves with dormant sprays during the winter. But as spring starts to break, he keeps a closer watch on the trees, because the new flushes of vegetation can spark an explosion of psyllids.

"They like to lay their eggs on the fresh, tender leaves," Jordan says.

Changes routine

At first, Daharam "Di" Ragoonanan of South Florida Citrus Service in La Belle sprayed 2,000 acres of mostly Valencias and a few grapefruit by the calendar.

For the past 18 months, he's waited for the psyllid count to hit 10 to 12 when he conducts a leaf tap.

"If I'm going to spray, I wait 'til the psyllid count gets up a little bit," Ragoonanan says. He continues to conduct a dormant spray in December.

When Ragoonanan sprays, he says, "I try to be as careful as I can" to avoid impacting the population of beneficials.

In early March, for example, he avoids any product toxic to bees.

It's difficult to determine the precise threshold for killing psyllids without wiping out the beneficial population, he says.

"I'm trying to find a medium," Ragoonanan says. "I don't think I've found it yet, but that's the goal."

Sampling as easy as tap, tap, tap

The tap sampling method for Asian citrus psyllids that was developed by Phil University of Florida entomologist, and a team from the Southwest Florida Research Education Center is relatively easy to conduct.

It requires only two items: a letter-sized sheet of laminated white paper or transparent clipboard and a 2-foot-long stick or PVC pipe.

Hold the sheet about 1 foot below a leafy branch, and hit the branch three times sample.

Psyllids and other insects fall onto the sheet.

The smooth surface of the sheet makes it difficult for the insects to fly, allowing count and record them.

The stem tap system is quick and works under wet or dry conditions.

Research has shown that 75 percent precision is adequate for commercial pest-management purposes.

Based on that, Stansly says it would require 100 tap samples to detect with confidence psyllids, a reasonable threshold during the growing season.

The tap sampling system also can be used for other insects.

For more information, download the EDIS sheet at <http://edis.ifas.ufl.edu>.

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Maury Boyd

Report Abuse

Florida | April, 16, 2012 at 07:53 AM

At U of Fla 's SWFREC , Immokalee, good practical grower research is underway.

The low volume low rate monthly application was pioneered by growers and at our SW groves we switched over to aerial, low volume, low material rates applied at 140mph; no psyllid escaping here.

In 2009 I believe we achieved excellent psyllid control along with our other nutritional/ health program.

If one controls the psyllids/ vectors the disease is controlled. Recent USDA/ Florida surveys show 100% control.

Question-- what control is necessary for profitable survival? Will biologicals ever return?

Phil mentioned in the article tree recovery. Interesting! Recently Drs' Rouse and Brlansky found our infected trees had minor phloem plugging compared to non treated infected trees. Since funding from the CRDF was delayed until this month, little follow up has occurred. Growers believe this is significant.

Our yields and quality continue to be little affected--- but it takes awhile. If returns should diminish and growers must cut back iHLB defense, there will be an increasing downward spiral.

Maury Boyd

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Florida | April, 16, 2012 at 08:02 AM

Soon Drs Rouse and Spann will be reporting data taken from our Felda grove. Hopefully Rouse and Brlansky will be able to incorporate some Pholem photos of controls vs treated infected trees. My opinion this has been the first early encouraging sign .

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