

# Effective and economical psyllid spray programs

By Phil Stansly

**E**ffective control of Asian citrus psyllid (ACP) has been a challenge for many Florida growers these last two years. Possible explanations include warmer, wetter weather in winter, fewer insecticide sprays being applied and a possible increase in insecticide resistance.

There is little doubt that weather-induced flush the last two winters has provided extra food and refuge for ACP. Furthermore, rain reduces residual insecticide persistence. Both these factors compromise critical dormant sprays.

Strained budgets and additional costs of bactericides may have reduced the number of insecticide sprays going out.

Heavy reliance on inexpensive pyrethroids, organophosphates (OPs) and neonicotinoids might be expected to result in resistance to these modes of action. While there is no direct evidence yet to confirm this has occurred, monitoring has been limited.

So how can growers improve ACP management and remain profitable in the face of rising costs and stagnant prices? Below are a few suggestions for adjusting spray programs to achieve better and more economical control.

## 1. Winter is the best time to spray for ACP.

Generally cool, dry conditions limit flush and thus ACP reproductive potential. Adult populations drop

to a minimum with the fewest eggs and nymphs to control. Low canopy density improves spray penetration, especially from overhead aerial sprays. Inexpensive pyrethroids and OPs are effective, with prolonged residual activity in winter.

Many beneficials are scarce due to lack of prey and, therefore, are not impacted by spray. Thus, ACP populations can be effectively lowered to reduce numbers entering spring flush, which is the source of most HLB movement. Effective dormant sprays set the stage for ACP management for the rest of the year.

## 2. Border sprays are effective and reduce the need for spraying entire blocks.

The border effect may be caused by movement of ACP into the block where adults accumulate on the block edges, especially those adjacent to open areas (see Figure 1, page 17). Monitoring ACP with separate counts for block borders and interiors will help determine whether full-block sprays are warranted. By limiting the treated area to a few rows of trees around the edge, border sprays reduce costs, selection for resistance and impacts on beneficials.

## 3. Selective insecticides are best for spraying the entire block during the

## An ACP spray plan

- Make sure to apply at least two good dormant sprays.
  - Use pyrethroids or organophosphates (OPs).
  - Try to avoid rain events. Spray again if it does rain or a foliar flush occurs.
- Do not use pyrethroids or OPs again, except for perimeter/border sprays.
- Use selective chemistries on whole-block sprays during the growing season.
  - Use products that target prevalent pests.
  - Rotate through the whole toolbox rather than repeat modes of action in a single season.
  - Create reservoirs in block interiors for beneficials and for ACP still susceptible to border-spray products.
- Make every effort to protect new blocks and resets.
  - Make full use of soil-applied systemics interspersed with foliar sprays.

**growing season.**

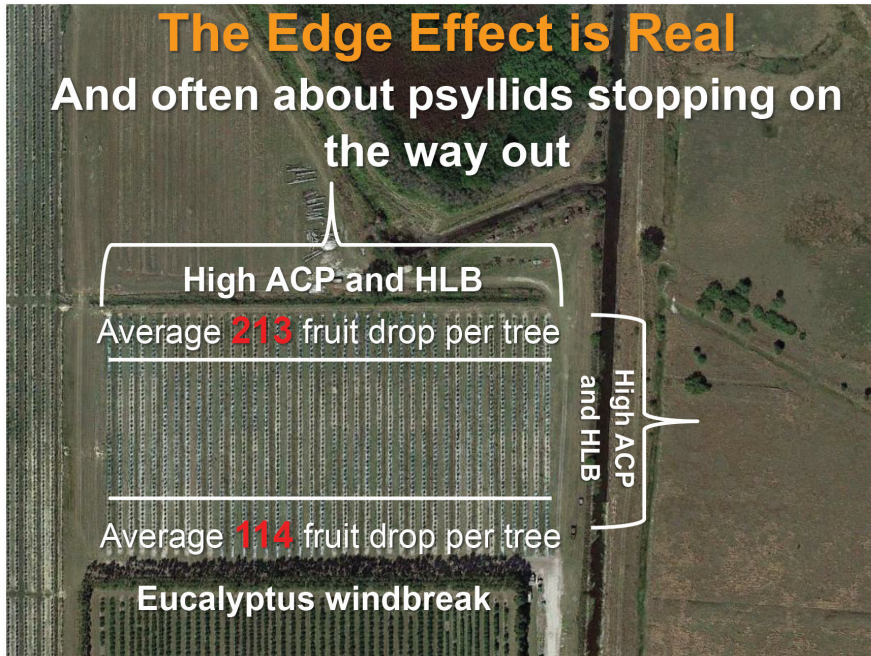
There are many recommended options for rotation of insecticides sprayed during the growing season

to control ACP and other pests that may need to be targeted. Products for ACP management (and other pests controlled) include Apta (also mites

at high rates), Movento (mites and scales), Exirel (leafminers), Sivanto, Delegate (leafminers) and Micromite (leafminers and rust mites) (see Figure 2). There are also premixes such as Agri-Flex and Voliam Flexi that are effective, although they contain a neonicotinoid (thiamethoxam) that might be better left for use on young trees.

Oil will also provide short-term control of ACP and many other pests. With the exception of oil, these products are generally more expensive than broad-spectrum insecticides. However, they provide effective alternatives for control of a variety of pests, help delay resistance through rotation and conserve natural enemies. See the 2016 Florida Citrus Pest Management Guide ([http://edis.ifas.ufl.edu/topic\\_book\\_florida\\_citrus\\_pest\\_management\\_guide](http://edis.ifas.ufl.edu/topic_book_florida_citrus_pest_management_guide)) for more details. 🍊

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**Figure 1.** Satellite view of a 10-acre trial at A. Duda & Sons near LaBelle 37 months after planting in July 2012. Fruit drop data from 2016 indicate greater HLB severity on the north side, where the closest citrus planting is 2 miles away, compared to the south side of the block that is adjacent to a eucalyptus windbreak.

## Spray Options for Citrus Pest Management

	Dormant season			Growing Season			
Months	Nov-Dec	Jan	Feb-Mar	Apr	May - June	July - Aug	Sep-Oct
<b>Products</b>	OP <sup>13</sup> (e.g., Imidan, dimethoate, chlorpyrifos)	Pyrethroid <sup>14</sup> (e.g., Mustang, danitol, baythroid)	*Sivanto <sup>9</sup> *Movento <sup>1</sup> *Portal <sup>2</sup> *Micromite <sup>4</sup> *Intrepid <sup>5</sup> Exirel <sup>6</sup>	Oil <sup>7</sup> Portal <sup>2</sup> Micromite <sup>4</sup> Exirel <sup>6</sup> Apta <sup>8</sup> Sivanto <sup>9</sup>	Movento <sup>1</sup> Delegate <sup>10</sup> Abamectin <sup>11</sup> Knack <sup>12</sup> Exirel <sup>6</sup> Apta <sup>8</sup> Sivanto <sup>9</sup>	Oil <sup>7</sup> Sivanto <sup>9</sup> Apta <sup>8</sup> OP <sup>13</sup>	Movento <sup>1</sup> Delegate <sup>10</sup> Apta <sup>8</sup> Sivanto <sup>9</sup>
<b>Pests</b>	ACP Weevils	ACP Weevils	ACP Mites Leafminers Weevils Scales Aphids	ACP Mites Leafminers Weevils Aphids	ACP Rust mites Leafminers Scales	ACP	ACP Rust mites Leafminers
<b>ACP+++<sup>1, 6, 8, 9, 13, 14</sup> ACP++<sup>2, 10</sup> ACP+<sup>4, 7, 11</sup> Leafminers<sup>4, 5, 6, 10</sup> Rust mites<sup>1, 4, 7, 8, 11</sup> Scales<sup>1, 12</sup> Aphids<sup>9</sup> Mealybugs<sup>1</sup></b>							

**Figure 2.** Insecticide alternatives for different times of the year based on pest controlled, efficacy against Asian citrus psyllid (ACP) resistance management (+++ = excellent, ++ = good, + = fair), conservation of beneficials and cost. Subscripts on products indicate pests controlled. Neonicotinoids and premixes not included. \*Permitted on bloom