

Alternative management tools for ACP under development



By Lourdes C. Pérez Cordero

Management of the Asian citrus psyllid (ACP) in the HLB era is incredibly important. This well-known insect can vector and facilitate the spread of the bacterium associated with HLB disease. Therefore, effective reduction of ACP populations can be beneficial for the citrus industry.

But how exactly do we manage this pest? Unfortunately, there is not a set answer to this question. However, there are currently several alternative tools in development that could help create an efficient management program. The combination of traditional management techniques, such as insecticidal applications, with other alternative and/or holistic approaches could be beneficial in the long run.

Understanding the behavior of the vector is crucial in pest management. ACP adults lay their eggs on the developing leaves (flush) of citrus trees. Therefore, the trees' flushing periods usually correlate with the psyllid's increase in population throughout the year. Adults can lay up to 800 eggs

in temperatures between 73 and 84 degrees.

Once hatched, the psyllid nymphs only feed from the new softer tissue, while adults can feed from both the newer and the more mature leaves. By introducing their piercing-sucking mouthparts in the plant tissue, adults can transmit the phloem-limited bacterial disease. Even though nymphs can also acquire and vector the bacteria, adults are more likely to spread it because of their higher mobility when compared to nymphs.

INDIVIDUAL PROTECTIVE COVERS

Individual protective covers (IPCs) are mesh bags that act as barriers that protect citrus trees from the psyllid vector. Younger trees are constantly flushing. Therefore, they are the most vulnerable and become common targets of psyllid infestations. IPCs can be used to give young trees a head start by excluding the vector and delaying the exposure to the pathogen.

In addition, an increase in fruit yield and quality has been observed in trees with IPCs. The

Reflective mulch and individual protective covers are among the methods being used for Asian citrus psyllid management.



shade that they provide helps protect the leaves from sun damage and promotes photosynthesis.

REFLECTIVE MULCH

Reflective mulch refers to a metallized plastic used to deter the ACP from citrus trees. When the sunlight reflects on the mulch, it interferes with the insect's vision. This interrupts the normal behavior of the vector and prevents the psyllid from finding its way to the plant.

Scientists have observed a significant reduction of ACP populations when comparing plots with reflective mulch versus plots without it. Increases in growth rate and tree canopy density have also been seen in trees treated with reflective mulch in field trials at different locations.

KAOLIN CLAY

Kaolin clay is a white powder that is mixed with water and applied to citrus trees with a sprayer. After the mix dries on the surface of the leaves, a particle film remains. The change of leaf color, from vivid green to white, disrupts the visual cues that ACPs use to find the host plant.

Red kaolin clay gives trees a pinkish appearance when applied. The red-dyed kaolin clay seems to be even more effective at discouraging the psyllids' interest in treated trees. However, this tool is still in development since it is easily washed off by heavy rain events — something to keep in mind, especially in Florida.

BOTANICAL OILS

Botanical oils of non-host plants could be used in the future to interfere with the olfactory cues that attract psyllids to citrus trees. Researchers have tested multiple essential oils (including thyme, lavender, coriander, fir and others) in previous years with the goal of deterring psyllids from the host plant. However, effective field deployment devices for botanical oils are still in development. 🍊

Lourdes C. Pérez Cordero is an agriculture and natural resources Extension agent for University of Florida Institute of Food and Agricultural Sciences Extension Highlands County in Sebring.

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