Biological Control of Asian Citrus Psyllid in Commercial Citrus

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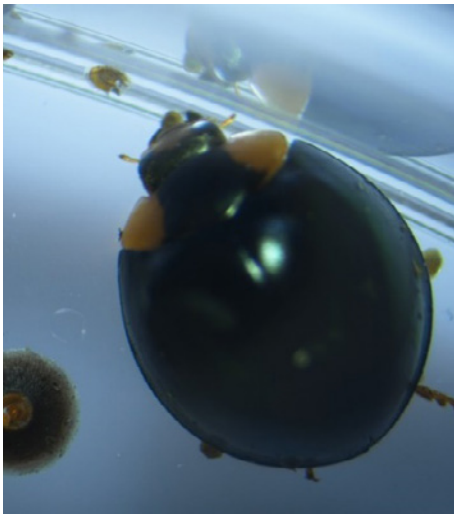

Summary: Biological control has always been an essential component of citrus insect pest management in Florida, including Asian citrus psyllid (ACP). Predators already present in Florida responded immediately to the ACP invasion in 1998. Fifteen years ago, feral populations of natural enemies such as ladybeetles, lacewings, and spiders were observed to cause a significant reduction of 90% or more in ACP populations. However, since the discovery of huanglongbing in 2005, chemical control of ACP increased significantly. *Tamarixia radiata* introduced from Taiwan and South Vietnam established in the citrus groves and its augmentation through the release of mass-reared populations from multiple countries including Pakistan, China, and Vietnam contribute to ACP mortality. In 2015-2016, releases of *Tamarixia radiata* in commercial citrus were observed to cause more mortality of ACP in the citrus blocks under organic pest management and untreated blocks compared to the blocks under conventional pest management. Recent studies from 2020-2022, evaluated the status of biological control of ACP in commercial citrus. The exclusion techniques were employed by protecting the developing colonies of ACP immatures from natural enemies against the colonies that remained exposed to measure the reduction in psyllid populations. Cohorts of protected and exposed colonies of ACP were evaluated in five commercial citrus groves. A reduction of 50-90% in nymphal colonies exposed to natural enemies was observed. Ladybeetles (*Curinus coeruleus*, *Harmonia axyridis*, *Olla v-nigrum*, *Cycloneda sanguinea*), lacewings, and spiders were common predators observed in the citrus groves. These findings suggest that there is still a significant role of natural enemies in regulating the populations of ACP and contributing to integrated pest management. However, populations of natural enemies such as ladybeetles and lacewings were reduced due to the high use of conventional insecticides for several years.

Take Home Message:

- Biological control is an important component of citrus pest management.
- Predators, parasitoids and entomopathogens contribute to natural mortality of ACP.
- Judicious use of insecticides helps reduce non-target effects and insecticide resistance.

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