



BUG BIZ

Pest Management and Insect Identification Series



Diaphorina citri, Asian Citrus Psyllid (Hemiptera: Liviidae)

Arjun Khadka, Forest Huval, T. E. Reagan, Chris Carlton

Description

Asian citrus psyllid (ACP) is a notorious pest of citrus and vectors the causal agent of greening disease, also referred to as huanglongbing.

Adult ACPs are $\frac{1}{8}$ to $\frac{3}{16}$ of an inch (3 to 4 mm) in length and possess mottled brown and gray bodies. Black tips are visible at the tips of the antennae, and the front and rear edges of the wings are lined with irregular brown patches. Living ACPs are covered with whitish, waxy secretions that give them a dusty appearance. On host plants, the adults feed in a distinctive “tail up” posture.

Immatures (nymphs) are wingless, brown, greenish-yellow or yellow in color, with bright orange eyes. They develop wing pads as they mature. Large aggregations of nymphs are often observed feeding together. Eggs are yellow to orange, oblong and about $\frac{1}{75}$ of an inch (0.3 mm) in length.

Life Cycle

Female ACPs lay eggs on new flushes or growing tips. A single female can lay hundreds of eggs during her life span. After hatching, the nymphs undergo five growth stages (instars). Fifth-stage nymphs molt into adults. Development from egg to adult ranges from 15 to 47 days, depending on temperature, with most rapid development at 82 F (28 C). ACP prefers citrus host plants and other members of the family Rutaceae. Feeding damage by nymphs and adults might cause significant damage. ACPs are sap feeders and extract juices from host plants using piercing/sucking mouthparts. No diapause has been reported in ACP, and up to 10 generations per year can be detected in orchards.



Asian citrus psyllid adult (David Hall, USDA-ARS, Bugwood.org, Creative Commons 3.0).

Ecological Significance and Pest Status

ACP originated in south Asia and has spread into many citrus growing regions of the world. It was first detected on the east coast of Florida during 1998. Since then, it has spread across the southern United States, including Louisiana, and now occurs coast to coast. ACP is a pest of citrus and some other agricultural and ornamental members of the family Rutaceae.

ACP is present in at least five parishes of Louisiana and the citrus industry is heavily impacted by feeding damage and greening disease, a complex of bacterial pathogens that exhibit similar symptoms. During feeding, ACPs inject salivary toxins that can inhibit the growth of new tissues. Feeding alone can cause economic damage. More serious damage is caused by the pathogens vectored by ACP. Citrus greening disease

can cause lopsided and bitter fruits. Fruits may remain green even when ripe. Yellowing of shoots, twig dieback and stunted trees are common symptoms associated with the disease.

Control

Monitoring. Yellow sticky traps can be used to monitor population of ACPs. New leaves are most likely to be infested by nymphs and adults. Therefore, inspecting new growth is critical to estimate population levels in orchards. Restriction of movement of psyllids from infested citrus orchards to healthy ones must be a priority.

Cultural control. Growers should purchase citrus and ornamental members of Rutaceae from certified vendors to avoid infested plants. Trees infected with greening disease must be removed to stop spread of both the vector and disease, including ornamentals such as orange jasmine, which serves as a reservoir for the disease.

Biological control. Generalist predators such as syrphid flies (Syrphidae) and lace bugs (Chrysopidae) feed on nymphs and adults of ACP. *Tamarixia radiata* (Eulophidae) is a parasitic wasp that parasitizes nymphs of ACP. Research released in some citrus growing areas have shown promising results in reducing ACP populations.

Chemical control. Soil applied imidacloprid can be used to protect young trees. Foliar application of a suitable insecticide is recommended once a year (before the spring flush). Selective insecticides such as spinetoram can be used as post-bloom application. All applications should be need-based rather than calendar spray and must follow label directions.



Asian citrus psyllid eggs (David Hall, USDA-ARS, Bugwood.org, Creative Commons 3.0).



Damage caused by Asian citrus psyllid (Florida Division of Plant Industry, Florida Department of Agriculture and Consumer Services, Bugwood.org, Creative Commons 3.0).



Asian citrus psyllid nymphs (David Hall, USDA-ARS, Bugwood.org, Creative Commons 3.0).

References

Boina, D. R., and J. R. Bloomquist. 2015. Chemical control of the Asian citrus psyllid and of huanglongbing disease in citrus. *Pest Management Science* 71: 808-823.

Gómez-Torres, M. L., D. E. Nava, and J. R. P. Parra. 2012. Life table of *Tamarixia radiata* (Hymenoptera: Eulophidae) on *Diaphorina citri* (Hemiptera: Psyllidae) at different temperatures. *Journal of Economic Entomology* 105: 338-343.

Grafton-Cardwell, E. E., L. L. Stelinski, and P.A. Stansly. 2013. Biology and management of Asian citrus psyllid, vector of the huanglongbing pathogens. *Annual Review of Entomology* 58 : 413-432.

Hall, D. G., M. L. Richardson, E. D. Ammar, and S. E. Halbert. 2013. Asian citrus psyllid, *Diaphorina citri*, vector of citrus huanglongbing disease. *Entomologia Experimentalis*

et Applicata 146: 207-223.

LSU Agricultural Center. 2008. Pest alert. Get the facts about citrus greening (huanglongbing). Publication 3079: 2 pp.

Parra, J. R. P., G. R. Alves, A. J. F. Diniz, and J. M. Vieira. 2016. *Tamarixia radiata* (Hymenoptera: Eulophidae) × *Diaphorina citri* (Hemiptera: Liviidae): mass rearing and potential use of the parasitoid in Brazil. *Journal of Integrated Pest Management* 7: <https://doi.org/10.1093/jipm/pmw003> (accessed 13 May 2022).

Qureshi, J. A., and P.A. Stansly. 2007. Integrated approaches for managing the Asian citrus psyllid *Diaphorina citri* (Homoptera: Psyllidae) in Florida. In *Proceedings of the Florida State Horticultural Society* 120: 110-115.

Stansly, P., J. Qureshi, and A. Arevalo. 2009. Why, when and how to monitor and manage Asian citrus psyllid. *Citrus Industry* 90: 24-26.

Contact Us: For advice about arthropod identification or diagnosis, contact the LSU AgCenter Department of Entomology. Reach the department through the Contact Us webpage: <https://bit.ly/36c4awm>.



Matt Lee, Interim LSU Vice President for Agriculture
Louisiana State University Agricultural Center
Louisiana Agricultural Experiment Station
Louisiana Cooperative Extension Service
LSU College of Agriculture

PUB3842 (online) 10/22

The LSU AgCenter and LSU provide equal opportunities in programs and employment.

Visit our website: www.lsuagcenter.com