

First report of *Diaphorina citri* (Hemiptera: Psyllidae) in Costa Rica.

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The Asian citrus psyllid (*Diaphorina citri* Kuwayama (Psyllidae)) and the African citrus psyllid (*Trioza erytrae* (Del Guercio) (Triozidae)) are two of the most serious pests of citrus in the world (Hoy and Nguyen 1998). The Asian citrus psyllid is usually found crowded on the lower sides of leaves, with the head almost touching the surface and the body raised almost to a 30 degree angle. The greatest activity of this psyllid occurs simultaneous with new citrus growth (Frank 1998). The Asian psyllid causes leaf distortion and curling in young tender growth due to direct feeding damage and toxic saliva (Hoy and Nguyen 1998); and a chlorosis resembling zinc deficiency, twig dieback and reduced fruit size and quality, caused by the pathogenic phloem limited bacterium, *Liberobacter asiaticum*, which it transmits. This disease is called "citrus greening" or "Huanglongbing", which means "yellow dragon disease" (Halbert 1998). This bacterium occurs in many countries of tropical and subtropical Asia and Africa (CABI and EPPO)

Capoor *et al.* (1974) reported a high bacteria transmission rate by tissue grafts, and also found that 4th and 5th instar nymphs and adults of *D. citri* could affect transmission. Adult psyllids were able to transmit greening in a minimum infection feeding time of 15 minutes, but the percentage of transmission was low under these conditions. One hundred percent infection was obtained when the psyllids fed for one hour or more on diseased plants. *Diaphorina citri* requires an incubation period of about 21 days to transmit the pathogen, and after a short access feeding period (15-30 minutes) on a

diseased plant, it retains the bacteria for life. Capoor *et al.* (1974) indicated that the pathogen multiplied in the the psyllid vector and that there was no transovarial transmission.

The Asian psyllid was reported in Rio de Janeiro, Brazil, by Costa Lima (1942) and by Catling (1970). In June 1998, the insect was detected in Florida and by September 2000 this pest had spread to 31 Florida counties (Halbert 2001). Recently this species has also been reported from Mexico (Coronado-Blanco, J.M. and Ruiz-Cancino, E. 2004). In November 2003, the Asian citrus psyllid was found for the first time in Costa Rica, in Alajuela, Heredia and San Jose provinces. It was found on sweet lime (*Citrus limetioides* Tanaka), Sweet orange (*Citrus sinensis* (L.) Osb.), tangerine (*Citrus reticulata* Blanc.), pomelo (*Citrus paradisi* Macf.), and Persa lime (*Citrus latifolia* L.). Honduras (Burckhardt and Martínez 1989) and Venezuela (Cermeli *et al.* 2000) are the nearest countries from which the Asian psyllid has been reported.

The presence of the Asiatic citrus psyllid in Costa Rica is cause for concern since this insect is a vector of the bacteria causing Huanglongbing disease, a bacterium recently reported from both Brazil and Florida.

References cited

- Burckhardt, D. and M. Martínez. 1989. Notes sur la présence au Honduras d'un redoutable ennemi des citrus: *Diaphorina citri* Kuwayama

(Hom. Psylloidea psyllidae). Bulletin de la société entomologique de France 94: 65-66.

CABI and EPPO. Citrus greening bacterium. http://www.eppo.org/QUARANTINE/bacteria/Liberobacter_africanum/LIBESP_ds.pdf (consulted Sept. 2004)

Capoor S.P., D. G.Rao, and S.M. Viswanath. 1974. Greening disease of citrus in the Deccan Trap Country and its relationship with the vector, *Diaphorina citri* Kuwayama. pp. 43-49. In Weathers LG, Cohen M (ed.) Proceedings of the 6th Conference of the International Citrus Virology, University of California, Division of Agricultural Sciences.

Catling, H.D. 1970. Distribution of the psyllid vectors of citrus greening disease, with notes on the biology and bionomics of *Diaphorina citri*. FAO Plant Protection Bulletin 18: 8-15.

Cermeli, M., P. Morales, and F. Godoy. 2000. Presencia del psílido de los cítricos *Diaphorina citri* Kuwayama (Hemiptera: Psyllidae) en Venezuela. Bol. Entomol. Venez. 15(2):235-243.

Frank, W. M. 1998. Florida Department of Agriculture and Consumer Services, Division of Plant Industry. Originally published as FDACS/DPI Entomology Circular No. 180. <http://creatures.ifas.ufl.edu/citrus/acpsyllid.htm>

Halbert, S.E. (19 June 1999). Asian citrus psyllid - A serious exotic pest of Florida citrus. <http://www.doacs.state.fl.us/pi/enpp/ento/dcitri.htm> (14 October 2002).

Hoy, M.A., R. Nguyen. (June 1998). Citrus psylla: here in Florida - an action plan. *Pest Alert*. <http://extlab7.entnem.ufl.edu/PestAlert/hoy-0615.htm> (June 1998).

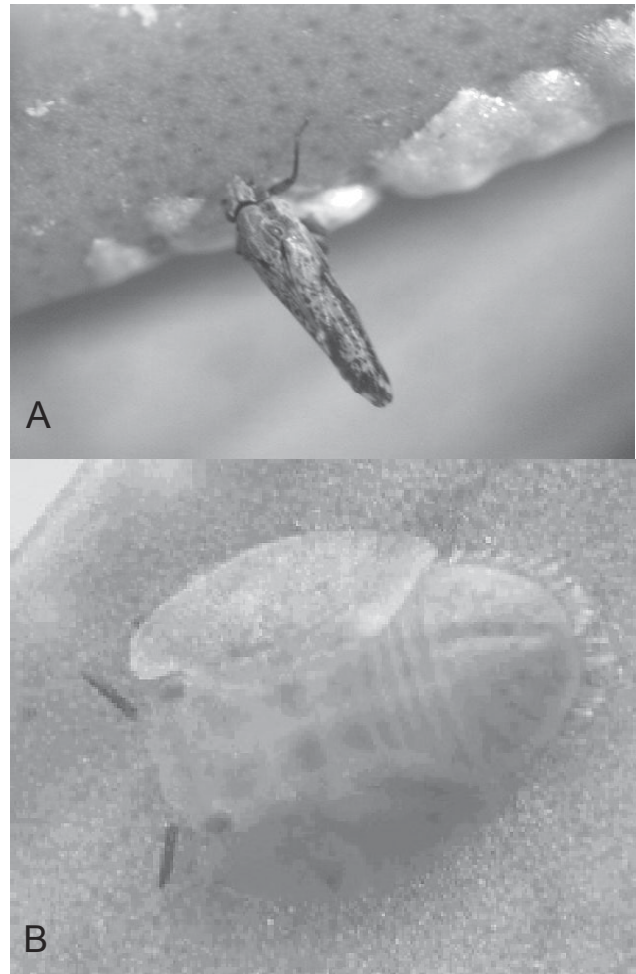


Figure 1. Adult female (A) and nymphal instars (B) of Asiatic citrus psyllid on *Citrus limetioides*.