

First Record of the Asian Citrus Psylla, *Diaphorina citri* Kuwayama (Homoptera:Psyllidae), in Texas

J. V. French, C. J. Kahlke and J. V. da Graça

Texas A & M University-Kingsville, Citrus Center, 312 N.International Blvd, Weslaco, TX 78596

ABSTRACT

In September 2001, the presence of the Asian citrus psylla, *Diaphorina citri* Kuwayama (Homoptera:Psyllidae) in Texas was confirmed. It was found on nursery citrus seedlings and on an orange jessamine (*Murraya* spp.) hedge. Since then, the insect has been observed in other parts of the Lower Rio Grande Valley. This insect is an efficient vector of the serious bacterial disease of citrus, huanglongbing (greening disease).

RESUMEN

Se confirmó la presencia del psílido de los cítricos asiático, *Diaphorina citri* Kuwayama (homoptera:Psyllidae), en Texas en Septiembre del 2001. El insecto se encontró en plantas de vivero y sobre un seto de *Murraya* spp. Desde entonces el insecto se ha observado en otras partes del Bajo Valle del Río Grande. Este insecto es un eficiente vector de la seria enfermedad verdosis bacteriana de los cítricos.

The Asian citrus psylla, *Diaphorina citri* Kuwayama (Homoptera:Psyllidae), became recognized as an important pest particularly after the demonstration that it is the vector of citrus huanglongbing (HLB), or greening disease (Capoor et al., 1967; Martinez and Wallace, 1967). HLB is a bacterial disease, and exists in two forms: the Asian, caused by "*Candidatus Liberibacter asiaticus*", and the African, caused by "*Candidatus L. africanus*" (Jagoueix et al., 1994). The symptoms of the two types are similar, although the Asian form causes more extensive dieback (Zhao, 1981), and the African one is temperature sensitive with suppression of symptom development at 27-30°C (Bové et al., 1974).

D. citri is widespread throughout the southern parts of Asia, from the southern islands of Japan in the east, through southern China, southeast Asia to India and Pakistan in the west (Aubert 1987). It has also recently been reported from eastern Iran (Bové et al., 2000). In addition, it exists in Saudi Arabia near the Red Sea (Bové, 1986) and the Indian Ocean islands of Reunion and Mauritius (Catling 1970, 1973). HLB occurs in all these areas. The psylla feeds on many species of rutaceous plants, including a common ornamental plant, the orange jessamine (*Murraya* spp.), described in parts of Asia as a preferred host (Chakraborty et al., 1976).

D. citri has also been recorded in Brazil and St. Helena, which are free of HLB (Aubert, 1987). The northward movement of the brown citrus aphid, *Toxoptera citricida* Kirkaldy, into Florida in 1995 (Hardy, 1995) raised concerns that the psylla could also move north, and pose a potential threat to that state's citrus industry. In 1998, *D. citri* was recorded in Florida, but no HLB was detected

(Knapp et al., 1998). The psylla has since spread to other parts of that state (Michaud, 2000).

In August 2001, nymphs of an unidentified insect were observed on nursery citrus seedlings at the Citrus Center in Weslaco, Texas. Winged adults were observed in early September. In addition to the nursery plants, both nymphs and adults were observed on a nearby orange jessamine hedge, and a few adults were seen on orchard trees. Ethanol-preserved specimens of adults and nymphs were sent to Dr. Ru Nguyen (Division of Plant Industry, Gainesville, FL), and their identification as *D. citri* was confirmed by Dr. Susan Halbert (Division of Plant Industry, Gainesville, FL). The adults are winged and 2-3 mm in length with a mottled brown body which is held at a 30 degree angle (Fig. 1). The nymphs are flat, yellowish orange, 1-2 mm long with distinct red eye spots and short black antennae (Fig. 2).

A commercial nursery in Weslaco was also found to have small numbers of all psylla life stages, and samples from a dooryard citrus tree near Donna were obtained at the same time. When described to growers at a meeting immediately after the identification, one commented that he had observed such insects in his citrus nursery near Edinburg in July 2001. We have since found *D. citri* in several other locations in Hidalgo and Cameron counties.

The presence of *D. citri* should not pose a major threat, provided no importation of HLB-infected citrus plant material into Texas occurs. Vigilance against illegal introductions must be maintained for both types of greening disease, since the Asian psylla has been shown to transmit African HLB as well (Lallemand et al., 1986).

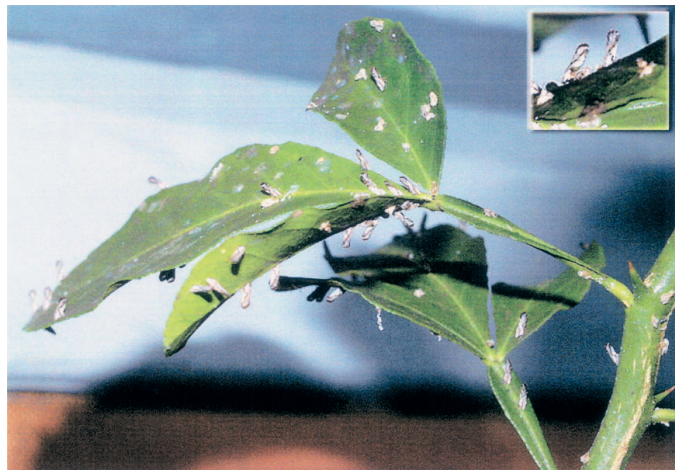


Fig. 1. Asian citrus psylla adults on Troyer citrange seedling. Adults shown close-up (10X) in upper right hand insert.



Fig. 2. Asian citrus psylla nymphs tended by ants on new flush citrus foliage. Late stage nymph shown close-up (45X) in upper right hand insert.

ACKNOWLEDGEMENTS

The assistance of Dr. R. Nguyen and Dr. S. Halbert (Division of Plant Industry, Gainesville, FL) in confirming the identity of the Asian citrus psylla is gratefully acknowledged.

REFERENCES

- Aubert, B. 1987. *Trioza erythrae* Del Guercio and *Diaphorina citri* Kuwayama (Homoptera:Psyllidae), the two vectors of citrus greening disease: Biological aspects and possible control. *Fruits* 42: 149-162.
- Bové, J.M. 1986. Greening in the Arab Peninsula: Towards new techniques for detection and control. *FAO Plant Prot. Bull.* 34: 7-14.
- Bové, J.M., E.C. Calavan, S.P. Capoor, R.E. Cortez and R.E. Schwarz. 1974. Influence of temperature on symptoms of California stubborn, South African greening, Indian citrus decline and Philippines leaf mottling diseases. *Proc. 6th Conf. Int. Org. Citrus Virol.*: 12-15.
- Bové, J.M., J.L. Danet, K. Bananej, N. Hassanzadeh, M. Taghizadeh, M. Salehi and M. Garnier. 2000. Witches' broom disease of lime (WBDL) in Iran. *Proc. 14th Conf. Int. Org. Citrus Virol.*: 207-212.
- Capoor, S.P., D.G. Rao, and S.M. Viswanath. 1967. *Diaphorina citri* Kuway., a vector of greening disease of citrus in India. *Indian J. Agric. Sci.* 37:572-576.
- Catling, H.D. 1970. Distribution of the psylla vectors on greening disease, with notes on the biology and bionomics of *Diaphorina citri*. *FAO Plant Prot. Bull.* 18:8-15.
- Catling, H.D. 1973. Results of a survey for psyllid vectors of citrus greening disease in Reunion. *FAO Plant Prot. Bull.* 21:78-82.
- Chakraborty, N.K., P.K. Pandey, S.N. Chatterjee and A.B. Singh. 1976. Host preference in *Diaphorina citri* Kuwayama, vector of greening disease in India. *Indian J. Entomol.* 38:196-197.
- Hardy, N. 1995. Brown citrus aphid found in Ft.Lauderdale. *Citrus Ind.* 76(12):31.
- Jagoueix, S., J.M. Bové and M. Gamier. 1994. The phloem-limited bacterium of greening disease of citrus is a member of a subdivision of the Protobacteria. *Curr. Microbiol.* 44:379-386.
- Knapp, J.L., S. Halbert, R. Lee, M. Hoy, R. Clark and M. Kesinger. 1998. The Asian citrus psyllid and citrus greening disease. *Citrus Ind.* 79(10):28-29.
- Lallemand, J., A. Fos, and J.M. Bové. 1986. Transmission de la bacterie associé a la forme africaine de la maladie du "greening" par le psylle asaitique *Diaphorina citri* Kuwayama. *Fruits* 41:341-343.
- Martinez, A.L., and J.M. Wallace. 1967. Citrus leaf mottle-yellows disease in the Philippines and transmission of the causal virus by a psyllid, *Diaphorina citri*. *Plant Dis. Repr.* 51:692-695.
- Michaud, J.P. 2000. The Asian citrus psylla and its natural enemies. *Citrus Ind.* 81(8):42-44.
- Zhao, X.Y. 1981. Citrus yellow shoot disease (Huanglongbin) - a review. *Proc. Int. Soc. Citricult.* 1:466-469.