11.4 Chemical Ecology of Asian Citrus Psyllid (*Diaphorina citri*) and Potential Applications of Behavior-Modifying Chemicals for its Management

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The Asian citrus psyllid, *Diaphorina citri* Kuwayama (Hemiptera: Psyllidae), is an important world-wide pest of citrus. It vectors three phloem-restricted bacteria in the genus *Candidatus Liberibacter* that cause huanglongbing (citrus greening disease). Huanglongbing is one of the world’s most serious diseases of citrus. Citrus trees infected by this disease may live only 5-8 years, during which they produce misshapen, poorly-colored, bitter-tasting, and unmarketable fruit. Despite the great economic importance of *D. citri* as a vector of huanglongbing, detailed investigations into the behavior of this pest have only recently begun. Recently, we characterized the morphology of *D. citri* antennae using scanning electron microscope techniques. Five olfactory and at least three mechanosensory sensillar types were characterized supporting plausible use of olfaction and vibration for host and/or mate finding in this species. Investigations of psyllid behavior in laboratory olfactometers have provided behavioral evidence for a female-produced volatile sex attractant pheromone in *D. citri*. Furthermore, citrus volatiles have been found to attract both sexes of *D. citri*, while guava volatiles have been found to repel this insect. Analytical techniques including gas chromatography, mass spectrometry, and electroantennography have been used to isolate and identify active compounds from *D. citri*, citrus and guava. Candidate attractants and repellents are being tested that may be developed for practical pest control applications of this important pest.