6.2 Pheromones of the Asian citrus psyllid, *Diaphorina citri* Kuwayama (Hemiptera: Psyllidae) elicit behavioral responses from its parasitoid, *Tamarixia radiata* (Waterston) (Hymenoptera: Eulophidae).

Onagbola E.O., Rouseff R.L. and Stelinski L.L.

University of Florida, Institute of Food and Agricultural Sciences, Citrus Research and Education Center, Lake Alfred, FL 33850.

Abstract

Volatile chemicals mediate inter-specific interactions between organisms. Biological control agents use host kairomones (volatile chemicals emanating from hosts) for location and recognition of hosts. *Tamarixia radiata* Waterston is an ectoparasitoid of several psyllid species including the Asian citrus psyllid (ACP), *Diaphorina citri* (Kuwayama), which vectors the causal bacteria responsible for citrus greening disease. Because the native biological control agents of the ACP in FL are insufficient for suppression of ACP populations, current research interests are focusing on enhancing the impact of parasitoid species against the ACP. As a result, we embarked on investigating the volatile chemicals produced by the adult male and female ACP and adult male and female *T. radiata*. Determining the chemical cues this parasitoid uses to find its host may allow us to exploit these chemicals for improved biological control of the ACP. Using standard solvent extraction and solid phase microextraction (SPME) techniques, volatiles were trapped from adult male and female *D. citri* and its parasitoid, *T. radiata* under ambient laboratory conditions. Collected volatiles were analyzed using gas chromatography coupled with mass spectrometer (GC-MS) equipped with Turbo Mass software and a DB-wax capillary columns and identified using NIST 2005 version 2.0 standard spectra. Pheromones of *D. citri* and *T. radiata* were identified. Responses of male and female *T. radiata* to the entrained air-borne volatiles from the adult male and female ACP and to the synthetic samples of the ACP pheromones were investigated in Y-tube olfactometer bioassays. Male and female *T. radiata* were behaviorally attracted to the air-borne volatiles from live adult ACP and to the synthetic *D. citri* pheromones. The results of this study provide insight into the chemical ecology of *T. radiata* and its *D. citri* host and suggest that *T. radiata* explores the kairomones of its *D. citri* host during host location processes.