

**Development and field validation of a system for autodissemination
of entomopathogenic fungi to control the Asian citrus psyllid on residential citrus**

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Abstract: The Asian citrus psyllid, *Diaphorina citri* Kuwayama (Hemiptera: Liviidae), is a key pest of citrus because it vectors the causative agents of huanglongbing (HLB). California and Texas share a pressing problem with *D. citri* and HLB spreading in residential citrus near commercial groves. Insecticidal treatment of residential trees for the psyllid is problematic and not cost effective; therefore, control of this insect vector in residential landscapes needs to rely heavily on natural enemies such as entomopathogens. The entomopathogenic fungi *Isaria fumosorosea* (*Ifr*) Wize (Hypocreales: Cordycipitaceae) is highly pathogenic towards *D. citri* and available as a commercial blastospore formulation (PFR-97) for use in autodissemination management strategies. “Autodissemination” is the dispersal of an entomopathogen by an insect. Dispensers (autodisseminators) can be deployed in residential citrus trees to attract and infect *D. citri* adults with PFR-97 blastospores for the purpose of inducing epizootics that will decimate psyllid populations on these trees. To evaluate the efficacy of our autodissemination system, we deployed dispensers treated with PFR-97 formulation on residential citrus trees in the Rio Grande Valley of Texas. For one study, we recovered dispensers after 1, 7, 14 or 21 days and tested their PFR-97 formulation for infectivity against *D. citri* adults. For a second study, we monitored *D. citri* populations for 14 weeks on untreated trees (controls) and trees given one of three treatments: (1) a single dispenser replaced every two weeks, (2) foliar sprays of PFR-97, or (3) both a dispenser and foliar sprays. We found that PFR-97 formulation recovered after 1 to 14 days could still infect adult psyllids. Dispensers or foliar sprays reduced the mean numbers of adult psyllids per tree by seven folds and the mean numbers of psyllid eggs per tree by nine folds; however, combining dispensers and foliar sprays did not further improve psyllid control. Based on our results, we determined that a single dispenser and replacement every two weeks was optimal for psyllid control on individual citrus trees. Our findings show that autodissemination of *Ifr* could be an effective and user-friendly alternative to foliar sprays for management of *D. citri* in residential landscapes.