

11.9 Investigations of the feasibility for managing the Asian citrus psyllid using *Isaria fumosorosea*.

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In Florida, growers are concerned about the ecological and economic ramifications of being dependent upon insecticide applications for the management of the Asian citrus psyllid, *Diaphorina citri*, the insect vector of the pathogen which causes Huanglongbing. In collaboration with Florida citrus growers, we have been evaluating approaches that would be more IPM compatible in the long term. In 2007, Meyer *et al.* isolated and identified an entomopathogenic fungus found infecting *D. citri* in citrus groves in Polk County as *Isaria fumosorosea* (= *Paecilomyces fumosoroseus* (*Pfr*)). Since this discovery, we have been evaluating the efficacy of different fungal strains of *Pfr* formulations (ARSEF *Pfr* 3581, *PFR* 97™ 20% WDG) and the effectiveness of autodissemination techniques as an alternative treatment. Results from laboratory bioassays indicated that leaves or yellow plastic tags (artificial insect attractant) sprayed with *Pfr* 3581 were equally effective in infecting and killing the adult psyllids. In a longevity study, *Pfr* 3581 blastospores sprayed on the yellow tags and hung in a greenhouse (10-30.5°C, RH 59-93%), remained infective to adult psyllids up to 10 weeks post-spray. In comparative pathogenicity studies, *Pfr* 3581 and *PFR* 97™ demonstrated the same efficacy for direct spray and residual infection. Due to the increasing use of copper applications for citrus canker management in Florida citrus groves, the effect of several commonly used copper products on the efficacy of *PFR* 97™ against *D. citri* was investigated. Leaves sprayed with different copper solutions in the field were excised and then sprayed with *PFR* 97™ prior to exposure to adult psyllids. Results indicated that efficacy of *PFR* 97™ against adult psyllids was not inhibited compared to the control. In a similar investigation, it was determined that the radial growth of *PFR* 97™ blastospores on potato dextrose and Noble agar plates was uninhibited following suspension in copper solutions or oil formulations commonly used in Florida citrus production (435 Spray Oil, Vintre™). In a preliminary field study in Midsweet orange trees in Okeechobee County, *PFR* 97™ was applied at a rate of 2 lbs/acre using a Curtec sprayer, and the efficacy against the psyllid and autodissemination of the fungal biopesticide by adults was evaluated. Results of the field study showed that 33% of psyllid eggs collected on the flush were infected with *PFR* 97™ 21 days post-spray, 17-29% of nymphs on the flush were infected 7-21 days post-spray and 100% (3/3) of the adult psyllids caught per yellow card were contaminated 28 days post-spray. Laboratory, greenhouse and field studies (although preliminary) suggested that there is potential for using *PFR* 97™ as part of an IPM strategy for managing psyllid populations in Florida. Additional larger scale field trials using various spray application methods need to be conducted and evaluated in order to verify how efficacious this product will be in the field. Presently, large scale efficacy field trials involving cold fogging *PFR* 97™ and also spraying in combination with oils are in progress. Studies are in progress assessing the pathogenicity of the newly acquired *Pfr* strain FE 9901 (NoFly™) against *D. citri*.

Citation: Meyer JM., Hoy MA, Boucias DG, Singh R, Rogers ME. 2007. 'Friendly fungi' killing psyllids in Florida citrus. *Citrus Industry* 88: 23-24.