Tamarixia radiata and Insecticides for Suppressing Asian Citrus Psyllid in Commercial Groves

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Summary: *Tamarixia radiata* is the primary parasitoid of the Asian citrus psyllid (ACP) in several citrus-producing regions of the world and being released in Florida citrus. Chemical control is common to suppress ACP. Insecticides from globally used classes of insecticides for controlling ACP were tested on this key parasitoid. Evaluations included dose–response of dimethoate, fenpropathrin, and imidacloprid in a topical application and lethal and sublethal effects from residues of imidacloprid, fenpropathrin, horticultural mineral oil (HMO), pyrethrin, and spirotetramat at 1, 3, and 7 days after application (DAA) of sprays on citrus trees in the grove. The parasitism potential of the females that survived insecticide exposure was evaluated on untreated nymphs of ACP developing on citrus shoots and untreated parasitoid females were evaluated on nymphs treated with insecticides. In the topical application, imidacloprid was eight times more toxic to *T. radiata* than dimethoate and fenpropathrin. The lethal effect of the residues from imidacloprid and fenpropathrin sprays was more detrimental than other insecticides. Parasitoid mortality from 1- to 3-day-old residues averaged 90–96% for imidacloprid, 83–94% for fenpropathrin, 38–77% for pyrethrin, 43–44% for HMO, and 17–33% for spirotetramat. Parasitism by females that survived insecticide exposure was reduced by 71–88% from fenpropathrin, 28–59% from pyrethrin, 31–55% from imidacloprid, 44–4% from spirotetramat, and 39–11% from HMO compared to untreated females. The lethal and sublethal effects of all insecticides on *T. radiata* were significantly reduced at 7 DAA, suggesting a lower impact on its establishment and performance if releases are made after a week from spray application.

Take Home Message:

- Parasitoid *Tamarixia radiata* is released in Florida citrus and attacks mature nymphs of Asian citrus psyllid.
- Direct sprays of insecticides or their residues on the trees cause harm to its populations.
- Its establishment and performance will be less impacted if releases are made a week after sprays are completed.

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