Establishment of Introduced Parasitoids of the Silverleaf Whitefly in Imperial Valley, CA

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An intensive effort was made to establish biological control agents in the desert southwest from 1994 to 1999. During this time, species and strains of exotic *Eretmocerus* and *Encarsia* were evaluated in laboratory and field cage tests. Within the Imperial Valley, greenhouse-reared parasitoids were released in large numbers (exceeding several million for many species) in commercial fields, refuge nursery plots and urban yards. This report provides a limited yearly examination of exotic parasitoid activity in the Valley, reflecting species establishment and relative abundance. The update primarily provides information collected from two pesticide-free refuge field plots (0.3-0.5 ha. each) located at the Imperial Valley Research Center, Brawley.

Similar to previous years, our 2002 field plots contained two beds of collard (planted in the fall of 2001), as well as okra, basil, cantaloupe and cotton (planted in March of 2002). Samples were collected approximately monthly from April to July (collard) or October (other plant species). In total, 464 *Eretmocerus* parasitoids were isolated for identification during 2002, along with *Encarsia* species. Of the entire collection of *Eretmocerus*, 50 percent of the male (Figure 1) and 41 percent of the female *Eretmocerus* were identified as representing introduced, exotic species. These findings are notable given that the native species, *E. eremicus*, is a commonly occurring biological control agent in the region. Species determination of exotics collected in 2002 is pending. From samples taken in 1997 to 2001, over 95 percent of the exotic *Eretmocerus* have been *E.* sp. nr. *emiratus* (M96076) and *E. emiratus* (M95104). The predominant *Encarsia* species collected, *E. sophia* (M95107), was very common by mid to late summer in the field nursery plots. Furthermore, *E. sophia* was the predominant parasitoid found on basil and collard in July and August, grown in a home garden in Brawley by a cooperating homeowner. *E. sophia* was also noted (by its distinct black pupal stage) as being particularly abundant on mulberry in October in the town of El Centro during 2002. In summary, several exotic species have been well established in Imperial Valley for over five years.
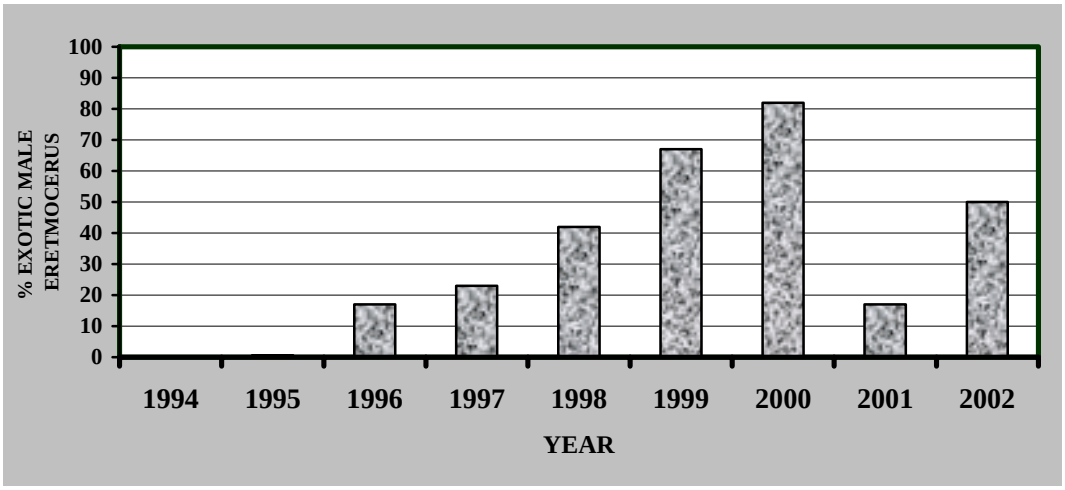
Figure 1. Establishment of Silverleaf Whitefly Exotic Parasitoids in the Genus *Eretmocerus* in Field Plots in Imperial Valley, CA