

NOVEL METHODS FOR MEASURING DISPERSAL OF THE WHITEFLY PARASITOID *ERETMOCERUS ETHIOPIA*

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ABSTRACT. We validate and apply techniques for marking and capturing small parasitoids of the silverleaf whitefly, *Bemisia argentifolii*, for mark-release-recapture (MRR) studies. First, we present a detailed description of how to build a lightweight, battery-operated suction trap to selectively collect minute insects. Second, we describe how to mark parasitoids with protein. The marker is the purified vertebrate protein, rabbit immunoglobulin G (IgG), which was applied externally by topical spray or internally by feeding. Marked parasitoids were then assayed using a sandwich enzyme-linked immunosorbent assay (ELISA) for the presence of the protein marker using an antibody specific to rabbit IgG. Virtually all of the marked *Eretmocerus* nr. *emiratus* from Ethiopia (98.0%) contained enough rabbit IgG to be easily distinguished from unmarked parasitoids, regardless of the amount of protein applied or the postmarking interval.

A field MRR study was then conducted to examine the dispersal characteristics of *E. emiratus* Zolnerowich and Rose. Protein-marked parasitoids were released on three separate trial dates into the center of a cotton field bordered by cantaloupe and okra. Overall, 1388, 637, and 397 wasps (marked + unmarked) were captured in suction traps in the three trials. A large proportion of parasitoids were captured between 0600 and 0800 h. Furthermore, even though we released an equal proportion of males to females, our traps consistently contained more males. Our results suggest that there are gender-specific differences in the dispersal behavior of *E. emiratus*. Almost 40% of the captured parasitoids collected during the three release trials were positively identified for the presence of the protein marker. The distribution of the marked parasitoids revealed two distinct patterns. First, almost all of the marked parasitoids recaptured in the cotton plot were in suction traps at or adjacent to the release site. Second, marked parasitoids were recaptured more frequently in distant traps located in the cantaloupe plot than in distant traps located in the cotton and okra plots.