

Biological Control

TRICHOGRAMMA CACOECIAE, AN EGG PARASITOID FOR CONTROL OF CHERRY BARK TORTRIX

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Naturally occurring *Trichogramma cacoeciae* Marchal (Hymenoptera: Trichogrammatidae) populations occur as an egg parasitoid on *Enarmonia formosana* (Scopoli), cherry bark tortrix (CBT), in Bellingham, Anacortes and Seattle. In July 2000, 50 parasitized CBT eggs were collected from cherry trees in Anacortes, Washington, to establish a colony at Washington State University, Pullman. Mass production of this species is straightforward due to their genetically thelytokous nature. In 2001, field studies were conducted in Seattle, Washington, to look at the dispersal, parasitism rates, and the overall efficacy of *T. cacoeciae* as a biological control agent for CBT. Our release program was greatly aided by the USDA APHIS PPQ laboratory in Niles, Michigan, which agreed to utilize their Biological Control Laboratory to mass produce *T. cacoeciae*.

In 2001, field experiments in Seattle included weekly releases of *T. cacoeciae* to acquire data on their intra- and inter-tree dispersal dynamics. Sentinel traps baited with irradiated eggs of the Mediterranean flour moth, *Ephestia kuehniella*, were placed at certain distances from the point of release to see how far *T. cacoeciae* disperses. The releases also provided data on CBT egg parasitism, which ranged from an average of 55% to as much as 95% at certain sites (Fig. 1).

Laboratory experiments with the *T. cacoeciae* colony will provide data on longevity, fecundity and storage capabilities at 5°C (Fig. 2) for different life stages. Storage capabilities are important for the potential use of *T. cacoeciae* to commercially control CBT. Longevity is greatly increased with the presence of a food source, which consequently results in continued egg laying. These field and laboratory experiments provide valuable data in our effort to combat the continuous spread of CBT from northwestern Washington, south into Oregon's urban forests and potentially east across the Cascade Mountain Range into Washington tree fruit regions.

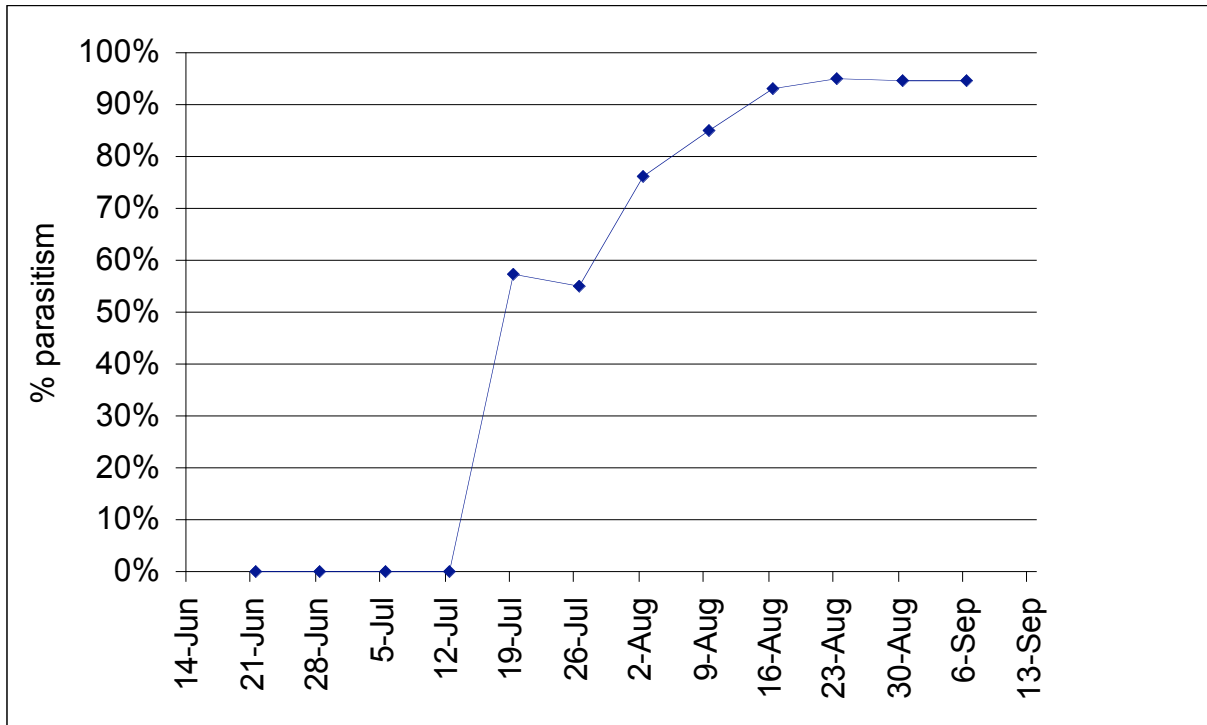


Fig. 1. Weekly percentages of parasitized CBT eggs by *T. cacaoeciae* at the Woodland Park Zoo, Bear Grotto Site, Seattle Washington, 2001.

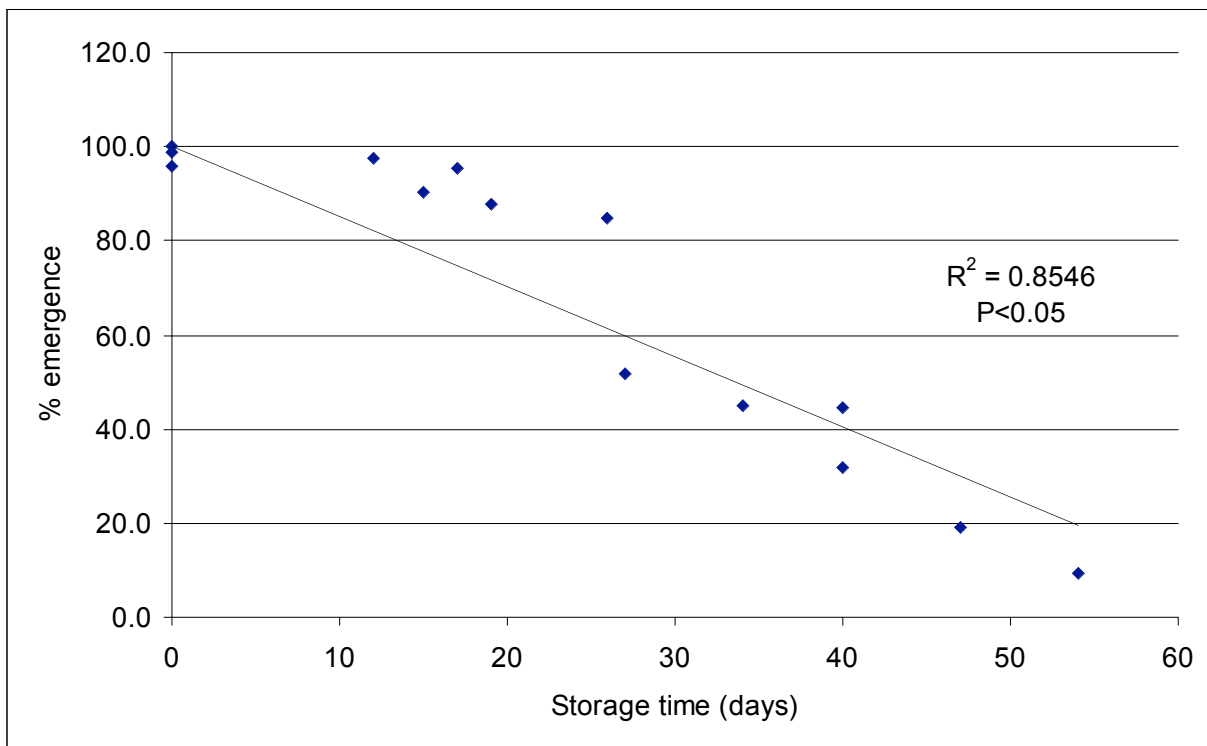


Fig. 2. Percent emergence of *T. cacaoeciae* after prolonged storage in the pupal stage at 5°C.