

Evaluation of *Trichogrammachilonis* Ishii (Hymenoptera: Trichogrammatidae) as a Potential Biocontrol Agent

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ABSTRACT: *Trichogrammachilonis* is a potential biological control agent of *Trichoplusiani*. Whenever the activity of bio-control agents is not sufficient, insecticide applications also may necessary to avoid economic crop loss. Therefore, the performance of *T. chilonis* was evaluated under the exposure of insecticides belong to different categories. It was found that profenophos was highly lethal to adult (74% mortality) and neem (7%) and chlorofluazuron (5.2%) were relatively safer for them. The survived adults showed significant variations on their longevity and capacity of parasitization. Average longevities of the survived adults after exposed to the same insecticides were 1.3, 7.0 and 5.2 days, and their levels of parasitism were 8.3, 48.0 and 51.5%, respectively. Similarly, it was also found that profenophos was highly lethal for immature stage (100% mortality) compared to chlorofluazuron and neem, which showed only 17.6% and 22.7% mortality, respectively. Parasitoids emerged withstanding exposure to chlorofluazuron and neem showed the average longevity of 6.2 and 7.6 days respectively, and their percentage of parasitism were 64.6 and 61.6, respectively across all immature stages of the host. The residue effect of profenophos and chlorofluazuron was significant up to 10 days and the ecosystem was safer for parasitoids after 15 days. Studies also indicated that host-plant volatiles have less involvement in searching behavior of *T. chilonis*. Therefore, it is capable of locating the host using host volatile and can be easily mass reared using alternative host eggs across the cabbage leaves, leaving no refuge eggs. The rate of parasitism positively responded to host egg density and it parasitized all possible eggs within five hours if the eggs are in ample supply. Due to this efficient searching and parasitization ability, survival and performance under insecticide exposure, *T. chilonis* can be considered as a potential candidate for bio-control of *T. ni* through augmentation and release.

Keywords: Dispersal, longevity, mortality, parasitism, Trichogramma

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