

Sub-Lethal Effects of Thiamethoxam and Pirimicarb on Life-Table Parameters of *Diaeretiella rapae* (Hymenoptera: Braconidae), Parasitoid of *Lipaphis erysimi* (Hemiptera: Aphididae)

Authors : Nastaran Rezaei, Mohammad Saeed Mossadegh, Farhan Kocheyli, Khalil Talebi Jahromi, Aurang Kavousi

Abstract : Integrated Pest Management (IPM) aims to combine biological and chemical strategies and measures, hence highlighting the study of acute toxicity and sub-lethal effects of pesticides comprehensively. The present research focused on the side effects of thiamethoxam and pirimicarb sub-lethal concentrations on demographic parameters of *Diaeretiella rapae* (McIntosh Laboratory) (Hymenoptera: Braconidae). Adult parasitoids were exposed to LC₂₅ of insecticides as well as distilled water as the control. The results showed that thiamethoxam adversely affected population parameters (r , λ , $R_{t=0}$, T), adults' longevity, females' oviposition period and mean fecundity, and a similar trend was obtained for pirimicarb with the exception of generation time (T), the latter did not significantly change compared to the control. The intrinsic rate of increase (r) in the control and those treated with pirimicarb and thiamethoxam were 0.2801, 0.2064, 0.1525 days⁻¹, respectively, and the sex ratio was biased toward females in all treatments. Furthermore, none of the insecticides influenced total pre-oviposition period (TPOP) and offspring emergence rate. In general, these results indicated that both insecticides potentially distort the demographic parameters of the parasitoid even at sub-lethal concentrations, and then they should not be considered for IPM program in the presence of *D. rapae*.

Keywords : *Diaeretiella rapae*, *Lipaphis erysimi*, life-table study, pirimicarb, thiamethoxam

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