

عنوان مقاله:

Foraging behavior of different developmental stages of *Hippodamia variegata* (Coleoptera : Coccinellidae) on *Hyalopterus amygdali* (Hemiptera : Aphididae)

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نویسندگان:

Soudeh Davoudi Dehkordi - Department of Plant Protection, Chaharmahal and Bakhtiari Agricultural and Natural Resources Research and Education Center, AREEO, Shahrekord, Iran

Zarir Saeidi - Department of Plant Protection, Chaharmahal and Bakhtiari Agricultural and Natural Resources Research and Education Center, AREEO, Shahrekord, Iran

Ghobad Babaei - Department of Plant Protection, Chaharmahal and Bakhtiari Agricultural and Natural Resources Research and Education Center, AREEO, Shahrekord, Iran

خلاصه مقاله:

Biological control represents an effective approach for managing pest populations in horticultural crops, presenting an alternative to the reliance on pesticides. To ensure the successful integration of predators into biological control programs, it is imperative to conduct thorough assessments of how these predators respond to changes in prey density in laboratory settings. In this study, we investigated the functional response of various developmental stages of *Hippodamia variegata* (Coleoptera : Coccinellidae) when exposed to varying densities of *Hyalopterus amygdali* (Hemiptera : Aphididae) at 26°C , $65 \pm 5\%$ RH, and 16L : 8D h photoperiod. Each treatment was replicated 15 times and conducted on almond leaves placed within Petri dishes. Our findings revealed that all larval stages, as well as adult males and females of the predator, exhibited a type II functional response when presented with different prey densities. We quantified searching efficiency (0.0219 , 0.0173 , 0.0163 , 0.0141 , 0.0198 , and 0.0128 h^{-1}) and handling times (5.7650 , 2.6023 , 0.7303 , 0.3166 , 0.7352 , and 0.2920 h) for the first through fourth instar larvae, male and female adults, using Holling's disc equation. Notably, handling times for males were significantly longer than those for females or fourth instar larvae. Nevertheless, no statistically significant differences were observed in the attack rate between fourth instar larvae and either adult females or males. The maximum attack rate (T/Th) for the first to fourth instar larvae, male, and female *H. variegata* was estimated as 4.163053 , 9.222611 , 10.52909 , 10.2925 , 32.64418 , and 82.19178 , respectively. Consequently, our results indicate that the fourth instar larvae and adult females of *H. variegata* are recommended for utilization in biological control programs aimed at managing *H. amygdali* populations.

کلمات کلیدی:

Biological control, attack rate, Handling time, *Hyalopterus amygdali*, *Hippodamia variegata*

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