

Abstract:

The Lady beetle, *Adalia bipunctata* is one of the natural enemies of *Agonoscena pistaciae* Burckhardt and Lauterer. Demographic toxicology is a common method for evaluating sub lethal effects of insecticides on natural enemies. Regarding the use of Thiamethoxam, Acetamiprid and Hexaflumuron in pistachio gardens, present study conducted to evaluate the side effects of this three pesticides, on biological and biochemical parameters and stable population growth parameters of *Adalia bipunctata* in controlled conditions (27/5^{0C}, 65±5 RH and 16:8 h- L:D). Eggs were treated with be calculated concentration by dipping method. The minimum developmental duration of eggs was 2.74 and 2.99 days for hexaflumuron, respectively. hexaflumuron showed maximum inhibitory effect on egg development, larval developmental time was incrise in Hexaflumerun in comparison to Thiamethoxam, Acetamiprid and control (P< 0.05). Results showed significant differences between treatment for gross reproductive rate (GRR), net reproductive rates (R_0), intrinsic rate of increase (r_m), finite rate of increase (λ), intrinsic birth rate (b) and doubling time (DT) parameters. The gross reproduction rates were estimated 190.9±1.207, 204.5 ±1.698, 295.2±1.846 and 278.2±1.623 in Thiamethoxam, Acetamiprid, Hexaflumuron and control respectively. Also r_m were estimated 0.087±0.002, 0.111±0.006, 0.104±0.004 and 0.151±0.005, and DT were 7.978±0.015, 6.414±0.028, 6.571±0.015 and 4.562±0.011 as above mentions respectively. Considering this results, Thiamethoxam had higher negative effect on intrinsic rate of *Adalia bipunctata*. The side effect of three insecticides was survived on larvae and adult of *A. bipunctata* by topical and contact method. The results showed that the side effect of two insecticide Acetamiprid and Hexaflumuron on larvae of *A. bipunctat* by topical method were the highest and lowest respectively. Also the side effect of these two insecticides on adult of *A. bipunctata* was calculated the highest and lowest in Acetamiprid and Hexaflumuron respectively. In contact method on larvae and adult of *A. bipunctata* was calculated the highest and lowest in Acetamiprid and Hexaflumuron respectively.

Keywords: Side effect, *Agonoscena pistaciae*, *Adalia bipunctata*, Life table, sublethal effect.



University of Zabol
Graduate School
Faculty of Agriculture
Department of Plant Protection

**The Thesis Submitted for the Degree of M.Sc. (in the field
of Agricultural Entomology)**

**Biological effects of three pesticides on
Adalia bipunctata (Col.: Coccinellidae)**

Supervisor:
Dr. S. Ravan

Advisors:
Dr. A. khani
M.Sc. M. Basirat

By:
A. Rajabi Momen Abad

October 2013