

THE EFFICACY OF SOME MICROBIAL BIOPESTICIDES AGAINST DIAMONDBACK MOTH IN FIELD

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INTRODUCTION:

The diamondback moth, *Plutella xylostella* (L.) (Lepidoptera, Plutellidae), is the most important pest of crucifers in central parts of Iran. The overuse of pesticides has destroyed the natural check of the pest by its parasitoids. The present study aimed to study the efficacy of three biological insecticides [Antario 32K® (Bt ssp. *Kurstaki*; 32000 iu/mg; Russell IPM, UK), Belthirul® (Bt ssp. *Kurstaki* pb 54 strain; 32000 iu/mg; Probelte, Madrid, Spain) and Biolep® (Bt ssp. *Kurstaki*; 108 cells/ml; Tabiatgera, Karaj, Iran)], two registered chemical insecticides [Avaunt® (Indoxacarb SC 150) and Consalt® (Hexaflumuron EC 10%)] and a new insecticide Atabron® (Chlorfluazuron SC 10%) against *P. xylostella* in Isfahan province.

MATERIALS AND METHODS:

A field experiment was established using nine different pesticide treatments [Antario 32K® (1 kg/ha), Belthirul® (1 kg/ha), Biolep® (2 kg/ha), Avaunt® (0.25 lit/ha), Consalt® (1 lit/ha), Atabron® (0.5, 0.75 and 1 lit/ha) and control (water)] in plots of 50 m² at a 2.5 ha cauliflower farm, which was heavily infested to *P. xylostella*, in Falavarjan county (southwestern Isfahan) during autumn 2011. The treatments were replicated four times in a randomized complete block design. The live *P. xylostella* larvae were recorded on 5 cauliflower plants in each plot the day before the pesticide spraying and once again 5 days after the application. The data was corrected using Henderson-Tilton's formula and differences in the percentage mortality between treatments were analyzed using logistic analysis of deviance (binomial error) in R 2.10.0.

RESULTS AND DISCUSSION:

There was a significant difference between the tested insecticides for their effects on *P. xylostella* mortality; such that the best efficacy in causing *P. xylostella* larval mortality was obtained by Atabron® [1 lit/ha] and Belthirul® with the percentage mortality of 60.8 and 58.8, respectively. The mortalities caused by Biolep® (47.1%), Antario 32K® (41.2%), Avaunt® (37.3%), Consalt® (27.5%), Atabron® [0.75 lit/ha] (15.7%) and Atabron® [0.5 lit/ha] (11.8%) were not significantly different. Given the present study's findings and the bio-safety risk of using chemical pesticides, Belthirul® (1 kg/ha) can be recommended as a component of sustainable management strategies of *P. xylostella* in Isfahan province.

Keywords: *Plutella*, *Bacillus*, *Bt*, biopesticide, Isfahan

REFERENCES:

- Karimzadeh J, Hardie J, Wright DJ (2013) Plant resistance affects the olfactory response and parasitism success of *Cotesia vestalis*. *Journal of Insect Behavior* 26, 35-50.
- Karimzadeh J, Sayyed AH (2011) Immune system challenge in a host-parasitoid-pathogen system: interaction between *Cotesia plutellae* (Hym.: Braconidae) and *Bacillus thuringiensis* influences parasitism and phenoloxidase cascade of *Plutella xylostella* (Lep.: Plutellidae). *Journal of Entomological Society of Iran* 30, 27-38.
- Karimzadeh J, Wright DJ (2008) Bottom-up cascading effects in a tritrophic system: interactions between plant quality and host-parasitoid immune responses. *Ecological Entomology* 33, 45-52.



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