

Poster Presentations

Nematodes

P NEM 14

Efficacy of entomopathogenic nematode, *Heterorhabditis bacteriophora* against the diamondback moth, *Plutella xylostella* (L.) in laboratory condition

M. Zolfaghariani, A. Saeidzadeh¹, H. Abbasipour¹, A. Joyandeh², A. Ahmadian Yazdy

¹Shahed University, Plant Protection, Tehran, Islamic Republic of Iran

²Agricultural and Natural Resources Center of Mashhad, Mashhad, Islamic Republic of Iran

habbasipour@yahoo.com

The diamondback moth, *Plutella xylostella* (L.), is a global pest which has a large spread in tropical and subtropical and around the world does damage to cabbage and other plants of Brassicaceae family. This pest is able to attack their hosts in the greenhouse and field. In vitro studies was carried out on the diamondback moth, *Plutella xylostella* larvae using an insect entomopathogenic nematode isolate, *Heterorhabditis bacteriophora* obtained from the Koppert company, Netherlands. Larvae of *P. xylostella* were collected from cabbage farms around Mashhad city of Iran. During the study, the responses of larvae at 25 °C for three periods of 24, 48 and 72 h with different concentrations of 0, 50, 100, 200, 400, 800, 1600, and 3200 third instar larvae of nematode (infective stage=IJs) per insect into 10 cm Petri dishes containing filter paper soaked with 1 ml of nematodes suspension was performed. Maximum mortality caused by *H. bacteriophora* nematode was 60% at 24 h, 80% at 48 h and it was 100% at 72 hours. With increasing nematode population level and exposure time mortality of *P. xylostella* larvae was increased. Based on probit analysis, LC₅₀ values of *H. bacteriophora* nematode in three test periods were 1484.57, 544.97 and 242.67 IJs per insect, respectively. Initial ANOVA was performed for *H. bacteriophora* nematode. The effect of both nematode population levels (IJ) and exposure time (ET in hour) on third instar larvae of the diamondback moth, *P. xylostella* (df = 6; F <0.001) and (df = 2; F <0.001) was significant respectively. In general it is recommended to apply this nematode in suitable condition for controlling diamondback moth.

P NEM 15

Potency of entomopathogenic nematodes on the tomato leaf miner *Tuta absoluta* (meyrick) (Lepidoptera - Gelechiidae)

H. S. Salama¹, M. Fouda², I. Ismail¹, I. Ebada¹, I. Shehata¹

¹National Research Centre, Plant Protection Dept., Cairo, Egypt

²Azhar University, Entomology, Cairo, Egypt

hsarsalama@hotmail.com

The tomato leaf miner *Tuta absoluta* (meyrick) is considered as causing the greatest loss of tomato plantations in Egypt since its introduction in 2009. The potential of entomopathogenic nematodes in suppressing the insect developmental stages has been evaluated under laboratory conditions. The tested native isolates were *Heterorhabditis bacteriophora* (Hb), *Heterorhabditis indica* (Hi), *Steinernema carpocapsae* (Sc) and the imported isolate *Heterorhabditis bacteriophora* (Hb88). It appears that the first larval instar is more susceptible to infection with all tested nematodes strains judged from the LC₅₀ values. These values were 57.17, 57.61, 62.57 and 72.49 IJs after treatment with *H. bacteriophora* (Hb), *H. bacteriophora* (Hb88), *H. indica* (Hi) and *S. carpocapsae* (Sc), compared to 58.9, 61.95, 114.7 and 76.95 IJs, after treatment of fourth larval instar with the same isolates, respectively. The pupal stage was least susceptible. Value of LC₉₅ run in the same way. So these nematodes can be recommended for use in IPM strategies and which may alternate the application of hazardous chemical insecticides.

P NEM 16

Effects of amino acid treatments on nematodes

R. Bluemel, D. Fischer, M. W. Grundler

University Bonn, Molecular Phytomedicine, Bonn, Germany

rbluemel@uni-bonn.de

Amino acids (aa) are naturally occurring substances that are important for all living organisms. The application of certain at different concentrations affects various life stages of a broad spectrum of nematode species. However, the mechanistic details for the observed effects remain elusive till now. To investigate this question, we analyzed the effects of methionine (Met), lysine (Lys), threonine (Thr), isoleucine (Iso), 2-ketobutyric acid (Ket), homoserine (Hom) and tryptophan (Try) on the free-living nematode *Caenorhabditis elegans* and the plant parasite *Heterodera schachtii*. The activity and development of *C. elegans* was decreased by Try applications. No aa had an effect on the activity of *H. schachtii*. Interestingly, soaking J2 stage nematodes in aa solutions for twenty-four hours, led to more female nematodes per plant for Lys, and less for Thr. The strongest effects were observed when aa were supplemented to the nutrient-medium in a monoxenic culture of the host plant, *Arabidopsis thaliana*. This approach reduced the number of female nematodes per plant for Iso, Met, Thr, and Ket. Additionally, slight negative effects could be detected on the adult female sizes. Interestingly, these effective aa all belong to a group of metabolites that are