



XXVI International
Congress of Entomology
HELSINKI, FINLAND, JULY 17-22, 2022

Book of Abstracts

www.ICE2022Helsinki.fi

Side effects of some insecticides on two *Halyomorpha halys* egg parasitoids, *Trissolcus japonicus* and *Trissolcus mitsukurii*

Authors: Chiesa Serena Giorgia², Hoelmer Kim A.³ and Angeli Gino¹, ¹Edmund Mach Foundation - Technology Transfer Center, Italy, ²Fondazione Edmund Mach, Italy, ³U.S. Dept. of Agriculture, Agricultural Research Service, Beneficial Insect Introduction Research, Newark, Delaware, United States

Abstract: *Halyomorpha halys* is an invasive species native to eastern Asia accidentally introduced to America and Europe, causing severe damage in agriculture.

The egg parasitoid *Trissolcus japonicus* is the main natural enemy of *H. halys* in Asia, and adventive populations were discovered recently in USA and Europe. In Italy a second Asian egg parasitoid, *Trissolcus mitsukurii*, was detected parasitizing egg masses of *H. halys*. Both parasitoid species appear to be widely distributed in northern Italy. In Italy, the possibility for the application of a classical biological control program is currently being debated. A management approach involving the use of biological control in specialized crop cultures entails the need to determine the sensitivity of the parasitoids to commonly used agrochemicals and measure their persistence of these pesticides at levels harmful to the natural enemies over time.

Females and males of *T. japonicus* and *T. mitsukurii* used in our studies were obtained from lab-reared colonies using *H. halys* eggs as host. *T. japonicus* originated from the USDA Beijing colony, while *T. mitsukurii* was field collected in northern Italy. The insecticides whose selectivity was assessed in semi-field trials included Coragen (rynaxypyr; 0,2 ml/L), Steward (indoxacarb; 0,17 g/L), Delegate (spinetoram; 0,26 g/L) and Karate zeon 1.5 (lambda-cyhalothrin; 0,2 ml/L). An untreated control was added to the insecticide tests. The products were applied in the field on apple trees (Fuji variety) with a portable sprayer and the treated shoots were collected at three successive dates: T+0, T+5 and T+8 days after the treatment. The shoots were brought to the laboratory and placed in plastic cages. Ten females (3 replicates) were added to each cage, provided with honey, and incubated in a thermostatic cell (26±1 °C; 65% RH; 16:8 h light/dark).

Parasitoid mortality was assessed at 24 and 48 h (apparently insecticide-affected specimens were categorized as dead). The mortality values were transformed with the Schneider-Orelli formula to obtain the correct mortality rate. Results showed a low mortality of *T. japonicus* in the control that was always = 10%. On the same day of field application of the insecticides (T+0), Coragen and Steward showed good selectivity towards female *T. japonicus*, with a mortality rate of three and zero percent respectively. After 48 h of exposure, Coragen was confirmed to be quite selective, while Steward mortality increased significantly (87%). Similar results were observed when field-treated shoots were exposed to parasitoids after 5 or 8 days from treatment (T+5 and T+8). Karate Zeon and Delegate were shown to not be selective for *T. japonicus* from the start at T+0, with a mortality of 53 and 100% respectively. At T+5 and T+8 Delegate activity remained almost constant at high levels, while the toxicity of Karate Zeon tended to decrease over time. The same trends were observed for treated *T. mitsukurii* females and for males of both species.

Forensically Important Acari Associated with Rabbit Carcasses Placed at Four Different Ecoregions in Malaysia

Authors: Chin Heo Chong¹, N Azmiera¹ and A Mariana², ¹Faculty of Medicine, Universiti Teknologi MARA, Sungai Buloh Campus, Jalan Hospital, Sungai Buloh, Selangor, Malaysia, ²Unit of Acarology, Infectious Diseases Research Centre, Institute for Medical Research @National Institutes of Health Malaysia, Seksyen, Malaysia

Abstract: Recent development in forensic acarology has raised the interest of researchers on the importance of Acari in death investigations. The understanding of how ecoregion differences could affect mites' diversity and abundance is important as they are useful as forensic indicators to detect location of death as well as minimum post-mortem interval (mPMI). Therefore, the aim of this study was to determine the diversity and abundance of forensically important mites at four different ecoregions in Malaysia. Three rabbit carcasses (n = 3) were placed at each different locality namely forest, highland, village, and oil palm plantation. One hundred gram of soil samples were collected from beneath and around the decomposing carcasses every three days until the carcasses reached the skeletonization stage (i.e., 40 days). The soils were then placed in the Berlese-Tullgren funnel for the extraction of mites and proceeded with slide mounting for family identification. The ambient temperature and the amount of precipitation for each location were recorded. The abundance of mites in the forest was significantly higher than the other study sites (P <0.05) with the mean abundance of 7.47 ±7.52. Mites recovered from the highland (5.30 ±8.58) and oil palm plantation (4.23 ±5.49) were significantly higher than those from the village (1.92, ±3.52). The most abundant family of mites of forensic importance in the forest was Macrochelidae; Histiostomatidae on the highland, and Acaridae for both village and oil palm plantation. The soils samples collected from beneath and around the carcasses contain significantly more mites than those in the control soil (P<0.05). The introduction of carrion to the soil ecosystem has caused significant changes in the diversity and abundance of mites and further study is therefore needed to validate these changes as geographical and mPMI indicators in forensic investigations.