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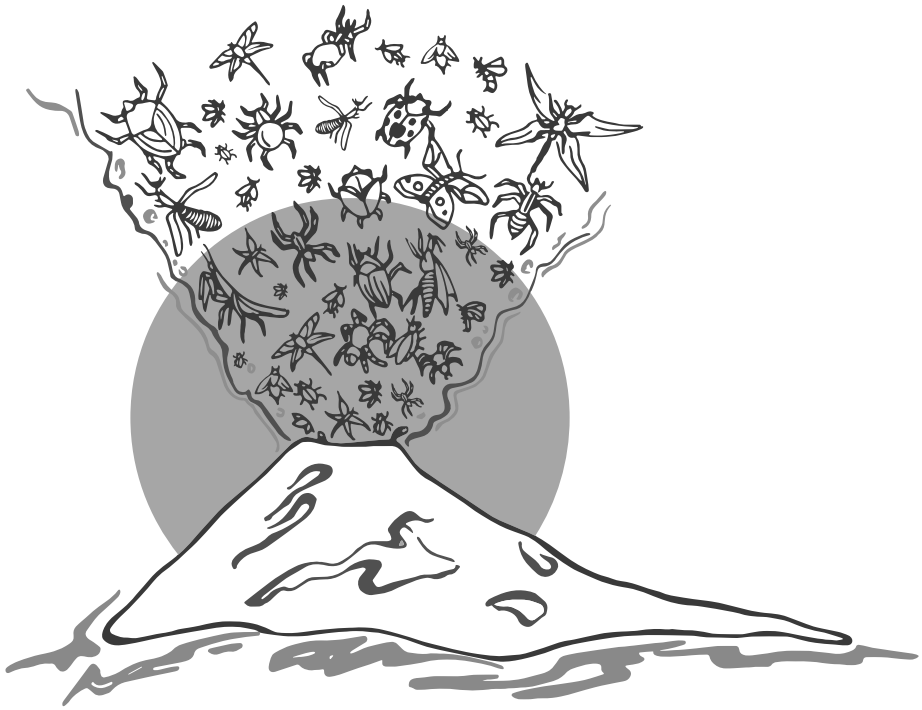

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BOOK OF ABSTRACTS

insecticides are the main method used to control crop aphid populations, however, with increased aphid resistance to insecticides and restrictions on insecticidal classes, effective aphid population control must look towards integrated pest management strategies. There are currently no modern wheat varieties with resistance to *R. padi*. Ancestral *Triticum monococcum* (L.) lines have been shown to possess some antibiosis (post–alighting) resistance to *R. padi*, but it is unknown whether this resistance is present at different growth stages. Aphid development, survival and reproduction were investigated on one, two, 12 and 20 week old *T. monococcum* lines differing in resistance to *R. padi*. It is unknown if there is antixenosis (pre-alighting) resistance in *T. monococcum*. Volatile organic compounds (VOC's) were extracted from non-infested and aphid infested plants using air entrainment technique. Aphid behaviour towards these VOC's were determined by olfactometry. Resistance observed in the laboratory was explored in field conditions, monitoring aphid populations (*R. padi*, *Sitobion avenae*, *Metopolophium dirhodum*) and the presence of natural enemies (Coccinellidae, Crysopidae larvae, parasitized aphid). Results showed that the presence and degree of post-alighting resistance was dependant on both the resistant genotype and plant age. Pre-alighting resistance was dependant on the resistant genotype and the presence of infestation, indicating that aphids can distinguish between more and less suitable hosts. Field observations revealed that the presence of both aphids and natural enemies was determined by host plant susceptibility to aphids.

Keywords: Aphid, antibiosis, antixenosis, *Rhopalosiphum padi*, temporal, *Triticum monococcum*, volatiles, wheat

PO106

SYMBIOTIC CONTROL OF THE OLIVE FRUIT FLY, *BACTROCERA OLEAE*

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The olive fruit fly *Bactrocera oleae* (Rossi) (OLF) is a major pest, which causes severe yield losses and quality decay of olive oil. The widespread use of chemical insecticides to control this pest is a major concern for the resulting environmental impact and food safety issues. Therefore, the development of sustainable control strategies is highly desirable. The primary endosymbiotic bacterium of the OLF, "*Candidatus Erwinia dacicola*", is essential for successful larval development in unripe olive fruits. Then, targeting this endosymbiont with antimicrobial compounds may exert a control action against OLF. Here we evaluate the impact on OLF endosymbiont of Copper Oxychloride (CO) and the fungal metabolites Viridiol and Harzianic Acid (HA) produced by two biocontrol strains of *Trichoderma* spp. Laboratory bioassays were carried out on OLF wild populations to assess the effect of the oral administration of these compounds on mortality and fecundity of adult flies, and on larval development of their progeny in unripe olive fruits. Treated females were processed by qPCR to measure the endosymbiont load in the oesophageal bulb and in the midgut. Exposure to Viridiol and HA had a strong negative impact on endosymbiont load and OLF larval survival, while CO negatively affected both adults and larval stages, showing a combined toxic action and an anti-symbiotic effect, which was dose-dependent. These results provide new insights on the symbiotic control of the OLF and pave the way for developing new strategies based on the use of natural compounds with antimicrobial activity.

Keywords: *Trichoderma*, IPM, real-time PCR, antimicrobial activity, Copper

PO107

FACTORS AFFECTING WOOD ANT DISTRIBUTION IN THE BIAŁOWIEŻA FOREST

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Wood ants (the species of the subgenus *Formica* s. str.) are common in coniferous, mixed and deciduous forests of the Palaearctic ecozone, where they are one of the most important group of insects due to their high abundance and activity. The Białowieża Forest is one of the largest and best preserved forest ecosystems within the temperate zone in Europe, and is widely regarded as the best example of an ancient forest with limited anthropogenic impact, in terms of observations and research into pristine deciduous and mixed forests. We conducted a survey of wood ant mounds in an area of 1400 ha in the Białowieża Forest (N-E Poland) and related physical mound characteristics to the surrounding forest properties. We recorded the following ant mound parameters: diameter at the base, mound height, exposure of the longest slope and the distance to the closest tree (only for active mounds). In addition, we estimated the illumination condition (well-lit, moderate shade and full shade). The overall density of inhabited wood ant mounds was 0.13 ha-1. *Formica polyctena* and *F. rufa* were the most abundant species, and the highest densities of their mounds were found in fresh mixed deciduous and fresh mixed coniferous forests. The physical mound properties, like direction of the longest mound slope and the distance to the closest tree did not differ significantly between these two ant species. A significant factor affecting mound size and closest tree distance was the light condition, and consequently mound diameter, height and volume increased with increasing shade. The distance to the closest tree was greater under well-lit conditions than under shaded conditions. The results of our study suggest that coniferous forests with an admixture of deciduous trees are the most promising for maintaining vital wood ant populations in the forest.

Keywords: Wood ant, *Formica* polyctena, *Formica rufa*, Białowieża Forest

PO108

MANAGEMENT STRATEGIES TO CONTROL THE CAPE GRAPEVINE LEAFMINER, *HOLOCACISTA CAPENSIS*, IN SOUTH AFRICA

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A native leafminer, *Holocacista capensis* Nieukerken & Geertsema (Lepidoptera: Heliozelidae), was detected in a table grape vineyard in the Western Cape province, South Africa (2012), soon after stricter Maximum Residue Levels (MRL) were imposed. Since 2012, considerable effort has been exerted to gain clarity on the taxonomy of the moth; develop an attractant; establish action thresholds associated with bunch infestation; and explore the moths' bioecology and distribution throughout the Western Cape. The aim of this study was to contribute to an integrated pest management strategy, focused on the effective control of the leafminer. Various commercially available products (predominantly chemical control agents) and a biological control agent, namely entomopathogenic nematodes (EPNs), were tested against the leafmining larvae of H. capensis, collected locally. The trials were conducted by means of exposing 20 to 30 leafmining larvae to each of the chemical and biological treatments. Larval mortality was