



European PhD Network "Insect Science" XV Annual Meeting

Firenze, 13-15 November 2024

PROGRAMME & BOOK OF ABSTRACTS

CREA Centro di Ricerca per la Difesa e la Certificazione
Via Lanciola 12/a - Cascine del Riccio (Firenze)

European PhD Network "Insect Science" - XV Annual Meeting

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PROGRAMME

SESSIONS ON:

- INSECT PEST CONTROL (13 & 14 November)
- INSECT BIOLOGY (13 & 14 November)
- INSECT ECOLOGY AND CONSERVATION (14 & 15 November)

Wednesday 13 November 2024

13:30 **Registration**

14:00 **Welcome address**

14:10 **Senior scientist lecture:** Emmanuelle Jaquin Joly - INRAE, Sorbonne University
Reverse chemical ecology targeting insect odorant receptors: new avenues for pest control

14:40 - 16:30 **SESSION ON INSECT PEST CONTROL**
Oral Presentations (regular & short talks)
Chair: TBD onsite

14:40 - 14:55 **R** Sara Amoriello - CREA, University of Siena
Entomopathogenic nematodes for biological control of *Popillia Japonica* larvae: current status and future prospects

14:55 - 15:10 **R** Aurora Bozzini - University of Padova
Multispectral drone images for the early detection of *Ips typographus* infestations: assessment over large forest areas in the South-Eastern Alps

15:10 - 15:15 **S** Matilde Case - University of Padova
Development of new technologies for the study and management of the European spruce bark beetle *Ips typographus*

15:15 - 15:30 **R** Maria Rosaria Chianese - University of Napoli Federico II
Evaluation of frass of *Hermetia illucens* as elicitor of plant defenses against aphids

15:30 - 15:45 **R** Corentin Clavé - University of Napoli Federico II, CNRS-University of Tours
Endophytic colonisation of *Beauveria bassiana* in tomato plants: mechanisms and consequences for the control of the lepidopteran pest *Spodoptera littoralis*

15:45 - 16:00 **R** Maria Giovanna De Luca - University of Napoli Federico II
Three different endophytic microorganisms are effective control agents of *Spodoptera littoralis* noctuid moth larvae

16:00 - 16:15 **R** Nicolò Di Sora - Tuscia University
Advancements on the management of *Toumeyella parvicornis* (Cockerell, 1897): biology, distribution and control strategies

R Regular Presentation (15 min, discussion included) **S** Short Presentation (5 min, discussion included)

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- 16:15 - 16:30 **R** Giovanni Jesu - University of Napoli Federico II
Sublethal effects of prosystemin biologically active repeat motifs on *Spodoptera littoralis* larvae
- 16:30 **Coffee break**
- 16:50 - 18:30 **SESSION ON INSECT BIOLOGY**
 Oral Presentations (regular & short talks)
 Chair: TBD onsite
- 16:50 - 17:05 **R** Ilaria Armenia - University of Insubria
Impact of protein-to-carbohydrate ratio on the immune response of black soldier fly larvae
- 17:05 - 17:20 **R** Laura Rita Besana - University of Padova
Color vision in longhorn beetles: from electroretinogram recordings to practical applications
- 17:20 - 17:35 **R** Sara Caramella - University of Insubria
Effects of lead intake on *Hermetia illucens* immune system and development
- 17:35 - 17:50 **R** Marilù Cardinale - University of Napoli Federico II
Cryptocephalinae beetles (Coleoptera, Chrysomelidae) host a symbiont from the Morganellaceae family: prevalence, localization and potential roles for the host
- 17:50 - 17:55 **S** Marta Chignola - Free University of Bolzano
***Myzus mumecola*: insights into the biology of the newly invasive apricot aphid**
- 17:55 - 18:00 **S** Emanuele Crepet - University of Milano
Across the Spiderverse: comparative analysis of metals in spiders' mouthparts (Arachnida, Araneae)
- 18:00 - 18:15 **R** Giovanna De Leva - University of Napoli Federico II
An immunosuppressive virus causes gut dysbiosis in honey bees
- 18:15 - 18:30 **R** Aya Mohamed Attia Elsayed - University of Torino
Insect gut microbiome as a resource to improve insect mass rearing

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Thursday 14 November 2024

- 09:00 **Senior scientist lecture:** Massimo Nepi - University of Siena
The power of plants: insect manipulation in nectar-mediated interactions
- 09:30 - 11:10 **SESSION ON INSECT ECOLOGY AND CONSERVATION**
 Oral Presentations (regular & short talks)
 Chair: TBD onsite
- 09:30 - 09:35 **S** Sara Basiglio - University of Milano
Assessing the impact of different chemical pollutants on the gut microbiome of different pollinator species
- 09:35 - 09:50 **R** Sara Boschi - University of Siena

R Regular Presentation (15 min, discussion included) **S** Short Presentation (5 min, discussion included)

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**Population genetics and the role of dispersal barriers in the Antarctic springtail
Kaylathalia klovstadi (Collembola, Isotomidae)**

- 09:50 - 10:05 **R** Carla Libia Corrado - Sapienza University of Roma
Potential effects of an organic biostimulant on the tri-trophic interaction zucchini-ZYMV-aphid vector
- 10:05 - 10:20 **R** Paola Costagliola - University of Napoli Federico II
Arthropod biodiversity in Italian agroecosystems: monitoring approaches and factors of influence
- 10:20 - 10:35 **R** Claire Duménil - Free University of Bolzano
The impact of endophytic communities on the volatile organic compound profile of sunflower *Helianthus annuus* and its detection by honey bees
- 10:35 - 10:50 **R** Jay Darryl Ermio - University of Palermo
Neglected microbes in floral nectar: influence of filamentous fungi on nectar traits and parasitoids olfaction and performance
- 10:50 - 10:55 **S** Marco Falasco - University of Padova
Environmental and habitat influences on the gut microbiota of two European pollinators
- 10:55 - 11:10 **R** Alberto Fassio - University of Torino
New insights into the biology and parasitism rate of *Aphelinus mali*, parasitoid of the woolly apple aphid *Eriosoma lanigerum*
- 11:10 **Coffee Break**
- 11:30 - 13:05 **SESSION ON INSECT PEST CONTROL**
Oral Presentations (regular & short talks)
Chair: TBD onsite
- 11:30 - 11:45 **R** Stefano Galvagni - University of Trento, Fondazione Edmund Mach
Impacts of *Scaphoideus titanus* disturbance vibrational signal on grapevine defence mechanisms
- 11:45 - 12:00 **R** Vito Antonio Giannuzzi - University of Perugia
Assessing attraction of lures and dispensers on the efficiency of *Halyomorpha halys* trapping
- 12:00 - 12:15 **R** Valeria Grande – CNR, University of Torino
Sustainable *Varroa destructor* management influences honeybee viral dynamics
- 12:15 - 12:20 **S** Badr-Eddine Jabri – University of Torino
Effects of insecticide application on the gut microbiome of *Scaphoideus titanus*: shifts in endosymbiont composition and diversity
- 12:20 - 12:35 **R** Samah El Moussaoui - University of Trento
Biotremology for pest management, new solutions for stink bugs and true bugs
- 12:35 - 12:50 **R** Roberto Masturzi – Tuscia University
Impact of pest control management of phytophagous and predatory mites in hazelnut orchards in Central Italy
- 12:50 - 13:05 **R** Sara Paola Nastasi - University of Milano

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Humic substances-based nanoparticles as a novel nano-delivery system for an RNAi-mediated control strategy against *Spodoptera littoralis*

13:05 **Lunch**

14:15 **Senior scientist lecture:** Dana Ment - Agricultural Research Organization ARO
Lifestyle switches in entomopathogenic fungi – from pest control to plant benefit and beyond

14:15 - 15:30 **SESSION ON INSECT PEST CONTROL**

Oral Presentations (regular & short talks)

Chair: TBD onsite

14:15 - 14:30 **R** Adriana Poccia - University of Perugia

Behavioural response of *Phlaenus spumarius* to different compounds from essential oils

14:30 - 14:35 **S** Luca Rasi - University of Bolzano

Developing innovative digital solutions for the automatic detection and discrimination of *Drosophila suzukii* and *Drosophila melanogaster*

14:35 - 14:40 **S** Chiara Sciandra – CREA, University of Siena

Testing chitosan-based Fosetyl-Al nanocrystals in *Meloidogyne javanica* control

14:40 - 14:55 **R** Maria Carmen Valoroso - University of Milano

Characterization of the responses mounted by *Aedes albopictus* larvae exposed to the entomopathogen *Bacillus thuringiensis*

14:55 - 15:10 **R** Giorgio Vicari - University of Pisa

A regional plan for the management of the alien hornet *Vespa velutina* (Hymenoptera: Vespidae) in Tuscany

15:10 - 15:25 **R** Francesco Volpe - University of Torino

The egg parasitoid *Ooctonus vulgatus* (Hymenoptera: Mymaridae) in Northwestern Italy

15:25 - 15:30 **S** Marzia Zagallo - Free University of Bolzano

***Wolbachia*: endosymbiotic bacteria of insects and their potential use for sustainable pest control**

15:30 **Coffee Break**

15:50 - 17:15 **SESSION ON INSECT BIOLOGY**

Oral Presentations (regular & short talks)

Chair: TBD onsite

15:50 - 16:05 **R** Frédéric Manas – IRBI, University of Tours

Seminal fluid proteome and female post-mating responses in the black soldier fly *Hermetia illucens*

16:05 - 16:20 **R** Martina Marzari - University of Insubria

Evaluation of the growth performance of BSF larvae on a polyethylene terephthalate (PET)-contaminated substrate

16:20 - 16:25 **S** Marianna Olivadese - University of Bologna

A humanistic approach to entomology: tracing the imprint of the past on modern

R Regular Presentation (15 min, discussion included) **S** Short Presentation (5 min, discussion included)

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Testing chitosan-based Fosetyl-Al nanocrystals in *Meloidogyne javanica* control



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Plant-parasitic nematodes pose a significant threat to global plant health, with root-knot nematodes, particularly *Meloidogyne* spp., causing severe yield losses in horticultural and field crops. Chemical nematicides, traditionally used for control, are now restricted due to their harmful environmental and health effects. This has driven the search for eco-friendly alternatives, leading to increased interest in innovative solutions such as nanotechnology. For this reason, we conducted a study to evaluate the efficacy of a novel Fosetyl-Al formulation in controlling *Meloidogyne javanica*. *In vitro* experiments were performed using chitosan-based Fosetyl-Al nanocrystals (CH-nanoFos), synthesized through a sonication-assisted method employing chitosan as a coating agent. Preliminary experiments established optimal CH-nanoFos concentrations for testing against *M. javanica*. Nematicidal, nematostatic, and hatching inhibition effects were assessed at concentrations of 1, 2, and 4 mg/ml over different exposure times. Results revealed that nematicidal activity increased with higher concentrations and longer exposure, while nematostatic activity decreased. Hatching inhibition was also concentration- and time-dependent, with hatching decreasing with both concentration and time.

The study also investigated the effects of CH-nanoFos on mature tomato plants and seeds germinated for up to 14 days, focusing on germination percentage, seedling growth, genotoxic effects, and the content of polyphenols, flavonoids, and photosynthetic pigments. Ongoing TEM observations are assessing CH-nanoFos uptake and translocation within plant tissues, while *in vivo* experiments are evaluating its efficacy against *M. javanica* in tomato plants.