



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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REGULAR & SHORT PRESENTATIONS



ABSTRACTS

(in alphabetical order by last name of the 1st author)

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Entomopathogenic Nematodes for Biological Control of *Popillia Japonica* Larvae: Current Status and Future Prospects



S. Amoriello^{1,2}, G. P. Barzanti¹, F. Paoli¹, L. Marianelli¹, P. F. Roversi¹, G. Torrini¹

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The Japanese beetle (*Popillia japonica* Newman), first detected in Northern Italy in 2014, is considered one of the most dangerous quarantine pests for the entire European territory due to its potential environmental, economic, and social impact. As its larvae spend most of their life cycle in the soil, entomopathogenic nematodes (EPNs) offer a promising biological control option. *Heterorhabditis bacteriophora* (strain POP 16) was detected in the soil of outbreak area and selected as the most virulent native strain based on preliminary laboratory virulence assays. Field trials were conducted in the Piedmont region from 2021 to 2024 to assess POP 16's effectiveness in controlling the *P. japonica* larval population and its persistence in the soil.

P. japonica larval populations were significantly reduced in plots treated with EPNs, with over 90% fewer larvae observed compared to untreated areas and *H. bacteriophora* persisted in the soil for up to two years after treatment. The effects of EPNs on non-target soil biota were also evaluated and no significant negative impacts were observed in EPN-treated soil compared to the control. However, some non-target edaphic arthropod taxa showed increased abundances, suggesting potential long-term changes in the soil ecosystem.

Regarding the future prospects: identify the most promising symbiotic bacterial strains associated with EPNs for controlling *P. japonica* and study their genomes could reveal the loci responsible for entomopathogenesis. These further in-depth investigations are essential for developing novel, environmentally friendly control measures for the control of *P. japonica*, such as bioinsecticides based on bacterial strains isolated from EPNs.

8