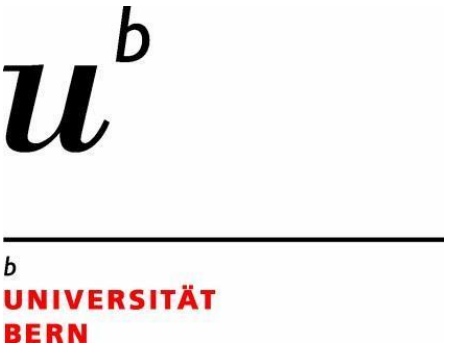
In partnership with



APITOX WORKSHOP

Proceedings

Hybrid (Bologna + teleconference), 10-11/02/2025

PARTICIPANTS TO THE WORKSHOP

Confirmed participants:

Present: Simone Tosi, Lukas Jeker, Daniela Grossar, Lars Straub, Riccarda Scheiner, Alex Splitt, Jacek Jachula, Albrecht Haase, Hervé Giffard, Fabio Sgolastra, Monica Colli, Fani Hatjina, Piotr Medzrycki, Noa Simon Delso

Remotely: Annely Brandt, Julie Fourrier, Tomasz Kiljanek

Excused: Celeste Azpiazu, Benjamin Poirot

Unknown participation:

Pierrick Aupinel, Gordana Glavan, Mina Tsinoglou, Valeria Malagnani

APITOX WORKSHOP

Topic

- Presentations from members' work
- Past projects
- On-going ring tests
- Publications done
- Risk assessment of wild bees

When

- 20 April - 09:00
- 21 April - until 13:00

Where

CREA-API - Council for Agricultural Research and Economics
Honey Bee and Silkworm Research Unit
Via di Saliceto 80
40128 Bologna
Italy
here is the location: https://maps.app.goo.gl/pwzf1rsAvFU3GMCA6

How to get to the venue:

You can reach CREA-API from the airport by taxi (about 20€), or from the centre (and from the Hotel Palace) by taking the bus 27, 97, 98 and getting out at the stop "De Giovanni". For those who have already been here, please get off the stop before the one you used in the past (De Giovanni instead of Caserme Rosse) because the former is temporarily inactive due to a construction site on the street.

Link for Online Participation

10 February 2025, 9:00 am – 11 February 2025, 12:30 pm ·

Time zone: Europe/Brussels

Google Meet joining info

Video call link: https://meet.google.com/nmz-rthx-zqm
Or dial: (ES) +34 910 48 95 10 PIN: 541 649 060 1881#
More phone numbers: https://tel.meet/nmz-rthx-zqm?pin=5416490601881

SCHEDULE

10 02 2025

Time	Session 1 –COMMON ONGOING WORK AND WORK FROM MEMBERS
09:00-09:15	Registration and Welcome words
09:15-09:35	News from the Regulatory and Political Framework related to pesticides in Europe/ OECD updates – Daniela Grossar, Lukas Jeker, Noa Simon
09:35-09:55	Updates on the publication of the ring testing of natural mortality – Julie Fourrier/Fabrice Requier
09:55-10:15	Method development to assess the effects of entomopathogenic nematodes on bees - Daniela Grossar, Lars Straub, Lukas Jeker
10:15-10:35	Trap or haven: Assessing the spray drift deposition of insecticides into flower strips - Lukas Jeker and Daniela Grossar
10:35-11:00	**Coffee/snack break**
Session 2 – ONGOING WORK FROM MEMBERS	
11:00-11:20	Decoding the neural impact of neonicotinoids: How these pesticides disrupt bee behaviour - Albrecht Haase
11:20–11:40	Studying the combined effects of neonicotinoids and fungicides on honeybees and wild bees - Ricarda Scheiner
11:40-12:00	Insignia-Europe results - Fani Hatjina
12:00-12:20	Presentation of the EU Pollinator Hub - Noa Simon
12:20-12:40	How to collect nectar and pollen straight from flowers and obtain ready-to-use samples - Aleksandra Splitt and Jacek Jachula

12:40-12:50	Pesticidovigilance - Ten years of the honeybee poisoning incidents diagnostics program in Poland - Tomasz Kiljanek
12:50-13:00	Preparation for the collaborative workshop in the afternoon
13:00-14:00	**Lunch**
Session 3 – BRAINSTORMING ON FUTURE COMMON WORK	
14:00-15:30	First part of the workshop - Update on the EU Risk Assessment of Pesticides on Wild Bees and Concepts of Risk Assessment + Q&A. Possibilities for new standardisation methods - Solitary bees field trials.
15:30-16:00	**Coffee/snack break**
16:00-17:30	2nd part of the workshop - Methodological discussion: Reprotoxicity
17:30-18:00	Concluding remarks from the workshop
20:00	**Social Dinner**

11 02 2025

Time	Session 5 – RISK ASSESSMENT SCHEME FOR WILD BEES
09:00-11:00	From ideas to action - working together to bring bee ecotoxicology to the next level.
10:30-11:00	**Coffee/snack break**
Session 6 – PREPARATION FOR WORK IN 2025	
11:00-12:30	Depending on the activities and discussions of the two days, we will identify the work programme for 2025 Administrative issues from Apitox
12:30-14:00	**Lunch**

ORGANISER CONTACTS	
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ABSTRACTS

Method development to assess the effects of entomopathogenic nematodes on bees Daniela Gossar, Lars Straub, Lukas Jeker

Daniela Grossar[1], Lars Straub[2] & Lukas Jeker[1]

[1] Swiss Bee Research Centre, Agroscope, Bern, Switzerland.

[2] Institute of Bee Health, Vetsuisse Faculty, University of Bern, Bern, Switzerland

Abstract

The use of entomopathogenic nematodes (EPNs) as alternative biological-control agents to conventional synthetic agrochemicals is often considered a low-risk control strategy for insect pests. Although EPNs are non-specific and able to infect a wide range of insect species, EPNs are considered naturally occurring in soil and have been largely excluded from pesticide registration requirements in many countries. In Hungary, Austria and Switzerland EPNs are registered as plant protection products, but data on the risks of EPNs used in crop protection to non-target arthropods as bees is limited. In fact, there are no validated protocols to test the risk of EPNs to bees available. We therefore aimed at designing protocols adapted to the biology of honey bees and of solitary living mason bees to test EPNs in field-realistic exposure scenarios. In the first test protocol, newly emerged *Apis mellifera* worker bees were exposed to dried and wet spray residues of Nemastar (Agroline Service & Bioprotect, Switzerland), containing the EPN *Steinernema carpocapsae,* applied onto fresh banana leaves. For the second test protocol, we exposed females of *O. bicornis* to the same EPN-containing product, applied to moist, sandy soil. We assessed the mortality of the test bees daily over a period of four days post-exposure. Nematode reproduction was assessed in all dead individuals after a three-week incubation time in so-called White traps. EPN exposure via wet residues on the leaves resulted in significantly reduced honey bee survival. However, exposure of honey bees to dried residues of EPNs applied on leaves did not significantly increase mortality. Due to a high mortality in non-infected controls in this pilot study, we were not able to determine if EPN exposure increases mortality also in *O. bicornis*. However, the EPNs were able to successfully reproduce in 17 out of 20 dead test mason bees. In conclusion, our experiments show that foliar exposure to a commercial EPN product, which we tried to mimic in the laboratory, significantly affected honey bee survival. We proved that the EPN *S. carpocapsae* successfully penetrates adult honey bees and reproduces in their cadavers in our experimental setting. Similarly, the exposure of *O. bicornis* to the commercial EPN product in the laboratory via application directly to the soil led to the successful penetration and reproduction of *S. carpocapsae* in cadavers of adult mason bees. Future efforts are required to optimise the experimental conditions to reduce control mortality, which will enable

verification of potential lethal and sublethal effects of the EPNs on *Osmia* spp. Considering the lack of data regarding the potential adverse effects of EPNs on non-target insects, our results underline the urgent need to act cautiously when considering using EPNs as plant protection products. Further research is needed to adequately investigate the potential risk of EPNs to bees and other non-target insects if exposure to EPNs cannot be fully excluded.

The EU Pollinator Hub: Collective approach for pollinator conservation

Simon Delso N[1], Crespy B[1], Susanj G[2], San Martin G[3], Marcos E[1], Lipovcek G[2], Rubinigg M[4]

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[4] Vitalife, Graz, Austria

It is well established that insect pollinators' numbers and diversity have severely decreased over recent years in Europe and worldwide. Beekeepers have experienced increased colony losses, and their observations are key to understanding and following up on insect decline and production trends, which are worrying as many sectors and actors depend on pollinators and pollination for their activity. Consequently, bees and other insect pollinators are increasingly relevant in the public debate, and growing efforts have been made over the years to understand these trends and the factors that may affect them. Related data have been/is produced by different institutions and actors, with various purposes and in multiple formats, making it impossible to obtain a clear picture of the situation and, more importantly, the possibilities to reverse the trends. In Europe, the stakeholder group EU Bee Partnership has created an innovative technology in data connectivity and dissemination applied to the environment: The PollinatorHub(.eu). By sharing or including our data and observations in the Hub, each of its users contributes to generating knowledge on the topic that everybody can use while keeping confidentiality and copyright. Thanks to its horizontal approach, the PollinatorHub can provide advice on field data collection, curation and communication, do the data curation, standardisation or analytics for the users, and provide meaningful and informative data visualisation options, so its users get the best out of their data. Beekeepers collecting data but not knowing how to analyse it can profit from the analytical features of the Hub. Researchers in bees, beekeeping and pollination can use the Hub to host the data as a data repository that will centralise the pollinator-related data. The PollinatorHub platform aims to transform the existing segregated data into a reference tool for those seeking information or whose activity depends on pollinators and pollination and who need to adapt their activities to manage the drivers determining their fate.

How to collect nectar and pollen straight from flowers and obtain ready-to-use samples

Jachuła J., Splitt A.

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The data on nectar (sugar) and pollen production per flower is scarce. The methods to obtain such data that we are going to present are simple, cost-effective and user-friendly. These methods are regarded as interdisciplinary standards and can be adapted to research in ecotoxicology. They can be summarised as follows:

Estimation of nectar and sugar mass:

1. Remove developed flowers
2. Bag the flowers/plants
3. Wait until the flowers have almost withered
4. Write down the mass of an empty Eppendorf tube
5. Collect nectar with an automatic pipette (10-30 flowers)
6. Write down the mass of the Eppendorf tube with nectar
7. Check the sugar concentration using a refractometer
8. Calculate the mass of sugars (simple subtraction)

Estimation of pollen mass:

1. Check for the right stage of flower development
2. Note the mass of an empty Eppendorf tube
3. Cut the anthers out (10-30 flowers)
4. Place the anthers in the Eppendorf tubes of known mass
5. Add ethanol and let the anthers open
6. Remove anther remnants, add ethanol and repeat the procedure
7. Let the ethanol evaporate
8. Note the mass of the Eppendorf tube with dried pollen
9. Calculate the mass of pollen (simple subtraction)

In this presentation, we are going to give tips for each step, possible modifications and discuss ways of application regarding the scientific interests of the APITOX group. The possibility of publishing the methods as a part of BEEBOOK will be talked through.

Title

Author(s) (Underlying the presenting author)

Affiliation

Abstract