Pollinator week

Advancing environmental risk assessment to better protect insect pollinators

Dr Agnès Rortais

Senior scientific officer

Trusted science for safe food

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European Food Safety Authority

Importance of bees

84% of crop species cultivated in EU depends on **insect pollinators**, **especially bees**[1]

The economic value of insect pollination in EU equals to 14.2 billion €[2]

Global pollinator declines[3] and worldwide honey bee colony losses (up to 30%)[4, 5] impact ecosystem functioning and human well-being

[1] Williams, 1994; [2] Gallai et al., 2009; [3] Potts et al., 2010; [4] Laurent et al., 2016; [5] Steinhauer et al., 2014

Issues

Multiple stressors affecting bees

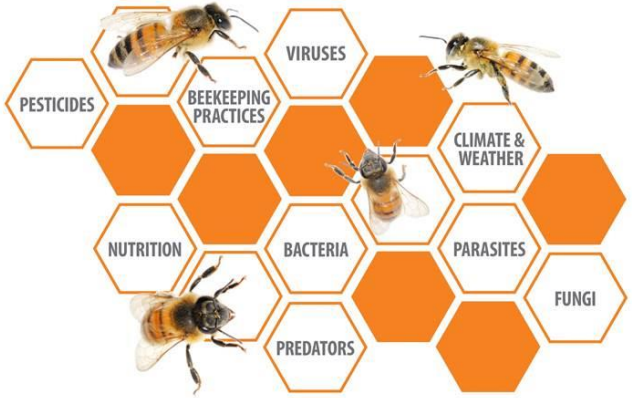
- Biological agents
- Chemicals
- Modulating factors

- Several applications per crop and over time
- Bees foraging in the landscape (over several crops) are exposed to multiple pesticide residues over time

Complexity of the landscape

MUST-B

EU efforts towards a holistic and integrated risk assessment approach of multiple stressors in bees



- **2015**: internal mandate of EFSA

- **2018**: European Parliament mandate and scientific opinion on “A systems-based approach to the environmental risk assessment of multiple stressors in honey bees”[1]

  - Terms of reference:
    - **Develop a methodology** for honey bees to assess cumulative and synergistic (+ acute, chronic and sublethal) effects of pesticides in combination with other stressors
    - **Provide guidance** to stakeholders for harmonised data collection and evidence-based risk assessments

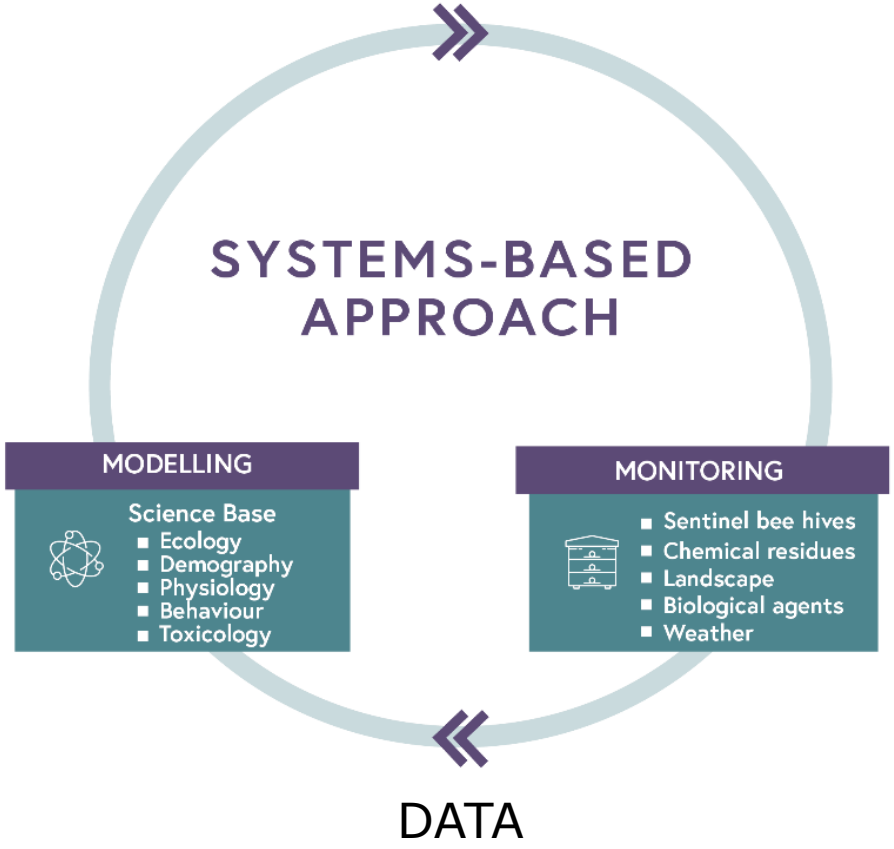
[1] EFSA Scientific Committee et al., 2021

Holistic and integrated ERA for honey bees

DATA

- Stakeholders involvement
- Scientific literature
- Research data

ApisRAM model[1] calibrated with field data[2]



DATA

For predictive and post-authorisation risk assessments of pesticides

[1] EFSA, 2016; Dupont et al, 2021

Applications, benefits and stakeholders

Applications/benefits

- Beekeeping and farming
- Research development
- Risk assessment & risk management
- Citizens

Interacting Stakeholders

- Beekeepers & farmers
- NGOs
- Industry,
- Practitioners associations
- Academia
- EU citizens, EC, EP, MS…

e.g. EU Bee Partnership

The EU Bee Partnership (EUBP)

2017: **Scientific conference** on “collecting and sharing data on bee health: towards and European Bee Partnership[1]

2018: Terms of reference of the EUBP, a **stakeholders’ partnership** to enhance harmonised data collection and sharing on bee health[2]

EU BEE PARTNERSHIP PROTOTYPE PLATFORM ON BEE HEALTH

2021: design of a **prototype platform**[3, 4] with a user Tutorial[5]

[1] EFSA et al., 2017; [2] EFSA, 2018; [3] Simon Delso et al., 2021; [4] bee-ppp.eu; [5] Youtube link

Next steps at EFSA

- Guidance Document on RA of pesticides in bees (honey bees, bumble bees, solitary bees)
- EUBP platform for harmonised data collection and sharing

✓ **ApisRAM for the RA of pesticides in combination with other stressors in honey bees**

✓ **Advancing ERA for insect pollinators**

Next steps: ApisRAM development

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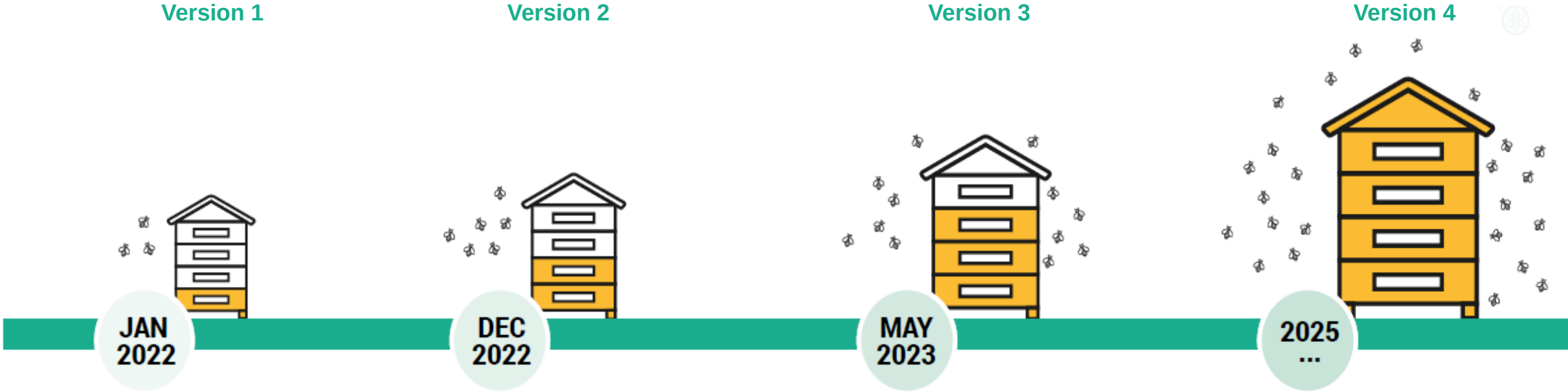

See https://www.efsa.europa.eu/sites/default/files/2021-03/timeline-ApisRAM-development-final.pdf

Insect pollinators at EFSA

*Advancing the Environmental Risk Assessment for Insect Pollinators (**IPOL-ERA**)*

- **Advance** by 2030 the ERA of chemicals for insect pollinators with support and collaboration of EC, EU agencies & MS
- **Support** the Farm to Fork Strategy, EU Biodiversity Strategy, EU pollinators Initiative & EU chemicals Strategy
- **Address** the current challenges and ensure preparedness for future challenges

*EFSA Science Studies and Project Identification & Development Office (**SPIDO**)*

- **Develop** theme papers, consult partners and define a roadmap for actions
- **Considering** the outcome and developments of other EFSA projects on ERA and multiple chemicals[1-4]

[1] PERA: Development of a partnership on ERA and transition to a systems-based ERA; [2] NAMs: New approach methodologies in risk assessment; [3] RACEMiC: Chemical mixture risk assessment; [4] NTA-ERA: Advancing the ERA for non-target arthropods – for more details check EFSA website

IPOL-ERA development areas

1
ENGAGE
IPOL Partnership

2
ASSESS
Ecological consequences of chemical to insect pollinators

3
ADVANCE
Hazard and exposure characterisation

4
ADVANCE
RA of combined exposure to multiple chemicals in insect pollinators

5
DEVELOP
landscape scale population-level ERA tools for environmental stressors

6
DEVELOP & IMPLEMENT
systems-based approach

Acknowledgements

- **MUSTB WG experts**
  - Gérard Arnold, Simon More (Chair), Christopher J Topping & Simone Tosi

- **EFSA colleagues**
  - Simon Terry, Domagoj Vrbos and Giorgia Zamariola , Communication and media relation Unit
  - Steve Pagani, Engagement & Cooperation Unit
  - Alexandra Papanikolaou & Giuseppe Triacchini, Evidence Management Unit
  - Domenica Autéri & Csaba Szentes, Pesticides Peer Review Unit
  - Kiara Aiello Holden, Julia Fabrega & Claudia Heppner, Science Studies and Project Identification & Development Office
  - Yann Devos, Jean-Lou Dorne, Angelo Maggiore & Tobin Robinson, Scientific Committee and Emerging Risks Unit

ONE Health conference

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ONE PLANET

TOWARDS A SYSTEMS-BASED APPROACH FOR THE ENVIRONMENTAL RISK ASSESSMENT OF PESTICIDES

The use of regulated products – such as biocides, industrial chemicals, pesticides, pharmaceuticals, feed additives and genetically modified organisms – is subject to an environmental risk assessment (ERA) and regulatory approval in most jurisdictions worldwide. While substantial progress has been made in achieving environmental protection with single product-based assessments, such assessments are perceived to have fallen out of step with scientific knowledge. Moreover, they are not necessarily aligned with modern policy targets and societal demands that call for a cleaner, greener future and a more sustainable food/feed system. Further advancing the ERA of regulated products will be key in supporting the UN SDGs and EU Green Deal ambitions to safeguard the environment (including biodiversity and ecosystems). We will explore: (1) the scientific merits and issues with the current ERA paradigm; (2) the incremental change needed to advance ERA of pesticides; (3) opportunities and challenges associated with the transition to/implementation of a more holistic ERA framework for pesticides that follows an inclusive and integrated systems-based approach; and (4) policy implications. The session will provide feedback to EFSA, other EU agencies, EU Member States and international partners on current challenges and future development opportunities for the transition towards a systems-based approach for the ERA of pesticides.

SUBMISSION OF ABSTRACT
EXTENDED DEADLINE - 30.09.2021

2022 EU CONFERENCE one
HEALTH • ENVIRONMENT • SOCIETY
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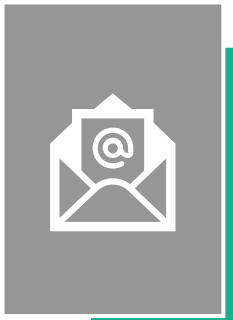

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EU BEE PARTNERSHIP PROTOTYPE PLATFORM ON BEE HEALTH

EU Bee Partnership Prototype Platform for collecting and sharing bee health data

Noa Simón Delso

Scientific Director at BeeLife European Beekeeping Coordination
Chair of the EUBP

29 September 2021

BeeLife
European Beekeeping Coordination

EUBEE PARTNERSHIP

Why such a platform?

Ongoing critical situation of bees and pollinators.

Main conclusions on the challenges related to bee data:

- **Enormous amount of data generated**
- **Data fragmentation**
- **Lack of accessibility to data and information (related to bee and pollinator health)**
- **Hamper efficient decision making**

Who is the EU Bee Partnership?

Group of stakeholders around bees and pollinators

Following the conclusions from 2017 EU Bee Week

Terms of Reference:
https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/sp.efsa.2018.EN-1423

Objective: improve data collection, management, sharing and communications to achieve a holistic approach to the assessment of bee health in Europe and beyond

Members

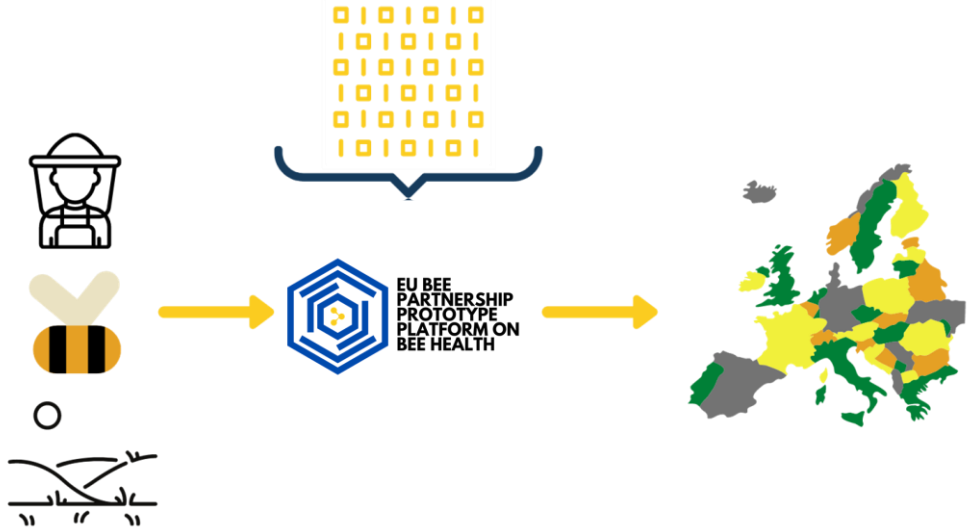
efsa European Food Safety Authority
BeeLife European Beekeeping Coordination
F.E.E.D.M.
APIMONDIA
European Professional Beekeepers Association e.p.b.a.
UNITING BEET GROWERS CIBE since 1927
AVC Association of Veterinary Consultants
Pesticide Action Network Europe
CropLife EUROPE
IBMA INTERNATIONAL BIOCONTROL MANUFACTURERS ASSOCIATION
EUROPEAN NETWORK OF SCIENTISTS FOR SOCIAL AND ENVIRONMENTAL RESPONSIBILITY

Observers

B-GOOD
Joint Research Centre JRC
European Union Reference Laboratory for Bee Health
European Parliament
European Commission
EUROPEAN MEDICINES AGENCY SCIENCE MEDICINES HEALTH
EEA
prevention of Honey Bee COlony LOSSes COLOSS

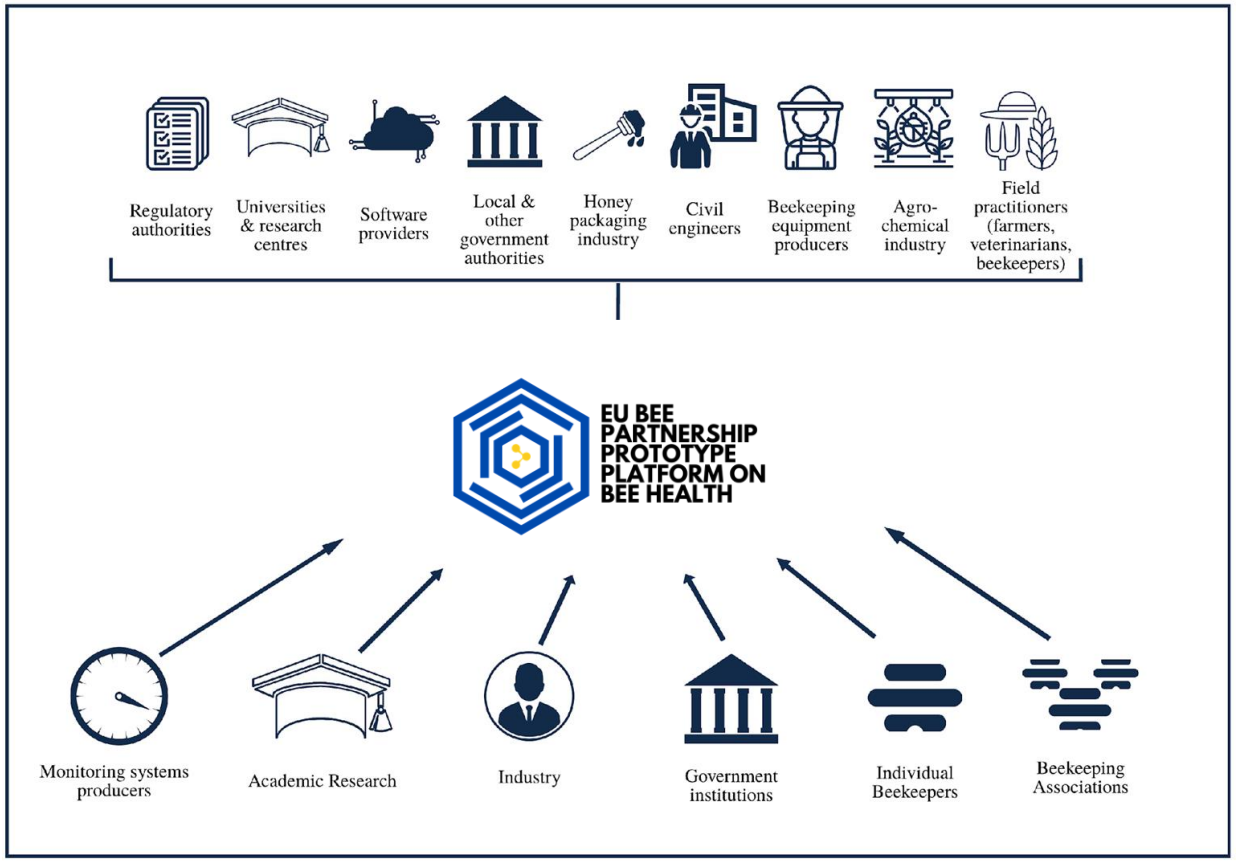
How? The Platform

- 2019/20 - 1st efforts to create a platform developed by BeeLife within the IoBee project (Proof of Concept - The Bee Hub)
- 2020/21 - EFSA invested resources to further prototyping the platform
- EUBP members contribute with datasets and advisory



How? The EUBP Prototype Platform

- **Centralised** pollinator relate data
- **Processing** data by field experts
- Creating **information** (e.g. interactive map) and supporting **decision making**
- **Securing** the sharing environment with data providers (trust)



Data Acquisition & Communication

Gathering data within Platform:

- Raw files (CSV, Excel, Calc, etc.)
- Databases (SQL, mySQL, Oracle, etc.)
- API[1] (existing services)

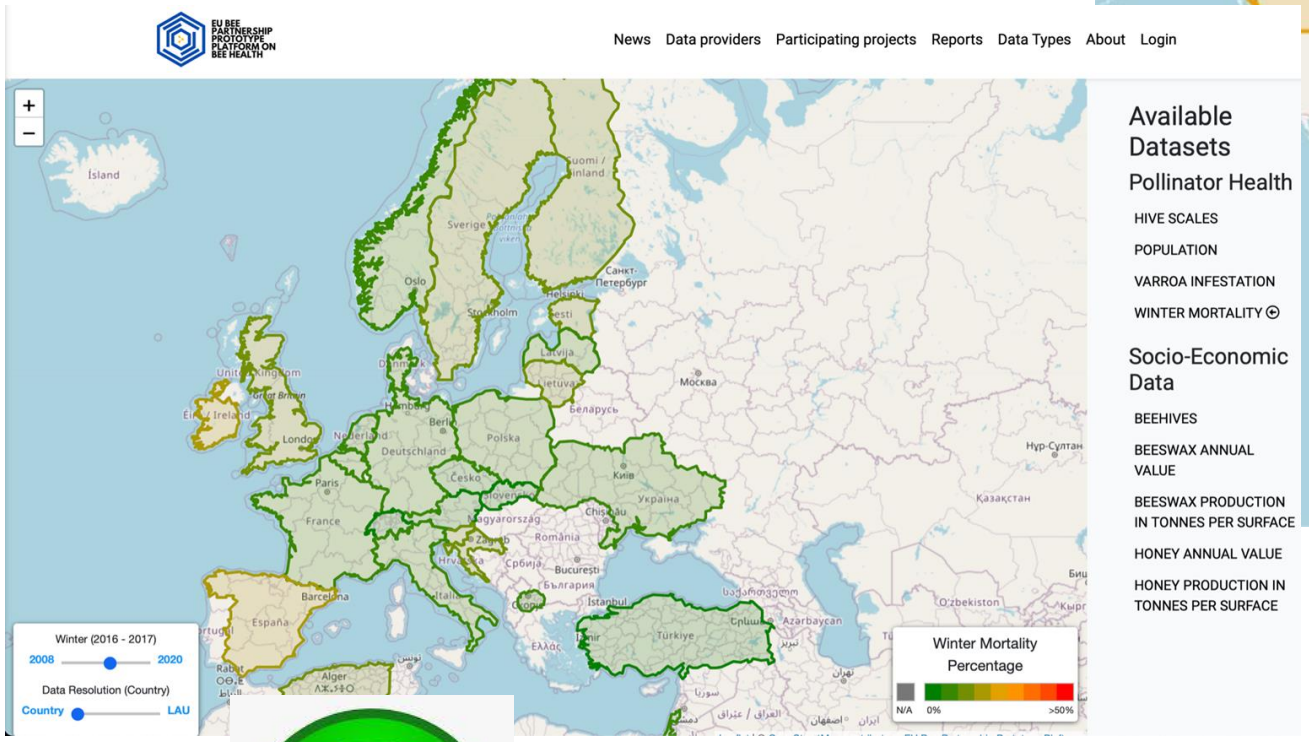
- Creating an **XML standard** along with the Apimondia BeeXML group

https://beexml.org

1 Automated Programming Interface

Visit the platform: https://bee-ppp.eu

Interactive maps

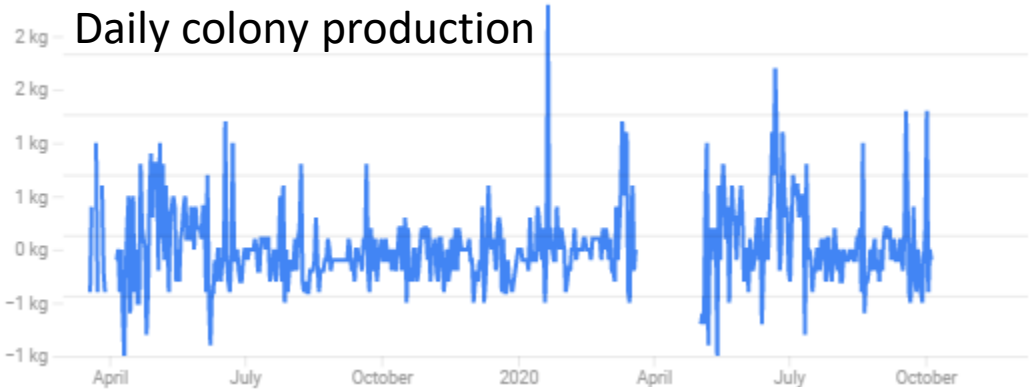


Reminder!! Work in progress. The platform is a prototype that still needs improvements

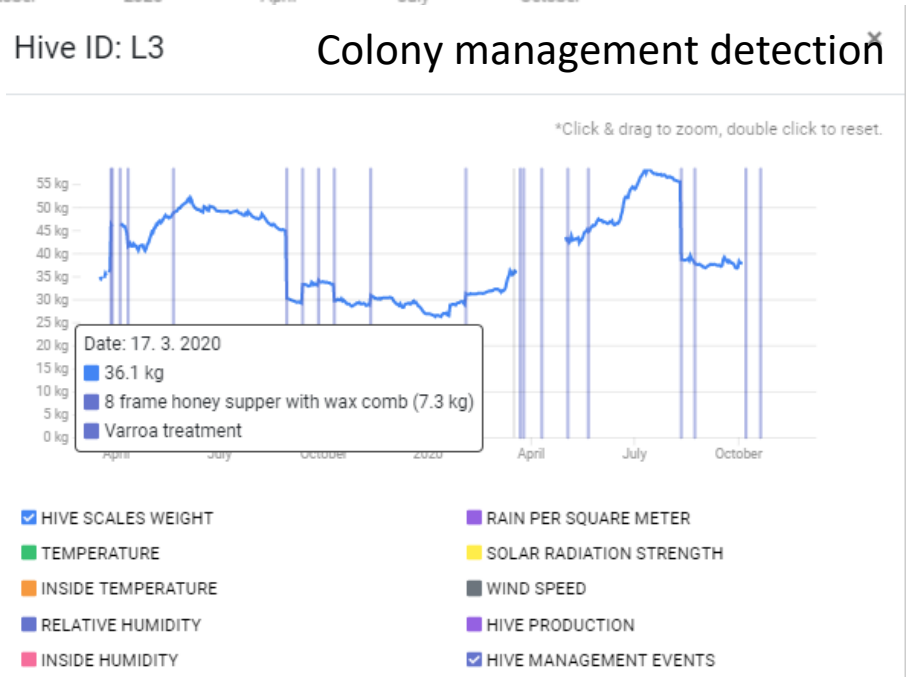
Visit the platform: https://bee-ppp.eu

Interactive graphs

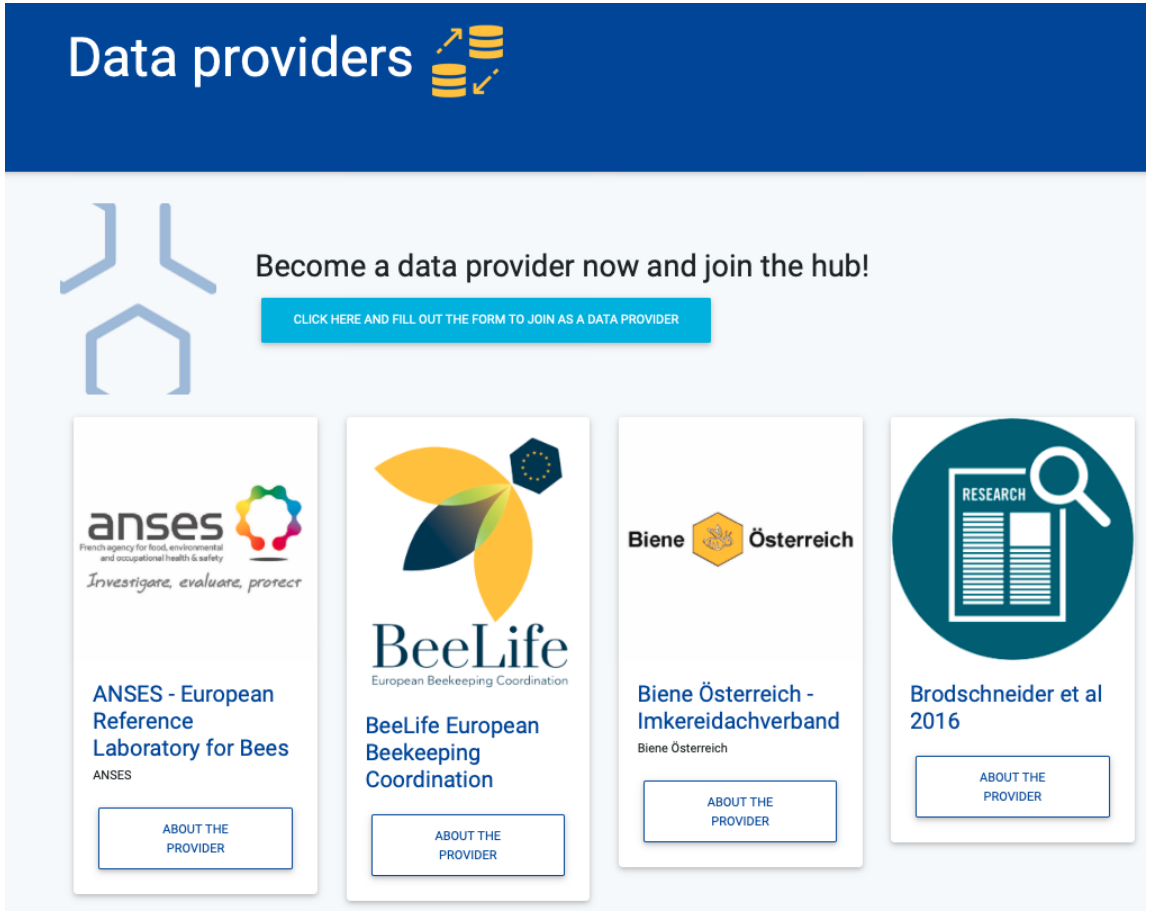
Daily colony production

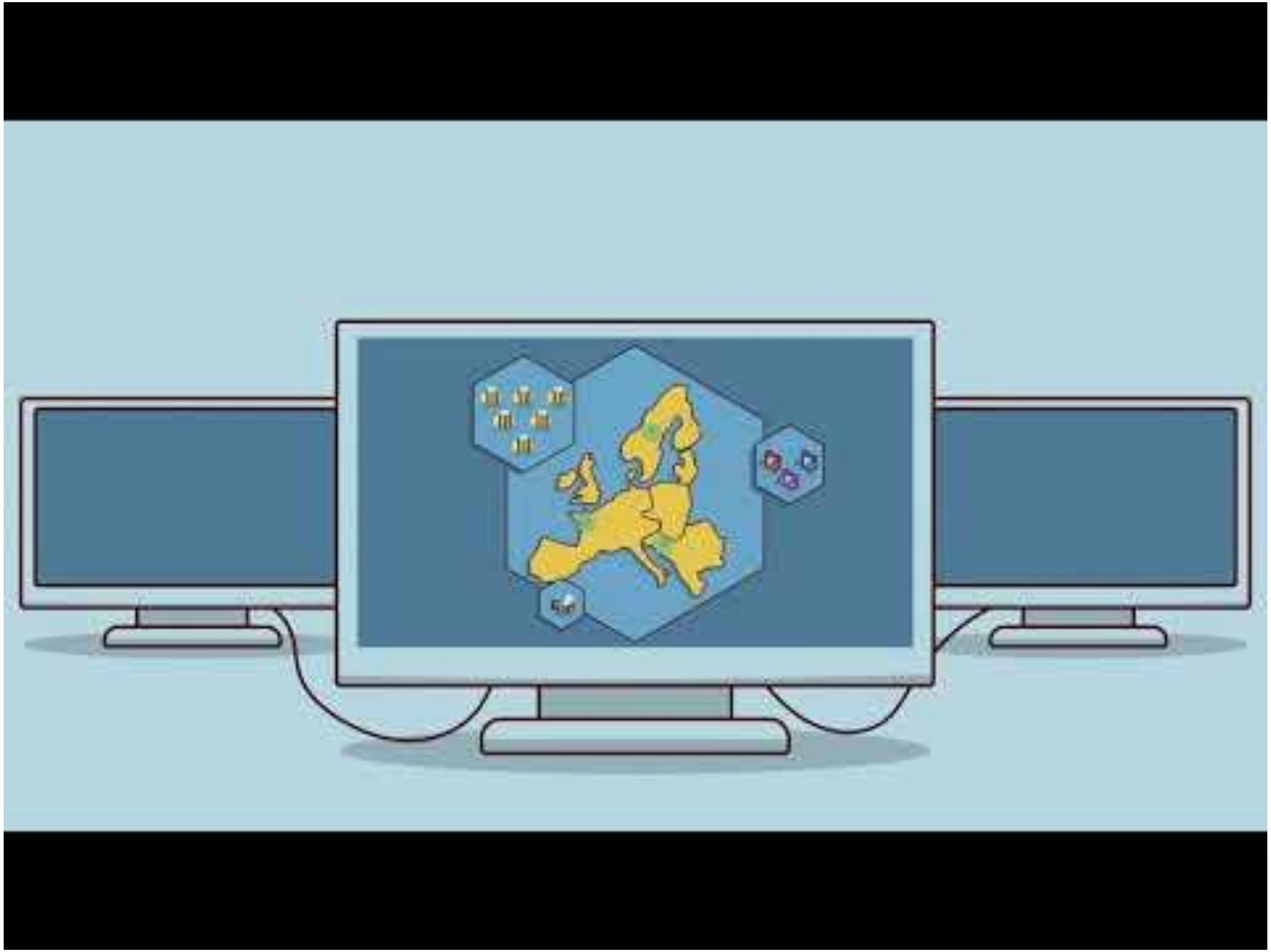


Colony management detection



Info about data providers and much more





Be part of the community!

Share your data with us!

Thank you for your attention!

BeeLife
European Beekeeping Coordination

EUBEE PARTNERSHIP

Noa Simón Delso: simon@bee-life.eu, info@bee-life.eu

www.bee-life.eu

29 September 2021

Current status of bee guidance review

Alessio Ippolito

Ecotoxicology Scientist

Trusted science for safe food

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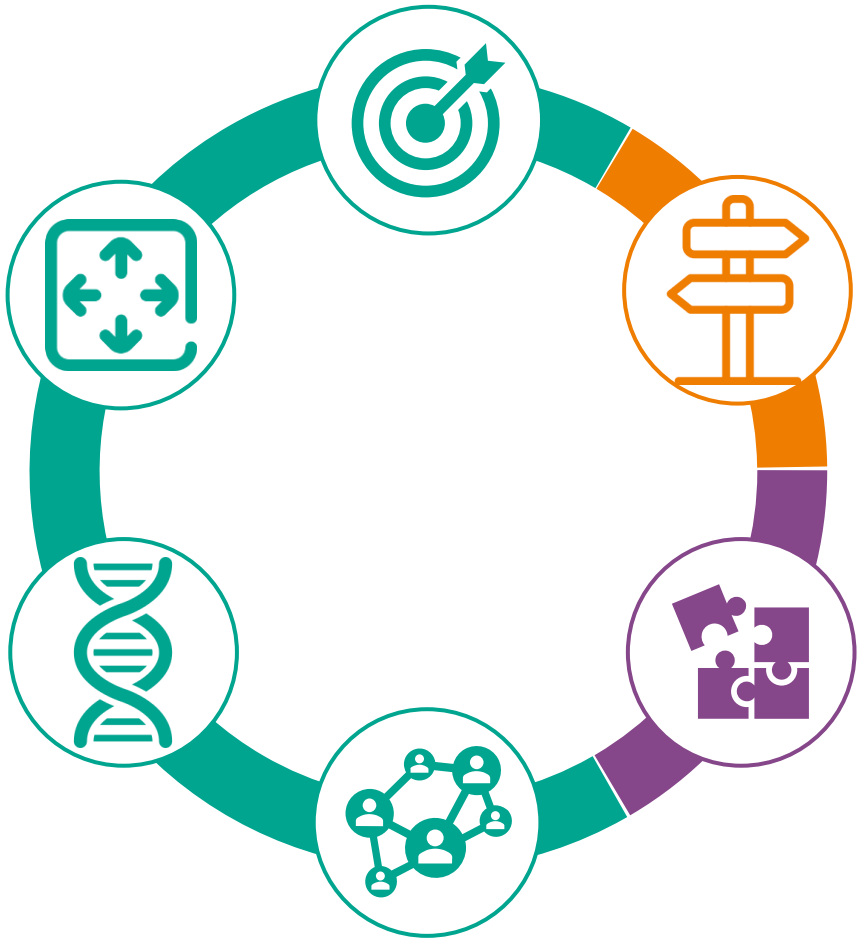
Yesterday, Today and Tomorrow

Yesterday
What have we done so far?

Tomorrow
How are we planning ahead?



Today
What are we working on?

Yesterday – what we have done

Increased accuracy

- Better estimate of bee **food consumption**
- Better estimate of **sugar content** in nectar
- Better estimate of bee **background mortality**
- Better estimate of pesticides **residues** in pollen and nectar

- SR: **11000** papers considered; >150 fully appraised
- SR: **2000** papers considered; 3000 measurements (60 crops)
- SR: **11000** papers considered; 5000 measurements included
- **>150** residue trials and **70** dissipation studies

Yesterday – what we have done

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More fit for purpose

- Re-assessment of relevance of **weed** scenario
- Better definition of crop **attractiveness**
- Better use of the **dose-response** relationship
- Support for agreed **protection goals** (HB)

- Analysis based on **7000** efficacy trials (>10000 considered)
- **EKE** with a panel of 6 experts: 5 session assessing 23 crops
- **> 600** ecotoxicity studies considered
- 19 European scenarios, **10000** in-silico hives simulated

Yesterday – what we have done

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Better considerations of bee diversity

Biological traits (weight, length, etc.) collected for ~ 300 sex/species combinations, used for modelling:

- Better estimation of **sugar consumption**
- Better estimation of **contact exposure** (bee surface area)
- Better prediction of difference in **sensitivity** (based on 500 studies on 15 species)

Yesterday – what we have done

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Extended collaboration

- 3 Consultations with Stakeholders and MSs
- 3 Consultations with Risk Managers on SPGs
- 2 Info-sessions with Stakeholders and MSs
- Cross-fertilization with 1 ECHA WG, 2 EFSA WG
- 1 external Expert panel (attractiveness)
- Several contractors on specific issues (JKI, ICPS, etc.)
- Several hearing experts (modellers, agronomists, etc.)

Today – what we are doing

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Integrating RM input in the risk assessment scheme

- Revision of the entire risk assessment scheme to make it compliant with **SPG** for HB
- **Integrating** assessments of different **routes of exposure** and different **time scales**
- Revision of the requirements of **higher tier studies**

In addition:

- Integration of **sub-lethal** effects
- Better consideration of long-term exposure (**TRT**)

Tomorrow – what we are planning to do

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Finalisation of the work and outlook

- Letter from SANTE asking for support for **SPG** setting of **wild bees** → Draft of a (third) supporting document
- Once a decision is made, implement SPG for wild bees in the risk assessment
- Consider all **comments** that will be received during the public consultation and amend the GD, if needed.
- List all **knowledge gaps** that are still present, to steer future research activities

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Overview and status on the development of a guidance for assessing the risks to arthropod pollinators (including bees) from the use of biocides

EU Pollinator Week Events

Advancing environmental risk assessment for bees and other insect pollinators

29 September 2021

Simón Gutiérrez Alonso
Biocidal Active Substances Unit
European Chemicals Agency

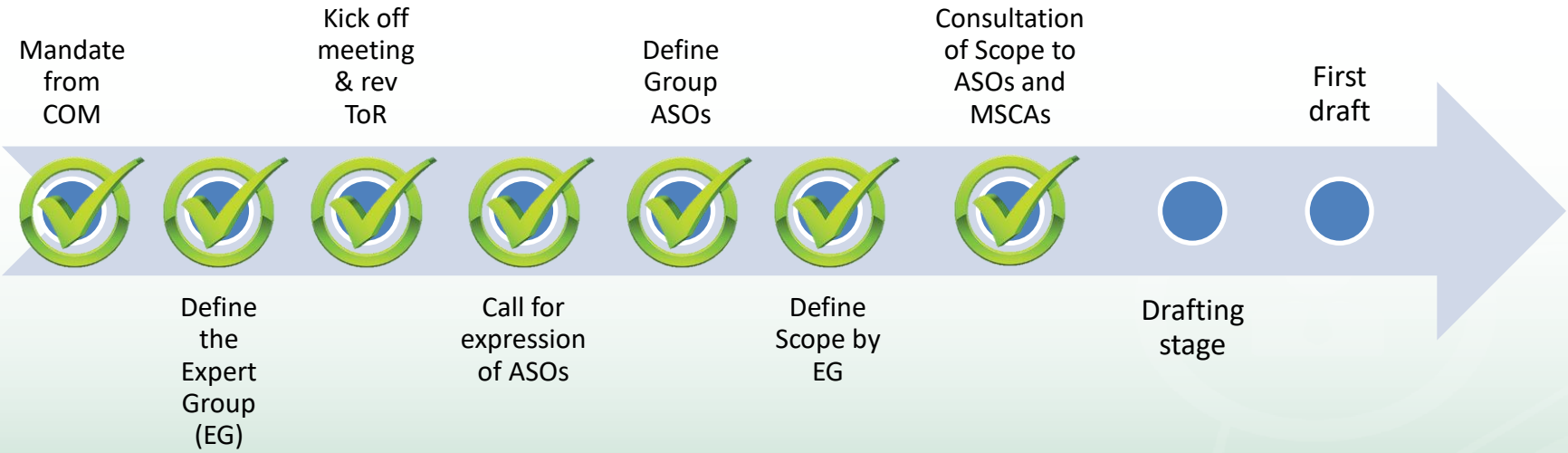
ECHA Work on pollinators

First authorisations for some neonicotonids (imidachloprid, chlotianidine, thiametoxam) were granted based on very basic risk assessments recognising that further work was needed.

Dec **2019 mandate** to develop a guidance for assessing the risks to arthropod pollinators (including bees) from biocides exposure to ensure a high and harmonised level of protection of the environment, taking into account EFSA's Guidance Document

In addition, ECHA was requested to specify **the information required** to enable a conclusion by the evaluating authority on whether products comply with the criteria under Article 19(1)(b)(iv) of the Biocidal Products Regulation concerning bees and other arthropod pollinators.

Milestones



Preliminary considerations for ECHA's guidance on the "Methodology to assess the risk to bees and other non-target arthropod pollinators from the use of biocides"
7957c0f8-5ded-4a6e-17a7-2a899bbb141a (europa.eu)

MSCAs Expert group

Austria

Switzerland

Germany

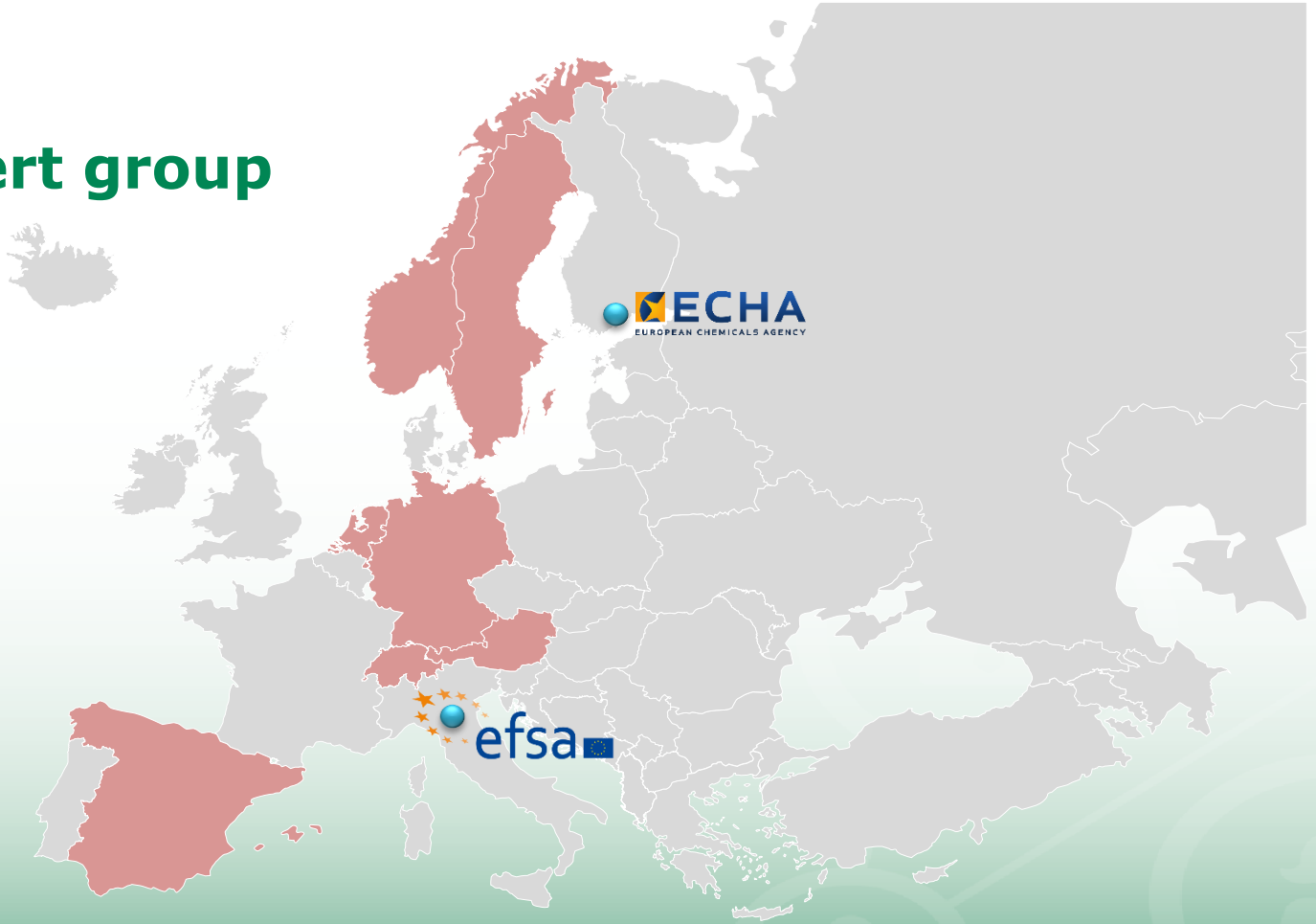
Netherlands

Norway

Sweden

Spain

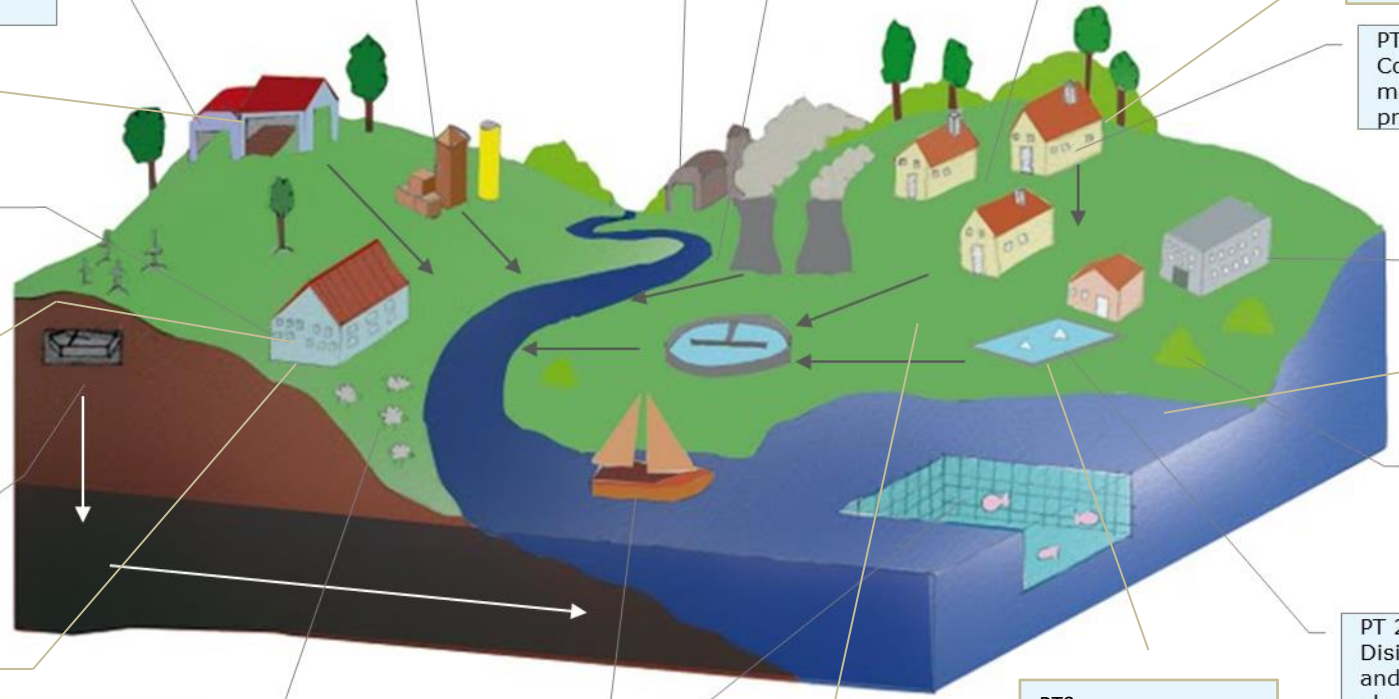
EU (ECHA, EFSA)



List of selected stakeholders

NAME OF ORGANISATION	STAKEHOLDER CATEGORY
Apimondia	NGO – environmental/ animal welfare
BeeLife – European Beekeeping Coordination	NGO – environmental/ animal welfare
Butterfly Conservation Europe (BCE)	NGO – environmental/ animal welfare
Pesticide Action Network (PAN) Europe	NGO – environmental/animal welfare
Copa-Cogeca	Industry
European Chemical Industry Council (Cefic)	Industry
European Federation of Honey Packers and Distributors (FEEDM)	Industry
European Professional Beekeepers Association (EPBA)	Industry
Euroseeds	Industry
European Crop Protection Association (ECPA)	Industry
International Association for Soaps, Detergents and Maintenance Products (AISE)	Industry
Faculty of Agriculture and Life Sciences of the University of Maribor, Slovenia	Academia
ITSAP-Institut de l'Abeille	Academia
Norsk institutt for bioøkonomi (NIBIO)	Academia

ECHA
EUROPEAN CHEMICALS AGENCY



PT 14, 15
Rodenticides, avicides

PT 13
Working or cutting fluid preservatives

PT 11
Preservatives for liquid-cooling systems

PT 1, 2
Disinfectants and algaecides

PT18
Products to control other arthropods

PT 8 Wood preservatives

PT 10
Construction material preservatives

PT 7
Film adhesives

PT 4 Food and feed area

PT 6
Preservatives for products during storage

PT12
Slimicides

PT17
Piscicides

PT 22 Embalming and taxidermist fluids

PT 19
Repellents and attractants

PT16
Molluscicides, vermicides and products to control other invertebrates

PT 2
Disinfectants and algaecides

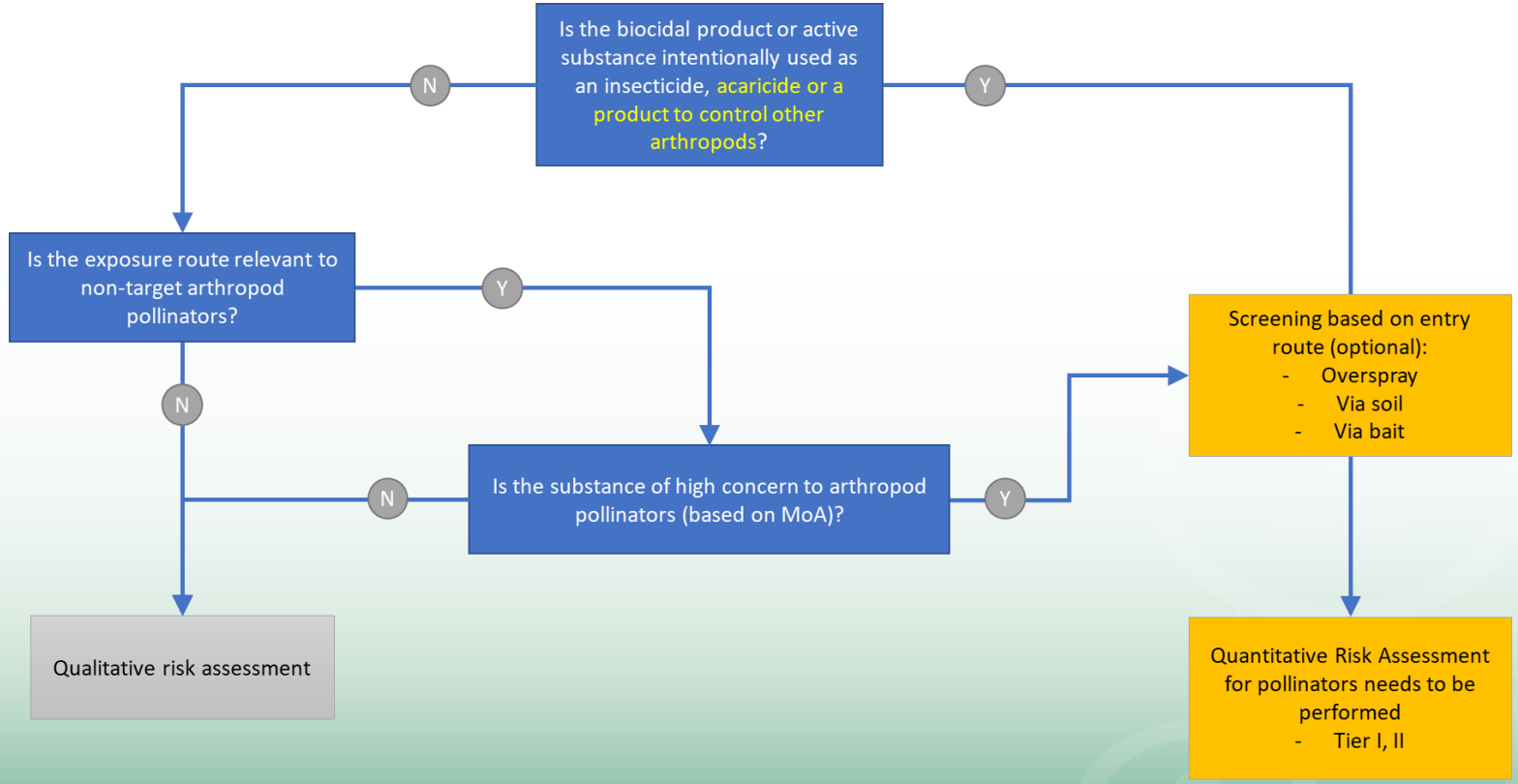
PT 3
Veterinary hygiene

PT 21
Antifouling products

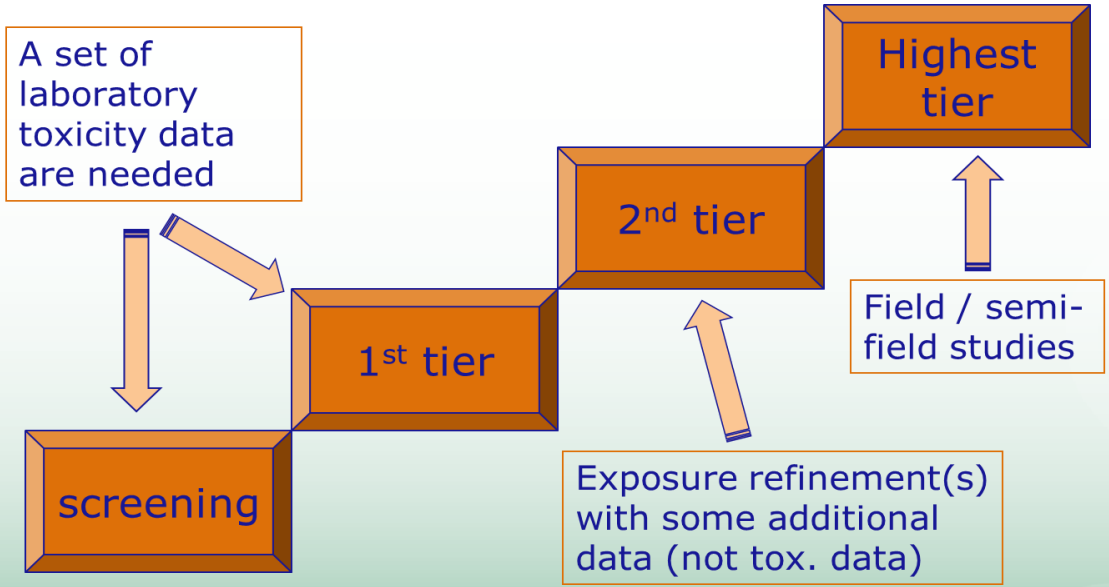
PT 5
Drinking water

PT9
Fibre, leather, rubber and polymerised materials preservatives

Overall draft strategy



EFSA SPGs and principles but with some adaptations

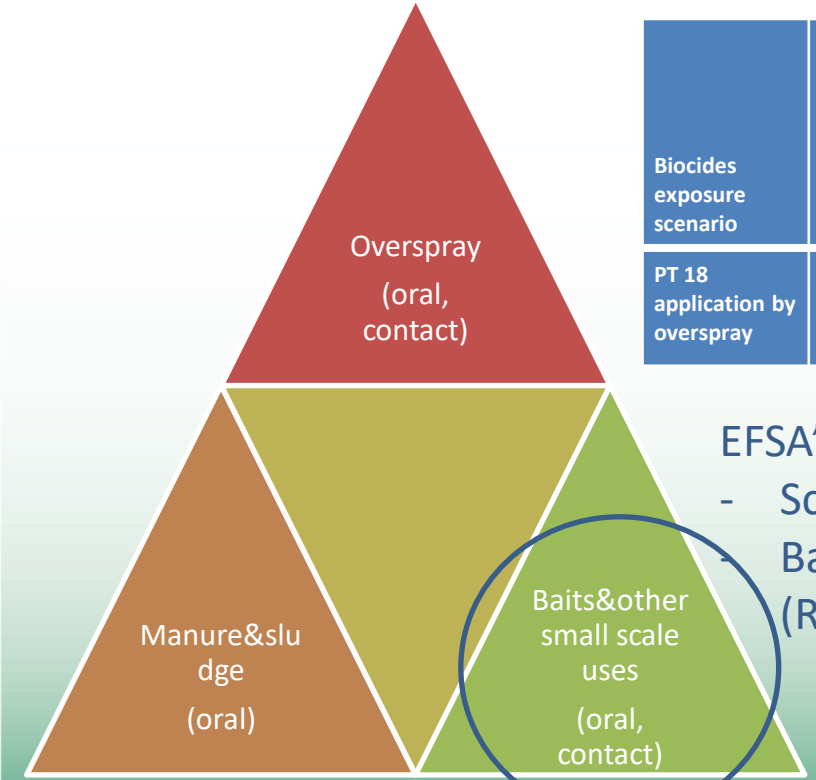


Areas of work

- Filtering of Exposure scenarios
- Exposure Scenarios (Overspray)
- Exposure Scenarios (Manure&sludge)
- Exposure Scenarios (Baits&other small scale uses)
- Fate Assessment
- RMM

- Cutoffs
- Non bee pollinators
- PNEC derivation
- Standard data requirements
- Protection Goals
- Assessment of mixtures and products

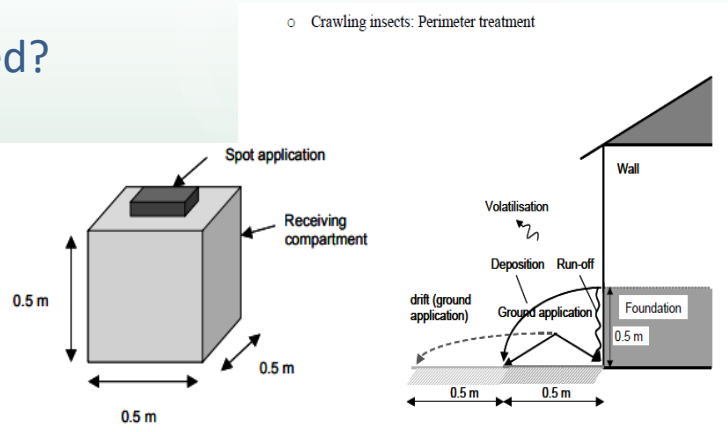
Exposure based on EFSA's scenarios



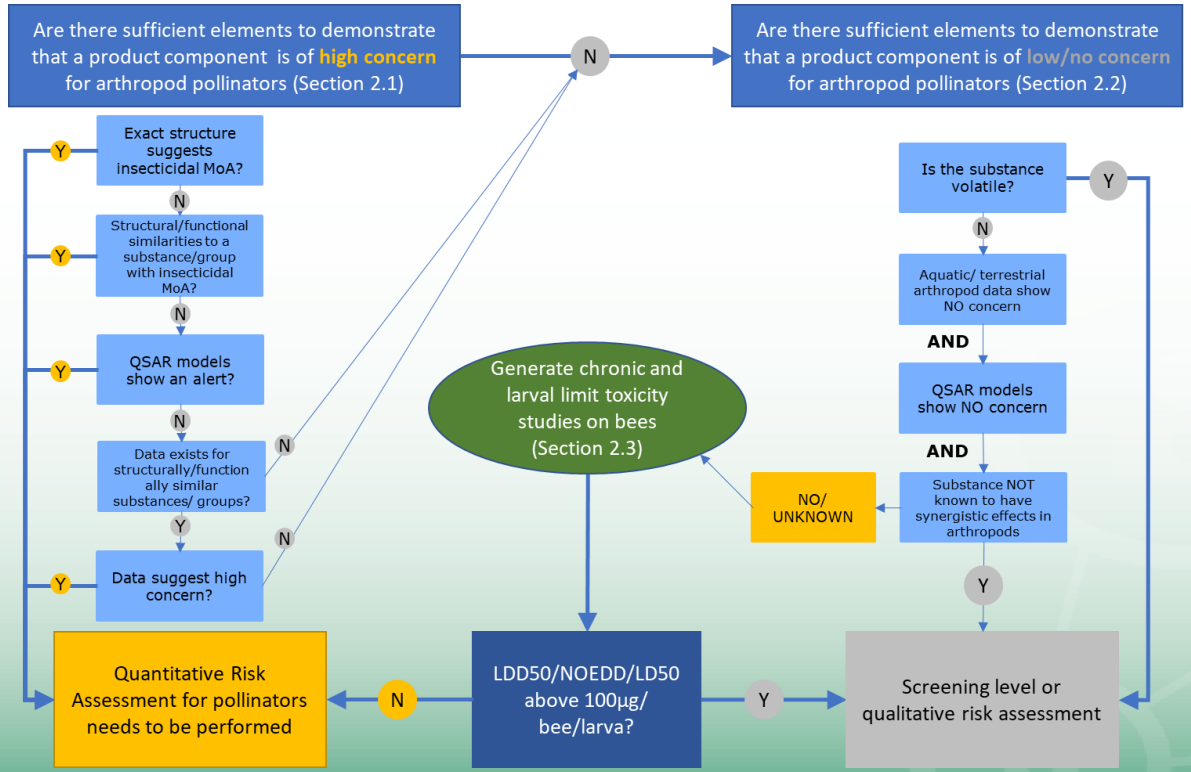
Biocides exposure scenario	Surrogate PPPs application	EFSA's exposure scenarios							
		Contact			Oral				
		Treated crop	Weeds (treated field)	Field margin	Treated crop	Weeds (treated field)	Field margin	Adjacent crop	Succeeding crop
PT 18 application by overspray	spraying	Y	Y	Y	Y	Y	Y	N	Y

EFSA's scenarios justified?

- Scale?
- Baits vs "flower"? (RMM!)



Draft strategy for the identification of high/low concern substances



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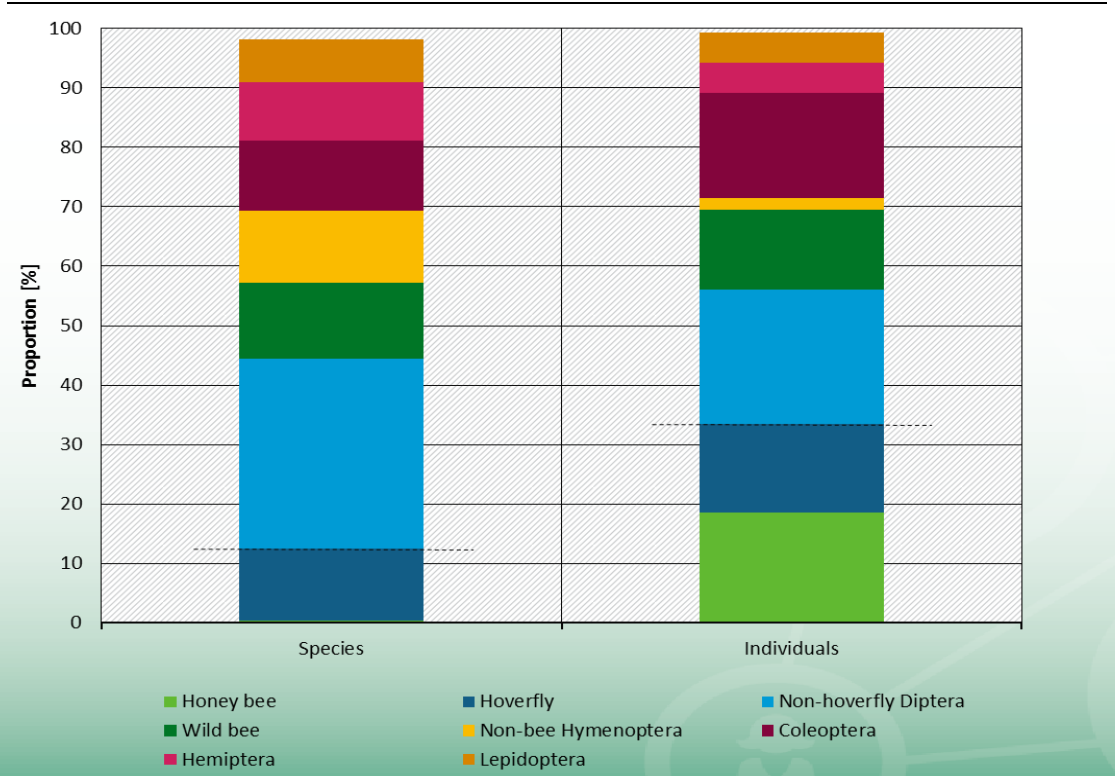
Non-bee pollinators

Hätönen, Milla;Kantner, Christian;Ludwig, Nancy;Benavent González, Alberto; Riedhammer, Caroline

Flower-visiting insects (FVIs) are defined as insect species that directly interact with flowers in at least the flying adult life stage

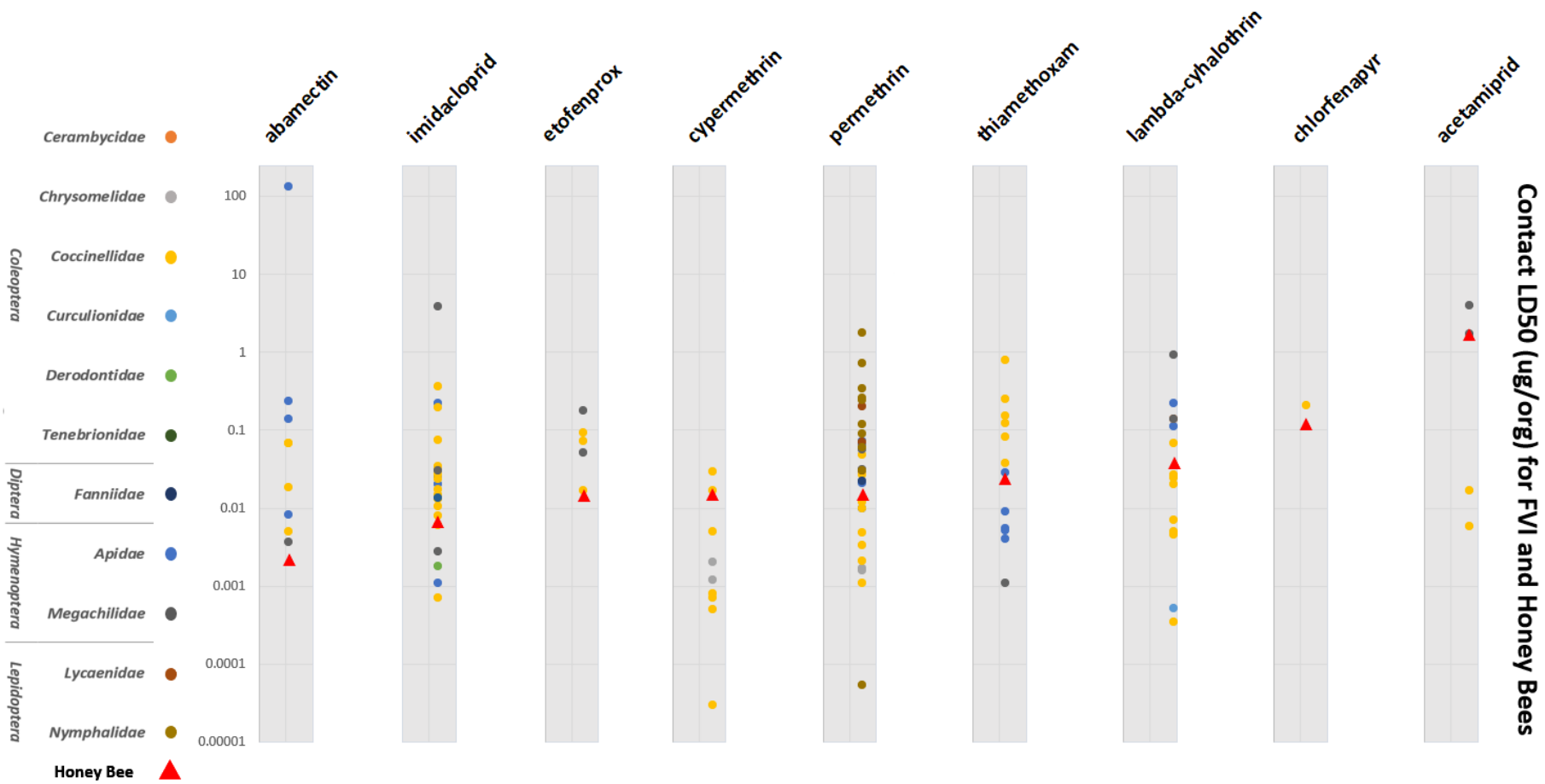


Contributions of different insect taxa to flower visitations in wildflower plantings in central Germany (*UBA Texte 54/2019; adapted from Grass et al. 2016.)*

Analysis performed

- A non-exhaustive literature and data base review was done, for non-bee arthropods of the orders Lepidoptera, Coleoptera, Diptera and Hymenoptera
- Collected information on:
  - Main characteristics of relevant species
  - Habitat types
  - Ecological role
  - Feeding behaviour
- Sensitivity of non-bee pollinators
  - Literature review
  - Comparison of sensitivity data
- Data gaps and recommendations for future research

Findings with regards to sensitivity



Information/knowledge gaps

Species which are **vulnerable and relevant** based on their ecological traits are not always the species available for toxicity tests

The **data base is scarce** for non-bee pollinators, especially for Diptera and non-bee Hymenoptera. Relevant publications of toxicity endpoints are rare or could not be found in the scope of this research or did not fit the criteria to be used.

Although all presented LD_{50} were derived for acute contact exposure by topical application of test substances, some parameters differ, mainly **test** duration and type of test substance (active substance or formulation).

We are not yet in the position to finally **conclude on sensitivity differences** between bee and non-bee species, as not for all relevant families/species information was available, test results are not always comparable

For future studies, it would be highly valuable to have **more laboratory studies performed along similar parameters** to make the comparison easier. Ideally, species native to Europe should be chosen as test organisms.

Thank you

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