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## Section VII: Summary of the 12<sup>th</sup> symposium

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### 7.1 Synopsis of the 12th International Symposium ‘Hazards of Pesticides to Bees’

#### Anne Alix

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The 12<sup>th</sup> ICP-PR was hosted by Prof. Guy Smagghe and the Ghent University, Faculty of Bioscience Engineering, on the 15<sup>th</sup>, 16<sup>th</sup> and 17<sup>th</sup> of September 2014. The meeting was organised thanks to the lead of Prof. Smagghe and his team Annelies Billiet, Anneleen Parmentier en Bjorn Vandekerckhove, with Dr. Anne Alix, Dr. Gavin Lewis and Jens Pistorius in the scientific committee.

The symposium welcomed 170 participants from 20 countries, including Algeria, Israel, Brazil, China, USA and Canada beside European countries. Through a combination of 43 presentations and 24 posters, the program covered multiple areas including:

- developments in general risk assessment methods for insect pollinators
- developments in laboratory, semi-field and full-field testing for honeybees, bumble bees and solitary bees
- methods for assessing exposure [and risk] from seed treatments and guttation, and
- risk management and monitoring.

Plenary discussions concluded each session based on the presentations and the feedback of the respective *ad-hoc* ICP-PR working groups.

Developments in laboratory, semi-field and full-field testing for honeybees, bumble bees and solitary bees represented half of the contributions with 21 presentations and 15 posters, demonstrating a similar level of importance afforded to the development of methods for assessing other bee species in addition to honey bees. Results of ring testing of draft methods were presented such as the OECD 10-day test on adult honey bees, the Oomen-feeding semi-field test, as well as acute toxicity tests on *Bombus* or *Osmia* spp. Exploratory work was also presented including the development of laboratory, semi-field and full-field methods on solitary bees examining whether existing methods for honeybees can be adapted for non-*Apis* bees as well as identifying novel test methods and identifying the next steps for research and method developments. Research on semi-field and full-field experiments aiming to improve the assessment of brood, assessing sublethal measurement endpoints such as individual bee behaviour or colony-level performance measures were also presented. Various proposals with respect to assessment parameters including automated measurement methods and links with crop yields were discussed. Finally, sampling methods for estimating residue levels (exposure) in cultivated crops were reviewed.

The session on risk assessment offered a diversity of perspectives from Europe and North America, with presentations of the recent developments in risk assessment processes. Highlights on specific aspects of risk assessments related to crop management (as for weeds), and exposure routes, provided additional databases for further refinements. Potential input parameters for modelling different aspects of the risk, i.e. exposure and effects, at the individual bee and the colony level as well as need for defining suitable risk hypotheses were also presented. The session included case studies to discuss the strengths and weaknesses of risk assessment outputs in support of decision making.

Methods and risk assessment approaches dedicated to seed treatments and related exposure routes were covered using case studies of neonicotinoid insecticides. These case studies illustrated field-scale approaches measuring a number of parameters in honey bee colonies, bumble bees and solitary bees, and residues in hive and foraging honeybees. Considerations on the consequences for the risk assessment process were presented by the *ad-hoc* working group.

A review of ongoing work on exposure to guttation droplets as well as additional work on risk conditions of exposure under full-field conditions was presented and also the magnitude of potential side effects investigated. From the available newer data the initial findings regarding magnitude of residues in guttation of different crops presented at the last meeting were supplemented by larger data sets. Also further information on the potential magnitude of effects on bees and bee colonies in different crops was presented and the relevance for realistic field conditions discussed. Furthermore, possible potential risk mitigation options were discussed and proposed.

Developments in risk management tools and their implementation in the regulatory and field contexts in Europe, USA and Canada were presented. Europe is developing a dedicated toolbox covering product-related and farmland management aspects of risk mitigation for honeybees and other pollinators. A review of risk mitigation options and stewardship actions under development in the US was presented. Approaches used for seed treatments in Canada were proposed together with preliminary results with respect to their efficacy. Further collaborations between Europe and North America through OECD and SETAC networks were discussed.

The monitoring session welcomed feedback on methodology development as reported by the ICP-PR *ad-hoc* group, as well as incident reporting and pesticide residue monitoring. Approaches for residue monitoring utilizing diverse matrices which inform on different aspects of bee exposure and their value in exposure assessment are being explored. The monitoring of effects on bees from exposure to pesticides is documented in the open literature. The review of this literature by the ICP-PR *ad-hoc* group is intended to provide guidance on those approaches that can be readily adapted to support regulatory decision making and the development of appropriate risk mitigation measures. Links between monitoring and risk mitigation may be reinforced through a close collaboration between regulatory authorities and researchers such as those currently serving on the ICP-PR *ad hoc* working groups.

Overall, the symposium illustrated the important effort undertaken over the past three years in the area of pollinator protection through the development of a strong foundation of science to support assessing exposure to and effects from pesticides. All aspects of the risk assessment process identified in both the EFSA and the U.S./Canada guidance documents were covered by research projects discussed during the ICP-PR.

Contributions discussed during oral and poster presentations demonstrated the progress made in furthering the knowledge associated with the use of the honeybee as a model organism in regulatory risk assessment of pesticides. With this knowledge comes a better understanding of the boundaries of this model organism in terms of ecotoxicological risk assessment and what additional information may be needed to overcome potential knowledge gaps. With regards to semi-field and full-field testing, additional work is needed to provide improved protocols with an appropriate balance between clear guidance and necessary flexibility that will enable risk assessors to address uncertainties identified in lower-tier testing.

With regards to bumble bees and solitary bees, important work has already been initiated toward the development of standardized testing methods that meet regulatory requirements of sensitivity, reliability and robustness (reproducibility). Available knowledge on higher-tier testing on honeybees and other arthropod species should provide additional input for optimizing test protocols. Simulation modelling approaches may also be useful in designing field testing methods. Necessary links of modelling with monitoring as well as regulatory protection goals need to be established for a better alignment of risk assessment scenarios to parameters and endpoints measured in the field. This link to field and monitoring approaches is also important to reflect the feedback on the efficacy of risk mitigation tools and to describe successful conditions for pollinators in cultivated areas.

The following ICP-PR working groups were renewed to take the identified work forward:

Honeybees:

1. Development of testing methods on brood (chair Roland Becker)
2. Development of testing methods in semi-field and field (including modelling aspects) (chair Gavin Lewis)
3. Risk assessment related to dusts (chair Rolf Forster)
4. Risk assessment related to guttation droplets (chair Jens Pistorius)

Bumble bees and solitary bees:

5. Development of testing methods in the laboratory, semi-field and field (chair Sjef van der Steen)

All bees:

6. Monitoring methods (chair Anne Alix)

The ICP-PR Bee Protection Working Group composition was reviewed and the following members were elected:

Jens Pistorius (government): chair

Gavin Lewis (industry): vice-chair

Anne Alix (industry): secretary

Veronique Poulsen, Thomas Steeger (government)

Guy Smaghe, Klaus Wallner (academia)

Finally, the assembly formally recognized Dr Pieter Oomen and Dr Jacob Peter van Praagh for their tremendous contribution to risk assessment, research and knowledge on pollinators and the progress of the ICP-PR working group in general.



**Photograph:** Symposium host, prof. Guy Smaghe (right), with at his side awardee dr. Job van Praagh and his wife Margreet, and at left awardee and former chairman dr. Pieter Oomen and his wife Françoise.