4.3 Bumblebee (*Bombus terrestris*) versus honey bee (*Apis mellifera*) acute sensitivity – Final results of an ECPA data evaluation

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Abstract

A data evaluation was conducted by ECPA companies to compare the acute sensitivity of the bumblebee *Bombus terrestris* L. with that of the honey bee *Apis mellifera* L. to plant protection products. For the evaluation, 97 data sets were available for oral toxicity and 108 data set for contact toxicity for both bee species. The data comprised 27 and 29 sets for oral and contact toxicity testing of fungicides, 42 and 41 for oral and contact exposure for herbicides (including one plant growth regulator), and 28 oral and 38 contact data sets for insecticides (including one nematicide), respectively. For data sets with definitive endpoints for honey bees (most insecticides), the sensitivity ratio (SR) was determined by dividing the honey bee LD_{50} by the bumblebee LD_{50} value. Endpoints of data sets with unbound '>' endpoints (most fungicides and herbicides) for honeybees were assigned to toxicity classes. For data sets with unbound honey bee LD_{50}-values the data evaluation indicated similar or lower sensitivity of bumblebees versus honeybees by contact or oral exposure for all fungicides and herbicides. Likewise, similar or lower contact sensitivity of bumblebees than honey bees was determined for all insecticidal data sets (including the nematicide) with definite honeybee endpoints. For the oral exposure this was also the case except for 5 active substances. For two insecticide active ingredients the SRs were between 3.3 and 5.1. For two insecticide formulations with the same active ingredient and with unbound LD50-values for honeybees which generated SRs of approximately 95, results of higher tier semi-field data do not indicate any negative impact on *B. terrestris* and their colony development under more realistic semi-field conditions. Overall, the current data supports that, for a wide range of chemistry, the honey bee is a sensitive surrogate test species for bumblebees based on acute toxicity testing of plant protection products. Therefore, routine regulatory testing of the bumblebee (*B. terrestris*) in context of registration of plant protection products and/or using a standard safety of 10 on basis of honey bee endpoints is not justified on basis of available data review.

4.4 Proposed decision tree to evaluate the potential risk of plant protection products to bees via succeeding crops

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Abstract

The exposure of bees from residues in succeeding crops is included on the list of exposure scenarios to be considered in a risk assessment in the EFSA Guidance Document on the risk assessment of plant protection products on bees (*Apis mellifera*, *Bombus* spp. and solitary bees) (EFSA, 2013). A stepwise approach is proposed which is based on the default assumption of exposure in the succeeding crops, which is further refined based on knowledge of the quantitative coverage by attractive crops in the crop cycle and modelling estimates of pollen and nectar residues. EFSA acknowledged the difficulty to assess the spatial distribution of succeeding crops as well as the relevance of the assumptions on active substance properties and residue calculations to properly run this exposure scenario, and recommended to perform field experiments to study transfer from soil pore water to bee-relevant matrices to develop targeted succeeding crops scenarios.

This presentation proposes to contribute to the definition of targeted exposure scenarios for exposure through succeeding crops by introducing properties of the active substance and its metabolite(s) into the scheme that dictate the likelihood of presence as quantifiable residues in succeeding crops. These parameters are derived from existing guidance documents in use to decide for example upon soil persistence or to define residues levels in honey (EC, 2018). The possibility to define endpoints that trigger a risk assessment from succeeding crops will be discussed.