

## 4.11 Pesticide Risk Assessment: Comparing sensitivities of 'non-*Apis*' bees with the honeybee (*Apis mellifera* L.)

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### Abstract

For decades, numbers of pollinators are declining in Europe (Biesmeijer et al., 2006). In Germany an estimated 40% of wild bee species are threatened by extinction and many species have already disappeared. Key drivers of the loss of biodiversity are land consolidation and agricultural intensification (Westrich and Dathe, 1997). Among other things pesticides pose a threat to pollinators (Kevan, 1975). In the present risk assessment of pesticides the honey bee *Apis mellifera* is used as test organism representative for all non-*Apis* bee species. However, former toxicity studies were mainly conducted with bumblebees or non-European bee species (Tasei et al., 2002). Data on the susceptibility of European bee species to pesticides is lacking, leaving high uncertainties in the pesticide risk assessment.

Therefore acute contact toxicity tests with several European bee species were conducted to determine LD<sub>50</sub> values (lethal dose at which 50% of the tested organisms die) for Perfekthion (active ingredient: dimethoate) and a species sensitivity distribution was established. The values were compared to data from *Apis mellifera* studies to examine whether LD<sub>50</sub> values from honeybee acute contact toxicity studies are representative for other bee species.

Additionally, the relationship between bee size and sensitivity was examined, as it was hypothesized that smaller species are more sensitive.

### References

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