

OR035

Evaluation of pesticide toxicity to the honeybee: a new approach

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Chemicals are used in agriculture (fertilizers, pesticides) and can be potentially found in the environment. In order to know their impacts on the non-target organisms and to limit their undesirable effects, these products are evaluated according to several tests. One of the first steps is the establishment of the hazard quotient to evaluate the level of risk presented by the use of a molecule to an organism. This ratio is obtained by comparing the toxicity of the molecule to this organism and the quantity or the concentration to which it can be exposed in the environment. In honeybee tests, the environmental exposure is based on the amounts of active substance spread on one hectare of cultivated surface. This factor does not take into account the amounts that can be in contact with a forager during pulverization and thus does not enable a real evaluation of the risk. Our study proposes a new approach to evaluate the exposure and the potential toxicity of the pesticides to honeybees. We tested 20 of the most common commercial pesticide preparations on bees in order to know the rates of residues deposited on the bees during the pulverization in the field. This enabled us to determine an exposure surface of around 1 cm² per honeybee and then to convert an amount per hectare into an amount per bee. This new approach of the risk is more accurate and could become a tool for decision-making aid in the evaluation of the toxicity of pesticides.