

Plant protection products in the mix - semi-field studies on effects on honey bees

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In a series of screening laboratory experiments on tank mixtures in a spray chamber, synergistic effects on the mortality of adult honey bees were observed for some combinations of pesticides when exposed by contact exposure.

While in the laboratory studies higher numbers of different combinations are screened, to understand the potential additive or synergistic mode of action for different substances and to identify products and combinations of concern, further studies are needed to assess the potential risks for bee colonies. Therefore, higher tier studies in a semi-field setup were conducted to assess effects of these mixtures to honey bees under more realistic conditions, thereby including the effects from both contact and oral exposure.

To assess the risk on honey bees in a worst case scenario, honey bee colonies

were confined in tents with flowering phacelia as a highly bee attractive crop. Different field-realistic mixtures of PPPs were sprayed during bee flight. The influence on adult mortality, behaviour, flight activity, and colony development was investigated.

Our results showed that the combination of thiacloprid and an EBI-fungicide cause significant adverse effects on adult mortality, behaviour, and flight activity. These effects last from the day of application until two days after application.

Our results suggest that the application of this mixture poses a possible risk on the honey bees foraging on treated plants under semi-field conditions. Therefore, it is necessary to check whether the application of this mixture harms bees on colony level in a field realistic scenario, too.