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## **Sektion 1**

### **Bienen und andere Bestäuber**

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#### **01-1 – Ressourcenqualität kann negative Auswirkungen von Pflanzenschutzmitteln auf Honigbienen in einer Halbfreilandstudie reduzieren**

*Resource quality can mitigate negative effects of plant protection products to honeybees in a semi-field approach*

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Honeybee health has been reported to be affected by multiple factors including food quality and plant protection products (PPPs). Currently, concerns are growing about potential interactions between multiple stressors and their impacts on bee health. Maize pollen is considered to have low nutritional value for honeybees and is mostly collected by bees during late summer due to shortage of other flowering plants. To investigate the interaction between different nutritional pollen-sources and exposure to PPPs on honeybee health, a semi-field study with tents planted with maize, tents planted with 50% maize and 50% flower mixtures with diverse pollen qualities and tents planted with *Phacelia tanacetifolia* were realized. We set one healthy honeybee hive per tent. The variants were sprayed with a mixture of the fungicide “Prochloraz” and the neonicotinoid “Thiacloprid”.

Brood development in maize pollen fed bees was significant lower compared to *Phacelia* or mixed pollen fed bees. The interaction with PPP spraying had a strong negative effect on bee development in maize, but not in *Phacelia*.

Newly emerged bees from colonies foraged in tents with *Phacelia* or a flowering strip showed a higher longevity than bees with untreated monofloral maize diet. Application of a PPP mixture reduced the survival rate of emerged bees in maize but not in *Phacelia*.

After application of a PPP mixture, bee larvae originated from tents contained *Phacelia* showed higher activity of the detoxification enzyme P450 than bees from tents contained only maize.

Our study shows that a higher pollen quality may have positive effects on bee health compared to a poor monofloral diet with maize. This effect can also be seen in colonies exposed to PPP mixture. Development of flowering resources in agricultural fields, especially in late summer, may be an effective approach to maintain bee health and their response to PPPs.

#### **01-2 - Chronisch hohe Glyphosat Herbizid-Exposition verzögert die Entwicklung bei Arbeiterinnen unter Freilandbedingungen**

*Chronic high glyphosate-based herbicide exposure delays individual worker bee development under field conditions*

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Die anhaltende Debatte über Herbizide auf Glyphosatbasis (GBH) und ihre möglichen Auswirkungen auf die Bienengesundheit ist ein kontroverses Thema. In unserer Arbeit zielten wir daher darauf ab, mögliche subletale GBH-Effekte auf die Brut- und Volkentwicklung, Rückstände in Bienenprodukten, das Überleben von Adulten Arbeiterinnen