studied the effect of coumaphos in beeswax on larval development. Fifteen *Apis mellifera* colonies were treated with CheckMite® containing 2.72 g of coumaphos per application. During the following spring season, average coumaphos levels of 65 mg/kg were measured in combs that came into contact with the strips and average concentrations of 6.7 mg/kg were measured in combs that did not come into contact with the strips. Coumaphos was also detected in wax that was not present during the treatment, such as newly constructed wax, wax of honeycombs and capping wax, respectively. *In vitro* larval rearing in cups coated with beeswax containing coumaphos at a concentration of 70 mg/kg or 10 mg/kg demonstrated that coumaphos levels of 70 mg/kg in beeswax negatively affected larval development, while no differences to the controls (0 mg/kg) were observed for larvae exposed to beeswax containing coumaphos at 10 mg/kg. Therefore, beeswax exposed to CheckMite® should not be recycled in order to prevent elevated coumaphos residues in new foundations and hence to prevent honeybee larvae from being exposed to high residue levels. For further information please see Kast, C., Kilchenmann, V. and Droz, B. (2019) Distribution of coumaphos in beeswax after treatment of honeybee colonies with CheckMite® against the parasitical mite *Varroa destructor.* Apidologie

1.11 Exposure following pre-flowering insecticide applications to pollinators

Edward Pilling[1], Jeremey Barnekow[1], Vincent Kramer[1], Anne Alix[1], Olaf Klein[2], Lea Franke[2], Julian Fricke[2],

[1, 2]Eurofins Agroscience Services GmbH

E-Mail: edward.pilling@corteva.com

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Abstract

Applying insecticides pre-flowering can mitigate the risk to pollinators by significantly reducing exposure via both contact and dietary routes. Methods have been developed to quantify the exposure of foraging honeybees, bumblebees and solitary bees to insecticides following pre-flowering applications. The insecticide sulfoxaflor was applied pre-flowering at BBCH 55 to a variety of target crops at five different sites across Europe. The subsequent residue levels on foliage after application were determined to investigate the decline of residues prior to flowering. When the crop reached the flowering stage at BBCH 60, residue levels in pollen and nectar were determined to provide an estimate of potential maximum exposure to pollinators and rate of decline in pollen and nectar. Exposure levels were compared to results from effect studies with honeybees, bumblebees and solitary bees. With honey bees, effect assessments included mortality, foraging activity, behaviour and colony condition assessments. Nectar and pollen were sampled from forager bees, pollen traps, and from combs to determine levels of dietary exposure. Effects on bumblebees were investigated by mortality assessments in the colony and tunnel, together with assessments of foraging activity, colony weight, queen production and brood assessments at the start and end of the study. Dietary exposure to bumblebees was determined by analysis of nectar and pollen collected from forager bees and in nectar and pollen pots in the colony. Effects on solitary bees (*Osmia bicornis)* were assessed following applications to oilseed rape in tunnels. Assessments included hatching rate, nest occupation, flight activity, cell and cocoon production and hatching success. Dietary exposure was determined in nectar and pollen collected from plants. Results from both exposure and effect studies will be presented together with a discussion on risk to pollinators and mitigation with pre-flowering applications.

1.12 Assessing effects of insecticide seed treatments on pollinators in oilseed rape and maize

Edward Pilling[1], Anne Alix[1], Olaf Klein[2], Lea Franke[2], Julian Fricke[2], Marco Kleinhenz[2], Heike Gätschenberger[2]

[1]Corteva Agriscience, [2] Eurofins Agroscience Services GmbH

E-Mail: edward.pilling@corteva.com

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Abstract

To fully assess the risk of insecticide seed treatments in oilseed rape and maize, methods have been development to investigate effects of seeds treated with cyantraniliprole on pollinators. Tunnel studies were conducted with oilseed rape grown from treated seed combining exposure and effects assessment on honey