

Thiamethoxam in the cultivation of hop – does it pose a threat to honey bees?

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Abstract

One serious problem in the growing of hop is the feeding damage caused by different soil insects (e.g. *Curculionidae*, *Alticinae*) during springtime. In 2010 the grower of hop in the Hallertau, the largest hop growing area in Europe, tested a new agent, thiamethoxam (Actara®), that belongs to the group of neonicotinoids. The application process in hop is a drench application with 200 ml solution (50 g a. i. / ha) around the growing plant.

To find out if there is any exposure of the bees to this agent, various investigations were undertaken. 24 Beehives were set up in groups of 8 at three different places with different distances to the hop fields. From April to July, twice a week homing bees were caught at the hive entrance in the early morning and were deep frozen. Dead bees were collected from dead bee traps three times weekly and also the population development and the honey production were measured. In the hop garden the occurrence of guttation of the hop was observed in regular intervals. Guttation of the grass and the plants in between hop rows was collected. Additionally, further samples of the soil, plants and puddles were taken. From the intercepted bees the honey sac was dissected and prepared for further examinations. Also the pollen loads were analysed for residues.

The used agent and the known metabolite clothianidin were detectable (LOQ 0,001 mg/kg) neither in the pollen loads from single bees (n=26), nor in the honey sacs (n=2000), nor in bee bread samples (n=9) nor in harvested honey (n=9). The population development and the honey production were similar to the control group. Results of the dead bee traps showed no noticeable effects on the colonies.

References

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