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

Ingrid Illies[1], Verena Gottschalch[2], Klaus Wallner[2], Bernhard Engelhard[3], Jens Pistorius[4], Gabriela Bischoff[5]

[1]Bavarian State Institute for Viniculture and Horticulture, Department of Honey Bee Research and Beekeeping, An der Steige 15, 97209 Veitshöchheim
[2]University of Hohenheim, State Institute of. Apiculture, August von Hartmann Strasse 13, 70593 Stuttgart
[3]Bavarian State Research Center for Agriculture, Hop Research Center Hüll, Hüll 5 1/3, D-85283 Wolnzach
[4]Julius Kühn-Institute (JKI) Federal research centre for cultivated plants, Institute for crop protection in Field Crops and Grassland, Messeweg 11/12, 38104 Braunschweig
[5]Julius Kühn-Institute (JKI), Institute for Ecological Chemistry, Plant Analysis and Stored Product Protection, Königin-Luise Str. 19, 14195 Berlin

DOI: 10.5073/jka.2012.437.017

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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