

There's something in the water - Guttation and the risk for honey bee colonies (*Apis mellifera* L.): a worst case semi-field scenario in maize

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The study was performed under semi-field conditions in Lucklum (Braunschweig, North Germany), in seed treated (Clothianidin) and untreated maize. The tents (4 treatment and 2 control) had an area of 96m² (16 x 6m) each and were covered with a gauze. The study was repeated twice, in the first run (BBCH 13-15) with two variants, one with and one without artificial water source containing uncontaminated tap water. In the second run (BBCH 15-19) all variants had an artificial water source. Bee colonies used were of similar size with approximately 10.000 bees. The adult mortality of bees was assessed in dead bee traps and on linen sheets in the crop. The flight activity and behavior of bees at the entrance of the hives and in three flight squares in the crop

were determined once daily. The observation time in the tents were 10 days, the observation of brood development for 100 brood cells per hive was conducted nearly for four weeks. During the whole observation period the occurrence of guttation was documented. In the first run of the study, in the artificial extreme situation without any additional water supplies a high impact on mortality and also on the brood development was observed, indicating the sensitivity of the test system but representing an unrealistic worst case scenario. In variants with treated maize and additional water supply, no effects on adult mortality and brood were observed. The results of the second run are also with no effects on adult mortality or brood development.