

## Effects on honey bee colonies following a granular application of Santana® containing the active ingredient clothianidin in maize in 2010 and 2011

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### Abstract

Wireworms, which are the larvae of click beetles (family *Elateridae*) have become a serious pest of corn. Thus, the application of Santana®, a granulate with the active ingredient clothianidin, was allowed in 2010 and 2011 under strict regulations in Germany. The granules are deposited with the grain of seed in the soil during sowing. Clothianidin belongs to the group of neonicotinoids and is toxic for bees. An exposition of honeybees to clothianidin by dust during sowing as well as by guttation liquid might be possible. If guttation liquids collected with the beginning of guttation were mixed with sugar and fed to caged bees high mortality was observed; bees fed with this mixture died within one hour. Thus, the effect of guttation under realistic field conditions was observed.

In 2010 and 2011 honey bee colonies were placed at fields before sowing of corn and Santana®. All colonies were equipped with dead bee traps in front of the hives to estimate the mortality of honey bees in the hive. In both years during sowing and the following days no increased mortality was recorded. During the guttation period the mortality in the bee traps increased marginally on a few days. In some samples clothianidin was detected.

Neither in 2010 nor in 2011 negative effects on colony development were recorded.

### References

1. Pistorius J., Wallner K., Joachimsmeier I., Reetz J., Schenke D., von der Ohe W., Illies I., Maus C., Block T., Becker R., (this volume): Review on activities in Germany to assess the occurrence, residues and possible risk of guttation for honey bees.