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## Study shows low risk to bees from neonicotinoids

19 November 2013 | By [Alistair Driver](#)

NEONICOTINOID pesticides do not [pose](#) a threat to [bee health](#) at doses typically used in the field, according to the results from an extensive [field trial](#) carried out by Syngenta.

The agrochemical giant hopes the research, which has [finally been published](#) after a protracted [peer review process](#), will help fill the data gap on the impact of the chemicals in the field and reinforce the case for their continued use in Europe.

The study was conducted in various different regions in France between 2005 and 2010 to support the company's application to use Cruiser as a [seed treatment](#) on maize and oilseed rape in the EU.

In one part of the study, trials showed the residue levels of thiamethoxam (the active chemical in Cruiser) in pollen and nectar collected by from fields treated with the product were 'typically'.

In the other part, field studies showed no evidence of detrimental effects on colonies that were repeatedly exposed over a four-year period to thiamethoxam residues in pollen and nectar, following seed treatment of oilseed rape and maize.

Various measures of bee colony health, including mortality, foraging behaviour, colony strength and weight and food storage levels, were found to be broadly similar between colonies located near the treated crops and controls of untreated crops.

This work also showed that colonies exposed to the treated crop were able to successfully overwinter and had a similar health status to the control colonies in the following spring.

"We conclude that these data demonstrate there is a [low risk](#) to honey bees from systemic residues in nectar and pollen following the use of thiamethoxam as a seed treatment on oilseed rape and maize," the researchers said in a paper published in scientific journal Plos One.

Cruiser was one of three neonicotinoid products that will be [suspended across the EU for two years from December 1](#) as seed treatments on crops that are attractive to bees.

The suspension was forced through by the European Commission after member states failed to reach a definitive decision.

The decision was based research showing various 'sub-lethal effects' on bees exposed to the chemicals in laboratory experiments, including reduced colony growth and impaired foraging and homing behaviour. Syngenta, backed by the UK Government and farming industry, has argued that these studies used much higher doses than would be deployed in the field.

The researchers said the results from Syngenta's large-scale field trials provide a different conclusion to these laboratory because 'exposure and hence risk to honey bees from systemic thiamethoxam residues in pollen and nectar following seed treatments is low under real in-use field conditions'.

Syngenta said its study was 'unique' and the first to 'directly investigate the data gap regarding potential over-wintering effects on honeybee colonies in the field'.

The researchers acknowledged the limitations of field trials of this magnitude conducted over a number of years. Challenges included finding suitable trial sites with sufficient distance between the control and treatment plots that separated from other pesticide treated sites and accounting for high bee colony losses caused by other factors such as loss of healthy egg-laying queens and background disease.

But they said: "Risk assessment based on laboratory data alone, however, will not provide critical information on realistic exposure or behaviour of bees following actual use of the pesticide under normal agronomical conditions.

“Therefore, while there can be limitations and challenges with regards to conducting and interpreting field trials, the information generated adds considerable value to our understanding of risk under real in-use field conditions.”

A Syngenta spokesman said the research had been described by many member states as the ‘best field study they had ever seen’.

He said: “We would have preferred to see this data published sooner in order for it to form part of the debate ahead of the Commission’s decision to restrict neonicotinoid use in some contexts but, quite rightly, the journal’s review process is extremely rigorous and took almost a year to complete.”

Syngenta, along with Bayer, which is also facing the loss of key products due to the suspension, [has launched a legal challenge against the decision to suspend the product.](#)

The companies claim the Commission took the decision on the basis of a ‘flawed process, an inaccurate and incomplete assessment by the European Food Safety Authority and without the full support of EU Member States’. It has filed its legal case against the Commission at the EU General Court in Luxembourg. No date has been set yet for a hearing.

The decision to suspend the three neonicotinoid products will be review in 2015.

- To see exactly what the ban means for farmers, click [here](#)

## Key findings

One part of the study looked at residue levels in pollen and nectar collected from bees exclusively foraging in flowering thiamethoxam (Cruiser) seed treated maize and oilseed rape.

- It found thiamethoxam residue levels were ‘typically low’ with median values between <1 and 7 µg/kg for pollen and <0.5 and 4 µg/kg for nectar. These were much lower than the doses that showed sub-lethal effects in the laboratory studies.
- Residues in hive samples were consistently lower than residues in pollen and nectar samples collected from bees, indicating dilution and/or degradation of residue in the hive following collection.

The other part considered the long-term risk to honey bee colonies from four years consecutive single treatment crop exposures to flowering maize and oilseed rape grown from thiamethoxam treated seeds. Bee colony health was compared with control colonies located near untreated fields.

- During the exposure period, when colonies were placed adjacent to treated and control fields, the number of dead bees, foraging behavior, colony strength, brood development and food storage levels were, on average, similar between treatment and control colonies.
- By monitoring the weight of colonies throughout the four-year period, it was evident that there were also no substantial losses of foraging bees exposed to treated crops in the field.
- Detailed examination of brood development throughout the year demonstrated that colonies exposed to the treated crop were also able to successfully overwinter and had a similar health status to the control colonies in the following spring.

## Readers' comments (1)

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Anonymous | 19 November 2013 4:37 pm

Maria - Any critique of the actual study? Is it flawed just because a commercial company undertook it? Isn't this a peer reviewed study published in the same journal that published the 'independent' studies to which you make reference? Why is this study not scientifically valid?

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