

Study explores what we know about how neonicotinoids affect bees

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Credit: Lilla Frerichs/public domain

An international group of pollination experts - including a University of Guelph professor - has published a second summary in as many years on the scientific evidence about the effects of neonicotinoid pesticides on bees.

The report was published this week in *Proceedings of the Royal Society*

B.

"The extent to which neonicotinoid insecticides harm bees and other [insect pollinators](#) is one of the most contentious questions that environmental policymakers have to grapple with today," said U of G environmental sciences professor Nigel Raine, who holds the Rebanks Family Chair in Pollinator Conservation.

More than 400 studies have been published on the topic in the last decade, often presenting variable or conflicting findings, making it difficult for farmers and policy-makers to make evidence-based decisions, Raine said.

He served on a team of researchers whose first scientific review of the evidence was published in May 2014.

Since then, more than 80 new studies have appeared. The team was asked to update its findings by the chief scientific adviser of the United Kingdom government, which has banned the use of three neonicotinoid insecticides.

"Our aim was to act as honest brokers, providing an account of the evidence, its strengths and limitations, but without making any direct policy recommendations," Raine said.

The two reviews provide a comprehensive overview of current scientific understanding of neonicotinoid impacts on pollinators. Such information must be considered within the broader context of the many, interacting factors affecting pollinator health, Raine said.

He added that despite plenty of research on aspects of this topic, policymakers have only limited evidence on how pollinator populations are affected by neonicotinoid use and on how farmers will respond to

usage restrictions.

"Insecticides are designed to kill insect pests. Bees, and many other important pollinators, are also insects that will be killed by insecticides if exposure levels are high enough," Raine said.

What's being debated is the extent to which field levels of exposure have impacts on pollinators, he said.

"It varies enormously depending on many factors, including the type of insecticide, how it is applied and which pollinator species you consider. Current evidence suggests that bumblebees and [solitary bees](#) are more severely affected by neonicotinoids than honeybees."

More information: H. Charles J. Godfray et al. A restatement of recent advances in the natural science evidence base concerning neonicotinoid insecticides and insect pollinators, *Proceedings of the Royal Society B: Biological Sciences* (2015). [DOI: 10.1098/rspb.2015.1821](#)

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Provided by University of Guelph

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