
Pesticide Turns Bees Into Picky Eaters - Science News

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Lee Rannals for RedOrbit.com

New research shows that a common pesticide can alter the appetite of honey bees and turn them into “picky eaters.”

Biologists at the University of California, San Diego (UCSD) found that a single dose of imidacloprid given to bees made the insects crave sweeter foods and reject foods that may not be as tasty.

According to the researchers, honey bees that prefer sweeter foods limit the amount of resources they contribute to the colony.

During the study, the scientists individually harnessed the bees so only their heads could move, enabling them to get a more detailed perspective of a bee’s behavior.

They stimulated the bees’ antennae with sugar water and were able to determine at what concentrations the sugar water was rewarding enough to feed on. The researchers touched the antennae of each bee to see if it extended its mouth parts.

Bees treated with imidacloprid were less willing to feed on lower concentrations of sugar water than those bees that went untreated with the pesticide.

“Our results show that shortly after bees are exposed to pesticides, they respond less often to sweeter nectar sources that they would normally feed on,” Daren Eiri, lead author of the paper published in [Journal of Experimental Biology](#), told RedOrbit in an email.

“In addition, bees typically recruit their nestmates to good food with waggle dances, and we discovered that the treated bees also danced less to food sources that did not contain any pesticides.”

Imidacloprid, which is part of the group of crop pesticides known as neonicotinoids, is a popular active ingredient in many consumer-used products for home gardening, according to Eiri.

Honey bee populations have dropped in both North America and Europe over the years due to “colony collapse disorder,” and recent published studies point to neonicotinoids as a culprit.

Eiri said the biologists began this study because an earlier study showed that bees feeding at a source contaminated with imidacloprid resulted in reduced foraging activity.

“It was unclear whether this was due to the anti-feedant character of the pesticide, or if there was activity occurring inside the colony to reduce foraging activity,” he told RedOrbit. “Our research will contribute to the number of studies recently published that have also found negative effects on honey bee behavior.”

Imidacloprid is banned for use in certain crops in some European countries, but it is still able to be used in the U.S. Eiri said he hopes the study may influence how pesticides are registered by the EPA.

“The EPA currently does not have a formal review process that looks at the sublethal, or behavioral, effects of pesticides to beneficial insects like honey bees,” he said.

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Because imidacloprid is part of consumer products, Eiri said the findings may also have an influence on homeowner's choice in what products to use for gardening.

"It may influence home owners to use alternative products that use active ingredients that are not considered harmful to beneficial pollinators," Eiri told RedOrbit.

The researchers said their discoveries not only have implications for how pesticides are used in crops, but also help to produce an additional chemical tool that can be used by other researchers who study the neural control of honey bee behavior, according to a press release.

Image 2 (below): Using an ascending range of sugar water from 0 to 50 percent, the researchers touched the antennae of each bee to see if it extended its mouthparts. Credit: Daren Eiri

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