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## Neonicotinoids come under fire

### INDUSTRY NEWS

Groups say these pesticides damage bee populations

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A widely used farm pesticide first introduced in the 1990s has caused significant changes to bee colonies and removing it could be the key factor in restoring nature's army of pollinators, according to two studies released Thursday.

The scientists behind the studies in Europe called for regulators to consider banning the class of chemicals known as neonicotinoid insecticides. In the U.S., the Environmental Protection Agency told msnbc.com that the studies would be incorporated into a review that's currently under way.

Neonicotinoid pesticides labeled for nursery use include Flagship, Marathon, Safari and TriStar.

A pesticide trade group questioned the data, saying the levels of pesticide used were unrealistically high, while the researchers said the levels used were typical of what bees would find on farms.

"Our study raises important issues regarding pesticide authorization procedures," stated Mikael Henry, co-author of a study on honey bees. "So far, they mostly require manufacturers to ensure that doses encountered on the field do not kill bees, but they basically ignore the consequences of doses that do not kill them but may cause behavioral difficulties."

"There is an urgent need to develop alternatives to the widespread use of neonicotinoid pesticides on flowering crops wherever possible," added the authors of the second study on bumble bees.

Last week, a coalition of environmental groups and beekeepers asked the EPA to suspend the use of the pesticide, which is widely used in flowering crops like corn, sunflower and cotton to combat insects.

The studies are the first to go outside the lab and into the fields, where the experts said they detected how the pesticide impacts bees as they collect pollen and pollinate flowers and crops.

Honey bee populations have been crashing around the world in recent years, and pesticides have been suspected, along with other potential factors such as parasites, disease and habitat loss, in what's known as Colony Collapse Disorder. In the U.S., some beekeepers in 2006 began reporting losses of 30-90 percent of their hives, according to the U.S. Department of Agriculture.

"About one mouthful in three in the diet directly or indirectly benefits from honey bee pollination," it adds.

Published in the peer-reviewed journal Science, one study

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by British scientists looked at honey bees and the other by French scientists examined bumble bees, which unlike honey bees live in the wild but also are key pollinators.

In the bumble bee study, researchers concluded that colonies treated with nonlethal levels of the pesticide "had a significantly reduced growth rate and suffered an 85% reduction in production of new queens" compared to colonies without the pesticide.

"It was quite massive," researcher Penelope Whitehorn said of the reduction at a press conference Thursday.

"Bumble bees have an annual life cycle and it is only new queens that survive the winter to found colonies in the spring," the authors noted. "Our results suggest that trace levels of neonicotinoid pesticides can have strong negative consequence for queen production by bumble bee colonies under realistic field conditions, and this is likely to have a substantial population-level impact."

In the honey bee study, radio transmitters were attached to the back of bees to see how they foraged in conditions with and without the pesticide.

The pesticide, the researchers concluded, impaired the homing ability of bees and exposed bees were two to three times more likely to die while away from the hive. That "high mortality ... could put a colony at risk of collapse" within a few weeks of exposure, especially in combination with other stressors, they noted.

"We were actually quite surprised by the magnitude," Henry told reporters.

CropLife America, a pesticides trade group, said in a statement that the studies "fail to account for the many real-world factors that impact bee and colony health, and the researchers used unrealistic pesticide dose levels that are not commonly found in practical field situations in agriculture."

Dave Goulson, a University of Stirling researcher with the bumble bee study, countered that the scientific papers "are the closest studies to date to look at the real world situation."

A leading U.S. researcher said the honey bee study "did use a higher dose than we have seen in pollen and nectar."

That study is "not fatally flawed," added Jeff Pettis of the USDA's Bee Research Laboratory, "but the higher dose must be considered as being a factor in why they saw the loss of bees."

"The bumble bee study, however, used a very realistic dose and the effect on reproduction was the major finding," he told msnbc.com. "The bumble bee study was very convincing in my opinion in being realistic and showing a significant impact on reproduction."

CropLife America spokeswoman Mary Emma Young said the dose in the bumble bee study was "a high level, but not as excessive" as in the honey bee study, and that "similar studies on bumble bees did not show these effects, so more research may be needed."

In the honey bee study, the authors said they tested the bees at an "intensive cereal farming system" in France and used sublethal amounts of thiamethoxam, "a recently marketed neonicotinoid substance currently being authorized in an increasing number of countries worldwide for the protection of oilseed rape, maize and other blooming crops foraged by honey bees."

Goulson noted that EPA rules don't require pesticide makers to test the product as bees navigate over natural distances and yet that "is where the problems seem to start."

The EPA, contacted by msnbc.com, said it has "begun reviewing the two studies ... and they will be considered" as part of

an ongoing process that reviews chemicals. Non-EPA scientists will weigh in at a special meeting in the fall, it added.

The prevailing view among most scientists and regulators is that "complex interactions among multiple stressors" are to blame, the EPA stated. "While our understanding of the potential role of pesticides in pollinator health declines is still progressing, we continue to seek to learn what regulatory changes, if any, may be effective."



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