

Bee breakthrough as scientists find how common pesticide kills off their colonies

[Rob Waugh for Metro.co.uk](#) Wednesday 26 Apr 2017 10:26 am



A honey bee (*Apis mellifera*) is harnessed for study on a flight mill in biology professor James Nieh's laboratory NN

A common pesticide sprayed on crops around the world doesn't kill bees – but non-lethal amounts seriously damages their ability to fly.



The breakthrough could explain how pesticides kill bee colonies – by meaning that bees are less likely to return to their home

North Korea shows off the firepower of its million-strong army as nuclear tensions rise

nests after ingesting tiny amounts of ‘neonic’ pesticides.

The new study, published in the journal Scientific Reports, describes in detail how the neonicotinoid pesticide thiamethoxam damages honey bees.

Thiamethoxam is used in crops such as corn, soybeans and cotton.

To test whether the pesticide impairs flight ability, the researchers designed and constructed a flight mill – a bee flight-testing instrument – from scratch. The apparatus allowed them to fly bees under consistent and controlled conditions.



Photo by Jeff Blackler/REX/Shutterstock

Months of testing and data acquisition revealed that typical levels of neonicotinoid exposure, which bees could experience when foraging on agricultural crops – but below lethal levels – resulted in ‘substantial damage’ to the bees’ ability to fly.

Doctor Simone Tosi, of University of California San Diego, said: ‘Our results provide the first demonstration that field-realistic exposure to this pesticide alone, in otherwise healthy colonies, can alter the ability of bees to fly, specifically impairing flight distance, duration and velocity.

‘Honey bee survival depends on its ability to fly, because that’s the only way they can collect food.

Why are bees such a big deal?

If bees were to die out, humanity would basically be doomed – and that’s not an exaggeration.

The neonicotinoids we use in agricultural production are a neuro-toxin that poisons bees and leaves them disoriented, unable to pollinate plants effectively, and close to death.

Unfortunately, they are used in many stages of international food production – and bees are fast dying out.

When bees are infected they transfer that illness back to their whole hive, which quickly leads to an epidemic.

Many beekeepers have reported said that around 90 per cent of their bees have died.

Without bees, there would be no way of producing around 70 per cent of the food humans currently eat.

‘Their flight ability is also crucial to guarantee crop and wild plant pollination.’

Professor James Nieh, of UC San Diego, said: ‘Bees that fly more erratically for greater distances may decrease their probability of returning home.’

He said the pesticide doesn’t normally kill bees immediately, but it has a

more 'subtle' effect.

Prof Nieh said: 'The honey bee is a highly social organism, so the behaviour of thousands of bees are essential for the survival of the colony.'