

TRANSCRIPT OF 'THE STRANGE DISAPPEARANCE OF THE BEES'

Mark Daniels Interviews: Maryann Frazier, Jeff Pettis (USDA) and Dennis Van Engelsdorp

Transcript of DVD from **1hr 18 minutes 31 seconds** onwards.

Commentary by Mark Daniels:

“By the Fall of 2009 – French researchers were locked in controversy – scientists at two different French laboratories were arriving at two very different views of the bee crisis. At the same moment, American pesticide research was taking on a new momentum”

Maryann Frazier’s long series of Field Studies showed that bees are continuously exposed to many agricultural chemicals, and it’s not just adult bees that are affected.

Maryann Frazier (Senior Extension Associate, Penn State University)

“So the struggle in beginning was – are these pesticides out there getting into into the hives, the bees food – are they getting into the wax where the young bees are developng. That was our original question – and that question has been answered. And the answer is ‘Yes’ these pesticides are there, they are getting into the hive. In some pollen samples we found as many as 31 pesticides– on average we found 6 pesticides per pollen sample. It turns out honeybees are quite good monitors of the environment, they pretty much pick up everything that’s out there. And while we think we put these pesticides out there and they just go away – obviously that’s not the case.

Commentary

The honeybee genome research revealed that just as bees are deficient in pathogen resistance, they are also deficient in toxic resistance – they have few defences against pesticides. The interactions of different chemicals found in the environment are a danger for bees everywhere both wild and domestic.

Maryann Frazier:

We have evidence that these pesticides in combination have a synergistic toxic effect, when two or three of these pesticides are taken together by bees in a pollen diet for the bees, there’s an ‘additive’ effect of those pesticides. But we’re finding that some of these pesticides, particularly fungicides, can ‘synergize’, meaning that they can be much, much more toxic when they’re added together than either of these two things are on their own or added cumulatively.

Mark Daniels Commentar:

In the Fall of 2009 at **Apimondia** the World Bee Congress, the role of pesticides remained controversial; a consensus was forming around a ‘**multi-factorial**’ cause for bee mortality – a mix of: habitat loss, diseases, parasites and chemicals; exactly how these elements might act together remained unclear and almost impossible to verify experimentally.

But in the corridors, news was circulating about a **breakthrough study**, demonstrating a new type of synergy. The author was **Jeff Pettis** of the United States Department of Agrulculture – his co-author **Dennis Van Engelsdorp**.

Dennis Van Engelsdorp speaks

(Sr. Extension Associate, Entomology, Penn State University)

“We’re finding that virus levels are much higher in CCD bees; but since we are not finding a consistent virus or a consistent pathogen, that implies that something else is happening underneath it, something is breaking down their immune system, or somehow challenging them so that they are more susceptible to disease.”

Mark Daniels Commentary:

Autopsies of CCD bees reveal at least four types of virus per bee, and they are also infected with fungal diseases, one of which is associated with the deaths of thousands of colonies in Spain – ***Nosema Ceranae***,

Jeff Pettis Speaks

“I’ve done a recent study actually in collaboration with Dennis van Engelsdorp and some other researchers, where we exposed whole colonies to very low levels of neo-nicotinoids in this case, and then ‘**challenged**’ bees from those colonies, with ***Nosema*** – a pathogen – a gut pathogen. And we saw an increase, even if we fed the pesticide at very low levels – an increase in *Nosema* levels – in direct response to the low level feeding of neo-nicotinoids – as compared with the ones which were fed normal protein “

Dennis van Engelsdorp speaks:

“You measure that effect (*Nosema* infection) at levels that you could not detect the pesticides – and so that brings up the question: if it’s having an effect at that low dosage – we would not have discovered it in our study because it was below the limit of detection. The only reason we knew the bees HAD exposure (to nicotinoid pesticides) is because we exposed them; otherwise we would never have known they had been exposed (to neo-nicotinoids).”

Jeff Pettis Speaks

“The take-home message is that interactions may be the key. Bee Health is very complex and that these interactions are often overlooked and are hard to tease apart. So in this case we were manipulating ONE pesticide (Imidacloprid) and one pathogen (*Nosema Ceranae*) and we clearly see the interaction.“

COMMENTARY

The conclusions of Pettis and Van Engelsdorp were confirmed in a lab study by French researchers Cedric Alaux, Yves Le Conte and Luc Belzunces, published in December 2009 :

“ even at undetectable levels, neonicotinoid pesticides weaken bee immunity”

If this is the final answer to worldwide bee deaths, then the elimination or reduction of neo-nicotinoids might save the bees; or is it too late?

How can insecticides that poison at ‘**undetectable levels**’ be quantified or controlled?

How can their elimination be confirmed?

Industrial agriculture requires billions of bees but bees cannot live in the environments that industrial agriculture produces.

What choice is there and WHO will make the choice?

For the moment the answer is simple: ***“Disposable Bees”***

But Science and Industry are already working together, looking ahead to a world without bees.

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Dr. Jeff Pettis is an entomologist and chief researcher at the USDA's premier bee lab in Beltsville, Maryland. The mission of the Bee Research Laboratory in Beltsville is to conduct research on the biology and control of honey bee parasites, diseases, and pests to ensure an adequate supply of bees for pollination and honey production. Pettis conducted research in 2010 on both the effect of pesticides on bees, and also an online assessment of beekeepers hives in the U.S.

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