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TUESDAY, DECEMBER 4, 2012

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Ontario beekeepers suffered heavy bee losses at corn planting time this year - they say they know the culprit

BY JEFFREY CARTER
Ontario Farmer

Unprecedented declines in world honeybee populations may no longer be a big mystery.

According to four Ontario beekeepers gathered at Munro Honey in Alvinston, the neonicotinoid insecticides widely used to treat agricultural seed lie at the heart of the problem or, at the very least, are a key contributing factor.

Bill Ferguson of Ferguson Apiaries near Hensall said bee deaths were widespread in Ontario this past spring around corn planting time and he's noticed similar problems in previous years.

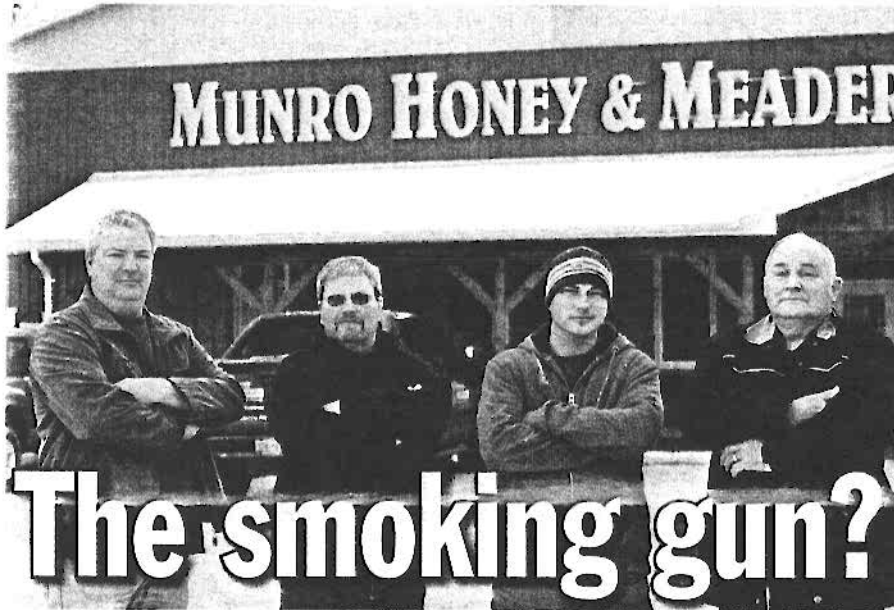
The counts for varroa mites and nosema parasites - two other significant problems for beekeepers - were both "very low," he said.

Even CropLife Canada, an organization representing agricultural pesticide manufacturers in Canada, sees logic in the assertions.

"This spring in Ontario there were a number of reports of acute bee kills around the time of corn planting... There's likely some linkage there," Pierre Petelle, vice-president of chemistry at the organization, told *Ontario Farmer*.

"In 2012, we had incidences that derailed our proactive approach and threw us into the fire and forced us to react... Our goal is to not have those incidences."

CropLife is developing a set of "best management practices" for farmers. Petelle said these will ask growers



John, Davis and Steve Bryans and Bill Ferguson are among a large number of Ontario beekeepers who say seed treatment insecticides were behind bee deaths this past spring. They're now contemplating legal action.

to be mindful of the weather when seeding their crops.

Health Canada's Pest Management Regulatory Agency (PMRA) is currently conducting a re-evaluation of three neonicotinoid insecticides - clothianidin, thiamethoxam and imidacloprid.

According to the June notice from the agency: The PMRA has received reports relating to bee mortalities occurring in Canada and internationally. Should evidence become available demonstrating reasonable grounds to believe that health or environmental risks of a pesticide are unacceptable,

the PMRA will take appropriate regulatory action.

Thioamtoxam is the active ingredient in Cruiser, a seed treatment produced by Syngenta. Clothianidin and imidacloprid are, respectively, the active ingredients in Poncho and Gaucho, both produced by Bayer CropScience.

The head of corporate affairs at Syngenta Canada responded to an interview request.

"There has been no definitive link between pesticides and long-term risk to bee health," Chris Davison said.

"If pesticides are used according to

label instructions in field conditions they provide a targeted way to control pests while minimizing exposure to non-target organisms."

Pressed on the question of whether Clothianidin can be toxic to bees, Davison responded, "Any product at a certain level will be toxic."

Davison said recommendations from Syngenta suggest growers keep in mind whether there are nearby hives when they're planting, control weeds in the fields prior to flowering, handle seed properly, support good habitat

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BEES

• Continued from page 1

pollinators and take into account weather conditions at planting. Windy conditions may be a concern, he said.

Syngenta is also looking at two polymers as alternatives to talc, Davison said. Talc is widely used to optimize the flow of seed through planting equipment.

There has been concern that

a combination of talc and pesticides has been escaping into the environment in unacceptably high levels as farmers plant their crops and blow out their seeding equipment.

Bayer CropScience Canada also responded to an interview request. "It (the seed treatment) has a certain level of toxicity, certainly, but the risk is one of exposure. If you keep the product away from bees there is no problem," Bayer

spokesperson Derrick Rozdeba said.

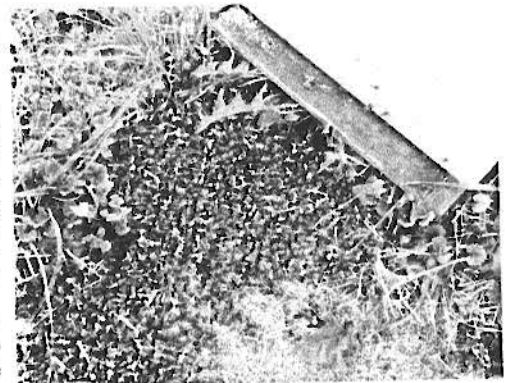
HONEYBEES AND other pollinators are often found in the same areas where crops planted with treated seed are grown. Honeybees routinely fly as far as a mile away from their hives in search of nectar and flights as far as three miles away have been recorded.

Ferguson and Davis, John and Steve Bryans of Munro Honey in Alvinston lost large numbers of bees this past spring from hives located close to fields being planted to corn. They suspect insecticide residues were the cause.

The chemical companies that produced the insecticides may be responsible, they said.

Fellow farmers – the growers using treated seed – feel compelled to use the products, they said. Many were not even aware their seed contained a pesticide.

"One young farmer told me that if everyone used the same seed and it didn't have the treatment on it, they'd probably be as well off as they are today... The treatment just increases the price of the seed,"



This is what Ontario beekeeper feel is the result of exposure to insecticides – hundreds of dead honeybees. (PHOTO COURTESY OF MUNRO HONEY)

Davis Bryans said.

Legal action has been discussed by members of the Ontario Beekeepers Association, Davis Bryans said. He understands from a preliminary report from the PRMA, that 70 per cent of the dead bee samples sent for testing contained clothianidin.

The number might even have been higher if not for UV radiation breaking down the chemical before the tests took place, he noted.

All four beekeepers said

steps should be taken immediately to address the problem of exposure to neonicotinoids when crops are planted.

John and Steve Bryans and Ferguson support an outright ban on the seed treatments containing the suspect chemicals.

Ferguson recorded separate incidences of bee deaths that occurred this spring including several involving his own hives:

"... On April 12 the seeding began at 8 a.m. in the field near

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my hives. There was frost that morning the temperature was around freezing. Bees are not able to maintain flight in that temperature. Within an hour and a half of the seeding process bees were starting to come out of my hives and die... More than 200 bees, including drones, started dying every day in the hives; with their tongues sticking out."

Over 150 bee yards (in Ontario) reported similar problems to my own. Some other beekeepers have claimed to have bee deaths too, but will not publicly share the location of their bee hives...

Ferguson and the others said the outright death of bees is just part of the problem. Beekeepers are also concerned about sub-lethal effects - including worker bee disorientation and reproductive disorders - compromising the health of their hives.

THERE ARE some studies suggesting neonicotinoids may present a health risk for humans. One, published in *Food and Chemical Toxicity* in September, suggests farmers and other handling the

products may be particularly at risk.

A 2007 report by Bayer researchers discusses the possibility of "sublethal effects" and "chronic exposure" but criticizes studies showing there may be negative impacts on bee health.

Bayer hasn't changed its opinion over the past five years and organizations like CropLife Canada support their position.

Following is a statement from the CropLife website:

"...The weight of scientific evidence clearly shows that these products do not affect long-term colony health. A few recent studies have claimed some impact on bees, but careful evaluation of the research show significant errors were made in the experimental design, or incorrect conclusions were drawn from the data."

This remark and other like them concern Purdue University entomologist Christian Krupke. He and his colleague, bee specialists Greg Hunt, conducted a study in 2010 and 2011 investigating a possible link between neonicotinoids

and bee deaths.

They say, these vague and unsupported statements about experimental design weakness are common in material circulated by chemical companies and their surrogates.

No studies to refute the published data are ever presented. Meanwhile, a review of the peer-reviewed literature reflects that studies performed by many unconnected labs, in different continents and various cropping systems have shown a range of detrimental effects of planting neonicotinoid-treated seed on honey bees and bumblebees.

At this point, the more prudent response of the ag chemical industry is to acknowledge there is a problem with some of their products and commit to helping to fix it.

Hunt cited the example of clothianidin as an example of neonicotinoid toxicity.

"Also known as Poncho, the oral LD50 is only three nanograms - that's three thousandths of a thousandth of a gram. A single treated kernel has enough active ingredient to kill tens of thousands of bees - perhaps

100,000 or more."

Virtually all field corn in the United States, much of the soybean acres and several other crops are planted with seed treated to a neonicotinoid insecticide.

The study conducted by Krupke evaluated the exposure rates of honeybees near fields planted to corn. They said the dying bees they evaluated exhibited the convulsions and tremors typical of a neurotoxic exposure.

Analyses determined clothianidin was present at levels ranging from 3.8 to 13.3 parts per billion.

Along with being the active ingredient in Poncho, clothianidin is rapidly metabolized in insects from thiamethoxam, the active ingredient in Cruiser. Krupke said.

The Purdue researchers said there are several ways bees can come into contact with the two insecticides. At planting time residues from the planter may land on dandelions and other plants or directly on bees.

It can also be taken up by the plants bees visit, including the crops.

"We found it in all the soils

we tested, two years after application...its half life is measured in years," Krupke said.

Most modern planters use a vacuum system. Pesticide residues are blown out as planters move through the fields and when planters are cleaned.

"This is incredibly toxic, super toxic. A bee that comes into contact with this probably drops like a stone getting that whopper dose," Krupke said.

Krupke is also concerned with long-term exposure to neonicotinoids. For a bee, it's like living in a home with lead pipes for drinking water.

Krupke said a UK study published in *Nature* in October looking at impacts on European bumblebees is the most recent study raising concern about the sublethal impacts of neonicotinoid insecticides on bees.

At least, the regulatory guidelines for how persistent and systemic pesticides should be reevaluated, Krupke said. And the question needs to be asked whether neonicotinoid insecticides should be used at all.

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