The silence of the bees – Nix the neonics! Sign the petition…

Three thousand or so registered beekeepers manage around 100,000 honeybee colonies in Ontario. In the spring of 2012, bees began to die in record numbers. No one knows what's killing the bees. There are several theories, including:

- exposure to neonicotinoid insecticides ("neonics")
- mite infestations
- biodiversity loss due to changes in land-use, mismanaged intensification and land abandonment, and loss of traditional farming and forestry practices
- habitat loss
- pollution
- other pathogens
- disruption of the timing of pollination by climate change and competition by invasive species (both insects and plants)

Health Canada investigated the 2012 bee deaths, and in its Ontario Bee Incidents report noted that the timing of the bee deaths appeared to coincide with corn planting. It found no pesticide misuse, noting that neonics were detected in approximately 70% of the dead bee samples analysed. The report's preliminary conclusion was that pesticides used on treated corn seeds may have contributed to some of the bee losses in Ontario, but that further information is needed before final conclusions can be made.

The federal Pest Management Regulatory Agency (PMRA) and Ontario's Ministry of the Environment (MOE) are collecting further information including types of crops, dates of seeding, seed treatments, planting equipment and practices used, pesticide applications and weather conditions during planting.

What are neonics?

Neonicotinoids are synthetic versions of nicotine, and are neurotoxins that kill insects by breaking down their nervous systems. The class includes clothianidin, imidacloprid and thiamethoxam (and associated products registered in Canada).

They are used to coat corn and soybean seeds (among others) - the seed itself becomes its own pest management system. Neonics are supposed to target harmful insects, and not be accessible to pollinators like bees.

However, experts speculate that insecticide residue remaining in corn planters after seeds are sown later becomes part of dust clouds. Talc or graphite, used to help irregularly shaped seeds flow smoothly through farm machinery, could aid in disseminating dust that comes off seeds.

Bees could be exposed to neonics and their metabolites by several routes:

- contact with contaminated dust,
- consuming pollen or nectar from the treated crop, adjacent flowers or fields, or
- consuming water (e.g., guttation fluid, surface water, puddles).

Ontario has a plan

On July 9, Premier Kathleen Wynne (who is also Ontario's Agriculture Minister) announced that she will strike an expert working group to study and advise on how to prevent bee deaths mortalities. Its recommendations are due by Spring 2014.

The province provides advice to corn producers to minimize the exposure of bees to insecticides, including to:

- actively communicate with local beekeepers
- consider planting at times when bees are less likely to forage
- get rid of flowering weeds around fields, before planting
- consider alternative strategies to minimize use of insecticide-treated seed
- decrease the amount of seed lubricant (e.g., talc or graphite) used during planting
- exhaust dust towards the centre (not edge) of fields

Farmers can get updates from Field Crop News, a forum for farmers, researchers, government and industry to share information.

The feds are also taking action

Health Canada updated its Pollinator Protection: Reducing Risk from Treated Seed in April. It sets out short-term measures to mitigate bee deaths to which pesticide registrants have agreed to comply, including:

- ensuring that dust release during planting is minimized, through compliance with a technical standard that sets a maximum permissible concentrations of the neonics in dust
- appropriate labelling that alerts growers/applicators to the potential hazard of treated seed dust to bees
- labelling that provides information on best manufacturing practices to use when planting treated seed
- amending pest control product labelling to include that the active ingredient is toxic to bees, referring to the Best Management Practices for Seed-Applied Insecticide
- the pesticide industry will report to the PMRA regarding technical improvements it develops to reduce dust release from treated seed

In 2012, Health Canada announced that it is re-evaluating neonicotinoid insecticides clothianidin, imidacloprid and thiamethoxam (and associated products registered in Canada) as a cluster. The re-evaluation will focus on environmental risks to pollinators, and will consider all uses of these pesticides, including soil applications, seed treatment and foliar/greenhouse uses.

Europe has gone further

The increase in bee mortalities is also a huge issue in Europe, where there are approximately 700,000 beekeepers and around 200,000 tonnes of honey produced each year. In May, in response to the European Food Safety Authority (EFSA) scientific report

that identified acute risks of certain neonics to bees, the European Union approved a 2-year restriction of three such agents (clothianidin, imidacloprid and thiamethoxam) for seed treatment, soil application (as granules) and treatment of foliage on plants and cereals that are attractive to bees. Restrictions apply from December 1, 2013.

In July, the EFSA published its Guidance Document for assessing risks of pesticide use to bees. The document proposes tiered risk assessment schemes that quantify the risk to bees using specific protection goals (SPG) that define the maximum level of harm that may be caused to bees; for honeybees, these SPG relate directly to colony strength: survival/development of colonies; larval health; bee behaviour; bee abundance; and ability to reproduce. In 2013, EFSA will also publish additional science-based reports, including the risk posed by two bee parasites.

What about the US?

The US FDA reported that as many as 1 million of the 2.4 million honeybee colonies in the US died out during the winter of 2006/07, with mites or neonics as the main culprits, although there was no singular causative agent, and the cause of around 25% of the bee deaths remained a mystery. According to the US Environmental Protection Agency, declining health of honeybees involves multiple stressors, including inadequate nutrition, diseases (viruses, bacteria, fungi), habitat loss and bee management practices – as well as pesticides. In the Honey Bee Health report published by the US Department of Agriculture and US EPA last year identifies pesticides, including neonic and pyrethroid classes, as possible contributors to the problem.

What can we do?

Clearly, Canadians care about their honeybees. In a recent poll by Sierra Club Canada, two-thirds of the 1000 Canadians polled supported a federal ban on neonics. If the federal government did not act to ban the chemicals 95% of respondents who support a ban would support action by their provincial government.

According to the precautionary principle, we have a duty to prevent harm, where we are in a position to do so. We urge the federal government to de-register neonics and stop their sale until more is known about why honeybees are dying. If Ottawa refuses, the provinces should to refuse to authorize use and sale of these pesticides in their jurisdictions.

At a minimum, we urge you to sign the petition to save our bees, by the Ontario Beekeepers' Association.

Finally, who is looking into whether "neonics honey" (as opposed to lavender honey) is safe for consumers?

Jackie Campbell

July 30 2013