



Some Facts about Honey Bee Health and Pesticides

Pollinators in Canada, such as honey bees and wild bees, pollinate many fruits, vegetables, field crops such as canola, and flower gardens. They are an essential part of a robust agricultural system.

Honey bee health can be affected by a number of different factors, including parasites (such as the Varroa mite), disease, and other stress factors (such as habitat loss, poor nutrition, climate change, and chemical exposure). The agriculture industry has a vested interest in protecting pollinators and is committed to thoroughly researching and protecting bee health.

What is causing elevated overwintering honey bee losses in Canada?

Over the past four or five years, overwintering honey bee losses have been higher than normal (in the range of 20 to 40 per cent nationally, compared to the more typical 15 per cent). Losses of bee colonies have been variable among the provinces and researchers haven't identified a single cause of these losses, although recent scientific research points toward a combination of parasitic mites (specifically the Varroa mite) and pathogens (such as Nosema and viral diseases) as main factors. Other possible factors include a lack of genetic diversity, climate change, pesticides, and stress-inducers such as colony transport, poor nutrition, weather, and starvation.

Nonetheless, early Canadian figures from 2011/2012 indicate a significant improvement in overwintering losses, likely due to the mild winter and better disease control.¹

What is Colony Collapse Disorder (CCD)?

Numerous beekeeping experts believe that Colony Collapse Disorder (CCD) symptoms have not been reported in Canada. CCD is a term used to describe a very specific set of symptoms, characterized by the sudden disappearance of worker bees from a colony, leaving behind an apparently healthy queen and brood.

Researchers haven't been able to identify a single cause of CCD but most experts agree that pollinator health decline in recent years is the result of a combination of factors, including parasitic mites and diseases. Many researchers suspect that invasive parasitic mites have weakened bees' defenses, making them more susceptible to diseases or other environmental factors.

CCD is a separate issue from overwintering losses and acute poisonings. While some overwintering loss is normal, the levels experienced by some professional beekeepers in various parts of the world over the past seven years have raised concerns.

How are pesticides regulated to ensure they do not harm bees?

All pesticides go through a rigorous testing process to ensure they can be used without causing harm to humans or the environment. This process includes more than 200 separate studies that test a range of health and environmental impacts, including effects on bees. The results of these studies help determine the instructions for use that appear on the product label. As scientific information evolves, products are continuously re-evaluated to ensure they meet the latest safety standards.

Is there any connection between neonicotinoid insecticides and long-term honey bee losses in Canada?

¹ See: <http://www.producer.com/2012/07/mild-winter-credited-for-low-beehive-losses%E2%80%A9/>

There is no evidence to suggest a link between neonicotinoids and long-term honey bee losses in Canada. There is no geographical correlation between long-term bee losses and insecticide use.

Although some neonicotinoids are toxic to bees upon direct contact (as are many insecticides), they are used in a way that minimizes any direct exposure to bees. Under normal field use, the exposure to bees is at very low levels, far too low to cause harmful effects. Independent, long-term, controlled field tests have repeatedly shown no effects on bee mortality, weight gain, worker longevity, brood development, honey yield, and overwinter survival relative to bees in areas where treated seed was not used.

Many of these studies have been published in peer-reviewed journals and presented at international conferences. For example, a recent Canadian study by G. Christopher Cutler and Cynthia D. Scott-Dupree was published in the *Journal of Economic Entomology*, 100(3): pages 765-772 (2007).

What about recent studies that claim neonicotinoids are a principle cause of pollinator decline?

The weight of the 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 a careful evaluation of the research shows significant errors were made in the experimental design, or incorrect conclusions were drawn from the data. Unfortunately, these studies have received wide media attention.

Can agriculture and bees really co-exist?

Bees and pesticides are very much complementary – both are essential to the success of agriculture. More than one-third of the world's food production comes from crops that depend on pollination. Modern crop protection products are critical tools that farmers use to protect their crops from potentially devastating pests. In fact, without pesticides, the world would lose at least 40 per cent of its food supply.

Our industry is committed to the developing products that allow Canadian farmers to grow food in an environmentally sustainable manner. For example, seed treatment insecticides evolved as a way to protect seeds and crops while also minimizing potential exposures of non-target insects such as bees. Indeed, these modern seed-applied insecticides have been used for a decade with almost no incidences of negative impacts on bees.

Only small quantities of the insecticide are needed to coat the seed, which reduces the need to spray insecticides to control insects. In fact, in contrast to a traditional spray treatment, where 100 per cent of a field is treated, less than 1 per cent of the field is treated when a modern seed treatment is used. This helps to reduce the exposure of pollinators and other beneficial insects (as well as human and environmental exposures) throughout the growing season. Furthermore, in Canada the climate is such that most years treated seed is planted during a period when bees are not actively foraging.

What role do farmers play in ensuring bees are protected from insecticides?

Farmers understand the tremendous importance of pollinators to the success of modern agriculture. To ensure farmers are well equipped to use our products safely, our industry provides them with technical advice on best practices to ensure they plant treated seeds in a way that protects non-target organisms such as bees. For example, during planting, farmers can limit dust when pouring seed into the planter; properly dispose of empty seeds bags; and follow manufacturer recommendations. Growers plant only during proper weather conditions, they take precautions when planting near flowering crops and they control flowering weeds in their fields prior to planting.

More extensive information on the Best Management Practices for the handling of seed-applied insecticides is available at www.croplife.ca.