Guest column: Our survival depends on rescuing the honey bee

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Over the past three years, more than 50 billion honeybees have died. Scientists understand the causes and now we need everyone to lend a helping hand.

The humble honeybee has been inextricably linked to humankind since prehistoric times. Honey is to a bee what electricity is for humans — energy. One teaspoon of honey weighing 21 grams contains 16 grams of sugar or 60 calories, and it took 12 bees their entire foraging lives, combined flying time of about 9,700 kilometres, to produce 21 grams of honey.

Consider that every third bite on your plate is a result of their primary role on the planet as pollinators, the most important group on Earth.

Honeybees contribute at least $47 billion a year to the North American economy pollinating crops like almonds, apples, avocados, blueberries, broccoli, canola, carrot seeds, cherries, citrus, cranberries, cucumbers, grapes, lettuce, melons, peaches, plums, pumpkins, tomatoes, zucchinis (to name a few), alfalfa and clover for beef and dairy industries, cotton for our clothes, and honey for candles and medicines.

Bees have been on the planet for over 100 million years or about 14 times longer than the first human progenitor. Bees have a memory; they vote, are being trained to count and are helping people as an early detector of disease by sniffing skin and lung cancers, diabetes and tuberculosis.

The Red Cross estimates there are 80 million to 120 million landmines in 70 countries and 40,000 new landmines are deployed weekly. Each year these brutal weapons of destruction maim tens of thousands of children. University of Montana researchers are using bees to find TNT residue — the primary ingredients in landmines — while conducting surveys many miles away from the hive.

Many blue-chip corporations depend on honeybees for their products, including Generals Mills Haagen-Dazs ice cream, Starbucks coffee and Clorox's Burt's Bees, a specialty personal-care company with over 150 products.

A combination of factors has created the perfect storm responsible for memory loss, appetite loss and autoimmune system collapse resulting in the rapid decline in honeybee populations.

Each year 2.3 billion kilograms of pesticides are applied globally. Many are neonicitinoids, a nerve poison that prevents acetylcholine from allowing neurons to communicate with each other and muscle tissue. In humans, it would trigger Parkinson's and Alzheimer's.

Imidacloprid (one form of neonicitinoids) is manufactured by Bayer under the trade names of Gaucho and Pancho. It killed millions of bees in France before eventually being banned in that nation, yet it's still used widely throughout North America.

In 2008, researchers from Penn State found 43 different pesticides in a Pennsylvania apple orchard. Many farmers combine or stack their chemicals to reduce applications costs, however stacking chemicals is known to increase toxicity levels in some cases by 1,000-fold.

European research showed that bees exposed to electromagnetic radiation from cellular towers made 21 per cent less honeycomb and that 36 per cent, taken a half-mile from the hive, were unable to navigate home.

In 2006, the honeybee genome was decoded and their genetics revealed only half as many genes for detoxification and immunity compared to other known insects. Scientists found specific "good" bacteria inside their stomachs and intestines crucial for fighting pathogens and digesting the silica casing around pollen grain, providing access to its protein.

Bees evolved to feed on a wide assortment of pollens but today we use them in monoculture fields. Pollens provide their only source of protein. Proteins grow eggs, larvae, brains and autoimmune systems.

The abnormally high temperatures of 2006 were likely the tipping point for bees in North America. The searing springtime temperatures during the onset of flowering are believed to have caused sterile pollen in many plants. Sterile pollen produces little if any protein. Beekeepers now feed their hives a protein shake with eggs, brewer's yeast, pollen and honey and other special ingredients.

Clearly agriculture must reduce the levels of toxicity from pesticides, herbicide and miticides, globally.

There is hope on the horizon as organics is the fastest-growing sector in North America at $27 billion a year — Michelle Obama has an organic garden on the White House lawn with two honeybee hives close by.

Each of us can help by buying organic foods and cottons, and support local beekeepers by buying organic honey. Do not use herbicides, pesticides or miticides in your yard. Plant a variety of native yellow and blue flowers and help scientists in Nature Watch's PlantWatch program (www.naturewatch.ca/english/plantwatch).

Without the bees, we cannot survive.

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