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MYTHBUSTING NEONICOTINOIDS: Industry's favorite talking points, debunked

MYTH: Surveys indicate honey bee populations are doing just fine.

TRUTH: Many people have misconstrued the recent USDA-sponsored Bee Informed Partnership survey. While surveys can be a valuable indicator of certain conditions plaguing beekeepers—unfortunately this survey is not a statistically reliable indicator. The honey bee population numbers announced in the most recent 2013/2014 survey only represent 21 percent of the nation's honey bee colonies, and are potentially inflated by the recent spike in urban beekeeping, which does not face the same problems as commercial beekeepers depended on by the agricultural community and consumers. Furthermore, bee numbers and losses naturally fluctuate from year to year. It is not scientifically sound to suggest trends based on a single year's data. The reality is that [many](#)^{*} honey bee colonies across the country are [still suffering](#) above-average winter [losses](#) and unusually high losses in the spring and summer seasons. Year round, beekeepers are fighting an uphill battle to keep their hives alive and viable.

MYTH: There are no studies that link neonicotinoids to widespread bee losses.

TRUTH: There is a wealth of independent, peer-reviewed [scientific literature](#) linking exposure to [neonicotinoids](#) to bee deaths and poor bee health. These include studies that show harm at neonic levels that are often found in the agricultural environment, not just lab studies. Neonicotinoids are highly toxic to bees and other pollinators, and exposure to these systemic insecticides can have both acute, lethal effects, or sub-lethal, chronic effects (such as impaired navigation, learning and memory, in addition to weakened immunity and reproductive capacities). The International Union for Conservation of Nature (IUCN) convened a [task force](#) to examine impacts of systemic insecticides like neonicotinoids. The task force is comprised of more than 29 independent scientists from around the world who have reviewed over 800 peer-reviewed published studies on systemic insecticides over the last four years. After completing this extensive analysis, the task force determined that systemic pesticides, in particular neonics, are accumulating in soils and polluting waterways and natural vegetation across the world, leading to widespread impacts on wildlife, including bees. Their findings also articulated that growing evidence indicates much of their use is unnecessary and ineffective.

MYTH: The varroa mite, not pesticides, is the reason honey bees are declining.

TRUTH: The varroa mite is one of numerous threats currently facing honey bees. Yet, while varroa mites are certainly a problem, it is one that beekeepers have historically been able to

* Please visit us on the web at <http://www.centerforfoodsafety.org/issues/304/pollinators-and-pesticides/mythbusting> to view active hyperlinks to references.

manage. The varroa mite began infesting honey bee colonies in the U.S. when it was brought over in the mid-1980s. Until 2006, beekeepers were able to prevent the mite from jeopardizing the full health and functionality of the hive. That's when beekeepers began reporting that their hives were becoming significantly weaker and were unable to fight off varroa mite and other parasites and diseases. Well-established [scientific research](#) has shown that exposure to pesticides like neonicotinoids [impairs the health](#) of bees and can make them more susceptible to threats such as pathogens and the varroa mite. Numerous [studies](#), including [one](#) by a USDA scientist, have demonstrated the correlation between neonic exposure and poor bee health.

MYTH: We need neonicotinoids because they are a critical tool for farmers.

TRUTH: Center for Food Safety [reviewed and summarized](#) 19 articles from scientific journals that studied the relationship between neonicotinoid treatments and actual yields of major US crops: canola, corn, dry beans, soybeans, and wheat. In sum, the studies show that in many contexts, neonicotinoid seed treatments do not provide significant yield benefits. European countries have reported maintained crop yields after regional neonicotinoid bans were implemented. Independent experts have argued that neonicotinoids are massively overused in the U.S., without significant yield benefits, across numerous agricultural contexts. The bottom line is that toxic insecticides are being unnecessarily applied in most cases. More sustainable agricultural practices, like crop rotations, are known to greatly reduce pest damage without the use of—or with greatly reduced use of—insecticides.

MYTH: When applied according to label instructions, neonicotinoids are safe for bees and other pollinators.

TRUTH: Neonicotinoids are an insecticide—by their very nature, they were created to kill insects. And because neonicotinoids are systemic, extremely persistent, and water soluble, there are a variety of ways in which insects, like bees, are exposed to the chemical and harmed, even when label instructions are followed. Bees do not need to come in direct contact with the pesticide at the site where it is applied to be poisoned. In fact, many of the [routes of exposure](#) for bees are through contact long after application to the seed or crop, such as through residues, ingestion of contaminated pollen or nectar, or drinking water from droplets that form on the plants. After application, neonicotinoids may last in the soil or vascular tissues of trees and plants for years—meaning the chemicals remain present any-time bees visit and forage at or near those treated areas long after the initial application. Many bees also create their nests in the surrounding contaminated soil, causing those species of bees to be exposed to toxins every time they return to their nest. None of these risks are resolved simply by following pesticide labels properly. In addition, EPA's risk analyses when approving neonic products and labels in the past failed to consider several important routes of exposure, such as contaminated dusts, soils and groundwater, which often is used to irrigate fields. Importantly, [several sources](#) of data show that the [amounts of neonics](#) in the environment are often high enough to [harm bees](#).