Pesticide Research Institute

Friends of the Earth

GARDENERS BEWARE 2014

In 2013, Friends of the Earth U.S. and the Pesticide Research Institute released Gardeners Beware: Bee-Toxic Pesticides Found In "Bee-Friendly Garden Plants Sold Nationwide, a report documenting a first-of-its-kind pilot study on the prevalence of neonicotinoid pesticides in bee-attractive plants commonly purchased by home gardeners. For the spring 2014 planting season, we expanded the scope of the study to include 18 locations in the U.S. and Canada and analyzed neonicotinoid concentrations in flowers separately from the greenery (stems and leaves). The results of our new study show that the use of neonicotinoid insecticides in nursery plants is still widespread, and these plants remain a source of exposure for bees and other pollinators.

"BEE-FRIENDLY" GARDENS MAY NOT BE FRIENDLY

Two-thirds of the food crops humans eat everyday require bees and other pollinators to successfully produce a crop. However, the health and productivity of honey bees, bumble bees, and other pollinators are in great peril, and populations are dwindling worldwide. Concerned citizens have responded by planting "bee-friendly" gardens to provide urban foraging grounds. Unfortunately, as our new study shows, many of the nurseries that provide bee-attractive plants sold at top retailers in the U.S. and Canada continue to use persistent, systemic neonicotinoid insecticides that have been shown to impair the health and survival of bees and other vulnerable pollinators. Unfortunately, home gardeners have no idea they may actually be poisoning pollinators through their efforts to plant bee-friendly gardens.

WHY ARE HONEY BEES IN TROUBLE?

Although managed honey bee losses have been linked to multiple factors—including Varroa mite infestations, pathogens, malnutrition and habitat degradation—a strong and growing body of scientific evidence suggests that neonicotinoid pesticides are a major contributing factor. Neonicotinoids, manufactured primarily by Bayer CropScience, Syngenta, and Dow AgroSciences, are used extensively in agricultural and urban/suburban areas. The neonicotinoid imidacloprid—introduced in 1994—is the most widely used insecticide in the world. Neonicotinoids are used as seed treatments on more than 140 crops, with virtually all corn, and a large percentage of soy, wheat, and canola seeds planted in the U.S. being pretreated with neonicotinoids.

WHAT ARE NEONICOTINOIDS?

Neonicotinoids are systemic pesticides that are taken up through roots and leaves and distributed throughout the entire plant, including pollen and nectar. These pesticides can poison bees directly, but

even low-level exposure can lead to sublethal effects such as altered learning, impaired foraging and immune suppression, which exacerbates the lethality of pathogen infections and mite infestations.

STUDY DESIGN

The plants tested in this new study were purchased from major nursery outlets and garden centers, including Home Depot, Lowe's and Walmart in 18 cities throughout all four official geographic regions of the U.S., as well as three provinces of Canada. The collected plant samples were submitted to an independent accredited analytical laboratory to identify specific neonicotinoids and degradation products, and quantify their concentrations in the flowers alone versus the stems and leaves.

STUDY FINDINGS

- Neonicotinoid residues were detected in 36 out of 71 (51 percent) of commercial nursery plants. In the samples with detections, the combined concentrations of bee-toxic neonicotinoids ranged from 2 to 748 micrograms per kilogram (µg/kg) in flowers and 2 to 1,945 µg/kg in stems and leaves, averaging 82 µg/kg.
- In approximately half of samples with detections, the neonicotinoid residues were distributed evenly between flowers and stems/leaves or were localized primarily in the flowers. This result suggests that bees are being exposed to neonicotinoids through contact with contaminated flowers and ingestion of pollen and nectar within the flower.
- Since 51 percent of the plants that were tested contained neonicotinoid residues, the chance of purchasing a plant contaminated with neonicotinoids is high. Therefore, many home gardens have likely become a source of exposure for bees.
- For the samples with positive detections, adverse effects on bees and other pollinators consuming nectar and pollen from these plants are possible, ranging from sublethal effects on navigation, fertility, and immune function to pollinator death (see Figure at right).

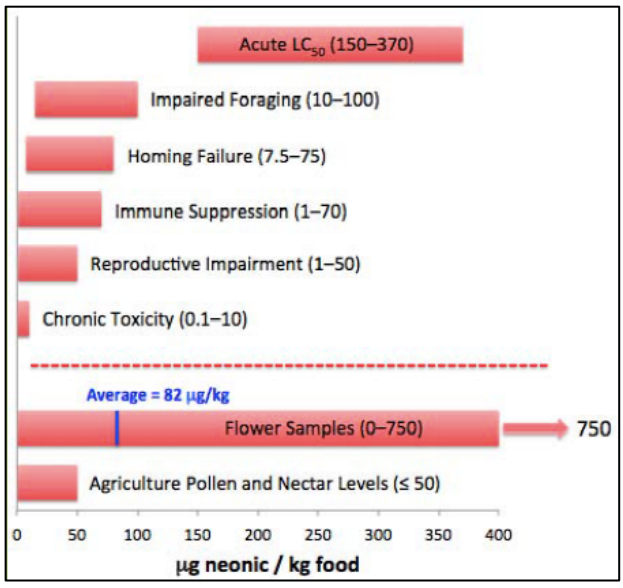
REGULATORY RESPONSE

The bulk of available scientific literature suggests that neonicotinoids are a key contributing factor to the decline of pollinator populations. As a result of this growing body of evidence, the European Commission suspended the use of three neonicotinoids (clothianidin, imidacloprid, and thiamethoxam) on flowering plants attractive to bees in European Union countries, effective December 1, 2013. U.S. EPA has been slow to address the threats to pollinators posed by neonicotinoids, delaying any substantive action until 2016–2019 when the Registration Review process for these chemicals is completed.

THE PRIVATE SECTOR RESPONSE

As people have demanded change, retailers, nurseries, institutional purchasers and local, county and state policymakers are taking action to avoid neonicotinoid pesticides to help protect bees and other pollinators. Labeling of plants treated with neonicotinoids is now required for suppliers of plants to Home Depot, and many smaller retail nurseries are asking their suppliers to provide neonicotinoid-free plants.

CONCENTRATIONS OF NEONICOTINOIDS ASSOCIATED WITH EFFECTS ON BEES



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