

## Protecting Honey and Native Bees

By Susan Camp

I am a bee hugger. Not literally, of course; who would hug a bee? I respect and admire their work ethic. Bees work hard all their lives, with little reward. There is no retirement pension, no Social Security for bees. When they die on the job, other bees step up and take over.

The work of bees requires boundless energy and stamina. Bees, along with some other insects, birds, and mammals pollinate our flowers, fruit, and vegetables, enabling them to set fruit. Bees perform the bulk of the pollination, so it is imperative that we protect them from toxic chemicals.

When gardeners talk about bees, we are referring, not only to honey bees (*Apis mellifera*) imported from Europe and Asia, but to more than 4000 species of native bees, which include bumblebees (*Bombus impatiens*), Eastern carpenter bees (*Xylocopa virginica*), Andrenid or mining bees (*Andrena* spp.), and orchard mason bees (*Osmia lignaria*). Honey bees are the only bees used to pollinate commercial crops, and they are the primary producers of honey, beeswax, and other substances used in the food and cosmetics industries.

Any mention of mass bee loss or death sends a chill down the spines of gardeners and farmers. The concern over Colony Collapse Disorder (CCD), the strange phenomenon that occurred during the winter of 2006-2007, during which hives were abandoned by worker bees, leaving the queens and nurses with insufficient food, raised awareness of the bees' importance to the U.S. economy.

In June 2013, over 50,000 bumblebees died after workers with a pest control company sprayed blooming linden trees with a neonicotinoid pesticide called dinotefuran. Neonicotinoids, or "neonics", are synthetic pesticides with properties similar to nicotine, hence the name. Neonics have been controversial since they first were marketed in the U.S. in the 1990's as alternatives to organophosphates, a class of pesticides that demonstrated high toxicity to wildlife. Neonics are less toxic to mammals and birds, but affect bees by interfering with their ability to find food or return to their nests.

Neonics are systemic toxins that affect all parts of plants, thus making the nectar and pollen toxic to bees and other pollinators. The chemical compounds remain in the plants and the environment for weeks to months after application. They also seep into waterways. Both honey bees and native bees are affected by neonics.

Neonicotinoids are widely used by commercial fruit and vegetable farmers. Soybean, corn, and canola seeds coated with the insecticide are planted by commercial growers in the U.S. and Canada.

The results of several recent studies indicate that neonics contribute to bee mortality, queen health and survival, and reproduction, as well as the nesting and foraging problems mentioned earlier. "Nixing Neonics to Protect Pollinators", an article in the February-March issue of "National Wildlife" magazine, and a PBS News Hour report from June 29, 2017, "Neonicotinoid pesticides are slowly killing bees" both discuss research results.

What can home gardeners do to protect honey bees and wild native bees? The best answer is to stop using this class of insecticides. Neonics are available in several different forms, including granules and sprays. Read labels carefully, and avoid products that contain dinotefuran, thiamethoxam, imidacloprid, clothianidin, or acetamiprid.

Look for untreated plants. Several big box stores and home improvement centers have pledged to stop selling neonicotinoid-treated plants. Plant labels should indicate treatment with neonics.

If you choose to use compounds from this or another class of insecticides, the current Virginia Cooperative Extension (VCE) publication “Home Grounds and Animals Pest Management Guide” and the NC State University Extension Master Gardener Handbook Appendix B. “Pesticides and Pesticide Safety” contain specific instructions to maintain bee safety. The bee safety precautions offer specific recommendations on the type of product that is least harmful and when and where not to spray. The VCE publication also contains lists of pesticides rated by their relative toxicity to honey bees.

Bees work hard for us. Let’s reward them by keeping their workplace safe and healthy.

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