street roots news

Buzzworthy: The widely used pesticide that's killing Oregon bees

by Emily Green |
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Oregon lawmakers killed a bill to restrict neonicotinoids, but could you be doing more to help declining pollinator populations?

In June 2013, an insecticide containing neonicotinoids caused a massive bumblebee die-off at a Target in Wilsonville. The chemical was sprayed to treat linden trees covered with aphids, but the trees were also filled with bumblebees pollinating the blossoms.

The result was a parking lot covered with the little corpses of an estimated 50,000 bumblebees.

Just a few days later, hundreds more died in Hillsboro, and it was in an area where the same product containing neonicotinoids had been sprayed, only it had been sprayed months earlier.

Oregon Department of Agriculture investigations determined neonicotinoids were the cause of death in both cases, but the chemicals continue to be widely used in both agricultural and residential settings across Oregon.

(Photo Courtesy of Bee Thinking)

In North America, more than half of all bee species are declining, with one in four species at an increasing risk of extinction, according to report released earlier this year from the Center for Biological Diversity.

While there are roughly 4,000 species of native bees in North America, there are just 46 species of bumblebee – and in Oregon, six of them are at risk of extinction, according to The Xerces Society for Invertebrate Conservation.

Neonicotinoids are a class of chemical that is systemic, meaning once a plant – or even a seed – is treated, the toxins spread through the plant's tissues and into the pollen and nectar that attracts pollinators such as bees and butterflies.

Neonicotinoids also contain nicotine, and a 2015 recent study from researches in the United Kingdom found bees appear to be getting addicted. They observed bees were seeking out plants treated with the pesticide, even though it's harmful to them.

When the leaves of a plant that's been treated with neonicotinoids fall and decompose in the earth, it contaminates the soil. The chemical is also water soluble and has been shown to have dramatic effects on aquatic ecosystems, ultimately leading to a decline in songbirds who survive on aquatic insects in areas of the Midwest, said Aimée Code.

Code has a master's degree in environmental health and toxicology from Oregon State University and is the pesticide program director at The Xerces Society. This Portland-based nonprofit is staffed with biologists and horticulturists who agree that it is a clearly documented fact that legal applications of neonicotinoids have caused bee kills.

In the years following Wilsonville and Hillsboro bee die-offs, Oregon banned the use of neonicotinoids, but only on linden trees.

The city of Portland banned all use of the neonicotinoid chemical class on property it manages, with very rare exceptions. It doesn't purchase plants that have been treated with the chemical either, said Mark Ross, spokesperson for Portland Parks and Recreation.

But amateur gardeners can choose from an array of products containing neonicotinoids at their local hardware store, grocery store or pharmacy, and if they aren't careful, they can kill the very insects they need to make their garden grow.

There are seven chemicals with different names in the neonicotinoid class, and they can be found in dozens of pesticides manufactured for home use, including many popular Bayer and Ortho products. They are: Imidacloprid, Clothianidin, Acetamiprid, Thiamethoxam, Dinotefuran, Nitenpyram and Thiacloprid.

"The label on the home use product allows greater application rates for home use than for professional use," said Lisa Arkin, executive director of Beyond Toxics in Eugene.

Her organization was behind a set of bills aimed at regulating neonicotinoids in Oregon: One aimed at changing labeling requirements was shelved after its first hearing, and another had a fighting chance.

Senate Bill 929 would have made neonicotinoids a restricted-use pesticide, meaning only licensed pesticide applicators could purchase and spray the chemicals. It's modeled after a bill that recently passed in Maryland, making it the first state to ban consumer use of the pesticide.

Farming and nursery lobbies opposed the bill, arguing that the science is not conclusive and that because there are many complex causes of bee decline, neonicotinoids should not be singled out.

Jeff Stone, executive director of Oregon Association of Nurseries, testified that the agriculture industry relies on neonicotinoids

to control pests and that they are less harmful to humans and mammals than other pesticides.

He also pointed to research showing that when used correctly, neonicotinoids are not harmful to pollinators.

Code said it's important to look at the body of research as a whole, and at who funded the study.

She pointed to one example of an industry study of exposure during the summer that found no risk. But an independent study that followed bees into their winter hibernation found a queen's survival rate dropped when she had been exposed to neonicotinoids during the summer.

"These studies done by industry wouldn't be looking at those subtle risks, but they are there," she said. "When you have an economic incentive to not find risk, if you look at the studies, you're less likely to find risk. Look at the independent studies, and you see harm."

When looking at the bulk of the data, the message, the science used and how researchers evaluated risk, she said, there is a growing body of science that demonstrates the risks of neonicotinoids.

"We're seeing significant concern for pollinators and water quality," she said.

But regardless of disagreements over the science, both sides seem to agree: When the application instructions aren't followed correctly, neonicotinoids can kill bees.

Nursery owner Lori Vollmer sells no pest control products containing neonicotinoids at her store, Garden Fever. - Photo by Emily Green

With SB 929, however, licensed pesticide applicators could still have sprayed neonicotinoids. The bill would not have restricted agricultural use of the chemical, only residential use.

The bill was scheduled for a work session but was postponed repeatedly. The Senate Committee On Environment and Natural Resources failed to vote on it before the April 18 deadline, effectively killing it.

When nursery owner Lori Vollmer heard about the bee massacre at the Target in Wilsonville, she immediately pulled all pest control products containing neonicotinoids from the shelves of her store, Garden Fever.

Vollmer, who has been operating the boutique nursery in Northeast Portland for 15 years, said it's quite common for residential gardeners to over-apply pesticides and other chemicals in their home gardens.

"There's always this thought of 'more is better,' and it really isn't," she said.

Code said a recent Xerces Society study revealed that even when people follow the directions on the label, they may be using too much.

"What we found," she said, "was that because of the way pesticide labels are written, the application rate could be significantly higher on an ornamental tree in a backyard in comparison to what can be applied in an agricultural setting. So not only are these chemicals a concern by themselves, but all of a sudden we might be allowing people to use much higher levels than what we expected because of the way a backyard is so different from an agricultural field."

Vollmer and Xerces Society staff joined a long list of scientists, researchers and pollinator fans – some came dressed as bees and butterflies – at a March 27 public hearing in Salem testifying in support of the bills that would regulate neonicotinoids.

The European Union has already placed restrictions on neonicotinoids, and in California and Colorado, lawmakers are also considering bills that are similar to the one passed in Maryland.

The causes of bee decline are not pesticides alone. Code said climate change, disease and loss of habitat are also to blame.

"This is part of the solution. It's not all of it, but it's part of it," she said of the bill. "What I really want to see is a transformation in how we think about agriculture and how we manage our yards."

Oregonians for Food and Shelter, which represents the agricultural industry, opposes both of the bills. Its policy director, Scott Dahlman, told lawmakers in Salem that if neonicontinoids are taken off the market, people will simply reach for alternative pesticides that also pose problems, and can also be toxic to fish and pollinators.

Arkin called this a "side-stepping" argument.

"They are all toxic, and the reason neonicotinoids need to come off the market is because of their bio-persistence and systemic nature," Arkin said. "This is a chemical that is known to contaminate surface water and kill aquatic insects for years after the initial application. We're talking about disrupting the food chain at its most basic level."

"It's so important to push these bigger policy changes, but we also really need to know what we can do in our own yard," Code said.

Vollmer said planting a variety of native species that will provide pollinators with blooms throughout the seasons is key.

She offers natural pest control products at her nursery, but at home, she said, she usually just blasts aphids with water because once they are knocked off the plant, they can't get back up.

Code said that while "organic does not mean pollinator friendly," because they are shorter lived, "the window for exposure is really small, whereas neonicotinoids we could have ongoing exposure over days and weeks, and lead to much greater harm."

Vollmer recommends using a natural dormant oil on trees during the winter, which will coat the pest eggs and keep them from hatching. She said there are also bacteria-based sprays for lettuce and cabbage that will kill pest caterpillars, but not butterfly larvae.

But both Vollmer and Code agree: Healthy plants will, for the most part, protect themselves against pests.

“You have to take care of your plants, and not try to grow things where they shouldn’t be grown, and that’s why natives are great,” Vollmer said. “Stressed plants get hurt by bugs. Healthy plants generally are not hurt by bugs.”