Public Testimony: Environment, Natural Resources and Agricultural Finance Committee Hearing
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My name is Lex Horan, and I'm an organizer with Pesticide Action Network of North America. Pesticide Action Network works to replace the use of hazardous pesticides with ecologically sound and socially just alternatives. We were founded in 1982, and since then have been working with policymakers and communities impacted by pesticides, towards a food system that's safe and healthy for all of us.

In 2012, Pesticide Action Network published a State of the Science report, summarizing the latest scientific research on the linkages between pesticides and bee declines. Given that this committee has already heard from a number of high caliber researchers, entomologists, and other experts on this issue, I won't attempt to replicate the information these speakers have presented. But I will briefly mention a few high-level conclusions from our report.

The assessment of a growing number researchers is that, although habitat, nutrition, and pathogens all play a role, pesticides, particularly neonicotinoids, must be understood as a driving factor behind declining bee populations.

Studies show that bees are exposed to neonicotinoid pesticides via multiple routes of exposure[i]: pollen from corn, pollen from flowering plants, dust from seed planters, droplets of water that are expressed by treated plants (called guttation droplets), treated nursery plants, etc.

Research tells us that when bees are exposed to multiple pesticides at once, it often produces a synergistic effect that leads to higher bee mortality than exposure to one pesticide on its own[ii].

As we learned this morning, when bees are exposed to high levels of systemic insecticides, acute bee kills occur: entire hives can be lost suddenly. However, we can't always look to this kind of alarming visual evidence to determine the causes of bee declines. At sub-lethal doses, neonicotinoids still have worrisome impacts on bees that can decrease their survival. At field-realistic levels, neonicotinoids have been shown

to interfere with bees' ability to navigate and forage.[iii] They impair memory,[iv] and bees become less mobile after exposure to low doses of neonicotinoids.[v] Hives exposed to neonicotinoids were more susceptible to infection by the gut parasite *Nosema.*[vi]

The last piece of research I'd like to point to is a forthcoming paper from Christian Krupke at Purdue University[vii]. His research indicates that there may be no significant difference in yield between corn that is treated with neonicotinoids, and untreated corn.

The Minnesota House and multiple state agencies have already taken important steps to address the problem of pollinator declines in Minnesota. Not all states are can be commended for taking this problem so seriously. At the same time, we're in good company: multiple states are considering, or have already adopted, policy changes to better protect bees from pesticides. I'd like to mention a few realistic policy options for this Committee's consideration, as you consider the best way to protect the health of Minnesota pollinators going forward.

One clear option is a suspension of neonicotinoids. The European Union took this action in 2013. In U.S. Congress, the Save America's Pollinators Act was introduced in the House in July 2013, and currently has 51 co-sponsors. This bill would suspend the use of neonicotinoids until it can be determined that these pesticides do not have unreasonable adverse effects on pollinators.

Another potential step might mirror a bill that was introduced into the Oregon state legislature, that would reclassify neonicotinoids as restricted use pesticides, requiring them to be applied by licensed applicators. This provision of the bill was eliminated, but an amended version of the bill passed last week, requiring increased education for applicators.

Another helpful step would be to require consumer labeling on nursery plants that come pretreated with neonicotinoids. A 2013 pilot study found that plants sold in nursery stores like Home Depot and Lowe's may be pretreated with these pesticides, and consumers have no way of knowing.

The last policy angle I'd like to mention addresses the use of neonicotinoid seed treatments.

In 2012, 94% of corn planted in the United States was pretreated with neonicotinoids.[viii] In a report released last week, the MN Dept of Agriculture points out that this across-the-board use of neonicotinoids—whether or not insect pests are present—quote "may contribute to a paradigm that moves away from integrated pest management (IPM)." In fact, it's very difficult for conventional corn and soy farmers to find untreated seed on the market.

In Canada, when regulators began reviewing neonicotinoids, a major seed company began selling seeds untreated with these pesticides, in anticipation of a changing market. Legislative action in Minnesota could have a similar outcome, increasing farmers' access to seed choice. The clearest policy option here involves tracking sales data on seed treatments. Although this is the primary use of neonicotinoids in our state, seed treatments aren't tracked by pesticide sales data, because of a federal exemption. This leaves a significant gap in state data. Minnesota has an opportunity to begin to track neonicotinoid seed treatments. This would go a long way to help us better understand the prevalence of neonicotinoids in farm landscapes and explore any correlations with bee declines.

I also raise seed treatments as a key issue because they're a major concern of rural beekeepers in the state. Yesterday, Steve Ellis, a commercial beekeeper from Barrett, MN delivered a petition to the Department of Agriculture, asking MDA to suspend the use of neonicotinoid seed treatments on Minnesota corn. The petition had signatures from 38 commercial beekeepers, representing 40,000 hives of bees in the state, and represented a potent call for policy change on bee-harming pesticides.

There are multiple sensible and realistic steps that our state could take to join growing national and international momentum to protect bees from pesticides. Many thanks to this committee for your diligent work on this issue, and I look forward to seeing Minnesota's progress.

[i] Krupke C, Hunt G, Eitzer B, Andino G, Given K. 2012. Multiple routes of pesticide exposure for honey bees living near agricultural fields. PLoS ONE 7(1).

[ii] Wanyi Zhu, Daniel R. Schmehl, Christopher A. Mullin, James L. Frazier. **Four Common Pesticides, Their Mixtures and a Formulation Solvent in the Hive Environment Have High Oral Toxicity to Honey Bee Larvae**. *PLoS ONE*, 2014; 9 (1): e77547 DOI: 10.1371/journal.pone.0077547

[iii] Henry, M., Reguin, M., Requier, F., et al. 2012. A Common Pesticide Decreases Foraging Success and Survival in Honey Bees. Science (20): 348 - 350.

[iv] Decourtye A, Armengaud C, Renou M, Devillers J, Cluzeau S, Gauthier M, et al. 2004. Imidacloprid impairs memory and brain metabolism in the honeybee (Apis mellifera L.). Pestic Biochem Phys 78: 83-92.

[v] Aliouane Y., El Hassani Athiamethoxam. K., Gary V., Armengaud C., Lambin M., Gauthier M., 2009. Subchronic exposure of honey bees to sublethal doses of pesticides: effects on behavior. Environ. Toxicol. Chem. 28(1): 113–122.

[vi] Pettis JS, vanEngelsdorp D, Johnson J, Dively G. 2012. Pesticide exposure in honey bees results in increased levels of the gut pathogen Nosema. Naturwissenschaften.

[vii] http://www.producer.com/2013/05/no-yield-benefit-from-neonicotinoids-scientist/

[viii] Krupke 2012