



Neonicotinoids and Bees

Lori Ann Burd, Esq.
Environmental Health Director
laburd@biologicaldiversity.org

AUGUST 19, 2013

Zakaria: The new al-Qaeda threat / Ted Cruz / Foroohar: Yellen over Summers for Fed chief / Low Rolling in Vegas

TIME

A
WORLD
WITHOUT
BEEES



THE PRICE WE'LL
PAY IF WE DON'T
FIGURE OUT
WHAT'S KILLING
THE HONEYBEE

BY BRYAN WALSH

time.com

The Mystery is Solved

Neonicotinoids are a leading cause of bee die-offs

- Currently six neonicotinoid active ingredients are registered for use for controlling pests on plants. Four of these, clothianidin, dinotefuran, imidacloprid, and thiamethoxam, are highly toxic to bees (EC 2005; EPA 2004; Schmuck et al. 2001; Syngenta Group 2005). The other two, acetamiprid and thiacloprid, are moderately toxic to bees (EC 2004a; EC 2004b).
- A review of over 800 studies on neonicotinoids and fipronil, another systemic insecticide, by 30 independent scientists resulted in peer reviewed findings concluding that current legal use of these compounds is likely to cause a wide variety of negative impacts on pollinators, other beneficial invertebrates and the broader environment (Van der Sluijs et al. 2014).

Neonicotinoids

- Potent new class of insecticide
- Most common insecticide today
- Major use is as seed treatment
- Extremely persistent
- Highly toxic to invertebrates, including non-target pollinators
- Multiple routes of exposure place species at risk for lethal toxicity and also sub-lethal/chronic effects



HOW NEONICOTINOIDS KILL Acute Toxicity



“The bumblebees were literally falling out of the trees. To our knowledge this is one of the largest documented bumblebee deaths in the Western U.S. It was heartbreaking to watch.”
–Rich Hatfield, Conservation Biologist, Xerces Society, Portland

**Oregon Bumblebee Deaths Up to 50,000
after Neonicotinoid Safari Sprayed On Trees**

FoodDemocracyNow.org #StopMonsanto #LabelGMOs

HOW NEONICOTINOIDS KILL

Sub-acute Toxicity/Delayed Mortality

- Reduced foraging ability in honey bees and bumble bees following field realistic exposures (Schneider et al. 2012; Gill and Raine 2014; Tan et al. 2014; Feltham et al. 2014).
- Reduced reproductive success in both bumble bees and red mason bees after low-dose field realistic neonicotinoid exposure (Gill et al. 2012; Whitehorn et al. 2012; Sandrock et al. 2013).
- “Chronic exposure to neonicotinoids increases neuronal vulnerability to mitochondrial dysfunction in the bumblebee” (Moffat et. al 2015).

Many Routes of Exposure

- **Pollinators** can be exposed to **neonicotinoids** through:
 - **Absorption in plant vascular systems, making plants toxic to certain insects**
 - (Girolami et al., 2009) & (Maus et al., 2005)
 - **Long half-lives and accumulation in soil**
 - (Hoffman & Castle, 2012) & (EPA Memo on Clothianidin, 2003)
 - **Water solubility and contaminated water bodies**
 - (Van Dijk, 2010) & (Stamer & Goh, 2012)
 - **Toxic pollen and nectar**
 - (Henry et al., 2012) & (Whitehorn et al., 2012)
 - **Residues in guttation water**
 - (Girolami et al., 2009) & (Hoffman & Castle, 2012)
 - **Contaminated dust from treated seeds during sowing**
 - (Krupke et al., 2012) & (Tapparo et al., 2012)

A single corn kernel coated with a neonicotinoid can kill a songbird. Even a tiny grain of wheat or canola treated with the neonicotinoid, imidacloprid, can poison a bird. 1/10th of a corn seed per day during egg-laying season is all that is needed to affect bird reproduction with any of the neonicotinoids registered to date.

Solutions?

- Administrative Advocacy
- Litigation
- Local Action
- Policy Changes



Photo Credit, Lukas Zeitler

Victory!

National Wildlife Refuges Ban Neonics



Erie NWR, Pennsylvania



CENTER *for*
BIOLOGICAL
DIVERSITY

Because life is good.

Questions?



Lori Ann Burd, Esq.
Environmental Health Director
laburd@biologicaldiversity.org