

# Honey Bees and Pesticides

Protecting pollinators is vital to American agriculture



## Why Are Pollinators Important?

- **One in three bites of food** is reliant on honey bee pollination and threats to pollinators concern the entire food system.
- A May 2013 report by USDA finds that pollination is valued at **\$20 to \$30 billion annually**. A single beekeeper pollinating almonds, blueberries, pumpkins, apples, and cherries can contribute an estimated \$5 million value to the agricultural economy.

## Pesticides Harm Pollinators

- **Neonicotinoids**—including, clothianidin, thiamethoxam, and imidacloprid—are a class of insecticides that are highly toxic to honey bees and other pollinators. They are **systemic**, meaning that they are taken up by a plant's vascular system and expressed through pollen, nectar, and guttation droplets from which bees forage and drink.
- Neonicotinoids are particularly dangerous because, in addition to being acutely toxic in high doses, chronic low dose exposures can also result in serious **sublethal effects**.
- Neonicotinoid exposure can disrupt bees' reproduction, mobility, navigation, feeding, foraging, memory, learning, and overall hive activity. These chemicals are also suspected of affecting honey bees' **immune systems**, making them more vulnerable to parasites and pathogens. During the 2012/2013 winter, beekeepers reported on average, bee losses over 45 percent and as high as 70 percent.
- Neonicotinoids also **harm wild pollinators** like butterflies, bumblebees, and other beneficial organisms. In June 2013, tree application of the neonicotinoid dinotefuran killed over 50,000 bumblebees in Oregon.

## Regulatory Failures

- EPA granted **conditional registration** to the neonicotinoid clothianidin in 2003 without a required field study for honey bees. **Over a decade** later, EPA continues to allow the use of clothianidin, while trying to mitigate hazards with product label amendments. A regulatory review of neonicotinoids will not conclude until 2018, with an action plan to be developed sometime thereafter.
- In March 2013, beekeepers, environmental, and consumer groups **filed suit** against EPA for its failure to protect pollinators from clothianidin and thiamethoxam —shown to be highly toxic to bees, citing regulatory failures and label deficiencies.
- In April 2013, the European Union (EU) instituted a **two-year ban** on the use of three neonicotinoids following an EU-commissioned report documenting their toxicity to bees.
- In May 2013, EPA released a report **recommending further research** on the role of parasites, disease, genetics, poor nutrition and pesticides on honey bee health, but presented no long-term sustainable solutions to address the current bee crisis.

## Recent Research Highlights Risks

- In January 2013, the European Food Safety Authority determined that the neonicotinoids imidacloprid, clothianidin, and thiamethoxam pose unacceptable risks to bees, prompting an EU-wide ban.
- A 2013 study published in the *Journal of Experimental Biology* revealed that honey bees exposed to imidacloprid were less likely to form long-term memory required for remembering food locations.
- Published in the *Bulletin of Insectology*, a 2013 study found that honey bees exposed to clothianidin had less success of finding their way home to their hives.