

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 2012 study by Cornell University finds that insect pollination results in a value of more than **\$15 billion annually**. A single beekeeper pollinating almonds, blueberries, pumpkins, apples, and cherries can result in an estimated \$5 million value to the agricultural economy.

Pesticides Harm Pollinators

- **Neonicotinoids** (clothianidin, thiamethoxam, 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, exposure also results in serious **sublethal effects** when insects are exposed to chronic low doses.
- Research has shown that neonicotinoid exposure causes **significant problems** for honey bee health, including disruptions in mobility, navigation, feeding, foraging, memory, learning, and overall hive activity.
- Pesticides are also suspected to affect honey bees' **immune systems**, making them more vulnerable to parasites and other pathogens.

Regulatory Failures

- EPA granted a **conditional registration** to the neonicotinoid clothianidin in 2003 without a required field study on pollinators on the basis that this study would soon be received. However, this requirement has **not been met**. EPA continues to allow the use of clothianidin **nine years** after acknowledging that it had insufficient basis for allowing its use.
- In March 2012, commercial beekeepers and environmental organizations filed an **emergency legal petition** with EPA to suspend use of clothianidin, asserting that EPA failed to follow its own regulations by allowing clothianidin to be used without the required adequate pollinator field study.

Recent Research Highlights Risks

- A January 2012 Purdue University study reveals that honey bees were exposed to clothianidin through dust that is expelled from mechanical planters containing coated seeds.
- An April 2012 study out of France shows that when exposed to sublethal doses of thiamethoxam, honey bees' foraging and feeding behavior were significantly degraded.
- A study released in May 2012 by the University of California at San Diego finds that small doses of imidacloprid depress honey bees' ability to communicate and effectively feed the colony.



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