

## Questions and Answers: Asian Longhorned Beetle Insecticide Use and Bees

### **Q. How can using the insecticide imidacloprid kill Asian longhorned beetles (ALB) but not bees?**

**A.** Scientific studies have shown that imidacloprid levels in pollen and flowers are lower than in the other parts of plants, such as the leaves and twigs where adult ALB feed. These studies also indicate that while imidacloprid can get into pollen, it does not generally do so at levels harmful to bees. The distribution of imidacloprid in trees makes it more harmful to ALB than to bees.

### **Q. If imidacloprid gets into tree pollen, why won't it harm bees?**

**A.** The potential level of imidacloprid in pollen from trees that have been treated for ALB is expected to be low, based on our review of available scientific data through environmental assessments. While bees may be exposed to imidacloprid, the levels should not be high enough to adversely affect them.

### **Q. Will the use of insecticide to eradicate ALB affect pollinators?**

**A.** APHIS has no intention of taking actions that would significantly affect pollinators. The ALB program's environmental assessment for Worcester and Middlesex counties in Massachusetts, which was published in September 2008, concluded that, "Studies to assess the effects of imidacloprid on homing behavior, colony development, foraging activity, reproduction, wax/comb production, colony health, as well as other endpoints, revealed that there was a lack of effects. Effects were observed at test concentrations not expected to occur under realistic exposure scenarios."

Additionally, imidacloprid is only applied to a limited area each year for the eradication of ALB. APHIS will inform beekeeper associations of the treatment areas each year so that they have the choice to limit exposure to their hives.

### **Q. Is imidacloprid tied to the general decline of bees?**

**A.** We do not believe so. Imidacloprid became commercially available in 1994. Imidacloprid-based

products quickly became used in major crops including cotton, potatoes, and a broad array of vegetables, many of which are pollinated by bee colonies. The use of these products was not followed by any claims of harm to bees. Imidacloprid had been in widespread use in agriculture for about a decade before colony collapse disorder began being reported. Most studies on bee decline conclude that factors other than the use of imidacloprid cause colony collapse disorder.

### **Q. Is imidacloprid safe to use in the environment?**

**A.** Yes. Imidacloprid is a registered pesticide under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The Environmental Protection Agency (EPA) has documentation that supports its proposed uses as labeled. Imidacloprid treatments are conducted in accordance with its label, the requirements of which are designed to protect human health and the environment.

### **Q. What is the EPA's perspective on imidacloprid and bees?**

**A.** For more than 5 years, the EPA has required studies to evaluate sub-lethal effects of nicotiny (neonicotinoid) pesticides, such as imidacloprid, on bees as a requirement for registration. EPA has evaluated these studies and the potential for a variety of sub-lethal effects, such as behavioral effects and incidence of disease, that could cumulatively affect the functioning of hives. These studies, and the information available in open scientific literature to date, do not demonstrate a link between sub-lethal effects of nicotiny pesticides and severe adverse impacts to bees.

### **Q. What kind of monitoring is being done with insecticide use for ALB eradication?**

**A.** APHIS is conducting environmental monitoring as part of the ALB eradication program. Although no significant adverse impacts are anticipated from the use of imidacloprid, the agency is conducting monitoring to verify the assumptions used in its planning documents, and if necessary, will adjust program operational protocols. Pre-treatment samples of bees, bee products, trees, and water have already been collected to establish the background environment. Residue monitoring is planned to continue through the eradication program. Additionally, a detailed study is underway using honeybee colonies both within and outside of treatment areas; this study will be useful for monitoring the safety of the control program for pollinators.

**Q. What experiments have been done on the effects of imidacloprid on bees and other organisms?**

**A.** Imidacloprid is a very well-studied chemical, with a large number of articles published in international scientific journals. Experimental work has been conducted on mammals, birds, bees, numerous beneficial invertebrates, fish, several frog species, multiple aquatic invertebrates, and some saltwater invertebrates and microorganisms. This work includes field experiments, controlled laboratory experiments, field studies, and dose-response experiments. More than 10 years of research on imidacloprid has shown that while some pesticide is taken in by bee colonies, no adverse effects have been demonstrated at the colony level.

**Q. What has the experience been with imidacloprid in States with ALB infestations?**

**A.** In ALB eradication areas, people have expressed concern about potential impacts to birds, squirrels, and humans. The scientific literature and exposure assessments conducted by APHIS addressing these specific concerns did not indicate the potential for exposure to harmful levels of imidacloprid through treatment applications being done for ALB eradication. There were no reported or suspected adverse impacts to people or the environment in any of the ALB eradication program areas to date.

**Q. Why is APHIS doing additional research on bees in Massachusetts?**

**A.** While APHIS does not expect any issues with bees, scientific studies to date have not specifically investigated how the treatment of trees with imidacloprid, as used by the ALB eradication program, relates to the health of bees. Currently, APHIS is working with the U.S. Department of Agriculture's Agricultural Research Service to further quantify any risk posed by imidacloprid in the pollen of treated trees and the response of test bees to the treatments. This research will allow APHIS to better estimate the potential risk to bees and, if necessary, to adjust the program to prevent any previously unidentified issues.

**Q. So what is going on with bees and colony collapse disorder in the United States and around the world?**

**A.** Currently, the best research available shows that the cause of colony collapse disorder is very complex. Scientists feel that pesticides alone are not the cause. Current theories suggest that a complex combination of factors are working together to impact bees, including mites, viruses, and possibly pesticides.

**Q. Didn't other countries ban the use of imidacloprid because of an impact to bees?**

**A.** Yes, but that's not the whole story. France banned the use of the imidacloprid as a seed treatment for sunflowers and corn because preliminary data suggested potential harm to bees. This ban remains in effect even though other studies do not consistently support the preliminary findings. Despite the ban, no improvement in bee colony health was observed in France. Germany suspended the use of a number of seed treatment pesticides following a bee-kill incident. But after investigating the factors contributing to the situation, Germany lifted all of the suspensions, with the exception of using clothianidin as a seed treatment for corn.

**Q. Will fall treatments result in greater exposure of bees to imidacloprid?**

**A.** No. We expect limited amounts of imidacloprid to be available to bees—below levels that should be harmful—regardless of whether treatments are done in the fall or the spring. The small number of treated trees relative to the number of untreated trees will further limit the amount of imidacloprid to which bees might be exposed.

**Q. Is imidacloprid used for other things?**

**A.** Imidacloprid is most commonly used on rice, cereal, maize, potatoes, vegetables, sugar beets, fruit, cotton, hops, and turf. It can be used as a seed or soil treatment or applied to foliage. It is also used in flea treatments for pets and in lawn care to control white grubs.

More information about imidacloprid is available on the Extension Toxicology Network Web site (<http://ace.orst.edu/info/extoxnet/>). EXTTOXNET is a pesticide information project of the cooperative extension offices of Cornell University, Michigan State University, Oregon State University, and the University of California at Davis; major support and funding are provided by the USDA Extension Services' National Agricultural Pesticide Impact Assessment Program.

---

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.