

Questions and Answers: Asian Longhorned Beetle Insecticide Treatments

The U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) and its partners use insecticide treatments as part of an integrated approach to eradicate Asian longhorned beetle (ALB).

Q. Why is insecticide used to fight ALB?

A. APHIS and its partners use an insecticide to decrease the number of beetles in an area and to prevent trees from becoming infested. It helps contain the spread of ALB from currently infested areas and helps protect noninfested trees when the beetle feeds on the leaves and twigs of treated trees and dies. The insecticide is also effective against the early larval stages of the beetle that feed on the inside, growing layer of the tree.

Q. How are ALB insecticide treatments used?

A. Insecticide treatments are used only on trees not known to be infested and according to product label requirements. The insecticide is applied through either tree trunk or soil injections. Trunk injections are applied directly into the trunk of trees. Soil injections are applied directly into the soil at the base of trees. The number of injections (either trunk or soil) per tree depend on the size of the tree. With each method, the tree's vascular system pulls the insecticide upward into the stems, twigs, and foliage where the beetle is expected to feed and lay eggs.

Q. What insecticide is used?

A. The generic name of the insecticide is Imidacloprid. It is a systemic insecticide commonly used to control both agricultural and residential insect pests, such as aphids, cockroaches, termites, soil insects, thrips, whiteflies, rice hoppers, and some beetles. It is also used in flea and tick prevention products for pets, and it has been sold in the United States since 1994. Imidacloprid is registered with the Environmental Protection Agency (EPA) under the Federal Insecticide, Fungicide, and Rodenticide Act and is approved for ALB eradication program use.

Q. What trees are treated with insecticide?

A. Tree species that could receive treatments include maple and box elder, horsechestnut and buckeye, mimosa, birch, katsura tree, ash, golden raintree, sycamore and London planetree, poplar, willow, mountain ash, and elm. Once an area is identified for treatments, it is ideal to treat all host trees within that area to optimize effectiveness.

Q. When do applications take place?

A. Imidacloprid treatments can be effective against ALB when applied in the spring, early summer, or fall—prior to or when adults emerge. It takes 1 to 3 weeks by trunk injection and up to 3 months by soil injection for Imidacloprid to distribute throughout the tree, depending on the tree's size and health and weather conditions.

Q. Can insecticide be used instead of removing trees?

A. Unfortunately, no. Variability in treatments, weather conditions, and overall tree health can result in uneven insecticide distribution within a tree and would not eliminate all ALB. In addition, the insecticide is not effective against the later larval stages that spend most of their time inside the heartwood of the tree because it will not reach them. Thus these larvae can continue to grow inside the treated tree, develop, and still emerge as adult beetles. All infested trees must be removed because that is the most effective way to completely eliminate the beetle. Even treated trees are removed and destroyed if they are later found to be infested.

Q. How does the eradication program decide when to use an insecticide?

A. The eradication program must ensure that specific criteria are met before applying the insecticide. When determining whether to treat trees with Imidacloprid, APHIS and State officials consider several important factors, including environmental and biological issues, the scale of an infestation, and cost.



Q. What research has been done on the use of Imidacloprid to control ALB?

A. USDA and Chinese researchers conducted lab and field tests in China and the United States. Multiple insecticides were tested, and Imidacloprid was shown to be the most effective. Specifically, the testing indicated that Imidacloprid was effective against adult beetles as they feed on small twigs and against young larvae as they feed beneath the bark. Imidacloprid has been very well-studied for other uses as well, with a large number of articles published in international scientific journals.

Q. How will these treatments affect the environment?

A. Imidacloprid treatments are applied according to the product label requirements, which are designed to protect human health and the environment. The precise placement of injection treatments and the measures used to ensure precision during applications help prevent potentially adverse environmental effects. Also, the environment is minimally affected because Imidacloprid residues are limited to the treated tree and root area.

Q. Can Imidacloprid harm bees? And are there alternatives?

A. EPA issued a preliminary risk assessment for Imidacloprid suggesting that some aerial applications may harm bees. The risk assessment did not show any adverse effects to bees from tree trunk or soil injections. USDA conducted a study in Massachusetts and New York which demonstrated that applications made to control ALB do not expose bees to harmful levels of Imidacloprid. APHIS continues to evaluate alternatives, but at this time none are as effective against ALB as Imidacloprid.

Learn More

For more information on Imidacloprid, go to EXTOXNET at <http://ace.orst.edu/info/extoxnet/>.

For more information on ALB, go to www.aphis.usda.gov/pests-diseases/alb.