

EMERALD ASH BORER



UNIVERSITY OF ILLINOIS
EXTENSION

Entomology Fact Sheet, NHE-164
Department of Crop Sciences

Emerald Ash Borer, *Agrilus planipennis*, is an exotic, invasive insect in North America that attacks and kills healthy ash trees. All ashes in the genus *Fraxinus* are attacked. If not protected with insecticides, essentially all of the green and black ash will die, but some of the white and blue ash are likely to survive. It also attacks declining white fringetree, *Chionanthus virginicus*; it's not known whether it kills healthy white fringetrees. Emerald ash borer is native to China, Korea, Japan, Mongolia, the Russian Far East, and Taiwan. It was first identified in the Detroit, Michigan, area in 2002 and was first found in Illinois in 2006. Ash trees are important in our residential landscapes, towns, cities, and forests in Illinois. In many communities, ash trees comprise 10 to 20 percent of the trees.



Adult & Exit Hole

Description and Life Cycle

Adult beetles are 1/3 to 1/2 inch long and elongate, with metallic emerald green wing covers on a bronze body. The upper surface of the abdomen is bright red, which is obvious when they fly. They emerge through 1/8-inch-wide, D-shaped holes in the bark of ashes. Adults are present for several weeks in mid to late spring, emerging earlier in southern Illinois. After mating, the female inserts her eggs, one or two at a time, between bark flakes.

The eggs hatch into larvae that tunnel through the bark into the cambium, where the water-, nutrient-, and sugar-conducting tissues, the xylem and phloem, are located. The larvae are white, elongate, and flattened, growing to about 1-1/2 inches long. The larval body appears as flattened beads, and there are two short, dark brown to black spinelike cerci at the posterior end of the body. After feeding for one or two growing seasons, the larvae tunnel as much as 1/2 inch into the sapwood below the cambium to pupate. Adult beetles emerge the following spring.



Larval Damage

Damage

The larvae create slender, winding tunnels under the bark. As the tunnels become numerous, they effectively girdle the branch, causing the branch to die due to lack of water and nutrients. Emerald ash borer attacks at the top of the tree first, causing thinning of the canopy. Epicormic branches (water sprouts) develop near the base of major branches. Attack continues down the tree, resulting in the gradual death of branches, and the entire tree eventually dies.

Larvae commonly attack the tree for about 4 years before branch dieback becomes evident. Once dieback starts to occur, the tree usually dies in 2 to 3 years. The bark on attacked trees separates from the tree trunk, allowing the larval tunnels to be easily seen. Woodpeckers chip away the bark to reach the larvae, appearing as light areas on the bark, and is a useful means of identifying potentially attacked trees before dieback becomes evident. Although woodpecker predation reduces borer numbers, it does not provide adequate control.

Management

There are several insecticides that provide effective control. Arborists, landscapers, and other professionals can apply emamectin benzoate (Tree-age) or azadirachtin (Azasol, TreeAzin) as a trunk injection, imidacloprid (Merit, Imicide, IMA-jet, Xytect, and others) at the highest labeled rate as a soil drench, soil injection, or trunk injection, or dinotefuran (Safari, Transect, Xylam) as a soil drench, soil injection, or bark spray.



Trees with Successive Damage (L to R)

Homeowners can buy and apply imidacloprid or dinotefuran (Green Light Emerald Ash Borer Killer, Ortho Tree and Shrub Insect Control) as a surface soil application. Imidacloprid is sold by a number of companies including Bayer, Bonide, Ferti-lome, Hi-Yield, Ortho, and Plant Care Science as tree and shrub insect control, borer-miner killer, systemic control, or Optrol. Apply according to label directions at the highest labeled rate. Do not apply imidacloprid into mulch or other dead organic matter.

Applications of all of these insecticides should be made annually except that Tree-Age needs to be applied only every two years. Control is more effective on smaller trees, those with a trunk diameter of less than two feet. Application is recommended to trees within 15 miles of a known infestation. Even infested trees showing dieback survive and show signs of recovery in the form of normal stem and leaf growth with the above insecticide recommendations if the dieback is not too severe.

Weigh the value of the tree in the landscape against the cost of treatment. A tree in an infested area will likely need to be treated for at least 20 years until untreated trees die and borer numbers drop to very low levels. Be sure that a variety of trees is planted in the neighborhood. This ensures that the loss of one or a few kinds of trees in the future will not be as devastating. Certified arborists provide expertise in properly treating emerald ash borer as well as expertly maintaining the health of ash and other trees and are listed at: <http://www.illinoisarborist.org/>.

More information on emerald ash borer is available at: <http://www.IllinoisEAB.com> and <http://www.emeraldashborer.info/>. If you see emerald ash borer or its damage in an area unknown to be infested, contact your local University of Illinois Extension Office listed at: <http://web.extension.uiuc.edu/state/> or the Illinois Department of Agriculture at (800)641-3934.