



FACT SHEET

The Value of Neonicotinoid Insecticides in Turf and Ornamentals

A Case Study of Neonicotinoid Use for Controlling Emerald Ash Borer—the Naperville, Illinois Experience

Summary

As part of a comprehensive evaluation of the economic and societal benefits of neonicotinoid insecticides, researchers conducted individual case studies to more deeply examine the benefits these products bring to specific market segments and explore what would happen if they were no longer available.

Faced with the threat of losing thousands of valuable ash trees to the invasive insect, the Emerald Ash Borer (EAB), the city of Naperville undertook an aggressive management program using neonicotinoid insecticides to keep its trees healthy and preserve the quality of its community. Two years into the program, more than 90 percent of the treated trees were thriving, while untreated trees in nearby neighborhoods had to be replaced, resulting in significant removal costs, environmental degradation and a decline in property value.

Key Findings

- EAB is an exotic, invasive pest that is destroying ash trees across the eastern and Midwestern United States on a scale that exceeds the devastation caused by Dutch elm disease several decades ago. One study estimated that communities will spend a total of \$10.7 billion through 2019 to treat, remove and replace ash trees due to EAB infestation (Kovacs et al., 2010).
- Ash trees are a popular choice among urban foresters and private homeowners because of their overall aesthetic appeal, low maintenance needs, wide canopy and longevity.
- Urban trees have many economic and environmental benefits. They increase property value and decrease home cooling costs while providing aesthetic benefits for individual properties and neighborhoods, as well as numerous environmental benefits, including storm-water retention, carbon sequestration, filtration of air from pollutants and decreased energy use (www.fs.fed.us/ucf/treesforpeople.shtml).
- Originating in Asia, EAB was first detected in the United States and Canada in 2002 and by July 2014 had spread to more than 20 states and two provinces.
- Females lay their eggs on ash tree bark, where the larvae tunnel into the tree's vascular system, ultimately destroying the tree's ability to circulate nutrients and water.
- Ash trees in North America have no native immunity or natural protection, such as predators or parasites that feed on the beetle.
- If not treated, ash trees infested with EAB will die within three to six years of infestation.
- Given the abundance of ash trees in many cities, bark and limbs falling from trees killed by EAB pose a serious threat to public safety and can damage personal property. Local governments and

homeowners may be liable for property damage and personal injury that results from unmanaged EAB infestation and must address these risks.

- Tree removal is expensive, with larger trees costing \$1,500 or more. Tree replacement results in additional costs.
- Because most of the damage is caused by larvae inside the tree, the most effective treatments are systemic insecticides, which move through the tree's vascular system and into the leaves.
- Neonicotinoids are systemic insecticides that have been very effective at protecting trees from EAB and restoring trees with less than 50 percent canopy damage.
- Neonicotinoids are typically applied as a soil injection or drench (or trunk injection or basal trunk spray) and it takes a professional applicator only 1-2 minutes to treat a large tree.
- Non-neonicotinoid products (e.g. emamectin or acephate) must be applied as a trunk injection by a licensed applicator, a process that can take up to 30-45 minutes for larger trees.

City of Naperville Experience

- The City of Naperville has more than 15,000 publicly owned parkway ash trees and many more on private lands. It first discovered EAB in 2008 and began to monitor the infestation.
- A pilot project in 2010 demonstrated the efficacy of neonicotinoid treatment on parkway ash trees. The results of this project showed that trees could be protected against EAB.
- By 2012, the city was faced with continuing tree losses and an ever-increasing level of infestation.
- The city compared the relatively low cost of treatment (approximately \$100 per tree per year) to the higher cost of removal and replanting (from \$1,200 - \$1,700 per tree).
- Faced with the threat of removing 15,000 parkway ash trees within two-to-three years and the pressure it would place on the municipal budget, the city decided to pursue an aggressive treatment program to conserve healthy parkway trees.
- Two years into the program (2014), more than 90 percent of the parkway ash trees show little to no EAB damage, while neighboring communities, which did not treat their trees, have lost substantial ash tree canopy coverage that will take many years to replace.
- "It was a night and day difference between untreated, dead trees on one side of a street and treated, lush, living ash trees on the other side" said Dr. Robert Buckman, past president, Naperville Area Homeowners Confederation, who also noted that property values dropped significantly in neighborhoods that had trees removed due to a prior infestation.
- "What became clear to me is that the cost associated with losing so many ash trees was far greater than the hard cost of removal and replacement. The property value of these homes will undoubtedly sink, the cost for air conditioning will rise, but most importantly, the feeling of the neighborhood has changed." - Steve Chirico, Councilman, Naperville, Illinois.
- "Neonics, with their quick and lower cost-treatment method, have allowed us to do the right thing for our residents and protect parkway ash trees across the entire city." - Doug Krieger, City Manager, Naperville, Illinois

Report References

The Value of Neonicotinoid Insecticides in North American Agriculture: Value of Insect Pest Management to U.S. and Canadian Corn, Soybean and Canola Farmers

This report is one of a series that will be released over the next few months as part of a comprehensive evaluation of the economic and societal benefits of neonicotinoid insecticides in North America. The research was conducted by AgInfomatics, a consulting firm of independent agricultural economists and scientists, and jointly commissioned and sponsored by Bayer CropScience, Syngenta and Valent U.S.A. For questions or information concerning this research and reports, please contact the Porter Novelli address identified below.

All reports will be published online at: <http://GrowingMatters.org/case-studies/>.

About Growing Matters

Growing Matters is a coalition of organizations and individuals committed to scientific discourse on the stewardship, benefits and alternatives of neonicotinoid insecticides in North America. [Bayer CropScience](#), [Syngenta](#) and [Valent U.S.A. Corporation](#) are leading this coalition with support from Mitsui Chemicals Agro, Inc.

Agriculture and horticulture are key to nourishing families and communities. Feeding a growing population, enhancing the beauty of our surroundings, and sustaining a commitment to environmental protection are fundamental needs that matter. Crop protection products, both natural and synthetic, are important tools that protect plants from tough and invasive pests that can devastate crops and urban landscapes.

Go to www.GrowingMatters.org for the latest information, reports, videos and infographics on the benefits of neonicotinoid insecticides or to show your support.

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