

FACT SHEET

Key Pests Controlled by Neonicotinoids

Summary

Neonicotinoids are highly valued because of their use in integrated pest management (IPM) programs. Because of their selective control of harmful insect pests, these products help ensure important beneficial insects remain available to keep other potential pests in check. Although there are other insecticides that control similar insect pests, neonicotinoids are uniquely suited for control of many early-season insects and are the primary defense against some invasive species that can cause catastrophic damage if left unprotected.

Asian Citrus Psyllid

The arrival of the Asian citrus psyllid, an invasive insect, was a game-changer for citrus production in Florida. In one decade, this insect has spread a bacterial disease, commonly known as "citrus greening" throughout the state. If not controlled, the disease will render the fruit unmarketable and can kill an entire block of trees. University of Florida researchers have demonstrated that neonicotinoids are the cornerstone in protecting young trees from infection. Unlike other insecticides, neonicotinoids cause the psyllid to interrupt its feeding, thus reducing the potential for disease transmission. Over five years, this disease has caused a loss of 8,000 jobs in Florida and a cost of \$4.5 billion to the state economy.

Living below the Surface

The most common use of neonicotinoids is for the control of various soil-dwelling insects that attack many different commodity crops. Scouting is impractical for most soil pests and seedlings are especially vulnerable to early-season feeding damage, making rescue treatments extremely difficult. For this reason, neonicotinoid seed treatments are an economical and highly valued tool used by farmers to help keep these difficult pests in check. Wireworms, seedcorn maggots and corn rootworms are among the most common soil-dwelling pests.

- **Wireworm** – the larval stage of the click beetle family is one of the most common soil pests targeted by neonicotinoids in major commodity crops. Wireworms can live for 2-6 years underground and during that time can kill seeds or severely stunt developing seedlings.
- **Seedcorn Maggot** – the larval stage of this fly family attacks corn, soybeans and vegetables, resulting in poor seedling emergence and significant stand reduction. Like many soil insects, these pests have increased in part due to reduced tillage practices.
- **Corn Rootworm** - both larvae and adults of this beetle can damage corn plants, but larval feeding on the roots can reduce water and nutrient uptake and place severe physiological stress on the plant. This can cause serious yield loss, or cause large plants to topple over.

Above-Ground Pests

Some early-season pests (such as aphids, thrips, and bean leaf beetles) have multiple generations each season, which creates specific management challenges for the grower. Neonicotinoid seed treatments have helped limit the number and impact of subsequent generations of these pests.

- **Soybean Aphid** – this Asian pest has spread rapidly in North America. Mature females can produce live offspring without mating, causing populations to explode if conditions are favorable. Neonicotinoid treatments limit early population growth, while preserving beneficial insects and have kept these pests manageable since their arrival in 2000.
- **Thrips** – these slender, fringed-wing pests attack cotton seedlings and can delay maturity, damage terminal buds, and can kill the plant. Thrips can complete five or more generations per growing season, requiring multiple foliar sprays if not properly managed.
- **Bean Leaf Beetle** – this insect is one of the more destructive pests of soybeans. Adult beetles defoliate leaves, damage pods and can help spread viral diseases. Early season neonicotinoid use has helped limit the need to treat the more damaging second generation.

Emerald Ash Borer

Since its arrival in 2002, the Emerald Ash Borer (EAB) has spread across the eastern and mid-western United States and Canada. This beetle is believed to have been introduced from Asia in wood packing material carried in cargo ships or planes. EAB has destroyed millions of residential ash trees and urban landscapes, costing millions of dollars to local communities. The larvae feed on the inner bark, disrupting the tree's ability to transport water and nutrients. Neonicotinoids are one of the few effective treatments in protecting ash trees from EAB larval damage.

Report Reference

The Value of Neonicotinoid Insecticides in North America

This fact sheet is in support of a series of reports 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.

All reports will be published online beginning October 28 at: www.GrowingMatters.org.

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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