

FACT SHEET

Understanding Neonicotinoids

What are neonicotinoids?

Neonicotinoids are a modern class of insecticides that have been widely adopted by growers to manage some of their most destructive insect pests. These products have largely replaced many older insecticides because of their effectiveness in pest management programs and favorable mammalian safety and environmental profile.

Most neonicotinoid insecticides belong to one of two chemical subclasses, the nitroguanidines or cyanoamidines. The nitroguanidine insecticides are the most widely-used and were the focus of research conducted by AgInfomatics, LLC. The specific chemicals (or active ingredients) in this subclass include clothianidin, dinotefuran, imidacloprid and thiamethoxam.

How are neonicotinoids used?

Neonicotinoids are applied as foliar sprays, soil applications or as seed treatments. Seed-applied insecticide treatments are the major application method in North American agriculture. Modern seed treatments provide a high level of precision when compared to foliar applications, resulting in less product being applied in the environment.

What are the major uses of neonicotinoids?

Neonicotinoids are used on many crops, ornamentals plants, lawns and even on pets (for flea control). The largest use of neonicotinoids is on corn, followed by soybean, wheat, cotton and sorghum. In Canada, the largest use is on canola. These products are used in many of the smaller acreage horticultural crops as well.

How long have nitroguanadine neonicotinoids been used?

Introduced in 1994, Imidacloprid was the first neonicotinoid sold in North America. Others were introduced as follows: thiamethoxam (2001), clothianidin (2003) and dinotefuran (2005).

Have these products been adequately tested before being used?

Pesticides are among the most highly regulated products in commercial use. More than 120 different baseline studies are required for a new registration, to assess safety to humans, wildlife and the environment. On average, it takes 10 years before a new product can be registered and sold. Neonicotinoids have been through this extensive review process and approved by government regulators. All pesticides (including neonicotinoids) are required to undergo periodic reevaluation to ensure they continue to meet the highest standards of safety necessary to protect human health and the environment.

Why do we need these products?

Neonicotinoids are highly valued by growers because of their use in integrated pest management (IPM) programs. Because of their selective control of pests, these products help ensure beneficial insects remain available to keep other potential pests in check. Without neonicotinoids, growers would be forced to rely on a few, older classes of chemistry which are less selective, resulting in reduced yields, more frequent sprays and higher costs – all of which would represent a serious setback to their IPM and resistance management programs.

What do we know about neonicotinoids and bees?

There is an extensive body of scientific research that has consistently shown neonicotinoids are not linked to bee health decline when products are applied according to label directions. Hundreds of studies evaluating the effects of these products on pollinators have been conducted. Many of these are higher-tier field tests that followed the long-term health of colonies and found no adverse effects on survival, brood development or foraging behavior, under normal field use conditions. Most scientists and bee experts agree that poor bee health is a result of an interaction of multiple factors, including parasites, diseases, nutrition, weather and hive management practices.

Isn't the decline in honey bee colonies directly related to neonicotinoid use?

The number of honey bee colonies in the United States declined by half following World War II, when honey was no longer needed as a sugar substitute. This decline occurred prior to the introduction of neonicotinoids. In fact, since neonicotinoids were introduced the number of bee colonies has remained stable or is increasing. Worldwide, the number of honey bee colonies has increased during the past 50 years.

But aren't neonicotinoids toxic to honey bees?

It's no secret that some insecticides, including neonicotinoids, can be acutely toxic to bees if not used according to label directions. However, these products are evaluated, tested and labeled so that, when users apply them at the right time and in the right amount according to label directions, there will be no unacceptable risk to pollinators. Years of field testing, combined with the use experiences of growers—many of whom have close relationships with beekeepers—confirm the longstanding safe use of these products to bees.

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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