

FACT SHEET

The Value of Neonicotinoid Insecticides in North American Agriculture

Estimated Impact of Neonicotinoid Insecticides on Pest Management Practices and Costs for U.S. Corn, Soybean, Wheat, Cotton and Sorghum Farmers

Summary

New research by independent agricultural economists finds that neonicotinoids are critically important to growers' integrated pest management (IPM) programs and profitability. The study showed that in the absence of neonicotinoids, farmers across major U.S. commodity crops would be forced to apply more insecticides, suffer serious disruptions to their IPM practices, and incur hundreds of millions of dollars in additional costs to their farming operations.

Key Findings

- Neonicotinoids are the most widely-used insecticides in these commodity crops, accounting for nearly half of the 240 million total planted acres.
- Averaged over the 3 years (2010-2012), neonicotinoids were used on 135 million acres:

Crop	Neonicotinoid Use (in millions of acres, or as a percent of treatment)		
	Millions of Acres	% as Seed Treatment	% of Total Insecticides
Corn	82.5	100%	85%
Soybeans	30.5	95%	60%
Wheat	10.7	100%	72%
Cotton	9.3	67%	30%
Sorghum	2.5	100%	78%

- Seed treatments account for 98% of the total neonicotinoid use across these crops.
- Four soil insect pests (wireworms, seedcorn maggots, corn rootworms, and white grubs) account for 70% of pests identified as treated with neonicotinoids. Major above-ground pest targets include aphids, bean leaf beetles, thrips and cutworms.

In the Absence of Neonicotinoids in these Commodity Crops

- 77% of the former neonicotinoid treatment acres would use an alternative insecticide, 10% would be scouted but not treated, and 13% would rely on cultural control methods (e.g. higher seeding rates) to offset anticipated stand loss.

- Despite the lower total acreage treated with an insecticide across these crops, the volume of insecticides applied would *increase*, driven by higher use rates and the need for more frequent sprays.
- The primary alternative insecticides used would be organophosphates and synthetic pyrethroids, adding an incremental 38 and 66 million acres treated, respectively.
- 4.0 million pounds of neonicotinoids would be replaced with 19.1 million pounds of alternatives (or each pound of neonicotinoid would be replaced with nearly 5 pounds).
- The total pounds of insecticide active ingredient used would more than double – an increase of 116% (13.0 million to 28.2 million pounds).
- There are no current soil insecticide alternatives registered for use in soybeans and wheat.
- Higher use of alternatives would impact non-target beneficial insects, result in more trips across the field, and increase the likelihood of spray drift and field run-off.
- Growers would incur a projected net cost increase of \$848 million per year
 - Increased spending on insecticides - \$157 million
 - Increased spending on applications - \$383 million
 - Increased spending on foliar scouting - \$210 million
 - Increased seeding rates/replanting costs - \$97 million
- The \$848 million cost impact does not include yield losses, which will be addressed in a separate report to be issued later.

Methodology

- The results are supported by a separate, 96-page report which provides a detailed description of the methods and assumptions used by the researchers.
- The report focused on the cost benefits of the nitroguanidine neonicotinoids in U.S. corn, soybean, wheat, cotton and sorghum when compared to alternative insecticides.
- The author of this report is Dr. Paul D. Mitchell, AgInfomatics consultant and associate professor, Department of Agricultural and Applied Economics, University of Wisconsin-Madison. AgInfomatics, LLC, is a consulting firm consisting of independent agricultural economists and scientists.
- The analysis relied primarily on GfK Kynetec data, which is widely recognized as the best survey-based data on agricultural chemical use.
- Data were averaged over three-years (2010-2012) to minimize annual variability.
- A total of 98 different insecticide active ingredients and 72 target pests were evaluated.

Report References

The Value of Neonicotinoid Insecticides in North American Agriculture: Part I. Estimated Impact of Neonicotinoid Insecticides on Pest Management Practices and Costs for U.S. Corn, Soybean, Wheat, Cotton and Sorghum Farmers; Part II. Methods and Assumptions for

Estimating the Impact of Neonicotinoid Insecticides on Pest Management Practices and Costs for U.S. Corn, Soybean, Wheat, Cotton and Sorghum Farmers

These reports are part 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. Corporation.

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.