



March 25, 2024

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Environmental Protection Agency
1200 Pennsylvania Ave NW
Washington, DC 204600-0001

Submitted via regulations.gov - Re: Docket EPA-HQ-OPP-2023-0428; Petition Seeking Rulemaking for Registration of Neonicotinoid Insecticides and Other Systemic Insecticides

Dear Mr. Hawkins,

Growing Matters Coalition (www.growingmatters.org), established in 2013, is a cross-registrant stewardship coalition committed to scientific discourse on the stewardship and benefits of neonicotinoid insecticides in North America. Registrant membership is comprised of BASF, Bayer, Mitsui Chemicals Agro., Syngenta and Valent U.S.A. The membership is represented by cross-functional participants from communications, government affairs (Federal and state), industry relations, regulatory, science, and stewardship. In addition to the above stated goals, the Growing Matters Coalition supports the *BeSure!* campaign which increases grower and applicator awareness of best management practices when handling and planting pesticide-treated seeds or making soil or foliar pesticide applications.

The member companies of Growing Matters jointly commissioned a comprehensive evaluation of the economic and societal benefits of neonicotinoid insecticides to North American agriculture, as well as trees, turf and landscape and production ornamentals. AgInfomatics, LLC, an independent agricultural consulting firm established in 1995 by professors from the University of Wisconsin-Madison and Washington State University, conducted the research and published a series of reports, resource materials and peer-reviewed articles. The Growing Matters Coalition information and data have been shared with both the Environmental Protection Agency (EPA) and the U.S. Department of Agriculture (USDA). EPA MRID 49548501.

The Growing Matters coalition, along with the listed allied organizations below, are committed to pesticide safety and the stewardship of pesticide products and appreciate the opportunity to comment on Docket EPA-HQ-OPP-2023-0428; *Petition Seeking Rulemaking for Registration of Neonicotinoid Insecticides and Other Systemic Insecticides*. Our comments will address specifically the EPA request about efficacy data as well as assertions made in the Petition.

Sincerely,
Growing Matters
CC: Ed Messina Director, OPP
Kimberly Nesci, Director, USDA OPMP

Supporting Allied Organizations:

Agricultural Retailers Association
AmericanHort
American Seed Trade Association
American Soybean Association
American Sugarbeet Growers Association
California Citrus Quality Council
California Specialty Crops Council
Council of Producers & Distributors of Agrotechnology
CropLife America
International Fresh Produce Association
National Alfalfa & Forage Alliance
National Association of Landscape Professionals
National Association of Wheat Growers
National Barley Growers Association
National Corn Growers Association
National Cotton Council
National Onion Association
National Sorghum Producers
Southern Crop Production Association
U.S. Canola Association
U.S.A. Rice

Growing Matters' Responses to the PEER and ABC Petition (The Petition)

Since their introduction in the mid-1990s, neonicotinoids have become the most widely used class of insecticides due to efficacy against sucking insects that transmit plant diseases, selectivity to beneficial insects, flexibility in application methods, and favorable safety profiles compared to older classes of chemistry. From their introduction, the potential hazard to bees has been known; neonicotinoids must be used with appropriate labeled precautions to ensure that they do not pose unreasonable risk. Additional protections have been accomplished by improvements in formulation technology, application methodology, labeling restrictions, stewardship, and best management practices.

Lack of Publicly Available Efficacy Data

Prior to the launch of a product in the market, in addition to human and environmental safety studies pesticide registrants conduct an extensive number of field efficacy trials across a wide range of geographies and climatic conditions to demonstrate activity against various crop insect pests in with both private and public testing organizations. The statement by the petitioners that there is frequent lack of effectiveness of the systemic neonicotinoid insecticides demonstrates a narrow view of land-grant university results and recommendations as well as farmer and retailer evaluations. The current system of land-grant university field testing and recommendations should continue to be the standard method for efficacy recommendations rather than having EPA evaluate field trial results.

Most of the field trials conducted by public land-grant universities evaluate insect pest control efficacy, potential phytotoxicity (crop injury) and, when appropriate, yield. (*"A land-grant (or Extension) university is an institution that provides research-based programs and resources for residents within their state. There is at least one land-grant institution in every state and territory of the United States, as well as the District of Columbia. The purpose of a land-grant university is to provide readily available, research-based programs and educational resources with the goal of improving the lives of the individuals, families, and communities within the state."*)

(<https://extension.usu.edu/news/purpose-and-benefit-of-land-grant-extension-universities>)

The extension research programs operating within the land-grant institutions are critical for providing growers with unbiased evaluations of the performance and benefits of pesticide products within their states. These data are provided in public reports and are used by extension to rate a pesticide's efficacy, usually from fair to excellent. If a pesticide product does not meet the minimum efficacy requirements for that geography, it is not listed or recommended in that state by either the extension service or the registrant. Therefore, despite the enormous amount of performance data a pesticide registrant generates via internal or private contract research, registrants still work with the land-grant extension service to verify performance prior to product launch and sales.

Additionally, farmers and retailers also evaluate products in their fields to determine the value in their situation and make informed decisions based on the results. As stated in one of the studies used in the 2020 Cornell University report, ([166] W. J. Cox and J. H. Cherney. Location, variety, and seeding rate interactions with soybean seed-applied insecticide/fungicides. *Agronomy Journal*; Madison, 103(5):1366–1371, Sep 2011. ISSN 00021962) *"The results of this study are site specific, so growers should conduct strip tests to determine if soybean seed*

treatments or rhizobia inoculants are beneficial, given their production practices, soil resources, and risk tolerance."

The Value of Neonicotinoid Insecticides in North American Agriculture - A Meta-Analysis Approach to Estimating the Yield Effects of Neonicotinoids – AgInfomatics (chrome-extension://oemmndcbldboiebfnladdacbfmadadm/https://growingmatters.org/wp-content/uploads/2017/04/report-aginfomatics-metaanalysis-yield-report-2014.pdf) (www.growingmatters.org)

AgInfomatics, LLC prepared a comprehensive economic analysis of more than 1,500 field studies conducted over 20 years. The results of the study found that neonicotinoid insecticides provided average yield increases ranging from 3.6 to 71.3 percent in eight major crops across North America, including corn, soybean, wheat, cotton, sorghum, canola, potato, and tomato. The data for this study were collected from three primary sources: 1) Results from the Entomological Society of America's Arthropod Management Tests (AMT) (<https://academic.oup.com/amt>) which are publicly available and peer reviewed, 2) Registrant databases of public efficacy experiments conducted by land-grant university researchers and 3) published literature from peer-reviewed journals and other university reports. The research results indicated the average yield benefit of using neonicotinoids far exceeds the cost of treatment and delivers a substantial economic return on investment to the farmer.

2020 Cornell University Report - (waterfrontonline.files.wordpress.com/2023/10/cornell2020studybees.pdf)

In the Petition, it is stated that "a 432-page, 2020 report by Cornell University's College of Agriculture and Life Sciences found that the "routine use of neonicotinoid-treated seeds does not consistently increase net income for New York field corn or soybean producers." "Even when compared plots using no insecticides, 89% of the field trials in the Cornell study saw no increase in corn yield using neonicotinoid-treated seeds." However, in contrast to the Petition where it was claimed that farmers do not see a value in neonicotinoid-treated seeds, page 81 of the 2020 Cornell University report states: "Switching from neonicotinoid-treated seeds to a soil-applied preventive insecticide would be difficult for some New York corn growers. Neonicotinoid-treated seeds have been widely available for more than two decades, and growers have invested in agricultural equipment and cropping systems appropriate for that technology. For instance, applying insecticides while planting requires planter attachments or other equipment not needed to use pre-treated seeds. Other costs associated with a shift to soil-applied insecticides could include additional labor costs associated with pesticide storage and use and greater health risks to farm workers who handle insecticides."

Compared to the AgInfomatics study, The Value of Neonicotinoid Insecticides in North American Agriculture - A Meta-Analysis Approach to Estimating the Yield Effects of Neonicotinoids (Tables 1 and 2), the 2020 Cornell University report had many fewer U.S. corn and soybean studies (Appendix A). In the AgInfomatics study, the average yield benefits from neonicotinoid seed treated was an increase of 17.4% for corn and 3.6% for soybeans, which is significant for row crop farmers. See Table below for summary of cited U.S. field studies.

Crop	Cornell University Cited U.S. Studies (% of AgInformatics Cited Studies)	AgInformatics Cited U.S. Studies Neonicotinoid vs. Untreated Control
Corn	58 studies (20%)	291 studies
Soybean	96 studies (33%)	289 studies

In 2020, Growing Matters reviewed the 2020 Cornell University Report and made the following conclusions about the report as it relates to farmer practices:

- The concern with the data used in the 2020 Cornell University report is whether insecticides were included in each of the studies as well as determining the insect pressure in the studies. As an example, there were limited New York field data studies, with only three studies for corn and three studies for soybeans and there was no indication if insects were present in the studies.
- It was unclear from the Report how pest control decisions were made. The Report did not consider other economic decisions relative to the costs of using seed treatments and other seed technologies.
- The Report did not consider EPA conclusions that seed treatments are low risk to pollinators.

Seed Treatments - Integrated Pest Management (IPM) and Insecticide Resistance Management (IRM)

In the Petition, claims were made that the use of seed treatments “violated IPM principles which call for economic thresholds to be set ahead of a growing season and require the use of chemical control only as a final resort after other control methods have been exhausted.” It was also stated that “Agricultural officials have repeatedly recognized that the prophylactic and preemptive use of systemic insecticides is incompatible with IPM programs because their use is not predicated on a demonstrated threat from a pest that would breach the set economic thresholds.” Neither of these generalized statements cite information sources.

Insecticide seed treatments must be used prophylactically or preventatively to protect the seed and seedling from soil inhabiting and early season insect pests. There are no rescue treatments, other than re-planting once the crop has been infested. Insecticide seed treatments provide the farmer with an economical level of risk management and a means of protection of the seed and seedling against early season, soil-dwelling, and above-ground insect pests. This reduces the need for a grower to apply rescue treatments, if any are available or replant a failed crop. Farmers report that they can often plant large acreage crops such as cotton, corn, and soybeans earlier and more quickly by using treated seed. Early season seed and seedling protection typically result in stronger, more uniform stands, healthier plants, and higher crop yields.

The USDA National Integrated Pest Management Roadmap 2018 states that “Integrated Pest Management (IPM) is a sustainable, science-based, decision-making process that combines biological, cultural, physical, and chemical tools to identify, manage and reduce risk from pests.” The pest management tools and programs utilized are intended to minimize overall economic, health and environmental risks(https://www.ars.usda.gov/ARSPUserFiles/OPMP/IPM_Road_Map_FINAL.pdf). Insecticide seed treatments contribute to IPM by managing pest damage with the least possible hazard to people, property, and the environment.

A literature review by Sappington et al. (2018), “Prevalence of Sporadic Insect Pests of Seedling Corn and Factors Affecting Risk of Infestation,” provides an excellent overview of the relevance of insecticide seed treatments to IPM and should be reviewed by all who are interested in this topic. The authors looked at the complexity of whether using a preventative insecticide treatment, such as a seed treatment, is compatible with IPM. Two conditions must be met: 1) rescue treatments are not an option, and 2) the pest is likely to cause economic damage. For seven of the sixteen insect pests evaluated, there were no realistic rescue tactics available, and only one of the sixteen insect pests was not soil-dwelling, making it even more difficult for farmers to scout for potential threats to their crop.. Economic Injury Levels are typically developed for single pests and have not been designed to assess simultaneous pressure from multiple pests in corn. The literature survey suggested that the pressure for many of the pests on corn seedlings is seldom high enough to cause detectable yield losses, but, at a field level, an attack can be costly for an individual farmer. Another consideration is that corn seedlings are particularly vulnerable to injury, and many of the early season insect pests can damage corn seedlings and lead to an expensive replant situation. Use of a soil insecticide or seed treated with insecticide might be recommended in replant situations.

In January 2024, the Agricultural Innovation Board and the Vermont Agency of Agriculture, Food & Markets released their annual report (https://legislature.vermont.gov/assets/Legislative-Reports/AIB-Annual-Report-CY-2023_final.pdf). The focus of the work is centered on recommendations for regulations establishing best management practices for seeds treated with insecticides used in Vermont. With regards to pest control, they evaluated “establishment of thresholds of pest pressure prior to the use of neonicotinoid treated article seeds” and “surveillance and monitoring techniques for in-field pest pressure.” Both aspects fall under the tenets of integrated pest management. Some of the report’s findings, as follows, demonstrate the ongoing challenges for farmers in Vermont and the rest of the U.S. in making management decisions for soil inhabiting and early season insects.

- *“Seed purchasing occurs months ahead of the season (September – November prior to April/May planting). Therefore, scouting the field for pests in the current year cannot influence what type of seeds to purchase and plant. Also, the previous year’s pest pressure levels are not a clear indicator of pest levels in the current year.”*
- *“It is very challenging to monitor soil pests to determine if threshold values are exceeded within the window of time prior to planting in Vermont.”*
- *“Few methods are available for scouting for corn seed maggot and no economic thresholds are established for this pest.”*
- *“Corn seed maggot is unpredictable. It can appear before or after planting. Corn is vulnerable to corn seed maggot damage 7-30 days from planting, and there is no insecticide rescue treatment.”*
- *“Wireworm bait traps within the field help scout for the pest and have an established economic threshold of an average of 1 wireworm per bait station for the whole field.”*

For soybean aphid control, an invasive pest, neonicotinoid seed treatments are part of an IPM approach utilizing both chemical and biological controls. As noted by Bahlai et al (2015) in the paper “Shifts in dynamic regime of an invasive lady beetle are linked to the invasion and insecticidal management of its prey,” when neonicotinoid seed treatments were used across multiple states, the soybean aphid populations trended to be lower. This was attributed to a smaller soybean aphid population following neonicotinoid seed treatments and biological control by the Asian lady beetle, a predator of soybean aphid.

In their 2020 paper “The value of insect management to US maize, soybean and cotton farmers” Hurley and Mitchell examined factors farmers used when making pest management decisions. Farmers that used seed treatments were making pest management decisions months prior to planting, which is a risk based IPM approach. With this approach, there is no right or wrong determination; it depends on the farmer’s perception of risks and benefits. In addition to factors such as yield and costs, farmers consider other factors such as economic risk, human safety, and environmental safety, which are elements of IPM programs.

As with any insecticide tool, the best resistance management strategy is to avoid repeated sequential uses of insecticides (seed treatment, soil application and foliar application) with a single mode of action for season-long control of any target insect species that has more than one generation per crop per season. Since insecticide seed treatments are targeted against soil insect pests and early season insect pests and activity lasts for a few weeks after planting, insecticide seed treatments do not have biological activity the entire season and fit well within an Insect Resistance Management (IRM) program.

Risk and Benefits

In the Petition, claims were made that EPA has not been adequately equipped to “make regulatory judgments” regarding “the risks and benefits of pesticide products”. EPA conducts numerous risk assessments during the registration process, which include human safety, ecological, and pollinator risk assessments. The neonicotinoids are currently in registration review and the information for this work can be found on the EPA website page Schedule for Review of Neonicotinoid Pesticides (<https://www.epa.gov/pollinator-protection/schedule-review-neonicotinoid-pesticides>). In addition, EPA’s Biological Economic and Analysis Division (BEAD) reviews pesticides risks and benefits. According to the EPA website (<https://www.epa.gov/pesticide-contacts/contacts-office-pesticide-programs-biological-and-economic-analysis-division>), BEAD “provides pesticide use-related information and economic analyses in support of pesticide regulatory activities.” For neonicotinoids and other systemic insecticides, BEAD has provided comprehensive reports supporting the benefits on various crops. In the neonicotinoid preliminary interim decisions, the EPA stated that “In general, risks of neonicotinoid seed treatments to honey bee colonies are considered low.” It should also be noted that in the Petition, the authors cited the Benefits of Neonicotinoid Seed Treatments to Soybean Production published in 2014 and did not cite the follow up document which did demonstrate benefits: Myers, C., Mallampalli, N., Wyatt, T.J. (December 17, 2017) “Biological and Economic Analysis Division (BEAD) Response to Public Comments Submitted in Response to BEAD's Assessment entitled "Benefits of Neonicotinoid Seed Treatments to Soybean Production" Dated October 15, 2014, OPP Docket: EPA-HQ-OPP-2014-0737)” (<https://www.regulations.gov/document/EPA-HQ-OPP-2014-0737-0948>).

U.S. Endangered Species Act

U.S. Endangered Species Act (ESA) & Section 7 Consultation states that “Section 7 of ESA requires federal agencies to ensure that actions they authorize, fund, or carry out do not jeopardize the existence of any species listed under the ESA, or destroy or adversely modify designated critical habitat of any listed species.” The neonicotinoids are currently undergoing the Section 7 consultation process. The Biological Evaluations (BE) from the EPA that considered Jeopardy/Adverse Modification for clothianidin, imidacloprid and thiamethoxam came to the following conclusions - EPA predicts that use may cause jeopardy to 9% - 11% of listed species and adversely modify 3% - 4% of critical habitats. These results do not imply that any of the identified species are going extinct.

Details can be found in this link <https://www.epa.gov/pesticides/epa-takes-next-step-endangered-species-act-review-three-neonicotinoids>. Only one bird was identified to which the neonics may cause jeopardy, the Atwater Prairie chicken, which has a limited range in Texas. There were no mammal species listed as “may cause jeopardy.” It is also important to note that EPA’s Jeopardy analysis did not fully consider exposure mitigation measures that are currently included on product labels or additional mitigation measures that could be included in the future. During the consultation process with the Services (US Fish and Wildlife Service and National Marine Fisheries Service), the registrants will discuss various agricultural practices, mitigations, and potential off sets to ensure that there is minimal impact of farming practices on listed species. As this is a complex process, there has been a lot of misinterpretation from groups as to what the actual BE numbers signify.

Treated Article Exemption (Docket EPA-HQ-OPP-2023-0420)

The treated article exemption has allowed for safe use of seed treatments for decades. The exemption does not mean that seed treatments are not regulated. Seed treatments go through the same rigorous evaluation process as all pesticides. In addition, the potential impacts of treated seeds on non-target organisms (such as to birds due to potential ingestion of treated seed or to pollinators due to potential dust-off) are assessed as part of the registration process.

From a stewardship point of view, it is also important to note that seed tag language already specifically addresses the proper handling, storage, and disposal of treated seeds, as well as use restrictions. Additionally, the American Seed Trade Association and Crop Life America jointly produced *The Guide to Seed Treatment Stewardship*, (<https://seed-treatment-guide.com/>) which provides farmers and seed companies with up-to-date guidelines on how to comply with all pesticide registrations and how to safely use and dispose of treated seeds to minimize environmental impacts. The American Farm Bureau Federation, National Corn Growers Association, and American Soybean Associations endorse the guide, and both EPA and U.S. Department of Agriculture have applauded the initiative.

Growing Matters BeSure! Pollinator Stewardship Campaign – (<https://growingmatters.org/besure>)

This campaign is entering its sixth year and communicates to applicators, growers and other pesticide users’ best management practices when handling and planting seeds that have been treated with neonicotinoid insecticides or when applying soil or foliar applications of neonicotinoid products during the growing season of agricultural crops, ornamentals and turf. The BeSure! campaign delivers information to growers, applicators, and other pesticide users across several different communication platforms such as digital ads, print media, radio segments, shareable content, social media, and trade shows. This approach ensures that the BeSure! campaign is reaching a large portion of the target audience when they are planting and making pesticide applications.

Europe

In the Petition, a claim was made “that studies were confirmed by comparing crop production in the European Union (EU), which banned most neonicotinoid seed coatings in 2015. The production of maize and oil seed rape, two most widespread EU row crops) did not suffer after the ban.” The information does not describe in detail if the increase in production was due to more hectares being planted.

However, a study was conducted in 2017 by HFFA Research (<https://hffa-research.com/>), an independent scientific consultancy on key issues in global agriculture, environment, and development, on “Banning neonicotinoids in the European Union, a post assessment of environmental and economic costs”. This study looked at 13 relevant clusters of scientific studies evaluating the agronomic impacts of the ban of neonicotinoids in the European Union. Their conclusions were that a ban on neonicotinoids caused a yield decrease in oilseed rape in the EU with impacts ranging from less than one to more than 20 percent. Crop quality was also affected with smaller seeds and lower oil content, which led to a price difference of 36.5 Euros per ton affected.

References Cited

- Bahlai, C.A., W. vander Werf, M. O’Neal, L. Hemerik, and D.A. Landis. 2015. Shifts in dynamic regime of an invasive lady beetle are linked to the invasion and insecticidal management of its prey. *Ecol Appl.* 25(7):1807-1818.
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