

March 8, 2023

Agriculture and Policy Committee
Minnesota House of Representatives
100 Rev. Dr. Martin Luther King Jr. Blvd.
Saint Paul, MN 55155

Testimony of Louis Robert, Former Agronomist at the Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec (MAPAQ), and Dr. Geneviève Labrie, PhD, Centre de Recherche Agroalimentaire de Mirabel (CRAM)

Dear Chair Vang and the Agriculture Finance and Policy Committee:

The undersigned individuals provide the following testimony regarding our experience with neonicotinoid-treated corn and soybean seeds in Québec, the science regarding their lack of benefit to farmers, and our personal experience with industry interference in exposing the truth of that science.

Louis Robert is an agronomist and grain crops specialist, who worked with the Department of Agricultureⁱ in the Province of Québec, Canada, for 33 years. Dr. Geneviève Labrie, PhD, has been a researcher at the Centre de Recherche Agroalimentaire de Mirabel (Mirabel Agricultural Research Center, "CRAM") in Québec, Canada since 2018. Between 2008 and 2017, she conducted research as an entomologist at the Field Crop Research Center (CÉROM), where she developed integrated pest management strategies against field crop insect pests. Dr. Labrie has published extensively on the subject of crop pests and pest control methods.

The Experience in Québec and the Science Regarding Neonicotinoid-Treated Seeds

As of April, 2019, the Department of Environment of the Province of Québec made it mandatory for anyone wishing to use neonicotinoids to produce a written recommendation from one of the Province's 3,300 registered agronomists. In its pre-bylaw consultations, the Department had made it clear that the use of those chemicals would be restricted, based on their proven acute toxicity to the environment and public health concerns. Before these restrictions, the vast majority (80-90 %) of the corn, soybean, and canola acreage (approximately 2 million acres) in Québec were planted with seed coated with the neonicotinoids clothianidin, imidacloprid, or thiamethoxam. Residues of any one or combinations of those molecules were detected in significant concentrations in over 90% of samples collected in rivers and streams being monitored by the Department.

This "verification of need" requirement resulted in substantial reduction in use of neonic-treated seeds. The seed suppliers reacted very swiftly to this regulatory change, having seen it coming. As soon as 2019, most corn and soybean seeds used in Québec were no longer carrying any neonicotinoids. (All corn seed and a major part of the soybean seed sold in Québec is grown in Ontario or the U.S. Midwest). In 2020, Québec farmers used neonicotinoids on about 2% of their fields.ⁱⁱ As a result, neonicotinoid contamination of surface waters decreased significantly.

Prior to those regulatory initiatives, word had already spread around that insecticide-treated seeds may not bring any advantages to Québec farmers, at least among crop advisers and top cash croppers. Dr. Labrie led a large research project carried out from 2012 through 2016 (5 cropping seasons) in 7 different regions, which found no significant difference in yield treated

and untreated plots of corn across all sites and years. Soybean plots similarly showed no statistically significant benefit of neonic seed treatments (see attached study). Continued monitoring of about 1000 sites confirms that main soil pests (wireworms and seedcorn maggot) are below economic thresholds in 92% of cases in Québec, with no damage to seedlings, regardless of whether seeds were treated or not. Four-year research just completed in 2022 by Dr. Labrie's team in sweet corn also demonstrated no yield differences in 24 side-by-side trials, while soil insect pests were three times higher in abundance in those fields than in field corn or soybean.

Dr. Labrie's findings are consistent with other studies conducted in the U.S. and Canada. For example, [Pacenka et al. \(2021\)](#) found in another four-year Purdue University study that "the absence of a neonicotinoid [corn] seed treatment had no impact on yields." [Smith et al. \(2020\)](#) concluded after a 4-years study of 160 corn and soybean fields in Ontario "that widespread use of seed-applied insecticides in corn and soybean is unlikely to provide benefit to producers." [Mourtzinis et al. \(2019\)](#) found that "despite widespread use," neonic seed treatments in soybean "appear[] to have little benefit for most of soybean producers." [Krupke et al. \(2017\)](#) found that three years of field studies in Indiana "failed to demonstrate a significant benefit of planting treated maize seeds." The [U.S. Environmental Protection Agency](#) found as long ago as 2014 that "these seed treatments provide negligible overall benefits to soybean production in most situations. Published data indicate that in most cases there is no difference in soybean yield when soybean seed was treated with neonicotinoids versus not receiving any insect control treatment." Each supports the conclusion that neonic seed treatments in corn and soybean often provide no benefit to farmers, but instead serve as unnecessary (but paid) insurance that contaminates whole ecosystems with harmful pesticides.

Substitution of Diamides for Neonics

After Québec imposed "verification of need" requirements for neonicotinoids in 2019, many farmers switched to seeds treated with another class of insecticides, the diamides (cyantraniliprole, chlorantraniliprole). Seed company officials stated that in 2021, at least 60% of the corn fields were planted with diamide-coated seed. However, this still marks a considerable decrease in the total use of insecticide-treated seeds from the period before the neonicotinoid restrictions took effect. While diamides are seen as less dangerous than neonics in some ways, they pose some of the same risks as neonics. They are equally persistent and water soluble, toxic to bees, and are extremely toxic to butterflies and aquatic life.

But Dr. Labrie's research suggests that the diamides are no more useful to farmers than neonicotinoid-treated seeds. Neonicotinoids were the active ingredients in all trials, but the fact that the non-treated plots did not yield less than the treated ones (despite the presence of significantly more targeted insects) made it clear that the conclusions would hold true for any class of insecticides. Higher pest presence did not decrease yield, so insecticide use was not necessary at all. This conclusion demonstrates the importance of Integrated Pest Management—the use of chemical control methods only when pests are present past a certain threshold. Soil pests reach this threshold in Quebec on only 5-8% of acres.

Since the neonicotinoid regulations were implemented in the Province and other research has emerged, farmers, agronomists, as well as the general public are much more aware of the risks of insecticide-treated seeds from an environmental and public health standpoint as well as their uselessness. However, because seed companies have shifted to diamide-treated seeds and diamides are increasingly showing up in water at harmful levels, the Minister of Environment

just requested a modification to the Pesticide code (Code de gestion des pesticides) to require verification of need for all seed insecticides and fungicides to protect water and bees.ⁱⁱⁱ

Personal Experience with Industry Interference with Research

On January 24th, 2019, Mr. Robert was fired for having leaked (in March 2018) an internal memo to the press. In that memo, Mr. Robert warned the deputy minister of the interference that the industry exerted to prevent the publication of public funded research that showed no advantages from the use of neonicotinoids. His firing sparked a cascade of news reports in various medias and the installment of an official inquiry by the inspector general of Quebec. The report issued in June 2019 publicly cleared him: in the months and years prior to going to the media, he had gone through (unsuccessfully) all the appropriate procedures detailed in the Whistleblowers Act^{iv} of May, 2017, and was fully in his right in going to the press.

Official apologies from the Minister (Secretary) André Lamontagne and Prime Minister François Legault shortly followed, along with full compensation and his re-installment at his position, on August 6th, 2019.

He carried on his duties at MAPAQ until his retirement in 2022. Since the time that he initially leaked the memo, the science has only grown stronger that seeds treated with neonicotinoids provide no benefits to Québec farmers.

During the same period, Dr. Labrie experienced high pressure from members of the board of directors of the CEROM to not publish her scientific results on neonicotinoids impacts on yields (the attached study). Some directors were also on the board of Grain farmer organization. The harassment she suffered for many months led her to leave the research center in 2017. Four other researchers did the same that year, as well as 17 other technicians and research professionals. After leaving, Dr. Labrie fought to recover the copyright of the study and she eventually succeeded in publishing the results in 2020. This situation led to a cascade of reports in various media and another official inquiry by the inspector general of Quebec. This report has not been published yet, but this led to many changes in the rules of ethics for public research center such as the CÉROM.

Sincerely,

/s/ Louis Robert

Louis Robert
Agronomist



Dr. Genevieve Labrie, PhD

ⁱ Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec- MAPAQ.

ⁱⁱ Ministère de L'Environnement et de la Lutte Contre Les Changements Climatiques, *Bilan des Ventes de Pesticides Au Québec* (2020), <https://bit.ly/3ZnhNUd>.

ⁱⁱⁱ Gazette Officielle de Québec, Partie 2: Loie et Reglements p. 426 (Feb. 22, 2023), https://www.publicationsduquebec.gouv.qc.ca/fileadmin/gazette/pdf_encrypte/gaz_entiere/2308-F.pdf (In English, via Google Translate: “To ensure better protection of aquatic life and bees, seeds coated with insecticides from the diamide family would be covered by the agronomic justification and prescription already applicable for seeds coated with neonicotinoids. The planting of seeds coated with fungicides (class 3B) would also be supervised. The addition of financial administrative penalties and the adjustment of penal provisions are also planned.”).

^{iv} Loi facilitant la divulgation d’actes répréhensibles à l’égard des organismes publics.