



Saskatchewan
Environmental
Society

Saskatchewan Environmental Society Policy Statement on Neonicotinoids

Prepared by the Saskatchewan Environmental Society

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The Saskatchewan Environmental Society encourages the Saskatchewan government to follow the lead of Ontario by launching a policy development process aimed at sharply reducing the use of neonicotinoid insecticides in Saskatchewan and protecting Saskatchewan's pollinators.

Ontario's rules are in effect as of July 1, 2015 and will be gradually phased in over two years. Ontario's regulations focus on the two crops in that province where neonicotinoids are most heavily used: corn and soybeans.

Neonicotinoid seed sellers in Ontario will need to obtain a treated seed vendor's license, submit annual sales reports to the Ontario government, and ensure that farmers meet the requirements for using treated seeds. Vendors will also need to ensure they make untreated seeds available for purchase, thus assuring that farmers have seed options that are free of neonicotinoids.

By 2017 farmers in Ontario will not be able to use neonicotinoid treated seed for corn and soybean crops unless they complete a course in integrated pest management, sign a written declaration that integrated pest management principles have been considered, and complete a pest assessment report on their property. Farmers will need to file relevant documents in this regard with seed vendors.ⁱ

The Ontario government's goal is to reduce the acreage planted in neonic-treated corn and soybean seed by 80% within two years.ⁱⁱ

Neonicotinoids are the world's most widely used insecticides. Based on the research coming out of other jurisdictions, and based on the levels of neonicotinoids being found in surface waters in Saskatchewan, the Saskatchewan Environmental Society has concluded that neonicotinoids pose a significant risk to Saskatchewan's wild pollinators and to entire ecosystems. There is every reason to be concerned about the impact these chemicals are having on birds, wild bees, butterflies and aquatic life in Saskatchewan.

Mounting evidence on the safety risks posed by neonicotinoids has been sufficiently great that the European Union Commission introduced a two year ban on three neonicotinoids in 2013.ⁱⁱⁱ

In Saskatchewan there is significant use of neonicotinoids on cereal and pulse crops and the chemicals are also utilized on a number of flowers, fruits and vegetables. Seeds of canola, wheat, barley, oats and field pea crops are regularly treated with neonicotinoids. The most extensive application of neonics is on Saskatchewan's canola crop, where the estimated usage rate is 98%.

In all, over 40% of Canadian prairie crop land is treated with neonicotinoids each year.^{iv}



Neonicotinoids are nerve poisons. They are systemic pesticides, so the chemical being applied migrates to all parts of the plant as it grows, including spreading to the nectar and pollen of flowering plants.

The Saskatchewan Environmental Society has surveyed key research findings on neonicotinoids in many other jurisdictions, as well as in Saskatchewan. These findings are as follows:

- 1) Evidence is pouring in from around the world that neonicotinoids are endangering pollinators and the organisms that create healthy soils. Neonicotinoids are very pervasive and there are multiple routes of exposure. They can contaminate air via dust thrown up during planting. Seeds treated with neonicotinoids can be eaten by birds. Pollen and nectar can be contaminated. And local streams and rivers are often impacted as the insecticide washes off fields into them. ^v
- 2) When neonicotinoids are applied, most of the active ingredient is not taken up by the crop. Rather it is taken up by the surrounding soil and soil water. The half-life of neonicotinoids in soil can exceed 1,000 days, with the result that insecticide levels accumulate with time. ^{vi}
- 3) Neonicotinoids block a part of the brain that honey bees use for learning. Bee neurons can be impacted within 20 minutes of exposure.
- 4) Bees cannot protect themselves against neonicotinoids. Unfortunately, they cannot taste the insecticides and are not repelled by them, leaving them highly vulnerable. Treating flowering crops with neonicotinoids thus presents a sizeable hazard to foraging bees. ^{vii}
- 5) Bumblebees that are exposed to neonicotinoids experience a significant decline in the amount of pollen they harvest, and have lower body mass than unexposed bees. Bumble bee hive queens suffer losses, and there is a reduction in bumble bee colony growth. ^{viii}
- 6) Applications of neonicotinoids to canola seeds has been shown to have serious consequences for wild bees under real field conditions. These applications reduced wild bee density and solitary bee nesting. ^{ix}
- 7) Neonicotinoids are water soluble. They have high potential to move beyond the treated area and run into soil and aquatic habitats. ^x Wild plants growing in agricultural field margins can be negatively affected, as well as downstream aquatic organisms and inhabitants of riparian zones.
- 8) During the spring, neonicotinoids are being detected in the majority of prairie wetlands sampled thus far. ^{xi} Neonicotinoids are frequently found at concentrations known to have chronic and acute effects on aquatic life. ^{xii}



- 9) Neonicotinoids are showing up in Saskatchewan wetlands even before spring planting begins. This is not a good sign. It means non-target species are being exposed over lengthy periods of time. ^{xiii}
- 10) Evidence in other parts of the world suggests that when neonicotinoids are present in surface waters at concentrations of 20 nanograms per litre or more, insect eating birds suffer. For instance, at these concentrations a Dutch study found a decline in bird populations averaging 3.5% per year. ^{xiv} Concentrations of neonicotinoids in Saskatchewan wetlands frequently exceed 20 nanograms per litre, and are often significantly higher. ^{xv}
- 11) Seeds treated with neonicotinoids can be toxic to birds if ingested.
- 12) Earthworms are being negatively impacted by neonicotinoids. Their ability to tunnel is disrupted.
- 13) Evidence from around the world demonstrates that the negative impacts of neonicotinoids cascade through ecosystems, weakening their stability. Important soil and freshwater functions can be disrupted including litter break down, nutrient cycling, biological pest control and pollination services. ^{xvi}

We think these findings clearly justify the provincial government bringing a halt to the widespread and indiscriminate use of neonicotinoid-based pesticides in Saskatchewan. The Province should develop regulations that strictly limit the use of neonicotinoids to circumstances where a pest problem is present.

It is also important that the Saskatchewan government intervene to ensure farmers have the right to access seed that is free from neonicotinoid treatment. We have a particular problem with respect to neonicotinoid use on canola in Saskatchewan. We have reached the point now where 98% of canola seed is treated with neonicotinoids. There is no sound rationale for putting neonics on all seeds. The Saskatchewan government should take steps to guarantee Saskatchewan farmers the right to purchase canola seed that is neonic-free, if they wish to do so.

Seed treatment increases the risk of insecticide resistance. Instead, the Saskatchewan government should be encouraging the use of integrated pest management.

Part of the problem with neonicotinoids has been that the Government of Canada allowed toxicity testing to be done with the daphnia magna water flea. It turns out these fleas are 1,000 times less sensitive to neonicotinoids than most other invertebrates, setting up a situation where the ecological impact of neonicotinoids was underestimated.



References

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- ⁱⁱⁱ “Bee-harming pesticides banned in Europe”, *The Guardian* (United Kingdom), April 29, 2013.
- ^{iv} “Widespread Use and Frequent Detection of Neonicotinoid Insecticides in Wetlands of Canada’s Prairie Pothole Region”, Anson Main, John Headley, Kerry Peru, Nicole Michel, Allan Cessna and Christy Morrissey, *PLOS*, March 26, 2014. doi:10.1371/journal.pone.0092821 The authors note that by 2012 applications of neonicotinoids covered an estimated 11 million hectares, 44% of prairie cropland.
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- ^{vii} “Bees prefer foods containing neonicotinoid pesticides”, Sebastien Kessler, Erin Jo Tiedeken, Kerry Simcock, Sophie Derveau, Jessica Mitchell, Samantha Softley, Jane Stout and Geraldine Wright, *Nature: The International Journal of Science*, May 7, 2015.
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Note: 20 nanograms per litre is equivalent to 0.02 parts per billion.
- ^{xi} Ibid.
- ^{xii} Presentation by Dr. Christy Morrissey, University of Saskatchewan, to the Saskatchewan Environmental Society Water Committee, February, 2015. Dr. Morrissey discussed with SES the results of her research findings on neonicotinoid use in Saskatchewan.
- ^{xiii} Ibid
- ^{xiv} “Be concerned: A possible link between neonicotinoid pesticide use and a decline in bird numbers is worrying”, Editorial, *Nature: The International Journal Weekly Journal of Science*, July 10, 2014.



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