



# Fact Sheet

## Neonicotinoid Pesticides and Pollinators

### Why is it important to Nature Alberta?

Nature Alberta's vision is that *Alberta's natural heritage is widely enjoyed, deeply appreciated and thoroughly protected*. Our mission is to be a *strong voice for the greater appreciation and conservation of Alberta's natural environment*. One of our guiding philosophies is that *all native species of animals and plants have a right to co-exist with Albertans*. The use of *neonicotinoid pesticides puts increased stress on pollinators and non-target insect species which has shown to have negative effects on bird populations*. The *negative impacts that neonicotinoids have on species such as insects and birds will diminish the social, economic and environmental viability of our province, for current and future generations*.



Photo Courtesy: John Acorn

### What is the Issue?

**Pollinators** are organisms that transfer pollen from a male flower to a female flower to achieve fertilization. More than 30% of the world's agricultural produce is fully dependent on pollinators. Although most research and media attention is focused on bees, there is a huge number of other native organisms that are responsible for pollination. Recently, there has been growing concern about the health of pollinators. Most current research suggests that pollinator health declines are due to a number of different factors such as pests, viruses, diseases, pesticides and loss of habitat and food sources. This fact sheet will focus on the effects of only one contributing factor, pesticides.

In the past two decades there has been an increase in the use of neonicotinoid pesticides. **Neonicotinoids** are present in approximately 25% of agricultural and household insecticides, including flea control formulas for pets. Neonicotinoids act by over stimulating and blocking receptors in the central nervous system of insects, which causes paralysis and death. Neonicotinoids in Alberta are most commonly used as a seed coat to protect seedlings against soil insects. The neonicotinoid then goes into the >



Photo Courtesy: John Acorn

tissues of the plant to protect it against piercing and sucking insects. For agricultural producers that grow the food we eat, these pesticides have become an important tool for preventing crop loss to insect pests. However, trace amounts of neonicotinoids can be found in the pollen and nectar of the treated plant which can have non-lethal negative effects such as reduced performance in honeybees. Additionally, large amounts of the neonicotinoids that are applied to fields worldwide can end up in the surrounding soil and groundwater. The neonicotinoids can persist for several years in the soil and have been observed above the lethal doses to beneficial pollinators. Neonicotinoids have also been negatively correlated with the health of birds. It is not yet known whether this is a direct effect (neonicotinoids causing toxicity to the birds) or an indirect effect (less insects for the birds to feed upon).

## Who is responsible for resolving this issue?

At the Federal level, the Pest Management Regulatory Agency of Health Canada is responsible for evaluating the impact that pesticides have on the environment and human health. This includes the products toxicology and environmental fate. In 2013, the European Union implemented a 2 year ban on the use of three neonicotinoids pesticides so that further investigation into their environmental risk could be performed. In Alberta, the Province is responsible for issuing sale, storage and application permits for pesticides and creating use restrictions. At the municipal level, bylaws can be created to restrict the use of pesticides. Provincial and municipal bylaws that restrict the cosmetic use of pesticides have been growing in number. These bylaws are often influenced by residents expressing concern to their local member of parliament. Agricultural producers are also responsible for resolving this issue. The decision to stop using neonicotinoid pesticides altogether would be optimal. However, for many producers this would cause financial devastation and large crop losses. Tools such as economic threshold and best management practices for pesticide application should be used.

## What other organizations are involved?

A number of complex factors are contributing to pollinator health concerns. An equally complex number of researchers, landholders, industries, conservation organizations and government agencies are working to resolve this issue. Health Canada provides some excellent resources:

Health Canada: [\*\*Pollinator Protection, Reducing Risk From Treated Seed, Update on Actions to Protect Bees from Exposure to Neonicotinoid Pesticides \(Notice of Intent\)\*\*](#)

## REFERENCES

Cresswell, James E. (2011) A meta-analysis of experiments testing the effects of a neonicotinoid insecticide (imidacloprid) on honey bees. *ECOTOXICOLOGY*. Volume: 20 Issue: 1 Pages: 149-157.

Food and Agriculture Organization of the United Nations. Pollination in Agriculture. Retrieved [online](#) on Nov. 6, 2014.

Goulson, Dave. (2013). REVIEW: An overview of the environmental risks posed by neonicotinoid insecticides. *JOURNAL OF APPLIED ECOLOGY*. Volume: 50, Issue: 4, Pages: 977-987

Gross, Michael. (2014) Systemic pesticide concerns extend beyond the bees. *Current Biology*. Volume 24, Issue 16, Pages R717–R720

US Environmental Protection Agency. 2013. Colony Collapse Disorder: European Bans on Neonicotinoid Pesticides. Retrieved [online](#) on Nov. 6, 2014

## What is Nature Alberta and its partners doing about it?

This is a heated topic filled with interest by many partners with opposing viewpoints. Many of the websites online provide biased and unscientific information on this topic. Nature Alberta will make efforts to provide a reliable scientific foundation for the environmental concerns that arise with this topic to create a knowledgeable naturalist community in Alberta. This will allow for a

## What can you do about it?

Just by reading this fact sheet, you've all ready started! We hope you will continue to learn about the effects of neonicotinoid pesticides by clicking on the links provided above. You can also write letters of concern to your local government representative or create petitions to sway governing bodies. If you live, work or play in Alberta, we hope you will do your part to reduce your use and support of neonicotinoid pesticides in agriculture and household uses.



Photo Courtesy: Dave Fairless