

Neonicotinoids Insecticides Contribute to Bee Declines

A Sample Reference of Studies on Effects of Pesticide Toxicity

Compiled by the Maryland Smart on Pesticides Campaign

Neonicotinoids (aka "neonics") have been confirmed to contribute to honey bee mortality, as well as declines in native pollinators, birds and aquatic life. Maryland's beekeepers are experiencing record beehive losses (nearly 50% in 2012) and are concerned about the widespread use of neonics, now in dozens of home & garden consumer products.

Sub-lethal exposure to neonicotinoids impaired honeybees winterization prior to colony collapse disorder (CCD)

Bulletin of Insectology 67(1) 125-130 2014 ISSN 1721-8861 | tinyurl.com/lgvec22

This study shows that sub-lethal exposure to two neonicotinoids, imidacloprid and clothianidin, affects the ability of the hive to repopulate at the end of winter. Bees treated with the neonicotinoids showed symptoms resembling CCD (50% of hives tested), while all control hives remained healthy and repopulating.

Neonicotinoids interfere with specific components of navigation in honeybees

PlosOne Mar 2014 | tinyurl.com/qbs8e8r

Study concludes that non-lethal doses of the three neonicotinoids tested (imidacloprid, clothianidin and thiacloprid) either block the retrieval of exploratory navigation memory or alter this form of navigation memory.

Exposure to neonicotinoids influences the motor function of adult worker honeybees

Ecotoxicology 2014; 23(8): 1409-1418 Jul 11, 2014 | tinyurl.com/kcxoojn

Study shows how prolonged exposure to sub-lethal doses of four neonicotinoid pesticides (imidacloprid, thiamethoxam, clothianidin, dinotefuran) affect basic motor function and postural control in foraging-age worker honeybees.

Fatal powdering of bees in flight with particulates of neonicotinoids seed coating and humidity implication

Journal of Applied Entomology 136 17-26 February 2012 | tinyurl.com/pjfancz

Study found that neonicotinoid particulates, from sowing of corn coated seed using pneumatic drilling machine contaminated bees in flight and vegetation surrounding sown area, caused bee mortality. Humidity was also found to increase bee deaths from this exposure.

Sub-lethal effects of pesticide residues in brood comb on worker honey bee development and longevity

PlosOne February 23, 2011 | tinyurl.com/4ptcz5v

Combined effects from honeybee exposure to pesticide residue in brood comb, i.e. reduced adult longevity, increased brood mortality, higher fecundity of Varroa mites and increased susceptibility to pathogens, contribute to reduced honeybee colony health, as affected queens and worker bees are unable to meet demand for brood production and resources needed to sustain large colony populations.

Neonicotinoids let virus thrive in bees

Journal of Chemical Education 21 October 2013 | tinyurl.com/mrbrmbs

Experiments suggest that exposure to neonicotinoids results in increased levels of a particular protein in bees that inhibits a key molecule involved in the immune response, making the insects more susceptible to attack by harmful viruses.

Pesticide residues and bees – a risk assessment

PlusOne Apr 9 2014 | tinyurl.com/ljaa8ve

Residues of pyrethroid and neonicotinoid insecticides pose the highest risk by contact exposure of bees with contaminated pollen. However, the synergism of ergosterol inhibiting fungicides with those two classes of insecticides results in much higher risks in spite of the low prevalence of their combined residues.

NEWS, PUBLICATIONS AND VIDEO SAMPLINGS

Widespread impacts of neonicotinoids 'impossible to deny'

BBC News June 23 2014 | tinyurl.com/pzeczy2

Researchers, who have carried out a four-year review of the literature, say the evidence of damage is now "conclusive". The scientists say the threat to nature is the same as that once posed by the notorious chemical DDT.

Study: Pesticide used on 'bee-friendly' plants may hurt bees

LA Times June 25 2014 | tinyurl.com/o43akaj

Many plants being marketed in nurseries and garden centers as beneficial to bees have been treated with an insecticide some scientists believe to be harmful to bee colonies.

Birds, bees, and aquatic life threatened by gross underestimate of toxicity of world's most widely used pesticide

American Bird Conservancy March 19 2014 | tinyurl.com/d86awek

The 100-page report reviews 200 studies on neonicotinoids incl. industry research obtained through US Freedom of Information Act.

Video: Minnesota bees die from exposure to corn pesticide drift

Video footage | tinyurl.com/nx4r6jb

In May, 2013, 1,300 hives were lost to a Minnesota beekeeper when the bees foraged on willow trees that were covered with the dust of a recently sprayed cornfield with neonicotinoids insecticides (clothianidin and thiamethoxam).

Are Neonicotinoids Killing Bees?

A review of research into the effects of neonicotinoids insecticides on bees, with recommendations

The Xerces Society for Invertebrate Conservation | tinyurl.com/d2792mo (2-pg summary and 32-page report)

Well-documented 32-page report covers in detail all aspects of issues surrounding the pollinator and pesticides debate.