

This is the latest article authored by Northern Light's CEO and founder Jeffrey Gibbs and published in the Australasian Beekeeping Journal September 2016.

The article discusses the contemporary issues Honey Bees are faced with.

If you wish to voice your concern you can phone or write to the Minister for Agriculture and the Minister for Health to call for a ban on neonicotinoids in Australia. Every voice counts.

Barnaby Joyce, Minister for Agriculture and Water: 02) 67613080
barnaby.joyce.mp@aph.gov.au

Sussan Ley, Minister for Health: 02) 6277 7220 minister.ley@health.gov.au



[Neonicotinoids in Australia - Part 2](#)

<http://www.theabk.com.au/articles/2016/8/30/neonicotinoids-in-australia-part-2>

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Author: Jeffrey Gibbs

Honey bee populations in Australia are in crisis. The numbers of bees under the care of commercial honey producers are at an all time low. Commercial beekeepers wintering losses of thirty per cent are now accepted as the norm, according to Des Cannon, Editor of The ABK. Bee diseases have never been more prevalent in Australia. Every commercial beekeeper is battling disease and this battle is a full time job. A battle fought by beekeepers alone at the expense of their own time and money.

Eight out of ten (or more) commercial beekeepers are reliant on antibiotic to keep their bees alive. The choice is between dosing or death. Contamination of honey with antibiotic is a live issue. Yet the Australian government, honey packers and pesticide companies have not

acknowledged the battle our beekeepers are fighting. In fact, it is a massive cover up. If we haven't got a problem, we can't fix it.

The frontline brandished by government, honey packers and pesticide companies to defer any concern for the honeybee is that 'the Australian honeybee is not in decline, despite the increased use of this group of insecticides [sic. neonicotinoids] in agriculture and horticulture since the mid 1990's'. This statement was taken from the 'Overview Report, Neonicotinoids and the health of honeybees in Australia', 2014, published by the APVMA, author Les Davis¹. An unfounded statement and simplistic argument, contrary to the anecdotal evidence of beekeepers Australia wide. Estimates of hive numbers alone are not a true barometer of the health of Australian bees, the old law is 'breed bees or gather honey'. Beekeepers today are faced with a situation of constantly see-sawing hive numbers as hives collapse and are supported back to health. Most hives in Australia right now are way down on bee numbers. Len Walker of Inverell, the head of one of Australia's most experienced beekeeping families, claims fifty per cent losses of hives in his country. He states that a real sign of the present weakened bee populations is the fact that bees need to be checked for strength prior to going onto almonds.

Despite the government asserting good bee health in Australia, estimates of bee populations published by the Rural Industries Research and Development Corporation and cited by the APVMA in correspondence to me still show a decline in managed hives. From 2006-2007 to 2014 there was a decline of 81,765 hives². This makes the statement that 'Australian honeybee populations are not in decline' from the APVMA 2014 Neonicotinoid report a sham, if not a shame.

The European Union, Canada and the United States of America have partially or completely banned neonicotinoids based on a mounting body of scientific concern. The Australian government at least concedes the likelihood of complex sublethal effects of neonicotinoids, yet has not taken a stand on the use of neonics, which should be the underpinnings of any environmental management.

This begs the question to whose interests are the government vested in? The long-term sustainability of our beekeeping industry and food security or the dollar interest of pesticide corporations? Pesticide corporations continue to have a field day in Australia at the expense of our honeybees and beekeepers' pockets.

There are over 900 scientific, peer-reviewed studies globally indicating that neonics are having severe negative effects on pollinators and suggesting regulatory agencies apply principles of prevention and precaution to all neonicotinoids.

The European Academies Science Advisory Council (April 2015)³, World Integrated Assessment advisory committee (Jan 2015)⁴ and the Belgian Superior Health Council (June 2016)⁵ have all reached the same conclusion through comprehensive reviews of independent and industry sponsored science. Furthermore they state that there are gaps in the science examining the complexity of ecosystem-wide sublethal effects. They raise concerns for the persistence, mobility and water solubility of neonicotinoids and call for a review of the adequacy of current toxic reference levels upon which the 'safety' of neonics are being reasoned^{3,4,5}. Resultant is an EU wide ban of thiamethoxam, clothianidin and imidacloprid. And the EU continues to review these pesticides and tighten regulations for all neonicotinoids. Montreal, Canada called a total moratorium on the use of all neonicotinoids

on December 10, 2015. The irrefutable consensus is that neonics harm the honeybee. So why is Australia so far behind the rest of the world?

A handful of American beekeepers and a group of stakeholders sued the US EPA in March, 2013 over inadequate toxicity evaluations of clothianidin and allowing its registration based on inadequate studies. Thanks to this pressure from beekeepers field trial results were released earlier this year by their government proving imidacloprid toxic to bees 6,7,8. This shows the triumph of beekeepers over government and I strongly suggest that you keep communicating with other beekeepers and keep your records of any harm to your bees past, present and future. We may find Australian beekeepers in a similar position and your intact records may be worth the quids you are losing now.

In Australia neonicotinoids are everywhere. They are the most widely used pesticides. It is important to understand the way neonicotinoids operate within ecosystems and the neurological system of the honeybee to understand the full threat of these pesticides. What we are up against are chemicals that have insidious sublethal and complicated effects on bees and these effects are difficult to assess.

The honeybee is a highly social insect and relies on complex communication and navigational skills for foraging behaviour and hive survival. Previous studies have examined individual field behaviour only. But it is the 'system' aspect that needs to be observed^{9,10}. Neonics disrupt and incapacitate the honeybee's abilities to communicate and navigate; as a result the critical function at the colony level is damaged and breaks down⁶. Bees require a lot of grooming within the hive to survive. The last thing you feel like doing when you are sick is brushing your wife's hair.

Neonicotinoids are completely water soluble and biologically persistent with a half-life of 19 years in heavy soil¹⁶. Seeds coated with neonicotinoid will contain the pesticide throughout the grown plant. The honeybee is routinely and chronically exposed to neonicotinoids by consuming pollen, guttation drops, nectar and honeydew^{11,13}.

Treated seeds contains the highest concentrations of neonicotinoids. The broadscale use of neonics to coat seed rather than the discriminatory use of these pesticides as a last resort has become common practice in Australia, a practice banned in the EU and criticised widely^{3,4,5}. The amount required for sublethal effects is three parts per billion. This equates to a pin prick divided many times in the bottom of a litre bottle. The coating on one clover seed in a litre of water is enough to kill your hive. The neonicotinoid on one coated corn seed is enough to kill 80,000 bees. One individual canola seed may contain 1 milligram of active ingredient^{4, 13,14,16,18}.

You may need to wonder about the water soluble neonicotinoid coating on hundreds of thousands of canola seeds after two inches of rain. Bees drink a lot of water. And where are your bees drinking from? Everyone has seen bees lined up around pools of muddy water in the canola paddocks. This is a main entrance into your beehives¹⁵.

Partial restrictions on neonics to crops that bees aren't attracted to are futile due to the solubility of these compounds. Corridors and verges of native flora adjacent to agricultural lands (Ti-tree species near sugar-cane, and turnip weed as particularly important examples) are contaminated with neonic pesticides. The contamination from agricultural land is so far

widespread, affecting underground water tables, wetlands, creeks and river systems and binding to soils^{4, 15}.

I am getting stories all the time of what appears to be colony collapse disorder. One load of 140 hives dropped down on our site for care seems to be in every respect what the rest of the world is CCD. The bees were on planted clover, and there appeared to be no other crops or sprays around excepting the neonicotinoid clover seed. It is now impossible to buy clover in Australia that has not been neonicotinoid-coated. Beekeepers need to watch the effects of any neonicotinoid-coated crop including almonds, citrus, canola, sunflower, clover, field grasses, corn and every other fruit and nut being pollinated.

Much of the honeybees' demise lies in the assault on the immune system as a result of chronic long term exposure to these pesticides^{10,11}. It is the interplay of depressed immune function, pesticide toxicity, stress (from shifting, wintering, drought, overstocking etc), disease and the band-aid use of antibiotic (to control EFB, and in many cases to illegally suppress AFB) that leads to weakening your bees. As with the laws of nature, causes are always multi-factorial¹⁰. How many bee keepers thought they were breeding good bees on the canola last year and when they shifted found that the bees had disappeared?

Viruses may be present asymptotically and kept in check by the modulation of a healthy immune system. Neonicotinoids slowly depress immune function and although your hives may seem to be coping OK over the summer and autumn, after adding the stresses of shifting and wintering you may see entire colonies collapse, as diseases and parasites rapidly spread¹¹. Stress leaves the bees less able to cope with pesticide toxicity. The bees then lose navigational function and simply disappear^{11,13}. A bee that can't find its way back to the hive is as good as dead¹⁶.

Bees are seldom exposed to a single pesticide and pharmacological knowledge of mixture toxicity is underdeveloped³. Pollen samples were found with a whopping 124 pesticide residues and 77 residues were found in nectar and honey in a study by Sanchez-Bayo and Goka (2014)¹³. Their results came from the USA, France, Spain and Poland; with residues in honey including additional data from surveys in Greece, Spain, Brazil and India; and residues in wax including other data from Spain and the USA. We just don't know what these chemicals do when they are combined. Some studies show alarming synergistic and antagonistic effects of exposure to neonicotinoids combined with organo-phosphates/carbamates and fungicides³. In the UK it is recommended not to apply neonicotinoids, fungicides and pyrethroid insecticides together¹. A laboratory study shows DMI fungicides increased the toxicity of some neonicotinoids 244 times!¹⁸

It is imperative to start thinking whole system functions and cumulative effects¹². Reducing the exposure of bees to toxins, reducing stress and increasing nutrition rather than trying to attribute colony collapses to one causal viral or parasitic factor.

Antibiotics are yet another toxin for your bees. As neonicotinoid use has increased leading to sicker bees the need for the use of antibiotics has skyrocketed. Antibiotics are a short-term remedy that weakens the bees immune system, masks AFB and then allows disease, viruses, parasites to return with a vengeance. There is barely a commercial beekeeper in Australia who doesn't understand the terminology Olley's Lolly. Over approximately the last twenty years there have been massive amounts of tetracycline antibiotic pouring into the beehives of Australia. In the mid 1990's beekeeper's were introduced to the release of neonicotinoids and

Olley's Lolly. It seemed like not only everyone was using 'Lolly' but this was also the easiest access to the need for antibiotic. The use initially was to spot-dose as disease cropped up. Nowadays blanket dosing is common. The closer you get to the Victorian border the greater the need for widespread blanket dosing of 'Lolly'. The correlation is the treated crops such as almonds, fruit trees, canola, sunflower, lucerne and clover. It is obviously clear, yet barely mentioned. You would be left to wonder how many bees we would have left in Victoria without use of antibiotic. Our bees are sick, they are as crook as they have ever been.

According to Laurie Kershaw there is barely a commercial hive from Canberra to the bottom of Australia that is not being dosed. From my investigations more than eight out of ten beekeepers down south are dosing (interviews conducted by Jeffrey Gibbs over an extensive period of time and country). It would be terribly difficult to run one thousand hives without the use of antibiotic in this country. With the bursting of disease and hive beetle, the use of chemicals in beehives has reached an all-time Australian high. Some beekeepers are scrambling for alternatives rather than weakening the immune system of their bees with antibiotic, yet they are by far the minority in this country. A growing number of beekeepers in Australia are refusing to work pollination because they know it is killing their bees. It is almost a certainty that if you can't find good clean forest pollen to detoxify and rebuild the immune system of your bees you are in trouble.

Every honey packer is well aware of the massive and increasing use of antibiotic in Australia to keep bees alive. I have spoken to Ben McKee of Capilano and Jodie Goldsworthy of Beechworth Honey to confirm that not only they but everyone is aware of the use of 'Lolly'. Apart from weakened bees we are also running the risks of contaminated honey through overuse of antibiotic. And this contamination is becoming an increasing threat to the Australian honey industry.

Beekeepers in Australia are almost in full control of Australia's food production. If we could only agree for once, the political power of this unity is all that is required to have this insecticide banned in Australia. The fact that our Government is one of the few in the world not to recognise that neonics harm bees is only increasing the plight of the Australian beekeeper. In my opinion Australian Beekeepers are being used as a massive field test on neonicotinoids. Australia is a worldwide excuse for insecticide companies who are blaming Varroa mite for bee colony collapse overseas and claiming that Australian bees are healthy. Given the present situation of most beekeepers in Australia, this is not only a joke but an insult. The only winners here are the pesticide corporations, making a mockery of your present hardship.

Just yesterday, in light of this article going to publication, Capilano Honey has stated in an email to me that:

'Capilano is committed to the health and wellbeing of Australia's honeybees and as such does not endorse the use of neonicotinoids. Capilano believes neonicotinoids should be banned. Capilano proposes a submission to the APVMA calling for the restriction or total ban of neonicotinoids in Australia.'

I ask of every Australian Beekeeper, if ever there was a time in Australian beekeeping history to love and care about the future of bees, and to show some direction to our industry, to unite and tell it how it is, it is now, on this very topic. Edmund Burke once said, 'The only thing necessary for the triumph of evil is that good men do nothing.'

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