



ONTARIO BEEKEEPERS'
ASSOCIATION
Since 1881

OBA RESPONSE TO ONTARIO BEE HEALTH WORKING GROUP FALL 2013 (DRAFT) REPORT

The Ontario Beekeepers' Association's mission is to ensure a thriving and sustainable beekeeping industry in Ontario. We are also grounded by OBA's core values of engagement, collaboration, science-based decision-making and environmental responsibility. ¹

The fulfillment of our mission requires that we focus first and foremost on optimizing the health of Ontario bees. Our response to the draft Ontario Bee Health Working Group report is guided by our concerns related to declining populations of bees, from outright bee kills to chronic health issues, due to the widespread use of neonicotinoid pesticides on field crops in Ontario.

GENERAL COMMENTS:

1. Although we regularly hear that decisions will be 'based on science', we see no scientific basis for most of these recommendations. There are no citations, references, data or analysis to support assertions (e.g. "Potential impact on yields could affect grain quality"), making many of the points seemingly opinion-based rather than science-based. This is particularly frustrating since the OBA has made efforts to provide the Working Group with relevant research, as well as access to researchers such as Professor David Goulson from Stirling University and Valerie Fornier, from Quebec, who provided her seminal study on water residues at a recent Working Group meeting at our request. OBA documents consistently reference independent peer reviewed national and international research, such as the work of the EFSA, which underpinned the EU ban of neonicotinoids. We also point out that the chemical industry has had ten years to prove that neonicotinoids are safe for bees and they have not done so.
2. Important, if not critical, data on crop dust residue research promised to the OBA in October has not been made available to the OBA for review. Analysis of this data is particularly relevant to our ability to evaluate recommendations in this report.
3. The report lists 'merits' and 'implications' for each recommendation, but lacks any risk analysis. And although we understand that it may be premature to provide detailed implementation plans, recommendations with minimal reference to feasibility, cost or timing are difficult to assess.
4. Given the imminent threat to bees, other insect pollinators and the viability of commercial beekeeping in Ontario, the lack of urgency in the report is of great concern. We had been led to believe that the Government of Ontario would act in time to protect bees in advance of the 2014 spring planting season. The impact of recommendations, such as more research, R&D related to new seed treatments, bee locator systems and habitat improvement, are long term strategies. Having a deadline of October for ordering untreated seeds for spring planting, for example, is simply unrealistic (and also unnecessarily early). This leaves two strategies, the same or similar BMPs that did not work in 2013 and dust reduction, a strategy with no proof that it will solve the problem.

5. These recommendations appear to be primarily focused on growers and what they can or can't do. What is the responsibility and liability of the chemical industry? Where is the hoped-for bold public policy response from this government-initiated working group?
6. While bee health is the number one concern of the OBA, we are greatly concerned about the economic health of our members. Yet nowhere in the recommendations does the report address compensation for beekeepers' economic losses.

INTRODUCTION: COMMENTS

1. The Problem:

- a. The first paragraph mentions only the 2012 bee kills. It is important to note that according to PMRAⁱⁱ, the problem was equally severe, or greater, in 2013, prompting them to declare that the current use of neonicotinoids in agriculture is "unsustainable".
- b. The statistics provided on over-winter mortality rates are misleading. In fact, the major variation is pre-2007, when the historical average was less than 18%, and post-2007 when neonicotinoids started to be used extensively on corn and soy and the average winter loss increased to more than 30%.ⁱⁱⁱ
- c. More important to note, however, is that the over-winter mortality rate no longer reflects the new post-neonicotinoid reality for beekeepers as it doesn't recognize additional spring and summer losses that occur because colonies are weak from the sub-lethal effects of pesticides, and cannot recover from winter damage and continue to be exposed throughout the season.

2. Honey Bees in Ontario:

- a. Although it is correct that there are 3000 registered beekeepers in Ontario, only around 230 could be considered commercial and they manage 80% (or 80,000) of the colonies, concentrated for the most part in central and southwest Ontario. Due to climate, as well as the demand for pollination services, commercial beekeeping operations tend to be situated within agricultural communities, making it difficult to avoid exposure to agricultural treatments.^{iv}
- b. The report states that "dead or weakened hives produce less honey". This is correct, but we think it should be noted that honey production in Ontario declined by 32.6% between 2012 and 2013, twice the national average.
- c. There are many reasons why large bee die-offs are not reported uniformly across all bee operations or areas of the province. Beekeepers are just learning to recognize the effects of neonicotinoid pesticide poisoning and this may lead to under-reporting of incidents. In addition, as Christian Krupke noted, foraging behaviour of honey bee colonies can vary greatly from colony to colony depending on where the scout bees happen to locate a resource. This means that each of several colonies in the same yard may be foraging in a different direction. However, it is evident that beekeepers are experiencing higher bee losses and poor bee health in areas with large amounts of corn and soy. (In fact some beekeepers report a direct correlation with the health of their hives and Statistics Canada's Census of Hectares of Corn Per Township.)

3. Neonicotinoids

- a. Although neonicotinoid pesticides may have been approved for use with potatoes in the '90's, conditional registration for use on corn was not granted until 2004 and didn't become widely used until 2006/7. Although Ontario figures aren't available, we know that total pounds of neonicotinoid pesticides used in agriculture in the U.S. was less than 500,000 pounds in 2003, and by 2009 the use amounted to 3.3 million pounds - a 560% increase. We have

reason to assume a similar and continuing growth pattern in Ontario. Therefore, we feel the history of neonicotinoids as presented in the report is misleading as it fails to correlate the increased use of neonicotinoids with the decline of bees.

- b. We question the statement, “Neonicotinoids have become an important pest management tool in agriculture including Integrated Pest Management programs.” Clearly the use of pesticides on 95% of crops when only 10-30% of acreage is threatened, contradicts the principles of IPM. In any event, extensive usage is not the same thing as “important”. Likewise, the statement that there are “limited or no alternative pre-emergent seed treatments to replace the neonicotinoid seed treatments” implies a lack of alternatives altogether and a dependency that is not warranted.

4. Bee Health

- a. Bee health issues such as varroa and viruses, while significant, can be managed by beekeepers, but beekeepers cannot manage neonicotinoid usage and exposure. Beekeepers in Ontario have been dealing with varroa since the mid-1990s and have not seen the current levels of bee health issues or winter mortalities until the introduction of neonicotinoids to field crops. As well, neonicotinoids are not separate from the other problems facing honey bees: exposure to these pesticides makes them worse. By compromising the bees’ immune system^{vi}, honey bees are more vulnerable to viruses and find it more difficult to fight off varroa^{vii}; by reducing their navigation skills, neonicotinoids affect the bees’ capacity to forage and communicate forage opportunities to other bees^{viii}; by reducing the availability of a diversity of uncontaminated plants, neonicotinoids compromise nutrition.^{ix}

The current wording of the report implies equal weight to all bee health factors: we think the report should reflect the synergistic impact of neonicotinoid pesticides.

PART TWO: PROPOSED OPTIONS FOR ACTION

Option A: Update Best Management Practices.

The OBA does not support updated Best Management Practices (BMPs) as an effective strategy to protect bees. The PMRA promoted similar BMPs to farmers in 2013 which resulted in no fewer incidents of bee kills than were reported in the previous year. By promoting BMPs, the Working Group perpetuates the myth that neonicotinoids could be safe for bees if applied properly at planting time, ignoring a growing body of scientific evidence that proves that the spread of dust from planters is just one way these pesticides are devastating bee populations. Research from Valerie Fournier, presented in the last Bee Health Working Group meeting, showed as much as a 100-fold increase in puddles and field water during late June, long after crops are planted and crop dust is a potential risk. Bee health research confirms the negative impact of even small amounts of neonicotinoids in ground water, nectar and pollen.

The “additional research required to strengthen existing best management practices” mentioned as an implication implies that current BMPs are not sufficient. This is correct. In fact, BMPs will not mitigate the effects of a systemic pesticide. There is no research to indicate otherwise and no reason to assume current BMPs will have any meaningful effect in 2014.

Further, research on specific BMPs only addresses the efficacy of particular actions. It doesn’t address the likelihood of adoption, a critical issue in what is clearly intended to be voluntary compliance. Once again, it was reported at the last Working Group meeting that Quebec has had availability of untreated seeds, exhaust/dust deflectors for equipment as well as promotion of BMPs and yet there has been no significant uptake or adoption of these practices by farmers. With no reportable results, assessment protocols, or even financial incentives, what is the likelihood of full compliance in Ontario?

Option B: Invest in Integrated Pest Management (IPM) research

Good farm practice should always consider IPM first. Yet the current practice has made IPM an afterthought. The goal of Integrated Pest Management is to utilize the least hazardous pest management options *only when there is a demonstrated need* and to take special precautions to reduce the danger to the environment. However, in Ontario, neonicotinoid-treated seeds are generally applied prophylactically regardless of whether pests are present in a particular field or at levels that will lead to economic losses. Seed companies and pesticide manufacturers have promoted neonicotinoid-treated seeds as necessary for maintaining yield levels despite OMAF declaration that only 10 to 30% of the corn and soybean acres are actually at risk of most of the soil pests on the product labels.

There has been a significant amount of research in this area by the E.U. and in the U.S. showing little or no loss of production when neonicotinoids are discontinued.

Despite promotion and education, IPM is not being applied extensively. Our question here is how is more research on IPM (which will take years) going to mitigate the essential problem of non-compliance? And how is it going to assist the 2014 growing season, the primary focus on the Working Group?

Option C: Promote availability of non-insecticide treated seed

The OBA supports the availability of untreated seed but with the following questions:

1. We do not believe that requiring growers to order untreated seed in early fall to be necessary or likely to decrease the use of neonicotinoid pesticide coated seeds, particularly if chemical companies continue to promote the need for prophylactic use and to provide uncoated seeds only for less favorable varieties.
2. What are the “logistical challenges” for seed companies that are mentioned? This is provided as fact in the report, but no explanation is given. This seems quite inconsistent with the fact that seed companies currently have no problem providing seed with two different rates of insecticide.
3. Where is the evidence that untreated seed could affect grain quality? Again, this seems an unfounded assertion and should not be included in this report.
4. There is no logic to the claim that there are “increased costs for seed companies to provide untreated seed”. How can untreated seeds possibly be more expensive? In fact, Quebec has asked seed producers to make neonicotinoid seeds the default options and charge the true cost of seeds to farmers. The report should not be stating that it is more expensive to produce untreated seeds without some documentation that this is reasonable.
5. “The use of other insecticide products later in the season may increase when untreated seeds are used.” Neonicotinoid treated seeds are used for soil borne insects, not for insects that emerge later in the season. Farmers often spray anyway.

We think the cost to growers, unreasonable timing and continuing promotion of seed companies should be added to the implications list.

Option D: Encourage development of new seed treatments

The OBA cannot support a strategy where taxpayers' dollars are used to help a multi-billion dollar industry develop new products that will bring in millions of dollars of profits when beekeepers are going out of business because they can't get compensation for losses due to government and industry inaction.

Option K: Encourage crop rotation

Why is this IPM strategy listed separately? We suggest it fold into Option B.

Option E: Centralize and Communicate Bee Location Data

1. The notion that farmers and beekeepers can avoid exposure to neonicotinoids is false. Bees will forage in a 3 to 5 km radius depending on the availability of fresh water or blossoms. With 4.2 million acres of corn and soy planted each year in Ontario it is nearly impossible to avoid exposure in Ontario beekeeping areas.
2. The onus on geographical tracing should be on the grower not the beekeeper. Beekeepers move their bees around to take advantage of forage opportunities and for pollination services. They may be in three or four locations before they settle for the summer. Farmers' fields do not move. Farmers can more easily provide GPS data on fields that will be planted as well as a window of time in which the planting might take place.
3. Because crop dust is only a small part of exposure to neonicotinoids, avoiding exposure during planting may have limited effect on bee mortality.
4. Public knowledge of the location of honey bee colonies could make bee yards vulnerable to theft and vandalism.

Option F: Develop strategy for pollinator-friendly habitats

The issue of habitat loss is a critical one for honey bees and other insects and we support a comprehensive, widespread publicly-funded strategy to improve habitat across the province. However, with regard to mitigation of neonicotinoid impact, we provide an excerpt of peer-reviewed Canadian research that states: "conversion of natural habitat to human-dominated land cover is a contributor to species losses. However, losses have occurred not simply in areas where native vegetation has been converted to agriculture or human settlement; rather, losses are concentrated in areas where agriculture is chemically intensive (i.e. widespread area coverage of pesticides). Either pesticides, per se, or something correlated with their use (other characteristics of intensive agriculture) apparently contributes to species losses. Conservation strategies to protect endangered species that focus mainly on habitat losses, rather than on patterns of surrounding habitat use, may be inadequate to prevent species losses. In particular, more research is needed on the role that pesticide use plays in species losses and on the possibility of reducing pesticide use as a means to help conserve species."^x If forage is planted or added to the landscape, there must be every assurance that this forage is not exposed to or contaminated by pesticides, including neonicotinoids. If not, then this forage will create another route of exposure.

Clearly, increasing pollinator-friendly habitats is a strategy that requires the suspension of neonicotinoids to have any meaningful impact.

Option G, H and I: Modification and standards for air planters and new fluency powder

We think these three options can be clustered together as a strategy for reducing dust, since they all have the same limitation: they do not address the underlying systemic nature of neonicotinoids.

Bees may be harmed by neonicotinoids regardless of how the chemicals are applied. While the dust generated from planting coated seeds can cause direct mortality of bees, less than 2% of the active ingredients are released through the dust during sowing.^{xi} The remainder is found in pollen and nectar and also in water and soil and is known to accumulate over an extended time period^{xii} creating acute and sub-lethal exposure through the season and for seasons to come. Therefore, a reduction in dust would have limited long-term impact since neonicotinoid pesticides are systemic and appear in all parts of a plant including roots, stems, leaves, flowers and fruits. Honey bees become exposed while gathering nectar, pollen and water. Also, the dust that is exhausted using the new fluency powder contains a 2.7-fold higher concentration of neonics than previous lubricants, perhaps increasing lethal exposure to bees. Beekeepers have also received information from the PMRA's own residue analysis showing levels of clothianidin at 8.3 ppb in canola, 16.1 ppb in corn pollen and 23.2 ppb in potatoes, close to the LD50 of 31.6 ppb.

We recommend that the report provide information on the limitations of dust reduction as a strategy to address the systemic impact of neonicotinoid pesticides.

Option J: Update the Ontario Pesticide Safety Course

According to the listed 'implications,' this training doesn't reach all farmers because applying seed treatment doesn't require completion of the course and there is a five-year rotation of those who take the course. The likelihood of this having any short-term impact on bee health is quite low.

Option L: Require grower consultation on appropriate rate for neonicotinoid-treated seed prior to purchase of insecticide treated seed

This option might have some merit if the use of neonicotinoids was suspended and growers were required to demonstrate need and to apply for a limited permit based on measurable assessment protocols.

We believe that as it stands, this recommendation is a subset of BMPs, with similar implications as noted (e.g. difficulties with risk assessment, scouting, variable dosage, rates of application). We would add, as well, the added strain on consultant resources that could lead to delays or added costs to the system.

With regard to the implications, we would like to point out that there is a greater potential for development of resistant pests if we only use one class of insecticides.

Option M: Consider a temporary ban on neonicotinoids

It is important to note that this recommendation is the only one in the report that identifies it as having the potential to reduce bee mortality, anticipate an improvement in bee health, reduce neonicotinoids in the environment and increase populations of beneficial insects (all of which can be backed up with research.)^{xiii} As these are the goals of this Working Group, we wonder why suspending the use of neonicotinoid pesticides isn't the recommendation of first resort of all stakeholder groups.

With regard to the implications, we request that the following questions related to specific points be answered with data and/or science or be removed from the list:

1. "Corn and soy growers would lose an effective pest management tool." IPM is the most effective tool to manage pests and protect the environment. IPM is still available as a primary measure for pest management.
2. "May impact Ontario grower competitiveness". We have seen no official data that concludes the impact of removing neonicotinoids from use is significant enough to impact grower competitiveness. Christian Krupke states that his research shows no statistical difference in crop yield between neonicotinoid treated and untreated seed. As well, OMAF information suggests that 70%-90% of crop acreage does not require these pesticides. Growers are paying for neonicotinoids that are of no benefit to them. This also causes us to ask another question: What about the impact to beekeepers and the greater environment? How great is the cost to our environment for the use of neonicotinoids?
3. "Growers may have fewer genetics as a source for planting." Why is this? Is the suggestion that Ontario can't remove neonicotinoids for use because the seed companies will limit the genetic alternatives?
4. "May have negative implications for availability of seed varieties in Ontario." We fail to see the sense in this comment. How is this inherent in the decision to remove neonicotinoid-coated seed? Isn't this simply a choice of seed producers?
5. "Potential yield loss due to increased pest damage." Research in Europe and the US has shown little loss in yields when neonicotinoids were discontinued on corn and soy.

6. "May not have the desired positive impact on bee health because of the use of other insecticide treatments or due to other bee health determinants." There is research from locations such as Italy, where the use of neonicotinoids on corn was suspended in 2008, to show the positive impact of discontinuing neonicotinoid use. There was enough data to convince the EU. Where is the research that would indicate otherwise?

CONCLUDING COMMENTS

Many of the concerns raised in our response to the Working Group report are a result of the composition of the Bee Health Working Group, which, as we have expressed on a number of occasions, does not represent a focus on bee health but rather a bias toward field crops. The working group includes five field crop specialists from OMAF, four representatives of the Pest Management Regulatory Agency plus another seven members who have a clear bias toward the continued use of neonicotinoids in corn, soy and wheat farming, including professional representatives of the Grain Farmers of Ontario, Crop Life, Crop Science, Syngenta, the Association of Equipment Manufacturers, and the Canadian Seed Trade Association. Bee health was represented by the Provincial Apiarist, three volunteer board members of the OBA and two Guelph research scientists. This unbalance has resulted in recommendations that do not reflect scientific knowledge about beekeeping or the real-life experience of beekeepers.

As well, Ontario's Ministry of Environment was noticeably absent from the discussion. With growing concerns about environmental impacts, including water and soil contamination and recent linkages to human health, we would have expected MOE to play a greater role. The OBA, at its own volition, invited researchers from Quebec to report on surface water contamination. This spring, at meetings with senior policy advisors, MOE had promised the OBA a program of water testing this summer. However, even with repeated inquiries from the OBA, we heard nothing from MOE about their water testing or results.

Consideration of the key public policy option of a suspension in the use of neonicotinoid-treated seed, has been given surprisingly little attention in the report. We continue to be alarmed by an increasing number of environmental concerns: confirmation of the decline of insect pollinators necessary for Ontario's local fruit and vegetable supply, proof of contamination of soil and water, linkages to bird losses and the recent EFSA concerns about fetal health and neonicotinoids. We request a more fulsome policy option, backed by science-based information, be provided for the Minister's consideration.

We understand that this is a draft report, and that there is little consensus among Working Group members, making a unified and comprehensive report that focuses on the urgent issues of bee health challenging. However, the OBA will only support a report that is based on respected, independent science, real-world application and the best interests of bees, the beekeeping industry and the people of Ontario.

Respectfully submitted:

OBA Delegates:

Dan Davidson, President
Tibor Szabo, 1st Vice President
Jim Coneybeare, 2nd Vice President

January 15, 2014

ⁱ OBA Strategic Plan 2012 – 2018 www.ontariobee.com

ⁱⁱ PMRA Report

ⁱⁱⁱ Provincial Apiarist's Report 2011 <http://www.ontariobee.com/sites/ontariobee.com/files/3.3.1-Ontario-Provincial-Apiarist-Annual-Report-2011.pdf>

^{iv} By 2012, corn represented 2.3 million acres in Ontario. Combined with soybeans, another heavy user of neonicotinoid pesticides, at 2.7 million acres, they represent more than 50% of Ontario field crops.

^v "Neonicotinoid clothianidin adversely affects insect immunity and promotes replication of a viral pathogen in honey bees" National Academy of Sciences of the US. Gennaro Di Presco, et al. <http://www.pnas.org/content/early/2013/10/18/1314923110>

^{vi} Immune suppression by neonicotinoid insecticides at the root of global wildlife declines"

http://www.gmfrecymru.org/pivotal_papers/JEIT-D-12-00001_proofs.pdf

^{vii} "Crop pollination exposes honey bees to pesticides which alters their susceptibility to the gut pathogen nosema ceranae"

<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0070182#authcontrib>

^{viii} A common pesticide decreases foraging success and survival in honey bees."

http://zembla.vara.nl/fileadmin/uploads/VARA/be_users/documents/tv/pip/zembla/2011/Moord_op_de_honingbij/Bees-Pesticides-Henry-03-30-12-Science.pdf

^{ix} Are Neonicotinoids Killing bees?" <http://www.xerces.org/neonicotinoids-and-bees/>

^x Katherine Gibbs, Robin Mackey, David Currie "Human land use, agriculture, pesticides and losses of imperiled species." *Diversity and Distributions, A Journal of Conservation Biogeography* <http://onlinelibrary.wiley.com/doi/10.1111/j.1472-4642.2008.00543.x/full>

^{xi} "An overview of the environmental risks posed by neonicotinoid insecticides. <http://onlinelibrary.wiley.com/doi/10.1111/1365-2664.12111/abstract;jsessionid=CED3404ABF34DBDA7DA8625430DAF9A4.f04t03>

^{xii} Beyond the Birds and the Bees: Xerces Society http://www.xerces.org/wp-content/uploads/2013/09/XercesSociety_CBCneonics_sep2013.pdf

^{xiii} www.ontariobee.com/neonics