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# Honey Bees & Neonicotinoids: Why Pollinators Need More Protections

BY: KATHERINE HEADLEY<sup>1</sup>

*Honey bees are essential for the pollination of copious amounts of fruits, vegetables, and nuts. However due to several factors, including the use of highly toxic pesticides like neonicotinoids, honey bee populations are decreasing at an alarming rate. This Note explores the history of neonicotinoids and their connection to honey bee health before examining several municipal, state, and federal actions taken to curb honey bee loss. This Note proposes that there be a federal baseline for restricting the use of neonicotinoids throughout the United States while allowing individual states to create additional standards based upon specific types of agriculture within their borders. Finally, this Note will propose that Illinois model a proposed heightened standard based on Minnesota's pollinator protection program.*

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## I. INTRODUCTION

“This is what’s left of Flowertown Bees,” a beekeeper narrated as she panned her camera across a black tarp filled with hundreds of dead and dying honey bees.<sup>2</sup> In a forty-four second video released via Facebook on Tuesday, August 30, 2016, the beekeeper’s voice is forlorn and dismayed as she surveys the massive damage done to the South Carolina bee farm.<sup>3</sup> Dorchester County, South Carolina, where Flowertown Bee Farm and Supply is located, approved an aerial spraying of Naled—a pesticide approved for agricultural use in the United States since 1959—to aid in the county’s efforts to combat disease-carrying mosquitoes and in the process destroyed the apiary.<sup>4</sup> The video quickly spread to national media outlets,<sup>5</sup> providing to many citizens the audio and visual proof that honey bees require the nation’s collective attention.

This most recent incident of honey bees (*Apis mellifera*) dying en masse from direct pesticide exposure comes after years of highly publicized articles and studies regarding dramatic honey bee loss worldwide.<sup>6</sup> Man-

2. Flowertown Bee Farm and Supplies, *So many bees dead after the aerial spray.*, FACEBOOK (Aug. 30, 2016, 5:00 pm), <https://www.facebook.com/169371146803372/videos/vb.169371146803372/169758263431327/?type=2&theater> [<https://perma.cc/S5L8-29KN>].

3. *Id.*

4. 46 hives—an estimated 2.5 million bees—were killed at the apiary from a spraying on Sunday, August 28, 2016. See Ben Guarino, ‘*Like It’s Been Nuked*’: Millions of Bees Dead After South Carolina Sprays for Zika Mosquitoes, WASH. POST (Sep. 1, 2016), <https://www.washingtonpost.com/news/morning-mix/wp/2016/09/01/like-its-been-nuked-millions-of-bees-dead-after-south-carolina-sprays-for-zika-mosquitoes/> [<https://perma.cc/44KF-GR4D>].

5. See, e.g., Camila Domonoske, *S.C. County Sprays for Mosquitoes But Accidentally Takes Out Millions of Bees*, NAT’L PUB. RADIO (Sept. 2, 2016, 2:32 PM ET), <http://www.npr.org/sections/thetwo-way/2016/09/02/492404411/s-c-county-sprays-for-mosquitos-but-accidentally-takes-out-millions-of-bees> [<https://perma.cc/2TZ3-CVXM>].

6. See Bryan Walsh, *The Plight of the Honeybee*, TIME MAG. (Aug. 19, 2013), <http://content.time.com/time/subscriber/article/0,33009,2149141,00.html> [<https://perma.cc/RB5U-UARP>]; David Jolly, *Pesticides Linked to Honeybee Deaths Pose More Risks, European Group Says*, N.Y. TIMES (Apr. 8, 2015), [http://www.nytimes.com/2015/04/09/business/energy-environment/pesticides-probably-more-harmful-than-previously-thought-scientist-group-warns.html?\\_r=0](http://www.nytimes.com/2015/04/09/business/energy-environment/pesticides-probably-more-harmful-than-previously-thought-scientist-group-warns.html?_r=0) [<https://perma.cc/8G3P-8VHV>]; Markham Heid, *You Asked: Are Honeybees Still Disappearing?*, TIME MAG. (Apr. 15, 2015), <http://time.com/3821467/bees-honeybees-environment/> [<https://perma.cc/3UQV-7PJA>]; Brandon Keim, *One-Third of U.S. Honeybee Colonies Died Last Winter, Threatening Food Supply*, WIRED (May 8, 2013, 6:30 AM), <https://www.wired.com/2013/05/winter-honeybee-losses/> [<https://perma.cc/Y5TB-4MN7>].

aged honey bee colonies,<sup>7</sup> and the beekeepers who supply them, are vital to many crops including fruits, vegetables, and nuts, throughout both the United States and the entire world.<sup>8</sup> Moreover, honey bees are an indicator of the health of the ecosystem at large.<sup>9</sup> The threat of honey bees going extinct has even caught the attention of the Federal Court of Appeals.<sup>10</sup>

Many statistics are asserted to demonstrate the honey bee's essential role in crop pollination; perhaps most shockingly, when foods that indirectly benefit from pollination are included, 35% of the human diet is thought to benefit from honey bee pollination.<sup>11</sup> Fifty-two of the 115 leading global food commodities depend on honey bee pollination for either fruit or seed set.<sup>12</sup> For example, every year at bloom time, more than 1.6 million hives are transported from all over the United States to California's San Joaquin Valley to pollinate the country's almond crop.<sup>13</sup> California<sup>14</sup> produces over

7. This Note will focus solely on *Apis mellifera*, or the Western honey bee, which is commonly used for commercial purposes like producing honey and aiding in pollination efforts across the country, as opposed to the bumble bee, which consists of about 250 species in the genus *Bombus*.

8. See U.S. ENVTL. PROT. AGENCY, *Policy to Mitigate the Acute Risk to Bees from Pesticide Products*, (Jan. 12, 2017), <https://www.regulations.gov/contentStreamer?documentId=EPA-HQ-OPP-2014-0818-0477&contentType=pdf> [<https://perma.cc/6665-QKYF>].

9. See Giorgio Celli & Bettina Maccagnani, *Honey Bees as Bioindicators of Environmental Pollution*, BULL. INSECTOLOGY, Jan. 2003, at 137-38, <http://www.bulletinofinsectology.org/pdfarticles/vol56-2003-137-139celli.pdf> [<https://perma.cc/RJF2-36RG>].

The bee then acts as a detector of environmental pollution in two ways. Its signals either via high mortality rates, even blanket apicides, the presence of molecules that are toxic to it, or via the residues in honey, pollen, larvae and so forth, the presence of certain heavy metals and of many fungicides and herbicides that are harmless to it. Mortality and residues are thus the keys enabling us to take an X-ray via the bee of the environment surrounding the hive. (Citations omitted).

Id.

10. "Bees are essential to pollinate important crops and in recent years have been dying at alarming rates." Pollinator Stewardship Council v. U.S. EPA, 806 F.3d 520, 522 (9th Cir. 2015).

11. Alexandra-Maria Klein et al., *Importance of Pollinators in Changing Landscapes for World Crops*, PROC. ROYAL SOC'Y B, Feb. 7, 2007, at 303, 306.

12. Dennis vanEngelsdorp & Marina Doris Meixner, *A Historical Review of Managed Honey Bee Populations in Europe and the United States and the Factors That May Affect Them*, 103 J. INVERTEBRATE PATHOLOGY S80, S95 (2010).

13. *Honey Bee Best Management Practices*, ALMOND BOARD CAL., <http://www.almonds.com/pollination> [<https://perma.cc/EE39-XNTH>].

14. Almonds are California's "most valuable agricultural export, worth more than twice as much as its iconic wine grapes." Bryan Walsh, *The Plight of the Honeybee*, TIME MAG. (Aug. 19, 2013), <http://content.time.com/time/subscriber/article/0,33009,2149141,00.html> [<https://perma.cc/RB5U-UARP>].

80% of the world's almonds,<sup>15</sup> but because of the significant loss of honey bees across the United States, the price for those essential bees has increased from \$75.00 per colony to \$150.00 per colony, which then increases the price of farming almonds, and the products consumers purchase.<sup>16</sup>

The decreasing honey bee population should therefore be concerning to not only people focused on its ecological impact, but also to people focused on its economic impact. Honey bees pollinate more than \$17 billion worth of crops in the United States every year and are regarded as the most important pollinator.<sup>17</sup> However, despite the honey bee's overall importance in pollination, many cash crops, such as corn, soybeans, wheat, and rice, are either self-pollinated<sup>18</sup> or wind-pollinated.<sup>19</sup> As a result, agricultural companies with immense lobbying power—such as Monsanto, Dow, and Bayer—ensure that production yields for these cash crops, which are used for food, feed, and products, remain high by insisting on the essentiality of dangerous application practices of harsh insecticides, such as neonicotinoids,<sup>20</sup> that can harm honey bees.

However, advocates for honey bees, such as the American Beekeeping Federation (ABF) insist that there be more regulation regarding the widespread use and application of pesticides, especially during certain high activity time periods.<sup>21</sup> By ensuring that there is a national conversation about—and resolution to—the decline in honey bee population, the honey bee advocates' goal is not to put those agricultural companies out of business, but rather to have the general population, large agricultural companies, and government recognize the importance of honey bees.<sup>22</sup> By identifying both the ecological and economic benefits and detriments of using highly effective pesticides, such as neonicotinoids, the intended goal is to find a resolution for both the honey bees and production yields.<sup>23</sup>

15. David Pierson, *California Farms Lead the Way in Almond Production*, L.A. TIMES (Jan. 12, 2014, 5:00 AM), <http://www.latimes.com/business/la-fi-california-almonds-20140112-story.html#axzz2zvLYmTNS> [<https://perma.cc/9UTP-T3BF>].

16. Jeffery Pettis & Keith S. Delaplane, *Coordinated Responses to Honey Bee Decline in the USA*, 41 APIDOLOGIE 256 (2010).

17. MINN. DEP'T OF AGRIC., REVIEW OF NEONICOTINOID USE, REGISTRATION, AND INSECT POLLINATOR IMPACTS IN MINN. 14 (2016).

18. Either autogamous or geitonogamous.

19. Anemophilous.

20. “[Neonicotinoids] are used on more than 140 different crops as well as in home gardens, meaning endless chances of exposure for any insect that alights on the treated plants.” Walsh, *supra* note 14.

21. *Legislative Updates*, AM. BEEKEEPING FED'N, <http://www.abfnet.org/?page=28> [<https://perma.cc/4QJX-4DEV>].

22. *Id.*

23. *Id.*

However, the lack of a national protocol for dealing with the fragility of honey bee populations combined with the necessity to ensure that there are high yields in necessary cash crops creates a system in which the honey bees, and the farmers who use and depend upon them, are neglected. Because it is vital to use good stewardship practices to ensure that the ecology and economy remain strong for future generations, federal agencies need to take a greater role in regulating the use of pesticides; in terms of type, amount, and application time. The most recent policy adopted on January 12, 2017, by the United States Environmental Protection Agency (EPA) addresses some, but not all, of these concerns.<sup>24</sup> Additional steps, such as providing funding for more research, providing incentives for companies to reduce neonicotinoids in their products, and ensuring the public understands what neonicotinoids do, actually need to be taken to ensure honey bees recovery and continued health.

This Note will propose that the EPA issue a federal baseline for restricting the use of neonicotinoids throughout the United States while allowing individual states to create additional standards based upon the specific types of agriculture within their borders, and it will suggest that the EPA refuse to re-register imidacloprid, a particularly hazardous neonicotinoid. This Note will first examine the history of neonicotinoids and their connection to honey bee population diminution, various states' and municipalities' legislative processes to date, and judicial actions that impact honey bees before examining the most recent EPA policy on protecting honey bees. Next, this Note will examine the European Union's regulation on neonicotinoids, suggesting that the United States adopt certain elements to ensure the country's honey bee's recovery. Finally, this Note will propose that Illinois model a heightened standard based on Minnesota's pollinator protection program, as the current procedures that Illinois uses to protect honey bees are not sufficient on their own.

## II. NEONICOTINOIDS AND HONEY BEES

Before entering into a discussion about the necessity of regulating the use of neonicotinoids, it is best to have an understanding of the various types of neonicotinoids, their uses and application procedures, and their impact on the honey bee. Historically, farmers began using pesticides like sulphur compounds as early as 4,500 years ago in ancient Mesopotamia to decrease the amount of crops lost to insect activity and to ensure a high yield on important crops such as wheat.<sup>25</sup> As technology advanced, so too

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24. U.S. ENVTL. PROT. AGENCY, *supra* note 8.

25. John Unsworth, *History of Pesticide Use*, INT'L UNION PURE & APPLIED CHEMISTRY (May 10, 2010, 4:43 AM),

did pesticides.<sup>26</sup> In the United States, inorganic chemical compounds like sodium chlorate were widely used until the 1940s, which was when growth of synthetic compounds to be used for agricultural purposes developed.<sup>27</sup> This led to the widespread use of arguably the most popular pesticide, dichlorodiphenyltrichloroethane, or as it is commonly known, DDT.<sup>28</sup>

When the EPA banned the use of DDT in 1972, due to its persistence in the fatty tissues of mammals, fish, and birds, which caused adverse health effects and the growing resistance in insects that quickly metabolized the DDT, the need for “safer” pesticides became apparent.<sup>29</sup> In the late 1980s, scientists developed a class of insecticides called neonicotinoids for commercial use; by the middle of the 1990s, neonicotinoid use was widespread in agriculture, home landscape, and animal production.<sup>30</sup> The name neonicotinoid literally means “new nicotine-like.”<sup>31</sup> Scientists developing neonicotinoids were drawn to nicotine because nicotine is a naturally occurring botanical insecticide.<sup>32</sup>

Neonicotinoids were the first new class of insecticide in over thirty years with systematic activity in plants.<sup>33</sup> The systematic activity protects plants from both sap-sucking insects and those that chew on the plants because when the neonicotinoids are absorbed by the plant, they are infused through all areas of the treated plant—the roots, stem, flowers, pollen, nectar, and leaves.<sup>34</sup> Because of its nicotine-like properties, neonicotinoids are lethal to insects;<sup>35</sup> when an insect ingests a neonicotinoid, its central nerv-

[http://agrochemicals.iupac.org/index.php?option=com\\_sobi2&sobi2Task=sobi2Details&catid=3&sobi2Id=31](http://agrochemicals.iupac.org/index.php?option=com_sobi2&sobi2Task=sobi2Details&catid=3&sobi2Id=31) [<https://perma.cc/MAT4-T3MG>].

26. *Id.*

27. *Id.*

28. NAT’L PESTICIDE INFO. CTR., DDT GENERAL FACT SHEET 1 (1999). For an in-depth discussion on DDT and its effects on environment, see Rachel Carson’s *Silent Spring*.

29. “After Rachel Carson published her influential book, *Silent Spring* in 1962, detailing the environmental harms posed by DDT and other pesticides, the public began to focus far more on the adverse environmental impacts of pesticides and many sectors of society mobilized to take legal and political action.” Alexandra B. Klass, *Bees, Trees, Preemption, and Nuisance: A New Path to Resolving Pesticide Land Use Disputes*, 32 *ECOLOGY L.Q.* 763, 764 (2005).

30. Whitney Cranshaw, *Neonicotinoid Insecticides: Use Characteristics –and Intersections with Pollinators*, COLO. ST. U., <http://webdoc.agsci.colostate.edu/bspm/Garden%20Center%20Talk%20July%202014.pdf> [<https://perma.cc/AP5D-W954>].

31. MINN. DEP’T AGRIC., *supra* note 17, at 16.

32. *Id.*

33. Whitney Cranshaw, *Neonicotinoid Insecticides: Use Characteristics –and Intersections with Pollinators*, COLO. ST. U., <http://webdoc.agsci.colostate.edu/bspm/Garden%20Center%20Talk%20July%202014.pdf> [<https://perma.cc/4WFQ-DD2X>].

34. *Id.*

35. *Id.*

ous system becomes hyper-stimulated because of the nicotine-like qualities, causing the insect to tremble and shake before becoming paralyzed.<sup>36</sup> This paralysis can lead to death depending on the exposure duration and dose of the neonicotinoid.<sup>37</sup> However, neonicotinoids were promoted as being safer for wildlife because they were less toxic to vertebrates like birds or mammals than older classes of insecticides like DDT.<sup>38</sup> Scientists and farmers thought little about how this new class of insecticides would impact honey bees,<sup>39</sup> who consume a plant's pollen and nectar--which are both infused with neonicotinoids--as opposed to the plant itself.<sup>40</sup> The use of neonicotinoids today is popular not only in commercial farming, but also in residential and business landscaping.<sup>41</sup>

There are seven types of neonicotinoids, six of which are present in the hundreds of plant protection products for sale in the United States: imidacloprid, clothianidin, thiamethoxam, dinotefuran, acetamiprid, and thiacloprid.<sup>42</sup> Although each of the types have various levels of water solubility and UV sensitivity, each work in a similar fashion, essentially overstimulating insects to death.<sup>43</sup> Neonicotinoids can be applied in a variety of methods such as seed coatings (covering the seed with the insecticide before it is planted),<sup>44</sup> soil drenches or granules (adding diluted insecticide directly to the base of the plants in liquid or powder form),<sup>45</sup> foliar sprays (applying insecticide on the leaves of the plants),<sup>46</sup> or chemigation (adding insecticide to irrigation waters).<sup>47</sup> Because of its lesser impact on vertebrate wildlife and the widespread application methods, neonicotinoids have become increasingly popular for plant protection.<sup>48</sup>

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36. MINN. DEP'T AGRIC., *supra* note 17, at 16.

37. *Id.*

38. JENNIFER HOPWOOD ET AL., THE XERCES SOCIETY FOR INVERTEBRATE CONSERVATION, ARE NEONICOTINOIDS KILLING BEES? 1 (2012).

39. "Studies have shown that neonicotinoids attack [honey bees'] nervous system, interfering with their flying and navigation abilities without killing them immediately." Walsh, *supra* note 14.

40. JENNIFER HOPWOOD ET AL., THE XERCES SOCIETY FOR INVERTEBRATE CONSERVATION, ARE NEONICOTINOIDS KILLING BEES? 1 (2012).

41. "Now ubiquitous on garden center shelves, neonicotinoids can be applied in much greater concentrations in gardens than on farms, and with fewer restrictions." *Id.*

42. *Id.* at 3.

43. JENNIFER HOPWOOD ET AL., THE XERCES SOCIETY FOR INVERTEBRATE CONSERVATION, HOW NEONICOTINOIDS CAN KILL BEES 6 (2d ed. 2016).

44. *Id.*

45. *Id.*

46. *Id.*

47. *Id.*

48. JENNIFER HOPWOOD ET AL., THE XERCES SOCIETY FOR INVERTEBRATE CONSERVATION, ARE NEONICOTINOIDS KILLING BEES? 3 (2012).

Beginning in the mid-1990s, beekeepers across the country began reporting significant losses in hive populations.<sup>49</sup> The term *Colony Collapse Disorder* (CCD) was used to describe these losses because no single factor could account for the high rate of decline in the population.<sup>50</sup> Hives impacted by CCD are identified by the abrupt disappearance of worker bees from a colony, with no dead bees present in or around the hive.<sup>51</sup> These colonies would otherwise appear healthy, with honey, pollen, and larvae present.<sup>52</sup> Scientists have pointed to a combination of factors that have led to CCD: biotic stresses such as pathogens, parasites, and pests; abiotic stresses such as climate change, pesticides, and pollution; and resource factors such as reduced availability of foraging and nesting sites due to habitat fragmentation and loss.<sup>53</sup> Since the recognition of CCD, general colony health and average annual honey production has also decreased.<sup>54</sup>

Normally, beekeepers expect to lose about 15% of their hive populations in any given year due to winter loss;<sup>55</sup> this is typical, and beekeepers can account for these losses by splitting hives and repopulating their apiaries quickly.<sup>56</sup> However, beginning in 2006, and continuing to the present, winter loss has been consistently over 15%, often times being twice the acceptable amount.<sup>57</sup> The reported total annual loss for the 2015-2016 season was 44%.<sup>58</sup> In 2014, beekeepers across twelve states reported losses greater than 50%.<sup>59</sup> This figure makes economic sustainability difficult for commercial beekeepers who have to repopulate many more hives than expected.<sup>60</sup>

49. Rosemary Mason et al., *Immune Suppression by Neonicotinoid Insecticides at the Root of Global Wildlife Declines*, 1 J. ENVTL. IMMUNOLOGY & TOXICOLOGY 3, 4 (2013).

50. MINN. DEP'T OF AGRIC., REVIEW OF NEONICOTINOID USE, REGISTRATION, AND INSECT POLLINATOR IMPACTS IN MINNESOTA 14 (2016), <http://www.mda.state.mn.us/~media/Files/chemicals/reviews/neonicreviewrpt2016.pdf> [<https://perma.cc/RA6X-KJCV>].

51. *Id.*

52. *Id.*

53. Tjeerd Blacquiere et al., *Neonicotinoids in Bees: A Review on Concentrations, Side-effects and Risk Assessment*, 21 ECOTOXICOLOGY 973, 979 (2012).

54. MINN. DEP'T OF AGRIC., *supra* note 17, at 14.

55. "Winter loss" is the amount of bees that die during the winter months, which is common among insects.

56. *Nation's Beekeepers Lost 44 Percent of Bees in 2015-16*, BEE INFORMED BLOG (May 10, 2016), <https://beeinformed.org/2016/05/10/nations-beekeepers-lost-44-percent-of-bees-in-2015-16/> [<https://perma.cc/H3X3-SH3E>].

57. *Id.*

58. *Id.*

59. Nathalie Steinhauer et al., *Colony Loss 2014-2015: Preliminary Results*, BEE INFORMED (May 13, 2015), <https://beeinformed.org/results/colony-loss-2014-2015-preliminary-results/> [<https://perma.cc/573H-NWV3>].

60. *Id.*

Many studies have been done to determine whether the widespread use of neonicotinoids has impacted honey bee populations.<sup>61</sup> Based on laboratory estimates, clothianidin, dinotefran, imidacloprid, and thiametoxam are considered to be highly toxic<sup>62</sup> to honey bees, and acetamiprid and thiacloprid are considered to be moderately toxic<sup>63</sup> to honey bees.<sup>64</sup> Field studies have shown that imidacloprid has been found to cut the number of egg-containing brood cells<sup>65</sup> by 46%, and thiamethoxam has decreased the number of live bees by 38%.<sup>66</sup> The rising annual death rates for bees and the continuance of CCD has been consistently linked to neonicotinoids.<sup>67</sup> “The delayed but cumulative effects of repeated exposure might explain why colonies keep dying off year after year despite beekeepers’ best efforts. It’s as if the bees were being poisoned very slowly.”<sup>68</sup> Moreover, honey bees that are introduced to neonicotinoid infused pollen and nectar show signs of being addicted to it, akin to humans being addicted to nicotine.<sup>69</sup>

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61. See generally J Bernal et al., *Overview of Pesticide Residues in Stored Pollen and Their Potential Effect on Bee Colony (Apis mellifera) in Spain*, 103 J. ECON. ENTOMOLOGY 1964, 1964-71 (2010); E.C. Yang et al., *Abnormal Foraging Behavior Induced by Sublethal Dosage of Imidacloprid in the Honey Bee*, 101 J. ECON. ENTOMOLOGY 1743, 1743-48 (2008); Takao Iwasa et al., *Mechanism for the Differential Toxicity of Neonicotinoid Insecticides in the Honey Bee, Apis mellifera*, 23 CROP PROTECTION 371, 371-78 (2004); Motohiro Tomizawa & John E. Casida, *Selective Toxicity of Neonicotinoids Attributable to Specificity of Insect and Mammalian Nicotinic Receptors*, 48 ANN. REV. ENTOMOLOGY 339, 339-64 (2003).

62. The term “highly toxic” is described by the EPA to refer to the median lethal dose of a pesticide to be less than 2 micrograms per liter. LD<sub>50</sub> <2 µg. See JENNIFER HOPWOOD ET AL., THE XERCES SOCIETY FOR INVERTEBRATE CONSERVATION, HOW NEONICOTINOIDS CAN KILL BEES vii (2d ed. 2016).

63. The term “moderately toxic” is described by the EPA to refer to the median lethal dose of a pesticide to be less than 2 and 10.99 micrograms per liter. 2-10.99 µg. *Id.*

64. JENNIFER HOPWOOD ET AL., THE XERCES SOCIETY FOR INVERTEBRATE CONSERVATION, HOW NEONICOTINOIDS CAN KILL BEES 6 (2d ed. 2016).

65. A “brood cell” is a cell in the bee comb used for the rearing of a larva. *Brood Cell*, MERRIAM-WEBSTER DICTIONARY (11th ed. 2016).

66. Joseph Mercola, *Battered Bees and the Threat to Our Food*, MERCOLA (Sept. 20, 2016), <http://articles.mercola.com/sites/articles/archive/2016/09/20/queen-bees-pesticide-exposure.aspx> [https://perma.cc/R3Y3-7PH3].

67. See generally RENEE JOHNSON, CONG. RESEARCH SERV., RL33938 HONEY BEE COLONY COLLAPSE DISORDER (2010); N. Desneax, A. Decortye & J.M. Delpuech, *The Sublethal Effects of Pesticides on Beneficial Anthopods*. 52 ANN. REV. ENTOMOLOGY 81-106 (2007).

68. Walsh, *supra* note 14.

69. See Sébastien C. Kessler et al., *Bees Prefer Foods Containing Neonicotinoid Pesticides*, 521 NATURE 74, 74-76 (May 2015) <https://www.nature.com/nature/journal/v521/n7550/full/nature14414.html> [https://perma.cc/3N5R-WYYG].

The preference of the bees in our assays for solutions containing [imidacloprid] or [thiamethoxam] probably arises from the pharmacological action of these compounds on nicotinic acetylcholine receptors (nAChRs) in the bees’ brains. It does

The constant fear of losing the country's honey bee population has led many honey bee advocates to seek legislative remedies.<sup>70</sup>

### III. LEGISLATIVE PROCESS TO DATE

Federal agencies have just begun making some strides to ensuring that honey bees receive the attention and protection that they deserve. On June 20, 2014, President Barack Obama released a Presidential Memorandum on Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators (hereinafter Memorandum) to the heads of executive departments and agencies, specifically the Secretary of Agriculture and the Administrator of the EPA.<sup>71</sup> In it, President Obama recognized that “[g]iven the breadth, severity, and persistence of pollinator losses, it is critical to expand Federal efforts and take new steps to reverse pollinator losses and help restore populations to healthy levels.”<sup>72</sup> The Memorandum established a Pollinator Health Task Force (hereinafter Task Force) with the mission to develop a National Pollinator Health Strategy (hereinafter Strategy) which would include explicit goals, milestones, and metrics to measure its progress.<sup>73</sup> The Strategy was released on May 19, 2015 and focused on four major issues surrounding pollinator health: (1) conducting research to understand, prevent, and recover from pollinator losses; (2) expanding public education programs and outreach; (3) increasing and improving pollinator habitat; and (4) developing public-private partnerships across all these activities.<sup>74</sup>

With the formation of the Task Force and the creation of the Strategy, the federal government began to inch its way into the fray that municipalities and states have been shouldering.<sup>75</sup> In states with larger, organized collectives of beekeepers and concerned farmers, such as California, legisla-

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not reflect a generalized enhancement of feeding because bees consuming these pesticides ate less food overall. Remarkably, the preference occurred even when bees consuming these solutions were more likely to die.

*Id.*

70. See [afb.org](http://www.afb.org) for legislative priorities. *Legislative Priorities*, AM. BEEKEEPING FED’N, <http://www.abfnet.org/?page=28> [<https://perma.cc/A9NY-LFPZ>].

71. Memorandum on Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators, 79 Fed. Reg. 35903, 35903 (June 24, 2014).

72. *Id.* at 35903.

73. *Id.* at 35904.

74. POLLINATOR HEALTH TASK FORCE, NATIONAL STRATEGY TO PROMOTE THE HEALTH OF HONEY BEES AND OTHER POLLINATORS i (2015), <https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/Pollinator%20Health%20Strategy%202015.pdf> [<https://perma.cc/B4R2-9WYA>].

75. *Id.* at 1 (“Preventing continued losses of our country’s pollinators requires immediate national attention, as pollinators play a critical role in maintain diverse ecosystems and in supporting agricultural production.”).

tion has existed for decades to protect honey bee colonies from various threats including pesticides.<sup>76</sup> A form of California's current statute protecting bees has been on its books since 1985, long before neonicotinoids or CCD were a factor in their decision making process.<sup>77</sup> The statute provides for regulatory actions such as requiring that farmers and others notify beekeepers as to when, how, and the amount of pesticide that will be applied, the creation of "Citrus/Bee Protection Areas" that will not allow the application of pesticides during specific seasons and times of day when bees are most active, and requiring a label to be placed on products that are known to be toxic to bees.<sup>78</sup>

A few months before President Obama released the Memorandum, the City Council of Eugene, Oregon, unanimously passed a resolution that banned the use of neonicotinoids on public land.<sup>79</sup> In so doing, Eugene became the first U.S. city to ban the use of neonicotinoids in some capacity.<sup>80</sup> This step spurred a number of cities in the Northwest, including Portland, Oregon, and Seattle, Washington, to do the same.<sup>81</sup> In August 2016, Minne-

76. See 1987's California's Food and Agricultural Code on the use of pesticides with bee management and honey production. CAL. FOOD & AGRIC. CODE § 13-7-29100 (West 2016):

- (a) The Legislature hereby finds and declares that bees perform a valuable service to agriculture in this state.
- (b) The Legislature further finds and declares that the necessary application of certain pesticides to blossoming plants poses a potential hazard to bees.
- (c) The Legislature further finds and declares that the use of pesticides is necessary for the protection of agricultural crops.
- (d) The Legislature further finds and declares that certain factors, including, but not limited to, the time of application, the type of pesticides used, the type of blossoming plant involved, the proximity of the apiaries, and the ability to locate and notify the owners of the apiaries involved, directly affect the extent of the harm to bees resulting from pesticides.

*Id.*

77. *Id.*

78. See §§ 6650-6656 of the California Code of Regulations, entitled, "Protection of Bees" CAL. CODE REGS. tit. 3, §§ 6650-56 (2017).

79. News Release, City of Eugene, Oregon, *Eugene Takes a Formal Stand Against Harmful Neonicotinoids* (Mar. 13, 2014), <https://www.eugene-or.gov/Archive/ViewFile/Item/3016> [<https://perma.cc/8QP8-SXM6>].

80. *Id.*

81. Andrew Theen, *Portland Bans Use of Insecticides Believed to be Harmful to Bees on City Property*, THE OREGONIAN (Apr. 1, 2015, 1:12 PM), [http://www.oregonlive.com/portland/index.ssf/2015/04/portland\\_bans\\_use\\_of\\_specific.html](http://www.oregonlive.com/portland/index.ssf/2015/04/portland_bans_use_of_specific.html) [[perma.cc/CG4Y-AKV5](https://perma.cc/CG4Y-AKV5)]; Matt Driscoll, *Seattle Sticks Up For Bees, Bans Neonicotinoids. But Will It Help?*, SEATTLE WKLY. (Sept. 26, 2014, 4:19 PM), <http://archive.seattleweekly.com/home/954782-129/seattle-sticks-up-for-bees-bans> [<https://perma.cc/PN63-H7YQ>].

sota's Department of Agriculture released a lengthy review of the state's neonicotinoid use.<sup>82</sup> In it, the Department proposed eight actions to ensure that the use of neonicotinoids do not harm pollinators.<sup>83</sup> These proposals follow along with similar Canadian and Western European countries' interventions regarding the use of neonicotinoids, which generally allow for a limited use of neonicotinoids, with strict penalties for regulation violations.

After experiencing over 61% loss in their state's bee colonies from 2014 to 2015,<sup>84</sup> the Maryland legislature and governor passed the Maryland Pollinator Protection Act.<sup>85</sup> The Act places a ban on neonicotinoid use beginning in 2018.<sup>86</sup> The ban includes every type of neonicotinoid and only excludes private citizens from using neonicotinoids as a pesticide.<sup>87</sup> The statute also includes a ban on retail stores selling products containing neonicotinoids.<sup>88</sup> Violators of this Act will be subject to a \$250 fine.<sup>89</sup> This

82. See generally MINN. DEP'T OF AGRIC., REVIEW OF NEONICOTINOID USE, REGISTRATION, AND INSECT POLLINATOR IMPACTS IN MINNESOTA (2016).

83. These include both legislative and non-legislative activities:

- (1) Create a treated seed program;
- (2) create a dedicated "Pollinator Protection Account;"
- (3) require formal verification of need prior to use of neonicotinoid pesticides;
- (4) develop an educational campaign for homeowners and residential users of insecticides;
- (5) review product labels for appropriate use of neonicotinoids for homeowners and residential users;
- (6) develop Minnesota specific pollinator and stewardship materials;
- (7) increase use inspections for insecticides that are highly toxic to pollinators; and
- (8) review label requirements for individual neonicotinoid products.

*Id.* at 83-85 (2016).

84. Nathalie Steinhauer et al., *Colony Loss 2014-2015: Preliminary Results*, BEE INFORMED (May 13, 2015), <https://beeinformed.org/results/colony-loss-2014-2015-preliminary-results/> [<https://perma.cc/8YF5-JKG5>].

85. MD. CODE ANN., AGRIC. §§ 5-2A-01- 5-2A-05 (Westlaw 2016).

86. Kathy Lundy Springuel, *Maryland is First State to Ban Neonicotinoids*, BNA (May 31, 2016), <https://www.bna.com/maryland-first-state-n57982073298/>.

87. MD. CODE ANN., AGRIC. § 5-2A-02(b) (Westlaw 2016).

On or after January 1, 2018, a person may not use a neonicotinoid pesticide unless the person is:

- (1) A certified applicator or a person working under the supervision of a certified applicator, as defined in § 5-201 of this title;
- (2) A farmer, or a person under the supervision of a farmer, who uses the pesticide for agricultural purposes, including crop production, livestock, poultry, equine, and noncrop agricultural fields; or
- (3) A veterinarian.

*Id.*

88. *Id.* at § 5-2A-02(a)(2) ("On or after January 1, 2018, a person may not sell at retail in the State a neonicotinoid pesticide unless the person also sells a restricted use pesticide, as defined in § 5-201 of this title.").

statute takes into account both the economic and ecological impact that a ban would have on the state.<sup>90</sup> Although there are ways to strengthen the statute, such as making a violation of the Act a misdemeanor, it is a good start to aid honey bees.

The piecemeal legislation to date from municipalities and states provides the benefits of regulating neonicotinoid use for honey bees within certain states, however collectively they fail to address the overall concern for honey bee health. After all, bees do not see borders, and colonies that span between states' borders<sup>91</sup> may continue to experience declines in production and colony health. States and municipalities have the ability to control only what occurs within their borders. Without the use of strong federal regulations, the overall health of this nation's honey bees will continue to decline.

#### IV. JUDICIAL ACTION TO DATE

To ensure that honey bees have adequate protection from neonicotinoids where statutes and regulations failed to provide for honey bees, local advocacy groups and states have taken to the judicial system and won.<sup>92</sup> In *Pollinator Stewardship Council v. United States Environmental Protection Agency*, the Ninth Circuit held that the EPA's unconditional approval to register Dow Agricultural's pesticide sulfoxaflor, housed in a subclass of neonicotinoids called sulfoximines, was not supported by substantial evidence and remanded the case.<sup>93</sup> The court analyzed the extensive process of the Pollinator Risk Assessment Framework, a three-tiered system designed to assess the extent of toxicity of pesticides to honey bees both individually and as a colony.<sup>94</sup> The studies submitted to the EPA from Dow were inconclusive as to the risks of sulfoxaflor to bees, and both the EPA and Dow therefore argued that "the studies affirmatively prove that

89. MD. CODE ANN., AGRIC. § 5-2A-05 (Westlaw 2016).

90. Natasha Geiling, *For the First Time, A State Just Banned Neonicotinoids, A Pesticide Threatening Pollinators*, THINK PROGRESS (Apr. 8, 2016), <https://thinkprogress.org/for-the-first-time-a-state-just-banned-neonicotinoids-a-pesticide-threatening-pollinators-dea68084afe#.nukml83p3> [<https://perma.cc/ZQ9R-5KL2>].

91. For example, Sunny Hill Honey Farm spans between the Illinois and Wisconsin borders. SUNNY HILL HONEY, <http://www.sunnyhillhoney.com> [<https://perma.cc/VQ74-9PSD>].

92. See, e.g., *Anderson v. McCarthy*, No. C 16-00068 WHA, 2016 U.S. Dist. LEXIS 63671 (N.D. Cal. May 13, 2016) (dismissing defendant's motion to dismiss plaintiff's claims that seed coatings containing neonicotinoids were not safe for honey bee populations); *Nat. Res. Def. Council v. U.S. EPA*, 676 F. Supp. 2d 307 (S.D.N.Y. 2009) (vacating the EPA's registration of an insecticide due to the EPA's failure to follow procedures outlined in Administrative Procedure Act).

93. *Pollinator Stewardship Council v. U.S. EPA*, 806 F.3d 520, 522 (9th Cir. 2015).

94. *Id.* at 524.

sulfoxaflor does *not* cause unreasonable adverse effects on bees.”<sup>95</sup> The court did not agree.<sup>96</sup> The court determined that the EPA did not follow its own protocols regarding the approval of the insecticide and remanded the case to the EPA to obtain further studies on the insecticide.<sup>97</sup> The court noted that “given the precariousness of bee populations, leaving the EPA’s registration of sulfoxaflor in place risks more potential environmental harm than vacating it.”<sup>98</sup>

In October 2016, the Massachusetts Attorney General announced that Bayer CropScience—the largest agrochemical company in the world—agreed to pay \$75,000 and change its advertising practices to resolve allegations that the company misled and deceived consumers about its product’s potential risks to honey bees.<sup>99</sup> Three of Bayer’s products<sup>100</sup> contained either imidacloprid or clothianidin, both neonicotinoids, but were advertised as being “a daily vitamin” for plants.<sup>101</sup> The assurance of discontinuance,<sup>102</sup> filed in the Suffolk Superior Court,<sup>103</sup> marked the first time any major pesti-

95. *Id.* at 531.

96. *Id.* (emphasis in original).

97. *Id.* at 533.

98. *Pollinator Stewardship Council*, 806 F.3d at 532.

99. Press Release, Attorney Gen. Maura Healey, AG Takes Action Against Bayer Over Deceptive Marketing About Risks of Pesticides (Oct. 27, 2016).

100. Bayer Advanced® All-in-One Rose and Flower Care, BAYER, <https://www.bayeradvanced.com/~/-/media/BayerAdvanced/Product%20Labels/All-in-One-Rose%20Flower%20Care%20-%20Concentrate%20-%2032%20oz.ashx> [<https://perma.cc/QS6G-2363>]; Bayer Advanced® 12 Month Tree & Shrub Protect and Feed II, BAYER,

[https://www.bayeradvanced.com/~/-/media/BayerAdvanced/Product%20Labels/Tree-\\_-Shrub-Protect-\\_-Feed-4lbs.ashx](https://www.bayeradvanced.com/~/-/media/BayerAdvanced/Product%20Labels/Tree-_-Shrub-Protect-_-Feed-4lbs.ashx) [<https://perma.cc/L4G7-7M2P>]; Bayer Advanced® Season Long Grub Control Plus Turf Revitalizer, BAYER,

<https://www.bayeradvanced.com/~/-/media/BayerAdvanced/Product%20Labels/SLG-w-Fert-12lb.ashx> [<https://perma.cc/58T2-KWNL>].

101. Press Release, Attorney Gen. Maura Healey, *supra* note 99.

102. *See* MASS. GEN. LAWS, ch. 93A, § 5 (2017).

In any case where the attorney general has authority to institute an action or proceeding under section four, in lieu thereof he may accept an assurance of discontinuance of any method, act or practice in violation of this chapter from any person alleged to be engaged or to have been engaged in such method, act or practice. Such assurance may, among other terms, include a stipulation for the voluntary payment by such person of the costs of investigation, or of an amount to be held in escrow pending the outcome of an action or as restitution to aggrieved buyers, or both.

*Id.*

103. Complaint, Commonwealth v. Bayer CropScience Inc., No. 1:12-cv-10849 (D. Mass. May 10, 2012).

icide company had agreed to a court order to address alleged false advertising regarding their product's risks posed to bees due to neonicotinoids.<sup>104</sup>

Although the court system has provided a few decent results for honey bees and their advocates, the court system should only be used as a last resort. Advocates may not have as much money as companies to take on expensive litigation and appeals processes. The amount of money that companies pay versus the amount of money that companies make annually, for example a \$75,000 fine for the largest agricultural company in the world,<sup>105</sup> does not do enough to dissuade them from using false policies in the future. Taking on a systemic problem case-by-case may do wonders for an individual bee keeper or a specific state, but it does not cure the problem facing the entire country. The federal government has been slow to address the issues of honey bee health using a more proactive approach.

#### V. THE NEW EPA POLICY

From the time that President Obama released the Memorandum to address pollinator health in 2014 through January, 2017, the EPA released just one proposal regarding neonicotinoid use and honey bees.<sup>106</sup> A year after the Memorandum, on May 28, 2015, the EPA proposed additional mandatory pesticide label restrictions to protect managed bees under contract pollination services from foliar applications of pesticides that are acutely toxic to bees on a contact exposure basis.<sup>107</sup> In its *Proposal to Mitigate Exposure to Bees from Acutely Toxic Pesticide Products*, the EPA proposed restrictions that would prohibit applications of pesticide products that are acutely toxic to bees<sup>108</sup> during bloom where honey bees are known to be present under contract for pollination services.<sup>109</sup> The EPA proposed that foliar application of acutely toxic pesticides on blooming plants be prohibited.<sup>110</sup> The list of registered active ingredients that met the "acutely toxic" criteria included seventy-nine chemicals.<sup>111</sup>

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104. Press Release, Attorney Gen. Maura Healey, *supra* note 99.

105. Monsanto is presently ranked number 204 on the Fortune 500 list, FORTUNE 500 <http://beta.fortune.com/fortune500/monsanto-189> [<https://perma.cc/3X2X-2P82>].

106. Proposal to Mitigate Exposure to Bees from Acutely Toxic Pesticide Products, 80 Fed. Reg. 30644 (proposed May 29, 2015) [hereinafter Proposal].

107. *Id.* at 3.

108. "Acutely toxic" is defined by the EPA as compounds with an acute contact. *Id.* at 6.

109. *Id.* at 3.

110. The Proposal stated that the following language should be added to each label of pesticide:

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

The proposal also noted the need for “clearer communications between growers/applicators, beekeepers and enforcement authorities.”<sup>112</sup> To encourage clearer communication to large numbers of bees intentionally placed by crops treated with pesticides, the proposal noted the need for “local solutions in the form of state and tribal MP3s for managed bees not under contract services.”<sup>113</sup> The proposal also noted that the “EPA will monitor the success of these plans in mitigating risk to bees from acutely toxic pesticides on an ongoing basis and determine whether additional EPA action is warranted.”<sup>114</sup>

Following a notice and comment period that was extended twice, the EPA amassed over 113,000 comments on the proposal.<sup>115</sup> Few of those comments were opposed to the proposed rule.<sup>116</sup> The EPA’s Response to the Public Comments identified fourteen specific plants that were likely to be impacted by the proposal.<sup>117</sup> The EPA noted that although there were many comments that focused on the lack of protection offered to non-contract bees, by focusing its restrictions on the bees under contract, the policy will aid all sets of bees.<sup>118</sup>

The EPA specifically addressed the public’s comments focusing on neonicotinoids, stating:

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FOR FOLIAR APPLICATIONS OF THIS PRODUCT TO SITES WITH BEES ON-SITE FOR COMMERCIAL POLLINATION SERVICES: Foliar application of this product is prohibited from onset of flowering until flowering is complete when bees are on-site under contract, unless the application is made in association with a government-declared public health response. If site-specific pollinator protection/pre-bloom restrictions exist, then those restrictions must also be followed.

*Id.* at 18.

111. Proposal, *supra* note 106, at Appendix A. This list included five of the six subtypes of neonicotinoids present in the hundreds of plant protection products on sale in the United States. *Id.*

112. *Id.* at 6.

113. *Id.* at 8-9.

114. *Id.* at 9.

115. See DOCKET FOR MITIGATION FOR PESTICIDE PRODUCTS THAT ARE ACUTELY TOXIC TO BEES, <https://www.regulations.gov/docket?D=EPA-HQ-OPP-2014-0818> [<https://perma.cc/K4QA-VF8U>].

116. “[O]nly a few indicated that the EPA’s effort to better protect bees from acute risks of pesticides was unwarranted.” U.S. ENVTL. PROT. AGENCY OFFICE OF PESTICIDE, RESPONSE TO PUBLIC COMMENTS SUBMITTED ON THE ENVIRONMENTAL PROTECTION AGENCY’S PROPOSAL TO MITIGATE EXPOSURE TO BEES FROM ACUTELY TOXIC PESTICIDE PRODUCTS PROGRAMS 2 (Jan. 12, 2017), <https://www.regulations.gov/document?D=EPA-HQ-OPP-2014-0818-0478> [<https://perma.cc/LN2Q-LRGB>] [hereinafter RESPONSE].

117. Almonds, apples, avocado, caneberries (blackberries and raspberries), cranberries, blueberries, cherries, dried plums, pears, citrus, macadamia nuts, seedless mandarin oranges, and tomatoes. *Id.*

118. *Id.* at 19.

With respect to the four nitroguanadine-substituted neonicotinoid insecticides (*i.e.*, clothianidin, dinotefuran, imidacloprid, and thiamethoxam), current labeling for these chemicals was modified in 2014 when the EPA sought specific pollinator protection language. The EPA also notes that these compounds are currently undergoing registration review. The EPA has already published a preliminary pollinator risk assessment for imidacloprid on January 16, 2015, in the public docket EPA-HQ-OPP-2008-0844, and intends to publish preliminary pollinator risk assessments for clothianidin, thiamethoxam and dinotefuran in early 2017. Consequently, the neonicotinoid registrations and labels will be evaluated and, as necessary, further modified based upon a comprehensive consideration of chemical-specific pollinator data (data generated in accordance with the new pollinator risk assessment framework) in addition to the considerations identified in the Policy.<sup>119</sup>

This recognition of neonicotinoids as a class unto their own pleased honey bee advocates and encouraged some that the use of neonicotinoids may soon go the way of DDT.

The formal policy<sup>120</sup> was enacted on January 12, 2017 and incorporated much of the language in the proposal.<sup>121</sup> The specific policy applies to all products that meet the following criteria: (1) liquid or dust formulations as applied; and (2) outdoor foliar use directions on agricultural crops that may utilize contract pollination services; and (3) maximum application rates that result in risk estimates that exceed the acute risk LOC (Level of Concern) for bees of 0.4 (based on contact exposure).<sup>122</sup> This focus ensures that “the Policy applies to all conventional pesticide active ingredients that

119. *Id.* at 8-9.

120. U.S. ENVTL. PROT. AGENCY, U.S. ENVIRONMENTAL PROTECTION AGENCY’S POLICY TO MITIGATE THE ACUTE RISK TO BEES FROM PESTICIDE PRODUCTS (2017) [hereinafter POLICY].

121. The Acute Risk Mitigation Label Language that will be added to products containing identified pesticides will read:

FOR FOLIAR APPLICATIONS OF THIS PRODUCT TO A CROP WHERE BEES ARE UNDER CONTRACT TO POLLINATE THAT CROP: Foliar application of this product is prohibited to a crop from onset of flowering until flowering is complete when bees are under contract for pollination services to that crop unless the application is made to prevent or control a threat to public and/or animal health as determined by a state, tribal, authorized local health department or vector control agency.

*Id.* at 5.

122. *Id.* at 9-10.

are applied as either a liquid or a dust and that are foliar applied to a crop that may utilize commercial pollination services.”<sup>123</sup> The labeling requirement was expanded to include label language for products with demonstrated low residual toxicity,<sup>124</sup> and for pesticides used on crops that have extended or indeterminate blooms or crops that are only grown for seed.<sup>125</sup> The addition of these labels will provide for much more protection for honey bees as well as other pollinators.<sup>126</sup>

There are many good aspects of the new policy. For example, the policy is required to be implemented on “Tier 1”<sup>127</sup> pesticides.<sup>128</sup> On the list of Tier 1 pesticides were five of the classifications of neonicotinoids: Imidacloprid, Clothianidin, Thiamethoxam, Dinotefuran, and Acetamiprid. By identifying these neonicotinoids as in the class of pesticides, the EPA

123. *Id.* at 12.

124. *See* Acute Risk Mitigation Label Language for Products with Demonstrated Low Residual Toxicity, which states:

FOR FOLIAR APPLICATIONS OF THIS PRODUCT TO A CROP WHERE BEES ARE UNDER CONTRACT TO POLLINATE THAT CROP: This product has a Residual Toxicity time of  $\leq 6$  hours . . . . Foliar application of this product is prohibited to a crop from onset of flowering until flowering is complete when bees are under contract for pollination services to that crop unless:

- (i) The application is made to prevent or control a threat to public and/or animal health . . . ; OR,
- (ii) The application is made in the time period between 2 hours prior to sunset and 8 hours prior to sunrise.

*Id.* at 5.

125. *See* Acute Risk Mitigation Label Language for Crops That Have Extended or Indeterminate Bloom, Or Crops That Are Grown for Seed, which states:

FOR FOLIAR APPLICATIONS OF THIS PRODUCT TO A CROP WHERE BEES ARE UNDER CONTRACT TO POLLINATE THAT CROP: This product has a Residual Toxicity time of  $\leq 6$  hours . . . . Foliar application of this product is prohibited to a crop from onset of flowering until flowering is complete when bees are under contract for pollination services to that crop unless:

- (i) the application is being made to prevent or control a threat to public and/or animal health as determined by a state, tribal, authorized health department or vector control agency; OR
- (ii) the application is being made to from 2-hours prior to sunset until sunrise; OR,
- (iii) the application is being made at a time when the temperature at the application site is 50°F or less.

POLICY, *supra* note 120 at 7.

126. “EPA has developed some exceptions to the label restrictions intended to allow greater flexibility . . . but still provide protection for bees.” *Id.* at 4.

127. A “Tier 1” pesticide is a pesticide that has been identified by the EPA as being highly toxic to honey bees and is of the “highest concern” for honey bee health.

128. Naled, the pesticide that destroyed the South Carolina apiary, is also—unsurprisingly—identified as a Tier 1 insecticide. POLICY, *supra* note 120 at 30.

has designated that they were aware of the swelling of public outcry regarding the insecticide and will be willing to work to address it.<sup>129</sup> The policy also includes a list of five crop groups that may have indeterminate bloom periods<sup>130</sup> and sixteen crop groups that have indeterminate bloom periods or strictly grown for seed,<sup>131</sup> that may not otherwise be covered under this policy, due to the crops' unknown bloom time. In expanding the policy to include these groups of crops, not only are more honey bees protected, but the economic vitality of these groups will continue to help the United States' economy.

The policy also included a section on state and tribal managed pollinator protection plans (MP3s). These plans were initially identified in the Strategy's 2016 Pollinator Partner Action Plan (PPAP),<sup>132</sup> as a management system that will "enhance communication among growers, beekeepers, and pesticide applicators and set out best management practices for minimizing impacts of human activities such as agriculture, on pollinator health while maintaining economic growth."<sup>133</sup> At the time of the release of the policy, "approximately 48 states have either completed or are in the process of developing an MP3."<sup>134</sup> These are beneficial because they allow for the states to directly control and determine the scope of an MP3 that best responds to the particular pollinator issues in their region.<sup>135</sup>

However, there are weak aspects of the new policy. Primarily, this policy at best provides for merely a deterrent for people to misapply pesticides during peak times when bees are active, and does not provide a baseline for

129. *See id.* (Appendix A).

130. POLICY, Appendix B states:

(1) Pome fruit group; (2) stone fruit group; (3) berries group; (4) berry and small fruit group (excluding strawberries); and (5) tree nut group; a few example crops are apples, pears, plums, blackberries, blueberries, kiwifruit, almonds, and chestnuts.

*Id.* at 32.

131. POLICY, Appendix B states:

(1) Cucurbit vegetables group; (2) berry and small fruit (strawberries only); (3) tropical and subtropical fruit; (4) root and tuber vegetables; (5) bulb vegetables; (6) leafy vegetables; (7) brassica leafy vegetables; (8) brassica head and stem vegetables; (9) legume vegetables; (10) fruiting vegetable group; (11) cereal grains group; (12) nongrass animal feeds; (13) herbs and spices; (14) oilseed group; (15) stalk, stem, and leaf petiole vegetable group. A few example crops are pumpkins, squash, strawberries, avocados, onions, celery, cilantro, broccoli, kale, chickpeas, soybeans, tomatoes, eggplant, alfalfa, canola, sunflower, and asparagus.

*Id.* at 33.

132. *See* U.S. ENVTL. PROT. AGENCY, POLLINATOR PARTNER ACTION PLAN (2016).

133. *Id.*

134. POLICY, *supra* note 120, at 26.

135. *Id.*

which pesticides should not be used at all.<sup>136</sup> Additionally, many of the public comments were correct in stating that the new policy did not do enough for bees that were not “under contract.” Although there is evidence that all bees, including wild, solitary, and bumble bees, will be aided in any reduction of neonicotinoid usage, by limiting the policy strictly to honey bees under contract, a wide range of bees are still very much at risk.

Finally, and perhaps most importantly, this policy only applies to foliar applications. It is true that foliar applications are the most direct route in which honey bees are exposed to neonicotinoids and have been determined to arguably be the most dangerous application method.<sup>137</sup> However, this fact does not negate the dangers of other neonicotinoid application methods, particularly seed coating and soil drenches, which provide a great amount of dust that honey bees come into contact with while foraging.<sup>138</sup> Thus, although this is policy is a good first step, it could have gone more in depth to mitigate the risks that pesticides—particularly neonicotinoids—pose to honey bees. The EPA should therefore enact a plan to curb the use of neonicotinoids throughout the United States, beginning with imidacloprid, which will be up for review in 2017.

## VI. OPPOSITION TO THE NEW EPA POLICY

Opponents to the new EPA policy, and any further EPA policies regarding regulations of neonicotinoids to protect honey bees have two main arguments. First, due to the states’ various levels of neonicotinoid applications, the different types of pollination crops use, and the scale of declines in honey bee population throughout the United States, each individual state should determine what to do for itself. Second, in enacting any first restriction upon neonicotinoids, there will soon be a landslide of restrictions banning neonicotinoids wholesale, which are regarded as being effective and helpful to both self-pollinating and wind pollinating plants. Both arguments do not see the full picture of the harm that neonicotinoids pose on honey bees and are not forward thinking.

It is undoubtedly true that states have felt the impact of the declining honey bee population at various levels.<sup>139</sup> In 2015, the reported annual honey bee loss per state ranged from 25.2% in Oregon to 63.4% in Oklaho-

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136. *Id.*

137. JENNIFER HOPWOOD ET AL., THE XERCES SOCIETY FOR INVERTEBRATE CONSERVATION, *HOW NEONICOTINOIDS CAN KILL BEES* 44 (2d ed. 2016).

138. *Id.* at 41.

139. See Nathalie Steinhauer et al., *Colony Loss 2014-2015: Preliminary Results*, BEE INFORMED (May 13, 2015), <https://beeinformed.org/results/colony-loss-2014-2015-preliminary-results/> [<https://perma.cc/RK3J-GQNM>].

ma.<sup>140</sup> However, because bee keepers have consistently noted that the acceptable annual loss is only 15%, these numbers are shocking.<sup>141</sup> Still, opponents say that the federal government does not need to be involved, as certain states have already delineated a plan to protect honey bees and other pollinators within their borders.<sup>142</sup> Indeed, the EPA seemed to agree that what they proposed—adding label language that would deter applicators from using pesticides during bloom time on certain crops—was enough, stating that the best way to mitigate the exposure to bees would be to focus on MP3s and the individual states.<sup>143</sup>

Leaving the determination of what is best to reduce the decline of the honey bee population to the states alone is shortsighted. Unlike livestock, which can be contained to a specific acreage within a state's borders, honey bees cannot be contained or trained to fly within a specific state's borders. This leaves bee keepers on borders between states in a state of flux; if one state has more protections than its neighbor, honey bees might still bring back neonicotinoid-tainted pollen to their hives. Moreover, honey bees are transported throughout the country for various crops bloom seasons.<sup>144</sup> Because the effects of neonicotinoids, particularly at a sub-lethal dosage, are felt within bees' nervous and sensory systems for quite some time,<sup>145</sup> a bee impacted by neonicotinoids in one state may not return to the hive after being transferred to another state. That single bee will not influence a crop's yield, but multiply that single bee by hundreds of thousands, and in the aggregate, there is a weighty concern.

Opponents also suggest that by beginning to regulate neonicotinoids, a complete ban, similar to the 1970 ban of DDT, will shortly follow.<sup>146</sup> Their

140. *Id.*

141. *Id.*

142. For example, California's statutes protecting honey bees from harmful pesticides throughout specific regions, and Maryland's newly enacted statutes banning the use and sale of neonicotinoids by private individuals.

143. See Memorandum on Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators, 79 Fed. Reg. 35903, 35903 (June 20, 2014) which states, "[t]he Environmental Protection Agency shall assess the effect of pesticides, including neonicotinoids, on bee and other pollinator health and take action, as appropriate, to protect pollinators; engage State and tribal environmental, agricultural, and wildlife agencies in the development of State and tribal pollinator protection plans . . . ."; see also POLICY, *supra* note 120, which states, "[s]tates and tribes have the flexibility to determine the scope of an MP3 that best responds to pollinator issues in their region."

144. See *Honey Bee Best Management Practices*, ALMOND BOARD CAL., <http://www.almonds.com/pollination> [<https://perma.cc/EE39-XNTH>].

145. E.C. Yang et al., *Abnormal Foraging Behavior Induced by Sublethal Dosage of Imidacloprid in the Honey Bee*, 101 J. ECON. ENTOMOLOGY 1743, 1743-48 (2008).

146. See *Ill-Advised Pesticide Ban Costing European Farmers Up to Half Their Crops*, DELTA FARM PRESS BLOG (Oct. 17, 2014), <http://www.deltafarmpress.com/blog/ill->

fear is that neonicotinoids are beneficial and necessary pesticides, and banning them will yield harmful results.<sup>147</sup> Large agricultural companies and farmers depend on the use of these less harmful insecticides to ensure that the cash crops that do not depend on bees produce high yields.<sup>148</sup> The fear is that without neonicotinoids, the other two-thirds of the crops humans eat will be susceptible to diseases, pests, and other vermin.<sup>149</sup> Moreover, opponents worry that a wide-scale ban of neonicotinoids will actually do more harm than good to the agricultural world.<sup>150</sup> Some claim that the DDT ban actually harmed the earth; “[t]o this day, scientists and policymakers dispute whether it was the right decision to ban DDT in light of the benefits it provide[s].”<sup>151</sup> These fears, however, do not take into account the numerous studies that show the impact neonicotinoids have upon honey bees.<sup>152</sup>

In recent studies being conducted for the re-registration of imidacloprid, scientists have concluded that that particular stand of neonicotinoid undoubtedly harms honey bees, and that harm needs to be taken into account when agreeing to put a pesticide on the market: “For all crops and application methods where on-field exposure is expected, values exceeded risk levels of concern. Even in cases where on-field exposure was not expected, an off-field spray drift assessment was conducted and indicated that there could be risk for all foliar uses . . . .”<sup>153</sup> As more neonicotinoids are up for re-registration, the more likely it becomes that the EPA will note that each one of the neonicotinoids are, in fact, dangerous to honey bee health.

Although an outright ban of neonicotinoids akin to the 1970 ban of DDT may not be feasible or economically viable, the EPA must do more to protect honey bees. The 2015 Strategy and its supporting documents all

advised-pesticide-ban-costing-european-farmers-half-their-crops [https://perma.cc/QR4M-Z2AB].

147. *Id.* “Ten months after the European Commission temporarily barred the use of neonicotinoid insecticide applications, rapeseed producers in the United Kingdom are experiencing crop losses of 20 percent to 50 percent due to an infestation of flea beetles.” *Id.*

148. Glynn Young, *Tagging Along with Jerry Hayes and the Bees*, BEYOND THE ROWS (Mar. 19, 2014), <http://monsantoblog.com/2014/03/19/tagging-along-with-jerry-hayes-and-the-bees/> [https://perma.cc/K87W-TQNV].

149. *Id.*

150. “Environmental activist groups have been demanding that EPA withdraw the FIFRA registrations for several products in the neonicotinoid class of insecticides because they (the activists) suspect they’re having an adverse impact on bee populations.” DELTA FARM PRESS BLOG, *supra* note 146.

151. Alexandra B. Klass, *Bees, Trees, Preemption, and Nuisance: A New Path to Resolving Pesticide Land Use Disputes*, 32 *ECOLOGY L.Q.* 763, 770 (2005).

152. *See generally* U.S. ENVTL. PROT. AGENCY, PRELIMINARY POLLINATOR ASSESSMENT TO SUPPORT THE REGISTRATION REVIEW OF IMIDACLOPRID (2016) (concluding that imidacloprid is dangerous to honey bees).

153. *Id.* at 287.

focused on the honey bees' recovery;<sup>154</sup> if the EPA continues to approve the registration of neonicotinoids like imidacloprid that harm bees, it is not following its mandate.<sup>155</sup> Therefore, a federal baseline of what neonicotinoids are appropriate and necessary needs to be established as well as a set of guidelines to the states to set higher standards, if needed, based upon their agricultural environment. Partnerships with and between various levels of government are essential to have any viable environmental protection plan.<sup>156</sup> Only a dual-pronged plan will give the honey bees adequate focus.

## VII. PROPOSAL

The EPA's new regulation is a good beginning, but it is insufficient to ensure that honey bees will both be protected now and mitigate the harmful factors that occur in the future. Further, the opposition to restricting the use of neonicotinoids is short-sighted and based upon faulty logic. The remainder of this Note will be dedicated to proposing another approach to the problem of neonicotinoid use and its damaging impact on the honey bee population. In order to best combat the ill effects neonicotinoids have on honey bees, there needs to be a two-pronged approach at both the federal and state levels. At the federal level, the EPA needs to establish a baseline

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154. The Strategy's identified overarching goal was to "[r]educe honey bee colony losses during winter . . . to no more than 15% within 10 years." See POLLINATOR HEALTH TASK FORCE, THE WHITE HOUSE, NATIONAL STRATEGY TO PROMOTE THE HEALTH OF HONEY BEES AND OTHER POLLINATORS, (2015).

155. See President Nixon's Special Message regarding the creation of the EPA, which states:

Similarly, some pollutants---chemicals, radiation, pesticides--appear in all media. Successful control of them at present requires the coordinated efforts of a variety of separate agencies and departments. The results are not always successful.

A far more effective approach to pollution control would:

- Identify pollutants.
- Trace them through the entire ecological chain, observing and recording changes in form as they occur.
- Determine the total exposure of man and his environment.
- Examine interactions among forms of pollution.
- Identify where in the ecological chain interdiction would be most appropriate.

Special Message to the Congress About Reorganization Plans To Establish the Environmental Protection Agency and the National Oceanic and Atmospheric Administration, XX PUB. PAPERS 578-9 (July 9, 1970).

156. *E.g.*, Safe Drinking Water Act, 42 U.S.C. §§ 300f- 300j-27 (2016) (authorizing the EPA to establish minimum federal standards to protect tap water used for human consumption and establishing standards for state programs to protect underground sources of drinking water from chemicals and other fluids).

level of restrictions to be enacted, similar to that of the European Union's regulation, EU No. 485/2013.<sup>157</sup> At the state level, based upon each state's unique agricultural environment, states must build off of both the new federal baseline and the state-specific MP3s already in place by the Strategy to ensure that honey bees are protected.

### A. Federal Level

Much like many other federal regulations regarding environmental policy, the key is where the federal government places the baseline. The EPA has the authority to regulate chemicals, including insecticides.<sup>158</sup> Included in its long list of approved actions to regulate pesticides, the EPA can (1) issue procedures for the proper safety testing of chemicals; (2) require the registration of insecticides; (3) require pesticide manufacturers to provide scientific evidence that their products will not injure humans, livestock, crops, or wildlife; (4) classify pesticides for either general public use or restricted use; (5) set standards for applicators; (6) issue regulations concerning the labeling, storage, and disposal of pesticide containers; (7) monitor pesticide levels in the environment; and (8) cancel or suspend the registration of a product based upon the actual or potential unreasonable risk to humans, animals, or the environment.<sup>159</sup>

Although several statutes give the EPA the authority to regulate pesticides, the most influential one dealing with neonicotinoids is the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).<sup>160</sup> FIFRA created the pesticide registration system and provided the EPA with the ability to set conditions under which pesticides may be sold or distributed throughout the United States.<sup>161</sup> To fulfill its obligation under FIFRA, the EPA is to consider whether each pesticide is "safe" as defined under the Food, Drug, and

157. Commission Regulation 485/2013 O.J. (L 139) 12.

158. FEDERAL REGULATORY DIRECTORY 68 (Laura Notton ed., 17th ed. 2016); Toxic Substances Control Act, 15 U.S.C. §§ 2601-2697 (1976) (banning the use of polychlorinated biphenyls (PCBs) and giving the EPA power to require testing of chemical substances that present a risk of injury to health and the environment); Federal Insecticide, Fungicide, and Rodenticide Act Amendments of 1988 (FIFRA), 7 U.S.C. § 136a-1 (2016) (requiring chemical companies to determine, over a nine-year period, whether their pesticide products had adverse health effects); Food Quality Protection Act of 1996, Pub. L. No. 104-170 (codified as amended in scattered sections of 7 U.S.C. and 21 U.S.C.) (amending FIFRA and the Federal Food, Drug, and Cosmetic Act of 1958 to allow the EPA to issue an emergency order to suspend pesticides that pose a risk to public health before a pesticide goes through the cancellation process); *see generally* Federal Environmental Pesticide Control Act of 1972, 7 U.S.C. § 136 (2016) (requiring the registration of pesticides and giving EPA authority to ban the use of hazardous pesticides).

159. *Id.*

160. 7 U.S.C. §§ 136-136y (2016).

161. 7 U.S.C. § 136a (2016).

Cosmetics Act (FDCA).<sup>162</sup> If the EPA determines that the pesticide is not safe per the FDCA, or that the pesticide would cause unreasonable adverse effects on the environment,<sup>163</sup> including unreasonable risk to humans, then the EPA does not have to register, or re-register, the pesticide.<sup>164</sup> This crucial step allows the EPA to reanalyze a pesticide's registration periodically<sup>165</sup> to ensure that the scientific community has not noted any changes to the pesticide's safety to humans or the environment.

Here, the EPA itself has recently noted that some subsets of neonicotinoids have adverse effects on honey bees.<sup>166</sup> Additionally, the scientific community as a whole has largely agreed that the whole class of neonicotinoids has either direct or indirect adverse effects on honey bees.<sup>167</sup> The next logical step, given the EPA's mandate to protect human health and the environment,<sup>168</sup> would be to then determine how to best protect the nation's honey bees from neonicotinoids. This goal has yet to be achieved for honey bees. However, the EPA should take additional steps to aid in honey bee recovery by restricting the use of neonicotinoids proven to be harmful to bees.

Looking across the Atlantic, the European Union (EU) provides an example of how the United States can create and maintain a strong neonicotinoid regulation.<sup>169</sup> In 2013, the EU passed a regulation, No. 485/2013, which amended a previous regulation regarding clothianidin, thiamethoxam, and imidacloprid.<sup>170</sup> The EU found that those particular neonicotinoids pose "high acute risks for bees from exposure via dust" from several crops throughout the Union, "from consumption of residues in contaminated pollen and nectar" from some crops throughout the Union, and "from exposure via guttation fluid" from corn throughout the Union.<sup>171</sup> The Union further noted that "unacceptable risks due to acute or chronic effects on colony survival and development could not be excluded for several

162. *Id.*

163. FIFRA defines "unreasonable adverse effects on the environment" as "any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of any pesticide" 7 U.S.C. § 136(bb) (2016).

164. 7 U.S.C. § 136a (2016).

165. 7 U.S.C. § 136a(g) (2016).

166. *See* U.S. ENVTL. PROT. AGENCY, PRELIMINARY POLLINATOR ASSESSMENT TO SUPPORT THE REGISTRATION REVIEW OF IMIDACLOPRID (2016).

167. *See supra* discussion on neonicotinoids and honey bees.

168. The EPA's mission statement provides that the EPA strives to "protect human health and the environment . . . by writing regulations." *Our Mission and What We Do*, U.S. ENVTL. PROT. AGENCY, <https://www.epa.gov/aboutepa/our-mission-and-what-we-do> [<https://perma.cc/F5J2-V28R>].

169. Commission Regulation 485/2013 O.J. (L 139) 12.

170. *Id.*

171. *Id.*

crops.”<sup>172</sup> Rather than wait to see whether the EU’s honey bees could be maintained while still using these neonicotinoids, the EU decided to restrict their use.<sup>173</sup> The restriction not only focused on when the neonicotinoid use would be restricted, but it also focused on what plants may be treated with neonicotinoids and how those neonicotinoids could be utilized.<sup>174</sup>

The 2013 EU regulation provided that plants that are attractive to honey bees cannot be treated with neonicotinoids both in seed-coating treatment and in direct foliar applications.<sup>175</sup> Paragraph 14 of the EU regulation states, “[t]aking into consideration those risks linked with the use of treated seeds, the use and the placing on the market of seeds treated with plant protection products containing clothianidin, thiametoxam, or imidacloprid should be prohibited for seeds of crops attractive to bees.”<sup>176</sup> The regulation also restricts the use of foliar applications of neonicotinoids to only greenhouse plants or plants no longer flowering.<sup>177</sup> This restriction protects honey bees in the way the current U.S. regulations do not. By ensuring that the plants that will be treated with these specific neonicotinoids are not attractive to honey bees based on the physical makeup of the plant, s the plants are inside a greenhouse, and/or that the plants are no longer flowering, the EU regulation goes well above labeling pesticide bottles.

Perhaps even more important to note, especially to people opposed to a nationwide regulation dealing with neonicotinoids and honey bees in the United States, is that the EU restriction covers all of the member states.<sup>178</sup>

172. *Id.*

173. Commission Regulation 485/2013 O.J. (L 139) 13 states, “[i]t is confirmed that the active substances clothianidin, thiamethoxam and imidacloprid are to be deemed to have been approved under [a previous EU regulation].” It continues:

In order to [minimize] the exposure of bees, it is, however, appropriate to restrict the uses of those active substances, to provide for specific risk mitigation measures for the protection of bees and to limit the use of the plant protection products containing those active substances to professional users. In particular the uses as seed treatment and soil treatment of plant protection products containing clothianidin, thiamethoxam or imidacloprid should be prohibited for crops attractive to bees and for cereals except for uses in greenhouses and for winter cereals. Foliar treatments with plant protection products containing clothianidin, thiamethoxam or imidacloprid should be prohibited for crops attractive to bees and for cereals with the exception of uses in greenhouses and uses after flowering.

Commission Regulation 485/2013 O.J. (L 139) 13 (EU).

174. *Id.* at para. 11.

175. *Id.* at para. 11.

176. *Id.* at para. 14.

177. *Id.* at para. 11.

178. Commission Regulation 485/2013 art. 3, 2013 O.J. (L 139) 25.5 (EU) states, “Member states shall in accordance with Regulation (EC) No 1107/2009, where necessary amend or withdraw existing authorisations for plant protection products containing

Each of the member states' agricultural communities are different, containing a mixture of Mediterranean to marine climates and plains to mountains.<sup>179</sup> Despite having a range of crops and climates, the EU recognized the importance of providing one standard throughout its borders to protect honey bees. Of particular note, paragraph 17 provides that "Member states may, under certain circumstances, impose further risk mitigation measures or restrictions to the placing on the market [neonicotinoids]."<sup>180</sup> In 2015, Germany issued such a restriction by passing an emergency ordinance which prohibited the "trade and the sowing of winter cereals and canola seeds treated with plant protection products containing certain neonicotinoids."<sup>181</sup> By allowing each member state to take necessary actions to further aid the honey bees within its borders, the EU provides an opportunity for its member states to focus on what is best for their bees.<sup>182</sup>

The United States EPA should take a lesson from its European counterpart and use the mandate established in President Obama's 2014 Memorandum to eliminate the use of dangerous neonicotinoids in plants that are attractive to honey bees. The previously discussed 2017 EPA policy merely suggests adding language to pesticide labels.<sup>183</sup> The EU regulation takes the restriction further to make affirmative steps toward aiding the declining honey bee populations in Europe.<sup>184</sup> The EU has access to the same science as the United States. The EU has a varied landscape, climate, and crop yields similar to the United States. There is no reason why the EPA should not go further by requiring that seeds for plants that are attractive to honey bees do not use neonicotinoids in the United States, and by not re-registering imidacloprid in 2017.

Although it may not be the desired proposal that all parties want, as environmentalists would prefer even more regulations and agricultural businesses would prefer even fewer regulations, it is a good compromise. By not restricting all neonicotinoids, large agricultural companies do not

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clothianidin, thiamethoxam or imidacloprid as active substance by 30 September 2013." Commission Regulation 485/2013 art. 3, 2013 O.J. (L 139) 25.5 (EU).

179. David Wood, *Major Climates in Europe's Different Regions*, GEOGRAPHY: MIDDLE SCHOOL, <http://study.com/academy/lesson/major-climates-in-europes-different-regions.html#transcriptHeader> [https://perma.cc/SB33-9H9R].

180. Commission Regulation 485/2013, 2013 O.J. (L 139) 25.5 (EU) para.17.

181. Oliver Tickell, *Bee Cause: Germany Tightens, UK Relaxes Neonic Regulation*, THE ECOLOGIST (July 23, 2015), <https://www.theecologist.org/2015/jul/23/bee-cause-germany-tightens-uk-relaxes-neonic-regulation> [https://perma.cc/6QCY-WHAL].

182. *Id.* As German Federal Agriculture Minister Christian Schmidt said, "[w]ith this regulation we are protecting the bees against dust-borne insecticides. This benefits both the bees as an important part of nature, as well as the farmers, who depend on the pollination of their crops by the bees." *Id.*

183. See Proposal, *supra* note 106.

184. See Commission Regulation 485/2013, 2013 O.J. (L 139) 25.5 (EU).

lose the protections neonicotinoids afford to cash crops. By focusing on specific application methods and subsets of neonicotinoids that are known to cause drastic effects on honey bees, the EPA can help in the honey bee population's recovery. Additionally, in providing one standard across the United States while encouraging the individual MP3s within each state, the EPA will provide a system that will encourage states to re-evaluate their own agricultural yields to determine if neonicotinoids are necessary.

### B. State Level

At the state level, each state should act in accordance with the proposal to restrict harmful neonicotinoids while taking into account their own agricultural needs. Illinois is well-known for having a large agricultural base, particularly in corn and soybeans. Less widely-known is the large number of honey bees throughout the state. In 2016, there were over 26,000 honey bee colonies in a little over 5,000 different apiaries throughout the state of Illinois.<sup>185</sup> However, despite that high amount of honey bees throughout the state, there are no statutes or codes recognizing the dangers of neonicotinoids on the honey bee population.<sup>186</sup> Both the statutory and administrative codes focus predominately on the registration of honey bee colonies within the state and the process the state will take if beekeepers do not follow those rules.<sup>187</sup> Because each beekeeper with more than one hive, either professional or amateur, has to register with the state via the Illinois Department of Agriculture (IDOA),<sup>188</sup> the IDOA has divided the state into eight separate apiary inspection regions, two of which are presently without an inspector.<sup>189</sup> The IDOA provides only one service for registered bee-

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185. ILLINOIS DEPARTMENT OF AGRICULTURE BUREAU OF LAND & WATER RESOURCES, APIARY STATISTICS (2016), <https://www2.illinois.gov/sites/agr/Insects/Bees/Pages/Apiary-Reports.aspx> [https://perma.cc/8RNL-ENHY] (submit query for "calendar year" and "2016").

186. See 510 ILL. COMP. STAT. ANN. 20/1-20/9 (West 2017); ILL. ADMIN. CODE tit. 8, § 60 (2017).

187. 510 ILL. COMP. STAT. ANN. 20/2(a) (West 2017) ("Every person keeping one or more colonies of bees shall register with the Department annually."); 510 ILL. COMP. STAT. ANN. 20/2(b) (West 2017) ("Every person keeping one or more colonies of bees may be required to post his or her registration number in a prominent place within each apiary under his or her control."). The administrative code provides the specifics of how registration will take place in Illinois. ILL. ADMIN. CODE tit. 8, § 60.20 (2017).

188. 510 ILL. COMP. STAT. ANN. 20/2(a) (West 2017).

189. ILLINOIS DEPARTMENT OF AGRICULTURE, MAP OF INSPECTOR'S REGIONS (2016), <https://www2.illinois.gov/sites/agr/Insects/Bees/Pages/Map-of-Inspectors-Regions.aspx> [https://perma.cc/6NY2-WR85].

keepers in the state: inspecting the colonies to determine their health.<sup>190</sup> Although that is an important service, it is a reactionary measure, not a proactive measure to ensure the honey bees' safety.

The MP3 that the IDOA has developed in accordance with the Strategy<sup>191</sup> is called Illinois Driftwatch.<sup>192</sup> In accordance with this online resource, the registered apiaries and the crops that are sensitive to neonicotinoids are made known to the growers who use neonicotinoids in an effort to enhance communication<sup>193</sup> between the two parties to help reduce the amount of honey bee loss. However, with 62.4% annual loss in the state of Illinois in 2014,<sup>194</sup> the state should take a more active role in ensuring the safety of its honey bees.

The state of Minnesota, through its Department of Agriculture (MDOA), created an extensive review of neonicotinoid use in the state and the impact those pesticides have upon pollinators.<sup>195</sup> Although Illinois and Minnesota do have differences in their agriculture, they both provide over

190. ILLINOIS DEPARTMENT OF AGRICULTURE, <https://www2.illinois.gov/sites/agr/Insects/Bees/Pages/default.aspx> [https://perma.cc/MDF9-Z5CK].

191. See generally Strategy, *supra* note 74.

192. According to the IDOA's website, Driftwatch: includes two main portals, one for pesticide-sensitive crop producers (including beekeepers) and another for pesticide applicators. The producer portal allows producers to register the types and locations of their pesticide-sensitive crops so that they can be viewed by potential pesticide applicators. The pesticide applicator portal allows applicators to register their service area which, in turn, will allow them to receive automatic notifications when pesticide-sensitive crop locations are added to the areas in which they work.

ILLINOIS DEPARTMENT OF AGRICULTURE, <https://www2.illinois.gov/sites/agr/Insects/Bees/Pages/default.aspx> [https://perma.cc/MDF9-Z5CK].

193. Thus keeping in-line with the Memorandum, Strategy, and most recent EPA Policy. See generally Memorandum on Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators, 79 Fed. Reg. 35903, 35903 (June 24, 2014); POLLINATOR HEALTH TASK FORCE, NATIONAL STRATEGY TO PROMOTE THE HEALTH OF HONEY BEES AND OTHER POLLINATORS (2015), <https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/Pollinator%20Health%20Strategy%202015.pdf> [https://perma.cc/B4R2-9WYA]; *Policy to Mitigate the Acute Risk to Bees from Pesticide Products*, U.S. ENVTL. PROT. AGENCY (Jan. 12, 2017), <https://www.regulations.gov/contentStreamer?documentId=EPA-HQ-OPP-2014-0818-0477&contentType=pdf> [https://perma.cc/6665-QKYF].

194. Nathalie Steinhauer et al., *Colony Loss 2014-2015: Preliminary Results*, BEE INFORMED (May 13, 2015), <https://beeinformed.org/results/colony-loss-2014-2015-preliminary-results/> [https://perma.cc/RK3J-GQNM].

195. See generally MINN. DEP'T OF AGRIC., REVIEW OF NEONICOTINOID USE, REGISTRATION, AND INSECT POLLINATOR IMPACTS IN MINNESOTA (2016).

5,000 hectares<sup>196</sup> of corn for grain and soybeans annually.<sup>197</sup> The eight actions that the MDOA provided will allow the state to better monitor neonicotinoid use and focus on honey bee health. The first action, creating a treated-seed program,<sup>198</sup> will allow for a more extensive monitoring of neonicotinoid seed coating. Even in suggesting such an action, Minnesota has far exceeded Illinois's protections for honey bees by recognizing not only the importance of honey bees, but also how neonicotinoid application practices help shape the well-being of honey bees.

If the EPA does create a new policy that mimics the EU's banning of neonicotinoids in plants that are attractive to bees, Illinois may, and should, go further to protect its bees. The Bees and Apiaries Act instructs that "[t]he Director may cooperate with any other agency of this State or its subdivisions or with any agency of any other state or of the federal government for the purposes of carrying out the provisions of this Act and of securing uniformity of regulations."<sup>199</sup> Keeping that in mind, Illinois should still adopt a plan similar to Minnesota's plan in monitoring neonicotinoid seed coating while implementing the new federal standard.

## VIII. CONCLUSION

With their influence in pollination, honey bees have been said to be "the glue that holds our agricultural system together."<sup>200</sup> Several others have lamented that honey bees are so often forgotten in our fast-paced world that this criticism of the EPA's inaction regarding neonicotinoids' impact on honey bees' health is not unique.<sup>201</sup> As with many environmental concerns, there are several factors at play that need to be addressed, such as the economic impact of a new federal regulation. Specifically, the benefits that neonicotinoids provide to cash crops, such as corn, soybeans, rice, and

196. A hectare is a unit of land equal to 10,000 square acres. *Hectacre*, MERRIAM-WEBSTER DICTIONARY (11th ed. 2016).

197. Jerry Hatfield, *Agriculture in the Midwest*, in AGRICULTURE SECTOR MIDWEST TECHNICAL INPUT REPORT NATIONAL CLIMATE ASSESSMENT 3 (2012).

198. MINN. DEP'T OF AGRIC *supra* note 17, at 83.

199. 510 ILL. COMP. STAT. ANN. 20/3(a) (West 2017).

200. HANNAH NORDHAUS, THE BEEKEEPER'S LAMENT (2011).

201. See Kelsey Ott, Note, *Buzzkill: How the EPA's Inaction is Killing America's Bees*, 39 WM. & MARY ENVTL. L. & POL'Y REV. 401 (2015) (arguing that because current scientific progress suggests that "it will be easier to develop an alternative pest control system than an alternative pollinator, a cost-benefit analysis comparing continuing neonicotinoid use with a neonicotinoid ban should clearly favor a prohibition."); see also Jarrett Rogers, Note, *It's Everyone's Beeswax: How Weaknesses in the Federal Regulation of Pesticides Endanger the Environment and Threaten the Public Welfare*, 23 SAN JOAQUIN AGRIC. L. REV. 215 (2014) (arguing that more pesticide restrictions "are pragmatic steps necessary to protect the honeybee and reduce the risk pesticides pose to human and animal welfare in the future").

wheat, are so great that large agricultural companies have tried to espouse that this class of pesticides is “safe.”<sup>202</sup> However, scientific studies and the dramatic losses in the honey bee hives proves differently. A world without honey bees will be a world with less biodiversity, fewer and more expensive fruits, vegetables and nuts, and a lot less buzz.

This proposal may soon be obsolete given the current administration’s lackluster drive to ensure the environment’s protection and dismay toward federal regulations in general. However, the fight to save this country’s honey bees will remain strong.<sup>203</sup> Concerned citizens may feel dismayed at the lack of support, but can do things on a daily basis to ensure honey bees are not forgotten. Citizens can influence government by ensuring any future comment periods are not only paid attention, but are also flooded with comments supporting honey bee protections. Furthermore, citizens can boycott products or companies that use neonicotinoids, as nothing speaks louder to companies than dollars.

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202. “[Neonicotinoids] could be a contributing factor [to CCD] . . . , but likely not the major one. A lot of people want to ban them, and don’t understand how that will increase agricultural crop spraying, which will likely be even more detrimental.” Glynn Young, *Tagging Along with Jerry Hayes and the Bees*, BEYOND THE ROWS (Mar. 19, 2014), <http://monsantoblog.com/2014/03/19/tagging-along-with-jerry-hayes-and-the-bees/>.

203. For example, people in Maryland, the state that most recently adopted stricter laws regarding neonicotinoids, has created the Maryland Pesticide Network, which created an informational sheet designed to let people know about neonicotinoid-free consumer pesticide products. See *About Maryland Pesticide Network*, MD. PESTICIDE NETWORK, <http://www.mdpestnet.org/about/> [<https://perma.cc/2QNS-V89E>].