

Indiana Pollinator Protection Plan

(DRAFT 5-31-15)

Introduction

Pollinator health is a high priority national issue due to significant colony losses experienced by U.S. beekeepers over the past decade. In his memo, "*Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators*" in June of 2014, the President called attention to the issue of pollinator health and directed federal efforts to reverse pollinator losses and help restore populations to healthy levels. In particular, the memo directed the U.S. Environmental Protection Agency (EPA) to engage state agencies in developing state pollinator protection plans as a means of mitigating the risk of pesticides to bees and other managed pollinators.

The primary purpose of a state Pollinator Protection Plan (P³) is to identify activities that can improve pollinator health. This can include a variety of proactive measures including, but certainly not limited to, reducing pesticide exposure to bees and other pollinators through timely communication and coordination among key stakeholders, including beekeepers, growers, pesticide applicators, and landowners. Pesticide exposure can be minimized if pesticide applicators and beekeepers communicate prior to pesticide applications to coordinate activities and allow crop protection products to be used without unreasonable adverse effects to managed pollinators. It is the intent that such open communication will lead to practices that both mitigate potential pesticide exposure to bees and allow for the management of pests. This could involve collaboration on the selection of the pesticide product, a change to the application timing, or an opportunity for beekeepers to move or cover their hives prior to a pesticide application, thereby reducing the chance that managed bees are found in the treatment area.

In addition to identifying a variety of proactive pollinator protection measures a P³ can also establish clear expectations among stakeholders when a pesticide application needs to be made near pollinators. This open communication will not only help build relationships and increase mutual understanding, but also ensure peaceful co-existence and allow all parties to operate successfully.

Goal

The goal of this plan is not to serve as the sole definitive source of how pollinators should be protected in Indiana or to eliminate or ban pesticide use in areas frequented by pollinators. Instead, the goal is to bring awareness to the issues faced by pollinators and all related stakeholders and to serve as a starting point to develop a blueprint of how each stakeholder group might contribute to the task of improving pollinator health.

Scope

One-third of our food production requires pollinators. Managed pollinators and contracted pollination services on such Indiana grown agricultural crops such as apples, melons, blue berries, cucumbers, (????), are the most obvious examples of this fact. The term “managed pollinators” includes any species of pollinators that are managed by humans, be it for pollination services; the production of honey, beeswax, and other products; or for some other purpose. Managed pollinators are primarily honey bees (*Apis mellifera*), but could include other species of bees, such as alfalfa leafcutting bees (*Megachile rotundata*), orchard bees (*Osmia spp.*), mason bees (*Osmia spp.*) and some species of bumble bees (*Bombus spp.*).

While managed pollinators may be the easiest to clearly associate with a stakeholder group, it is widely recognized that native pollinators such as butterflies, flower flies, and hundreds of wild bee species are also important to agriculture and other successful plant development processes. It is also recognized that strategies that are protective of native pollinators will also be protective of managed pollinators. Therefore, the scope of this plan will extend to all pollinators, where feasible. In addition, the plan will attempt to incorporate agriculture and non-agricultural settings, commercial beekeepers and hobbyists.

Stakeholder participation for development of this plan

In consideration of the relatively broad scope of this plan, insuring participation by all potential stakeholders is challenging. However, one of the objectives will be to facilitate that participation as effectively as possible. To that end, the first step was an open face-to-face organizational and information gathering meeting on March 31, 2015.

Subsequent steps identified for plan development include general circulation of any P³ drafts and open discussion and comment at quarterly meetings of the Indiana Pesticide Review Board (IPRB). It should be noted that, even though the scope of this plan is not limited to just protection of pollinators from pesticide exposure, the IPRB is being utilized as a vehicle for plan development based on their existing meeting schedule and public process. In addition, it may be necessary at some point in the process to facilitate additional stakeholder gatherings, similar to the March 31, 2015 meeting.

Growers and applicators should know if there are pollinators near pesticide application sites

In order to adequately coordinate and communicate with beekeepers, growers and pesticide applicators need accurate and timely information on the location of nearby colonies that could affect application decisions. Therefore, a critical element of this plan is the ability for a pesticide applicator to contact beekeepers with colonies near the pesticide application area to alert them of a pending treatment.

The distance from the pesticide treatment site inside which the applicator should identify the location of managed colonies will henceforth be referenced as the “pollinator awareness zone”. For purposes of this plan, the pollinator awareness zone shall be considered an area within a **two(?)** mile radius of the treatment site in agricultural areas. In urban settings related to turf and ornamental and outdoor structural pesticide applications the zone shall be limited to properties immediately adjacent to the location of the managed pollinator colony.

The recommended mechanism by which a pesticide user will be able to identify the location of managed bee colonies within the pollinator awareness zone should be the voluntary web-based site <https://in.driftwatch.org/map>. While participation in *Driftwatch* through the beehive location registry is voluntary for both beekeepers and pesticide applicators, utilization of this valuable communication tool is critical to success in minimizing potential pesticide exposures to pollinators.

It is also recommended that designated and recognized nature preserves be added to *DriftWatch* as potential pesticide sensitive sites so to raise awareness of pesticide applicators for pollinators living and foraging in these areas.

Growers and applicators should identify and contact nearby beekeepers prior to application

Once growers and applicators identify managed hives in the pollinator awareness zone, there needs to be a means for growers and applicators to contact those beekeepers to notify them of a pending pesticide application. Beekeepers, in turn, need a reasonable time period to take action to protect their colonies if necessary. This is often done by moving colonies temporarily to a protected location, by temporarily netting hives, or other means. Growers or applicators should notify beekeepers in advance of treatment so that parties can discuss and decide upon steps to protect the pollinators in the defined area, while still allowing management of the pest(s).

It is recommended that the grower or pesticide applicator contact all *Driftwatch* registered beekeepers in the pollinator awareness zone a minimum of **48(?)** hours prior to an anticipated pesticide application.

Best Management Practices (BMPs) to promote pollinator protection and health

There are a number of regulatory measures that are being proposed or are already in place to promote protection of pollinators, particularly with respect to minimizing pollinator exposure to pesticides. Proposed efforts include a recent U.S.EPA proposal (5-28-15) to revise pesticide product label language to address acute exposure to pesticides from foliar applications under specific conditions. While the proposed mitigation focuses on managed bees under contract pollination services,

EPA believes that in protecting managed bees in these circumstance, these measures would also protect native solitary and social bees that are also in and around treatment areas. Moreover, EPA recognizes there are concerns associated with potential exposure to chemicals that are not classified as acutely toxic by contact, including chemicals used in combination which may result in enhanced toxicity, and crops which incorporate pesticide residues in pollen/nectar. Future EPA actions will address these situations. EPA will continue to conduct chemical-specific risk assessments for bees and will consider additional product-specific mitigation as needed in the Office of Pesticide Program's (OPP's) registration and registration review programs. The proposed language includes the following:

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

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.”

In addition to the proposed label language, there are a variety of existing legally enforceable label restrictions focused on keeping pesticides from drifting off-target and protection of pollinators. Those label restrictions are enforced in Indiana by the Office of Indiana State Chemist (OISC). OISC has developed specific investigation procedures for responding to alleged pesticide exposure incidents to pollinators.

Regulatory safeguards aside, it is an objective of this plan to promote pollinator Best Management Practices (BMPs) that can be utilized by beekeepers, pesticide users, growers, land managers, government, homeowners and other stakeholders engaged in the protection of pollinators. BMPs under the plan include the following:

Work with landowners to choose hive locations. Ideal hive locations will have minimal impact on agricultural activities but will still have adequate access to forage and water. Avoid low spots to minimize impacts from drift or temperature inversions on hives. Give consideration to timing after rain events when determining which roads to travel. Discuss with landowners preferred roads/trails to use. Beekeepers should also request contact information for applicators, renters, and neighbors (if applicable).

Be cognizant of neighboring landowners when placing and moving hives. Neighboring landowners often use the same roads, trails, and section lines. Do not block these right-of-ways or place hives so close they may cause problems for other land-users. Take appropriate steps to ensure that bees do not negatively affect operations of neighboring landowners, such as considering the proximity of hives to neighbor's yard, bins, equipment, or storage sites.

Notify landowners and applicators when arriving and when moving hives. If possible, notify nearby pesticide applicators and landowners when you place or move beehives. This will ensure

they are aware of current hive locations and can notify you before making pesticide applications. Contact information for nearby pesticide applicators can usually be obtained from landowners.

Report all suspected pesticide-related bee kills to the OISC pesticide program immediately.

Inspect bee behavior regularly. The OISC is the lead pesticide regulatory agency in the state. The OISC will respond to complaints, including collecting and analyzing the location for pesticide residues. Some pesticides degrade rapidly, and timely reporting will aid the pesticide investigation. Beekeepers can report suspected pesticide incidents by calling 1-800-893-6637.

Ensure hives are easily visible to applicators. Hives must be visible so applicators can locate them before spraying. It is strongly suggested that hives are painted white, or a color that stands out from the surrounding area.

Work with beekeepers to choose hive locations. Ideal locations for hives will have minimal impact on farming operations, but will still allow bees to access forage and water. Communicate with beekeepers which roads/trails can be problematic when wet and any preferred traffic routes. Landowners may also want to provide contact information for applicators, renters, and neighbors (if applicable).

Communicate with renters about bee issues. Renting land for agricultural production is a common practice. Landowners and renters should discuss bee issues, such as who has authority to allow bees, how long they will be allowed, and hive placement. These issues should be addressed and included when rental agreements are negotiated.

Communicate with pesticide applicators whose responsibility it is to look for hives, notify neighbors, etc. When contracting with commercial pesticide applicators, make sure that there is a clear understanding of who has the responsibility to identify hive locations and communicate with beekeepers. Applicators may do this as part of their standard procedures, but some landowners may prefer to make beekeeper contacts themselves.

Agronomists should consider pollinator impacts when making pesticide recommendations. Ensure that agronomists and crop consultants consider pollinator issues when making pesticide recommendations, including product choices and pesticide timing decisions.

Plant bee forage. Plant flowering plants, trees, and shrubs to improve bee forage, especially in non-farmable or non-crop areas. Doing so provides forage and it may also concentrate bees away from fields to be treated with pesticides, thereby minimizing impacts to pollinators.

Learn to interpret seed tags and what pesticides may have been used to treat crop seeds. Some pesticide used as protective seed treatments may be more or less likely to cause bee health issues than others. Related pesticide exposure issues can include: 1) toxicity of the active ingredient; 2) whether the pesticide works systemically, transferring from the treated seed to the growing plant; or 3) pesticide containing dust created by seed handling/planting processes becoming airborne. Regardless, carefully consider the specific pest pressures that your crop

may face and choose seed treatment options that are less hazardous to pollinators. Also consider if use of untreated seed may be an option.

Utilize alternatives to talc/graphite in planters. When planting seeds treated with insecticides, utilize alternatives to talc/graphite as they become available. The talc and graphite can abrade the insecticide treatment off of the seeds, thereby creating insecticide-containing dust that can drift onto hives and flowering plants.

Use Integrated Pest Management (IPM). Utilize economic thresholds and integrated pest management (IPM) to determine if insecticides are required to manage pests. When insecticides are required, try to choose insecticides with low toxicity to bees, short residual toxicity, or repellent properties towards bees.

Use registered pesticides according to the label. Pesticide label language is developed to ensure that pesticides will not pose a risk of unreasonable adverse effects to human health or the environment. Failure to comply with the label not only puts humans and the environment at risk, it is also illegal. Many pesticides, especially insecticides, have use restrictions prohibiting applications when bees are foraging in the treatment area. Some labels prohibit applications when crops are blooming and require that the applicator notify beekeepers in the area prior to application. Always comply with these and other label restrictions to reduce risks. Applicators are bound by all directions, precautions, and restrictions on pesticide labeling, even when following other BMPs. Contact the OISC with any questions on pesticide label language.

When possible, apply pesticides early morning or in the evening. Pollinators are most active during daylight hours and when the temperature is over 55 degrees Fahrenheit. Apply pesticides early in the morning or in the evening when bees are less active to reduce the chances that bees will be foraging in or near the treatment site. Be cognizant of temperature restrictions on pesticides. The efficacy of some pesticides is reduced at certain temperatures. Be aware of temperature inversions when choosing the best time for applications.

Avoid drift. Pesticide drift involves the off-site movement of pesticides through the air from the treatment site to adjacent areas, either in the form of mist, particles, or vapor. Drift reduces the effectiveness of the chemical applied since only part of the applied amount reaches the target. Drifting chemicals also pose a risk to non-target organisms that come in contact with the off-target residues. These insecticides can negatively affect bees and other beneficial insects by direct contact or by contaminating their forage and habitat. Drifting herbicides have the potential to further reduce quality forage available to pollinators.

Identify and notify beekeepers in the area prior to pesticide applications. Bees will fly several miles to find quality forage. Therefore, pesticide applicators should identify and notify beekeepers within two miles of a site to be treated at least **48 hours** prior to application or as soon as possible. Timely notification will help ensure ample time for the beekeeper and applicator to develop a mutually acceptable strategy to manage pests while mitigating risk to honey bees. This may include covering hives, moving hives, or choosing the time of day to

apply. **Notifying beekeepers does not exempt applicators from complying with pesticide label restrictions. Many insecticide labels prohibit use if pollinators (bees) are present in the treatment area.*

Choose products with lower risk to bees. Avoid dusts and wettable powder insecticide formulations. Dust and wettable powder pesticide formulations can leave a powdery residue which sticks to hairs on bees. Bees then bring the pesticide back to the hive and potentially expose the entire hive to the pesticide for an unknown amount of time. Granular and liquid formulations are safer for pollinators since granules are not typically picked up by bees, and liquids dry onto plant surfaces. Also choose products with lower residual toxicity to bees.

Bee Forage. Everyone can plant forage for bees. Plants that support pollinators are also beneficial for other wildlife, are often visually attractive, and can help improve soil health. Flowers often come to mind when thinking about bees, but bees also utilize trees, shrubs, and other less-noticeable plants for pollen and nectar sources. It is important to consider diversity when choosing plants to ensure adequate forage for the entire growing season. Diversity will also ensure pollinators have access to all of the nutrients they require to be healthy. Here are some easy, efficient ways to improve pollinator forage.

Municipalities can plant trees, shrubs and flowers that provide good forage for all types of pollinators. Diversity is important, the pollen and nectar of each species carries a different nutrient load for the pollinators. This can be worked into new plantings, every time a plant is added/replaced choose a variety that will contribute to pollinator forage. Foraging honey bees are typically not aggressive.

Counties can create bee forage along secondary roads. Secondary road ditches often contain several species of plants that provide forage for pollinators. It is a common practice to mow ditches for the safety of motorists and to prevent drifting snow. Consider spot spraying noxious weeds and mowing ditches later in the year to ensure that bee forage is available. Incorporate short forbs into secondary road ditches to minimize attracting large wildlife.

Homeowners can put out flower pots, create flowerbeds, plant trees or shrubs, or establish gardens to provide forage. Homeowners should also take special precaution when applying pesticides. The pesticide user BMPs apply to anyone using pesticides. Remember, the pesticide label is the law and it is in place to minimize risk to the environment and human health.

Create habitat for beneficial, wild pollinators. Roughly 70 percent of native bees nest in the ground. They burrow into areas of well-drained, bare, or partially vegetated soil. Other bees nest in abandoned beetle houses in snags or in soft centered, hollow twigs and plant stems. Bees will also utilize dead trees and branches. Habitats can be created by leaving deadfalls and brush piles as nesting habitat. Consider the type of habitat you wish to create and pollinators

you want to attract. Be cognizant that certain structures might attract other animals such as fox, coyote, skunks, and porcupines.

Public land access. Public land typically does not incorporate crop production and large scale insecticide use. There are some agencies that allow beekeepers to place honey bees on state and federal lands.

Plan for public outreach

This P³ will only be successful if there is robust adoption of the plan. One way to accomplish this is through outreach to publicize the plan and its recommendations and requirements, not only to key stakeholders but to the general public as well. Several of these outreach options have already been outlined in other parts of this plan. Additional outreach and communication efforts should include both initial and continuing pesticide applicator certification and training by industry, Purdue Pesticide Programs (CES), and Office of Indiana State Chemist (OISC); brochures and fact sheets at point-of-sale pesticide distributors; bee association meetings; Master Gardner Program (CES); Master Naturalist Program (IDNR); Indianapolis Zoo Butterfly Building; Indiana Native Plants and Wildflower Society (INPAWS); and the OISC web site.

Process for periodic review of this plan

This plan is meant to be a dynamic document that will be periodically reviewed and updated. The Indiana Pesticide Review Board (IPRB) must determine whether or how to adjust the P³ based on stakeholder feedback so that the plan ultimately leads to better relationships among the stakeholders and greater degrees of protection for pollinators. Therefore, in addition to providing opportunities for P³ review and update at regularly scheduled quarterly IPRB meetings, the P³ should be comprehensively evaluated at least every three years. As with the initial plan development, it is critical that this comprehensive review include a public stakeholder process to evaluate the effectiveness of the plan and to make modifications as needed.

Measuring the effectiveness of this plan

At the time of this writing, states continue to work with EPA and other stakeholders to discuss appropriate measures for the effectiveness of the state P³. Examples of measures could include such things as changes in behavior (e.g. improvements in levels of communication and cooperation among stakeholders), changes in pesticide exposure to bees, trends in a catalog of reported swarms, trends in the use of the “bee check” portion of *Driftwatch*, environmental monitoring showing reductions in the presence of residual insecticides of concern, adoption rate of BMPs, reported and confirmed incidents of bee kills caused by pesticides, changes in overall pollinator health, or other metrics. It is unlikely that any single measure will be available to definitively measure the effectiveness of the P³. Instead, Indiana may need to develop a number of metrics to assess whether this plan is meeting its intended goals over time.