Virginia Department of Agriculture and Consumer Services

Virginia's Plan to Mitigate the Risk of Pesticides to Managed Pollinators

Background

Virginia's "Plan to Mitigate the Risk of Pesticides to Managed Pollinators" (Plan) is a set of recommendations and best management practices intended to increase protection of managed pollinators and allow crop production and beekeeping to thrive. Virginia's Plan facilitates a collaborative approach to implementing risk mitigation practices for beekeepers, agricultural producers, landowners, and pesticide applicators.

Virginia's Plan encourages effective communication between agricultural producers, pesticide applicators, landowners, and beekeepers. The Plan includes practices that mitigate potential pesticide exposure to bees, allowing for the effective management of pests, and avoiding situations of unnecessary conflict between these parties.

Agriculture is the largest industry in Virginia with an annual economic impact of more than $52 billion. Both the continued use and availability of effective pesticides and the presence of pollinators are vital to this industry to ensure a safe and affordable food supply. VDACS recognizes the need to protect pollinators in agricultural and non-agricultural settings to ensure healthy pollinator populations, as they are critical to our nation's economy, food security, and environmental health. The Plan focuses on the voluntary implementation of best management practices and enhanced communication and coordination between pesticide applicators, landowners, beekeepers and agricultural producers as a means to further protect pollinators. VDACS developed this Plan in cooperation with relevant stakeholders, industry groups, and other state agencies.

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Managed pollinators primarily include honey bees (*Apis mellifera*), but may also include other species of bees, such as alfalfa leafcutting bees (*Megachile rotundata*), alkali bees (*Nomia melanderi*), mason bees (*Osmia lignaria*) and some species of bumble bees (*Bombus impatiens*). For the purposes of Virginia's Plan, the term "managed pollinators" refers to honey bees and includes commercial and noncommercial (sideliners and hobbyists) beekeeping operations. It is anticipated that mitigating the risk of pesticides to managed pollinators will also reduce the risk to native bees and other pollinators.

According to the Agency's 2006 Report to the Governor and General Assembly, *Study of the Plight of Virginia's Beekeepers* (Senate Document No. 20), approximately 8% of beekeepers are sideline beekeepers and 90% of beekeepers in Virginia are considered hobbyist. Virginia's Plan is limited to managed pollinators and includes hives maintained by commercial and noncommercial (sideline and hobbyist) beekeepers. The Plan does not include contracted pollination services at the site of application. Contracted pollination services result in a relatively large number of bees intentionally placed in or near the crop production area that may be treated and are therefore more likely to be directly exposed to pesticides during an application. The EPA, through the federal pesticide registration process, is considering additional label restrictions on a broader range of pesticide products to protect managed bees under contracted pollination services from the potential acute hazards of insecticides. As such, contracted pollination services will not be addressed in the Plan.

The Plan applies to agricultural and commercial non-agricultural (i.e. turf and ornamental pest control) pesticide applications. It does not include pesticide applications where bees are the target pest, for example, bees infesting a structure. For the purposes of this Plan, the term pesticide means "*any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any insects, rodents, fungi, bacteria, weeds, other forms of plant or animal life, bacterium, or viruses*" and includes natural and synthetic substances. Including all pesticides in the Plan will allow beekeepers to be fully aware of all planned pesticide applications and make informed decisions regarding the measures necessary to protect their hives.

Virginia's Plan is not intended to prohibit, eliminate, or further restrict the application of pesticides, but rather reduce the risk of pesticide exposure to managed pollinators when pesticides are used nearby or within their normal foraging range. In all cases, pesticide applications must be made in accordance with the pesticide label and all applicable federal and state pesticide laws and regulations.

Stakeholder Participation

The input and cooperation of all stakeholders was integral to the development of Virginia's Plan. The Virginia Department of Agriculture and Consumer Services (VDACS) hosted seven

listening sessions at various locations throughout Virginia in an effort to obtain input from interested parties. The intent of the listening sessions was to seek input from stakeholders on the critical elements included in the Plan. In addition, a dedicated email account was established for receiving stakeholder comments regarding the elements of the Plan. Approximately 450 agricultural producers, beekeepers, private and commercial pesticide applicators, landowners, researchers, and Virginia Cooperative Extension agents participated in these listening sessions. In addition to the verbal comments received during the listening sessions, 169 written comments were also received.

Critical Elements of Virginia's Plan to Mitigate the Risk of Pesticides to Managed Pollinators

Virginia's Plan promotes the use of Best Management Practices (BMP) by beekeepers, agricultural producers, landowners and pesticide applicators with the goal of reducing the potential for pesticide exposure to managed bees that are adjacent to or near a pesticide treatment site. Bees may be exposed to pesticides when foraging in the treatment site or flying through treatment sites to nearby foraging areas or via drift. One key component of the Plan is timely and voluntary communication and coordination among key stakeholders, including beekeepers, agricultural producers, landowners and pesticide applicators.

I. Best Management Practices (BMPs)

The best management practices were developed based on stakeholder input and provide measures which agricultural producers, pesticide applicators, landowners, and beekeepers can implement to reduce the exposure of bees to pesticides. Implementation of one or more of the following BMPs may reduce the potential for pesticide exposure to managed pollinators.

A. Agricultural Producers:

1. If renting land for agricultural production, the renter should discuss bee issues with the landowner. If bee hives are located on the rented property, the landowner and renter should determine the specific location and time period which the hives will be on the property; these issues should be addressed in rental agreements;
2. Provide information to pesticide applicators regarding known beekeepers and the location of apiaries in the surrounding area;

3. Determine who is responsible (agricultural producer, landowner, or pesticide applicator) for notifying the beekeeper regarding anticipated pesticide applications;
4. Create bee forage along field edges and rights of way. Promote the growth of mid-succession blooming plants, such as wildflowers and brambles in field edges and rights of way. A complete list of blooming plants attractive to pollinators is available at http://www.pollinator.org/guides.htm ; and
5. Limit the use of herbicides, when possible, to increase bee forage.

B. Landowners/Homeowners/Occupants

1. If renting your property to others, landowners should discuss bee issues with renters such as specific location and time period which hives will be on the property. These issues should be addressed and included in rental agreements;
2. Provide information to renters and pesticide applicators regarding known beekeepers and the location of apiaries in the surrounding area;
3. Plant flowering plants that are attractive to bees and provide forage; and
4. Limit the use of herbicides, when possible, to further increase bee forage.

C. All Persons Applying Pesticides *(Additional Best Management Practices for Pesticide Applicators are available in Attachment A)*

1. Read and follow all pesticide label directions and precautionary statements. The EPA is now requiring a "Protection of Pollinators" advisory box on certain pesticide labels. Look for the bee hazard icon for instructions and restrictions that protect bees and other insect pollinators;
2. Implement Integrated Pest Management (IPM) practices. Utilize economic thresholds and IPM to determine if insecticides are required to manage pests. When insecticides are required, select insecticides with low toxicity to bees, short residual toxicity, or repellent properties towards bees. A list of pesticides is available https://extension.entm.purdue.edu/publications/E-53.pdf ;
3. Notify beekeepers within one (1) mile of the treatment site at least 24 hours prior to a pesticide application or as soon as possible after the decision has been made to apply a pesticide; **Notifying beekeepers does not exempt applicators from*

complying with pesticide label restrictions. Many insecticide labels prohibit their use if pollinators (bees) are present in the treatment area.

4. When possible, use selective pesticides that have minimal impact on non-target species as this protects pollinators and conserves natural enemies of target species. When possible, select pesticides with the shortest residual effect;
5. When possible, avoid dusts and wettable powder insecticide formulations as they can leave a powdery residue that sticks to hairs on bees. In addition, ultra-low volume formulations pose an increased risk for off target movement. Granular and liquid formulations reduce the risk to pollinators since granules are not typically picked up by bees and liquids dry onto plant surfaces.
6. Apply pesticides when bees are less likely to be foraging, preferably in the late afternoon and into the evening;
7. Postpone pesticide applications, if possible, when the wind is blowing toward bee hives or off-site pollinator habitats;
8. When planting seeds treated with insecticides, utilize alternatives to talc/graphite as they become available. The talc and graphite can cause the insecticide treatment to come off of the seeds creating insecticide-containing dust that can drift onto hives and flowering plants or otherwise be picked up by bees; and
9. Ask landowners/homeowners/occupants if they are aware of any hives in their neighborhood or in the surrounding area.

D. Beekeepers

1. Ensure bee health by practicing proper hive management *(See Attachment B: Best Management Practices for Maintaining Honey Bee Colonies);*
2. Inform persons in the surrounding area who may be applying pesticides that you have hives. Establish apiaries in areas as far away from pesticide application sites as possible;
3. Relocate bees when a pesticide application is scheduled. If unable to move bees, cover or restrict the flight of bees to prevent exposure to the pesticide; and
4. Increase the availability of bee forage at your apiary site.

II. Communication and Coordination Between Beekeepers, Agricultural Producers, Landowners, and Pesticide Applicators

Agricultural producers, landowners, and pesticide applicators need accurate and timely information on the location of nearby hives if they are to communicate with beekeepers regarding pesticide applications. Similarly, beekeepers need accurate information regarding areas where pesticides may be used in order to determine potential locations for placing bee hives and measures they will take to protect their hives.

To facilitate and encourage the voluntary exchange of information, DriftWatch Specialty Crop Site Registry (DriftWatch), developed by FieldWatch, Inc. and Purdue Research Foundation will be made available to all stakeholders. DriftWatch is an online database system that will allow beekeepers to indicate the location of their beehives and provide contact information needed by the agricultural producer, landowner, and pesticide applicator when informing the beekeeper of an anticipated pesticide application. It will also allow conventional and organic agricultural producers to record the location and type of crops in production and provide the contact information needed by the beekeeper when determining the potential location for an apiary. DriftWatch will be administered by VDACS staff, with access to the information limited to registered users only. In addition, DriftWatch will require annual renewal by users to ensure the most accurate information is available regarding the location of the hives and cropping systems.

A. Communicating the Location of Hives – Beekeepers should provide agricultural producers, pesticide applicators, and landowners with information regarding the location of hives so that notification of upcoming pesticide applications can be made. When communicating with agricultural producers and pesticide applicators regarding the location of hives, beekeepers are encouraged to:

1. Provide complete contact information including the preferred method of communication;
2. Provide the number and specific location of all hives; and
3. Provide timely updates regarding new hive locations, including hives that have been moved or those locations that are no longer being used.

B. Communicating Upcoming Pesticide Application – Agricultural producers, pesticide applicators, and landowners should provide advance notice of upcoming pesticide applications. When communicating with beekeepers regarding an upcoming pesticide application, agricultural producers, landowners, and pesticide applicators are encouraged to:

   1. Notify all known beekeepers with hives within one (1) mile of the application site of all planned pesticide applications.
   2. Notify beekeepers as soon as the application is planned and when possible, at least 24 hours in advance of the application
   3. Provide complete contact information including the preferred method of communication; and
   4. Provide pesticide product information including the product name, active ingredient, formulation, method of application and planned time of application.

C. Communicating Potential Locations for Hives – Beekeepers can determine the best location for hives based on information provided by agricultural producers, pesticide applicators, and landowners regarding pesticide application sites. When communicating with beekeepers regarding potential locations for placing bees, agricultural producers, pesticide applicators, and landowners are encouraged to:

   1. Provide complete contact information including the preferred method of communication;
   2. Provide the acreage and type of crop produced;
   3. Identify the production as conventional or organic; and
   4. Provide timely updates regarding the acreage and crop information as appropriate.

Plan Implementation

VDACS will encourage voluntary participation in Virginia's Plan to Mitigate the Risk of Pesticides to Managed Pollinators and utilize a variety of outreach methods to inform stakeholders and other interested parties of the Plan. Outreach methods include VDACS press

releases, posting on the VDACS website, direct distribution to industry and beekeeper associations, presentations at industry and beekeeper association meetings, and collaborating with Virginia Cooperative Extension in an effort to include information regarding Virginia's Plan to Mitigate the Risk of Pesticides to Managed Pollinators in certification and recertification courses and other meetings (for example, field days). Other outreach activities will include the development of audience appropriate fact sheets, information pages, and brochures. VDACS will quantify its outreach activities.

Periodic Review

Virginia's Plan to Mitigate the Risk of Pesticides to Managed Pollinators will undergo annual Agency review. VDACS will seek stakeholder input as needed to ensure the Plan remains relevant and meets the unique needs of Virginia's agricultural producers, landowners, pesticide applicators, beekeepers, and others using managed pollinators.

Measuring Effectiveness of the Plan

Virginia's Plan to Mitigate the Risk of Pesticides to Managed Pollinators promotes the implementation of best management practices and enhanced communication between agricultural producers, landowners, pesticide applicators, and beekeepers as a means to further protect pollinators. Metrics to determine the effectiveness of the Plan include:

1. Awareness of the Plan by agricultural producers, landowners, pesticide applicators, and beekeepers;
2. Number of registered users of DriftWatch;
3. Number of beekeepers that were contacted by agricultural producers, landowners, and pesticide applicators prior to the application of pesticides;
4. Number of agricultural producers, pesticide applicators, and landowners who have adopted or implemented best management practices to protect pollinators;
5. Number of beekeepers who have adopted or implemented best management practices to protect pollinators;
6. Number of beekeepers that contacted agricultural producers or landowners regarding the location of hives; and

7. Number of beekeepers that contacted agricultural producers or landowners regarding the potential location for hives.

Agency Contact Information

Should you have any questions or need additional information, please contact:

Keith Tignor, State Apiarist
Office of Plant Industry Services
keith.tignor@vdacs.virginia.gov
804-786-3515

Liza Fleeson Trossbach, Program Manager
Office of Pesticide Services
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804-371-6559

Select Resources

United State Environmental Protection Agency - Protecting Bees and Other Pollinators from Pesticides http://www2.epa.gov/pollinator-protection

VDACS Office of Pesticide Services http://www.vdacs.virginia.gov/pesticides.shtml

VDACS Office of Plant Industry Services http://www.vdacs.virginia.gov/plant-and-pest.shtml

General Crop Production Information

(To be added)

General Beekeeping Information

http://articles.extension.org/pages/21752/basic-bee-biology-for-beekeepers

https://agdev.anr.udel.edu/maarec/honey-bee-biology/the-colony-and-its-organization/

https://agdev.anr.udel.edu/maarec/honey-bee-biology/seasonal-cycles-of-activities-in-colonies/

Attachment A

Best Management Practices for Pesticide Applicators

(to be added)

Attachment B

Best Management Practices for Maintaining Honey Bee Colonies

The recommended practices for maintaining honey bees in managed colonies include:

1. Maintain strong, healthy, populous colonies.
    a. Remove or securely seal any empty hive equipment.
    b. Remove or combine all weak colonies.
    c. Repair or replace old, worn or defective hive boxes, frames and other hive equipment.
    d. Replace frames containing old comb with new or cleaned frames containing foundation such that all comb in a hive is replaced every 5 to 7 year.
    e. Maintain a minimum of 20 pounds of honey in hive with sufficient pollen stores for brood production during the growing season. Hives should enter winter with a minimum of 60 pounds of honey and 4 frames of pollen.
    f. Take appropriate measures to prevent disturbance or injury to honey bee colony or hive by vertebrate pests.
    g. Treat or remove all disease and/or pest infested colonies that may be detrimental to the health of other colonies in the area. Thoroughly inspect hives for disease at least every 3 to 4 months. Monitor pest populations for exceeding treatment thresholds.
    h. Report disease and/or pest infested colonies to the Department of Agriculture and Consumer Services, Office of Plant Industry Services at (804) 786-3515.

2. Practice proper management and control techniques to prevent colonies from swarming.

3. Maintain a water source within 50 feet of colonies or less than one-half the distance to the nearest unnatural water source, whichever is closest for urban and suburban apiaries.

4. Maintain colonies with honey bee races certified as European honey bees (EHB).
    a. Purchase queens, packaged bees, nucleus colonies, or established hives from certified EHB suppliers. Avoid purchasing queens or honey bees from suppliers within 100 miles from known Africanized honey bee (AHB) populations.
    b. Introduce queens from certified healthy stock when making divisions or splits of established colonies.
    c. Replace queens in all captured or trapped swarms within 30 days.
    d. Replace queens in all colonies every two years to minimize swarming behavior.
    e. Mark or clip queens prior to introduction to splits, swarms, and colonies.

10. Obtain queen and bees from local suppliers.

11. Report suspected pesticide related bee incidents to the Department of Agriculture and Consumer Services, Office of Pesticide Services.
    a. Include the following when reporting a suspected pesticide incident:
        i. Previous health of colony.
        ii. Prevailing winds.

iii. Name or EPA registration number of suspected pesticide if known.
iv. Previous treatments for honey bee pests and diseases.
v. When and where bees may have been exposed to a pesticide.

b. Do not disturb affected hives or bees in immediate vicinity pending an investigation.

c. Symptoms of honey bees suspected of potentially having been exposed to pesticide include:

i. Excessive numbers of dead and dying adult honey bees in front of the hive or on the bottom board.
ii. Dead brood at the hive entrance and in brood comb.
iii. Lack of foraging bees under normal weather conditions for bee flight.
iv. Adult bees that appear dazed, unconscious or paralyzed.
v. Adult bees that appear jerky, wobbly or experiencing rapid movement.
vi. Disorientation and reduced efficiency of foraging bees.
vii. Immobile or lethargic bees unable to leave flowers.
viii. Crawling adults on surface of hive or ground near hive unable to fly.
ix. Queenless or broodless hive.

(Note: symptoms may be similar to disease and pest infestation of honey bee colony.)

Recommendations are provided by the Virginia Department of Agriculture and Consumer Services, Office of Plant Industry Services, telephone: 804-786-3515, email: VABees@vdacs.virginia.gov.