

**Study on the Beekeeper Pollinator
Protection Plan and Voluntary Best
Management Practices to Improve
Communication between Beekeepers
and Applicators to Reduce the Risk to
Pollinators from Neonicotinoid
Pesticides**

Virginia Department of Agriculture and Consumer Services

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Study on the Beekeeper Pollinator Protection Plan and Voluntary Best Management Practices to Improve Communication between Beekeepers and Applicators to reduce the Risk to Pollinators from Neonicotinoid Pesticides

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Study on the Beekeeper Pollinator Protection Plan and Voluntary Best Management Practices to Improve Communication between Beekeepers and Applicators to Reduce the Risk to Pollinators from Neonicotinoid Pesticides

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Legislative Mandate

Chapter 458 of the 2021 Acts of Assembly, Special Session I

EXECUTIVE SUMMARY

Chapter 458 of the 2021 Acts of Assembly, Special Session I, directed the Department of Agriculture and Consumer Services (VDACS) to study the Beekeeper Pollinator Protection Plan (Plan) and voluntary best management practices for the purpose of proposing improvements to communication between beekeepers and applicators to further reduce the risk to pollinators from neonicotinoid pesticides. The chapter further required that VDACS provide a report on its findings to the Chairman of the Senate Committee on Agriculture, Conservation and Natural Resources and the Chairman of the House Committee on Agriculture, Chesapeake and Natural Resources no later than December 1, 2021. As allowed by Chapter 458, VDACS convened a stakeholder workgroup comprised of representatives from affected stakeholder groups while developing this study. Based on feedback from the workgroup and guidance from staff, VDACS recommends updates to the Plan, the introduction of several education and outreach opportunities, and changes to the agency's online systems that facilitate communication between beekeeper and pesticide applicators.

BACKGROUND

Honey bees and other pollinators may be impacted by pesticide applications that occur near bee hives or in areas within the flight range of honey bees. These impacts can occur when (i) pesticides are applied to plants that are in bloom, (ii) honey bees fly through pesticides as they are applied, or (iii) pesticides drift from application sites to honey bee hives or onto plants in bloom. Pesticide applicators can notify beekeepers in advance of pesticide applications, which allows beekeepers the opportunity to take measures to mitigate the impact of pesticides on their honey bees. It should be noted that the specific requirements for the legal application of a pesticide in Virginia can be found on the label of that pesticide, and some labels prohibit the application of the pesticide when plants are flowering, while bees are foraging, or when wind speeds exceed a specific threshold.

Neonicotinoid Insecticides

Neonicotinoid insecticides are a class of insecticide that are chemically similar to nicotine. Neonicotinoid insecticides are considered to be less toxic to vertebrates than many common older insecticides. Neonicotinoids can be sprayed onto foliage or applied as soil drenches and are commonly used as seed treatments. When used as a seed treatment, neonicotinoids are taken up by the plant as it grows, becoming a systemic insecticide present in pollen and nectar that pollinators can come in contact with when foraging.

Neonicotinoid insecticides include those products that contain any of the following active ingredients: imidacloprid, thiacloprid, clothianidin, thiamethoxam, acetamiprid, nitenpyram, and dinotefuran.

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

"Virginia's Voluntary Plan to Mitigate the Risk of Pesticides to Managed Pollinators" (Plan) was developed in 2017 and consists of voluntary recommendations and best management practices intended to increase protection of managed pollinators from pesticides while allowing effective control of pests that adversely affect crops, structures, public health, and domestic animals. The Plan facilitates a collaborative approach to implementing risk mitigation practices for beekeepers and pesticide applicators and encourages effective communication between individuals making pesticide applications (or their designees) and those engaged in beekeeping. The Plan includes practices that mitigate potential pesticide exposure to honey bees and other managed pollinators, allowing for the effective management of pests and the avoidance of unnecessary conflict between beekeepers and pesticide applicators. VDACS developed the Plan in cooperation with relevant stakeholders, including farmers, commercial applicators, beekeepers, Virginia Cooperative Extension (VCE), Virginia Tech, and industry groups.

Virginia's Pollinator Protection Strategy

The Plan is one component of the Virginia Pollinator Protection Strategy (Strategy), which was established in the Code of Virginia (Va. Code § 3.2-108.1) in 2016. The Strategy directs VDACS to develop and maintain strategies to (i) promote the health of and mitigate the risks to all pollinator species and (ii) ensure a robust agriculture economy and apiary industry for honey bees and other managed pollinators. The decline of managed pollinators is not due to one factor alone; rather, it

can be attributed to a number of variables, including parasites (e.g., Varroa mite) and other pests, pathogens, poor nutrition, failing queens, pesticide exposure, and the narrowing genetic base of honey bees. The Strategy focuses not only on communication between beekeepers and pesticide applicators, but also supports increases in pollinator habitats as well as research, education, and outreach about pollinators.

Effective Communication

Effective communication between beekeepers and pesticide applicators occurs when a beekeeper makes the location of their hives known to the applicator and the applicator provides advance notification of a pesticide application so that the beekeeper can take the necessary steps to protect their honey bees. To protect their honey bees, a beekeeper may confine their bees inside the hive to prevent them from being exposed to the insecticide, spray the hives with water to mimic rainfall to discourage bees from flying out of the hives, or move the hives away from the area of the pesticide application.

Communication between beekeepers and pesticide applicators may involve commercial pesticide applicators, farmers, or homeowners who apply their own pesticides. Homeowners are unlikely to be aware of the need for advanced communication with beekeepers and may not know that honey bees are located near their property. In addition, given the number of residential properties that can be found in urban settings, it is likely that a beekeeper would receive a large number of notifications should every homeowner and commercial applicator provide advance notification for applications made within the flight range (two miles) of the bee hive. The number of potential pesticide applications within two miles of the hive could result in beekeepers receiving advance notifications on a daily basis, thereby requiring mitigation measures by the beekeeper every day. Implementing daily mitigation measures is not practical and would likely be detrimental to a honey bee colony.

It should be noted that many beekeepers have developed relationships with nearby farmers, homeowners, and commercial pesticide applicators that already result in advance notification of pesticide applications. In many situations, the applicator is already implementing best management practices to reduce the exposure of pollinators to pesticides and communicating with the beekeepers through a phone call or a text message to provide advance notification. Several workgroup participants noted that while there was good communication between local farmers and beekeepers, communication was more difficult with mosquito control companies.

Online Communication Tool

To facilitate communication between beekeepers and applicators, VDACS provides the online communication tools BeeCheck® and FieldCheck®, which allow pesticide applicators to more easily communicate with beekeepers regarding upcoming pesticide applications. To use the online communication tool, beekeepers register the location of their beehives and provide their contact information in BeeCheck, and pesticide applicators, using FieldCheck®, can see the location of the beehives and beekeeper's contact information. The applicator can then notify the beekeeper when a pesticide application will occur in close proximity to their beehives. While FieldCheck® has contact information for the beekeeper, and the applicator can provide the

pesticide being applied, the system does not have the capability to automatically generate advance notifications.

Outreach

VDACS currently focuses its outreach efforts on educating members of local bee clubs and the Virginia State Beekeeper Association about the availability of BeeCheck® as a means of receiving notification from pesticide applicators in advance of pesticide applications in their area.

VDACS also includes as part of its pesticide applicator recertification courses information regarding the availability of FieldCheck®. Certified pesticide applicators must attend one recertification course every two years in order to renew their applicator certification.

WORKGROUP FEEDBACK

Chapter 458 of the 2021 Acts of Assembly, Special Session I, directed VDACS to study the Plan and voluntary best management practices for the purpose of proposing improvements to communication between beekeepers and applicators. Chapter 458 also provided that VDACS may establish a stakeholder workgroup composed of representatives of affected groups, including beekeepers, agricultural producers, commercial pesticide applicators, private pesticide applicators, pesticide manufacturers, retailers, lawn and turf service providers, the Virginia Farm Bureau Federation (VAFB), the Virginia Agribusiness Council (VAC), VCE, and other agribusiness and farmer organizations to assist in the study.

VDACS convened such a workgroup to assist in the study, inviting representatives from the groups mentioned in Chapter 458 to a meeting on September 29, 2021. In attendance were representatives from VAC, VAFB, Virginia Turfgrass Council (VTC), Virginia Grain Producers Association (VGPA), Virginia Golf Course Superintendents Association, Virginia State Beekeepers Association (VSBA), and individual beekeepers.

To evaluate the Plan and its associated voluntary best management practices (BMP), the workgroup discussed the use of the BeeCheck® and FieldCheck® online mapping tools, the current BMPs, and the Plan itself.

In an effort to promote advance notifications for a broad range of pesticide applications, the workgroup discussed the importance of the study addressing the application of all pesticides that impact honey bee populations, rather than just neonicotinoid insecticides. As a result, the workgroup feedback and agency recommendations are not limited to neonicotinoid insecticides.

Feedback from Workgroup Participants on the Plan:

- The Plan is working well; however, some participants expressed concerns that there was a lack of awareness and knowledge of the Plan among beekeepers and pesticide applicators;
- There was discussion among participants on the need to balance streamlining the Plan with providing enough information to be useful;

Suggestions from Workgroup Participants related to the Plan:

- Include a list of alternative insecticides that are not neonicotinoids;
- Include references in the Plan to FieldCheck® and BeeCheck® (the Plan currently references the “online communication tool” and does not specifically mention FieldCheck® or BeeCheck®);
- Distribute media releases regarding the Plan for use in newspapers and beekeeper sales catalogs that coincide with peak pesticide application season in the spring;
- Provide information regarding the Plan at meetings of civic organizations and groups as well as farmers’ markets.

Feedback from Workgroup Participants on BeeCheck® and FieldCheck®:

- BeeCheck® and FieldCheck® are valuable communication tools;
- There is a lack of awareness among beekeepers and pesticide applicators regarding the availability of this online communication tool.

Suggestions from Workgroup Participants related to FieldCheck® and BeeCheck®:

- Conduct an aggressive marketing campaign utilizing the beekeeping associations and provide information about BeeCheck® and FieldCheck® at retail locations where pesticides are sold;
- Include information on BeeCheck® and FieldCheck® in VDACS’s pesticide applicator training manuals;
- Include an automatic notification option in FieldCheck® that would allow the applicator to provide a notification to all beekeepers, within a specified distance, who registered bee hive locations in BeeCheck®. The automatic notification in FieldCheck® should also allow an option for the applicator to include, in the notification, the specific pesticide being applied;
- Update FieldCheck® to include less toxic chemical recommendations;

Feedback from Workgroup Participants on BMPs

Participants discussed changes to the BMPs contained within the Plan. Additional BMPs were proposed. There was a sentiment expressed that some applicators are already applying pesticides during the evening and night hours and this should be included as a BMP. Applying pesticides during the night and evening hours reduces exposure to pollinators. It was also suggested that the BMPs include a recommendation for 72 hours advance notice of pesticide applications, when feasible. It was also proposed that the Plan be distributed during VDACS pesticide applicator training to enhance knowledge and awareness of the BMPs.

Feedback from Workgroup Participants on Beekeeper Notifications

The workgroup concluded with a discussion regarding notifications to beekeepers of planned pesticide applications and the distance from the application site within which beekeepers should be notified of such application. Workgroup participants indicated the notifications to beekeepers based on the distance from the application site should depend on the type of pesticide applied, the conditions at the time of application, the environment, and other factors. Depending on these factors, the distance of impacted beehives from the application site could vary anywhere

between the adjacent property and a two mile radius. Discussion regarding pesticide applications in urban areas indicated that advance notification of pesticide applications more than one block from the beehives would result in too many notices being provided to the beekeeper due to the potential for frequent and numerous applications being made in urban areas.

Beekeepers participating in the workgroup meeting indicated that many beekeepers prefer to keep the location of their beehives confidential to prevent the theft of hives and allegations of stinging incidents associated with their honey bees. Beekeepers who prefer to keep the locations of their hives confidential jeopardize effective communication between the beekeeper and the pesticide applicator.

The beekeepers participating in the workgroup indicated that their biggest concern related to pesticide applications is insecticide drift onto their hives. Insecticide drift is a concern related not only to neonicotinoid insecticides but other insecticides as well.

Comments from Workgroup Participants on Draft Report

The agency solicited comments on the draft report from the workgroup participants and received comments from VTC, VAFB, VGPA, and VSBA.

VTC indicated that the report reflected the discussion of the workgroup.

VAFB and VGPA provided comments related to (i) enhancing communication by ensuring that beekeepers make the locations of their honey bee hives known to applicators; (ii) clarifying that updates to FieldCheck® related to automatic notification and listing the specific pesticide being applied are optional for the applicator; and (iii) implementing a statewide standardized identification program for hive locations. In general, these comments were discussed by the workgroup and have been included in the report.

VSBA commented that the report appeared to be misdirected as it does not address the concern that many beekeepers prefer to keep their hive locations confidential in order to prevent the theft of hives and allegations of stinging incidents. VSBA recommended that commercial pesticide applicators, especially mosquito control companies, be required to register the location where pesticide applications will occur 72 hours prior to the application when the application of toxic chemicals may result in damage to all members of the public, including honey bees and beekeepers, as this will allow beekeepers the opportunity to make decisions regarding their honey bee hives without revealing the location of their hives.

VSBA's comments related to requiring commercial pesticide applicators to register the locations of pesticide applications in FieldCheck® were not discussed by the workgroup. FieldCheck® does not have the capability to register the location of a pesticide application, therefore modifications would be required.

RECOMMENDATIONS

Communication between pesticide applicators and beekeepers can reduce the risk to pollinators from all pesticides, including neonicotinoid insecticides. To improve communication, increased awareness of the availability of BeeCheck® and FieldCheck® is needed as well as modifications to FieldCheck® to improve notification options. In addition, the establishment of an identification system to make pesticide applicators aware of local beehives may aid in reducing the exposure of honey bees to pesticides.

Outreach

Communication may be improved if (i) more pesticide applicators are aware of the availability of FieldCheck® as a means of identifying the location of beehives and (ii) more beekeepers are willing to make the locations of beehives available to applicators and utilize BeeCheck® as a means of notifying pesticide applicators of the location of their honey bee hives.

The Plan was established in 2017. BeeCheck® and FieldCheck® have been available since 2018. Based on input from the workgroup, it appears that many beekeepers and pesticide applicators may not be aware of the Plan or the availability of BeeCheck® and FieldCheck®. To increase the use of BeeCheck® and FieldCheck®, additional outreach efforts are needed.

The development of outreach programs focused on beekeepers, commercial applicators, farmers, and homeowners could be used to inform these various groups of the importance of following best management practices and providing advance notification. Opportunities for outreach include:

- Partnering with VCE, the Master Gardener Program, and the Master Naturalists Program to increase awareness of the Plan, the availability of BeeCheck® and FieldCheck®, and the benefits of advance notification of pesticide applications;
- Including information regarding the Plan and availability of BeeCheck® and FieldCheck® in VCE's agricultural and lawn and turf Pest Management Guides and other related guides;
- Enlisting the assistance of the Virginia State Beekeepers Association to provide outreach regarding the Plan and the availability of BeeCheck® to unaffiliated local beekeepers and beekeeper organizations;
- Providing information at pesticide retail outlets regarding the need to protect pollinators and the benefits of providing advance notification to beekeepers;
- Providing information on the availability of BeeCheck® for distribution by beekeeping supply companies;
- Issuing press releases in the spring regarding the need to protect pollinators and the availability of BeeCheck® and FieldCheck®;
- Providing onsite registration for the use of BeeCheck® and FieldCheck® at pesticide recertification courses and industry meetings;
- Including information on the Plan and the availability of BeeCheck® and FieldCheck® in VDACS pesticide applicator training manuals;

Modification to the Plan

To increase the use of BeeCheck® and FieldCheck®, VDACS should update the Plan to include specific references to “BeeCheck®” and “FieldCheck®” to ensure that those who read the Plan are aware of these online communication tools. In addition, the various user groups should review the BMPs in the Plan and update where applicable.

Advance Notification - Modification to FieldCheck®

To facilitate the use of BeeCheck® and FieldCheck® for advance notification, FieldCheck® should be modified to make it easier for pesticide applicators to notify all beekeepers in close proximity to the location of the pesticide application and provide an option that would allow the notification to include the specific pesticide being applied. These changes would likely require a modification by the system developers. The complexity and cost of these system modifications is unknown.

Standardized Bee Hive Identification Program

To allow pesticide applicators to more easily identify the location of honey bee hives, a standardized identification system could be established that would allow pesticide applicators to avoid the application of pesticides in the vicinity of honey bee hives. This voluntary identification system would involve beekeepers placing a standardized, easily recognizable identifier on mailboxes or yard signage to indicate where honey bee hives are located so that pesticide companies will know when beehives are in an area where a pesticide will be applied. This would be a voluntary program that would minimize the exposure of honey bees to pesticides by enabling pesticide applicators to avoid applying pesticides near the location of bee hives.

CONCLUSION

It is necessary to increase awareness of the availability of BeeCheck® and FieldCheck® among pesticide applicators and beekeepers. Based on feedback from the workgroup and guidance from staff, VDACS recommends the introduction of new education and outreach opportunities to raise awareness of the available online communication tools and to improve communication between affected groups to reduce the risk to pollinators from neonicotinoid pesticides. In addition, modifications to the Plan and associated BMPs and FieldCheck® may aid in reducing the exposure of honey bees to all pesticides, including neonicotinoids. Finally, the development of a standardized identification system would create another opportunity to reduce the risks of pesticides to pollinators.