



Tips for Commercial Agricultural Pesticide Applicators

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Why Are Pollinators Important?

When people think of bees, they often think of honey. Sure, honey is an important agricultural product, but managed honey bees pollinate commercial nut, fruit, and vegetable crops. As you drive across the country during the growing season, you will see bee hives placed in and around diverse fields of crops. It's a critical, multi-billion-dollar industry.



Figure 1. The taste and color of honey depend on the plants the honey bees were foraging on when they made it.

Not only are honey bees vital to production agriculture, so are countless native pollinator species. And it doesn't matter if the farm is small or large, organic or traditional, pollinators play a pivotal role in boosting fruit and vegetable crop yields.



Figure 2. Chances are good that most of the fruit and vegetables you eat every day require pollination. Without the commercial apiary industry and native pollinators, much of what we purchase at the grocery store would be scarce and far more expensive.

What Is the Problem?

Honey bees and pollinators face a number of stresses, including a loss of suitable habitat, various diseases, Varroa mites, and improper pesticide use. While agricultural pesticide applicators may not be able to control factors like habitat loss, they can take practical steps to help protect the pollinators so many in the agricultural industry rely upon.

This publication describes management practices commercial applicators can follow to minimize any potential harm to pollinators.

Some (not all) pesticides can have unwanted consequences on honey bees and native pollinators. The most obvious problem is that insecticides can kill individual pollinators that

contact the pesticide during an application or after it is on the plant. Pollinators also can bring nectar or pollen that contains pesticides back to the hive. When developing larvae and adult workers feed on this nectar or pollen, they can die. Less obvious, are herbicides that can indirectly influence honey bees by killing the plants they rely on for nectar and pollen.

Pesticides are critical for maintaining crop yields and quality. But everyone involved in production agriculture also has a vested interest in protecting pollinators.



Figure 3. The honey bee in the center of this photo has yellow pollen on its hind legs, which it is bringing back to the hive.



Figure 4. Everyone involved in production agriculture has an interest in protecting pollinators.

Best Management Practices

It's a commercial pesticide applicator's job to apply pesticides and protect crops from yield-robbing weeds, insects, and plant diseases. At the same time, the commercial agricultural industry must apply their pesticide products in a manner that preserves and ensures the health of the cropland and the environment. This includes protecting pollinators.

Commercial applicators may find it difficult to protect both the crop and save the pollinators, because applicators do not own the land, control

what is planted, or have a voice in how those fields are managed. Although farmers sometimes ask applicators to provide insights about some aspects of farm management, the farmers make the final decisions.

Still, there are some specific tactics that commercial agricultural applicators can practice that will help protect both pollinators and crops. We describe some of these tactics below.



Figure 5. Commercial applicators must protect both crops and pollinators.

Meet with Clients in the Off-season to Plan Ahead

Give your farmer clients an opportunity to discuss their philosophy of protecting pollinators. Does a farmer have any important areas on the farm that can be designated as a risk zone for pollinators? If so, then you'll know to take extra care when applying a pesticide near these areas.

Follow Integrated Pest Management (IPM) Practices

Purdue and other universities publish research-based, crop-specific guidelines that specify when it is economical to control insects feeding on a crop. If you apply an insecticide when the insect pests numbers are below these thresholds, you not only waste your client's money, you also risk exposing pollinators to the insecticides.

Look for Pollinator Warnings on Pesticide Labels

If a pesticide product can harm pollinators, the U.S. Environmental Protection Agency (EPA) requires the pesticide label to carry warning statements. The warning also directs applicators about actions they must take to protect pollinators.

Examples of such statements include:

- “This pesticide is toxic to bees exposed to direct application. Applications should be timed to coincide with periods of minimum bee activity, usually late evening and early morning.”
- “This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops if bees are visiting the treatment area.”

In addition to these warnings, the EPA requires certain registered pesticide products to carry a “Protection of Pollinators” box (Figure 6).

Select Products Without Warning Statements

Pesticide labels that include directions for protecting pollinators can be hard to follow. For that reason, choose products that do not carry pollinator warnings whenever possible. Using these pollinator-safe products may even be a selling point with your farmer clients — it shows concern for protecting pollinators.

Follow Product Labels

Many large bee kills were caused by an applicator who did not correctly follow the directions on a pesticide label. Following label directions (such as for mixing rates) can greatly reduce problems. Sometimes, it’s the dose that makes the problem. At the labeled rate, a product may be safe. But add just a little more, and it can cause enormous damage.

Consider Timing and Neighbors

Bees are not very active early in the morning or late in the evening. In some circumstances, you can take advantage of this inactivity to apply. The first thing you’ll have to determine is whether there are any bee hives in your area.

Honey bees commonly travel 2 to 3 miles from the hive to gather nectar and pollen. If you are treating a crop that is blooming, attractive to honey bees, and is within 3 miles of a known apiary, you might consider making the application in the early morning or evening.



Figure 6. The EPA requires certain registered pesticide products to carry this advisory box.

PROTECTION OF POLLINATORS



APPLICATION RESTRICTIONS EXIST FOR THIS PRODUCT BECAUSE OF RISK TO BEES AND OTHER INSECT POLLINATORS. FOLLOW APPLICATION RESTRICTIONS FOUND IN THE DIRECTIONS FOR USE TO PROTECT POLLINATORS.

Look for the bee hazard icon  in the Directions for Use for each application site for specific use restrictions and instructions to protect bees and other insect pollinators.

This product can kill bees and other insect pollinators

Bees and other insect pollinators will forage on plants when they flower, shed pollen, or produce nectar.

Bees and other insect pollinators can be exposed to this pesticide from:

- o Direct contact during foliar applications, or contact with residues on plant surfaces after foliar applications
- o Ingestion of residues in nectar and pollen when the pesticide is applied as a seed treatment, soil, tree injection, as well as foliar applications.

When Using This Product Take Steps To:

- o Minimize exposure of this product to bees and other insect pollinators when they are foraging on pollinator attractive plants around the application site.
- o Minimize drift of this product on to beehives or to off-site pollinator attractive habitat. Drift of this product onto beehives or off-site to pollinator attractive habitat can result in bee kills.

Information on protecting bees and other insect pollinators may be found at the Pesticide Environmental Stewardship website at: <http://pesticidestewardship.org/PollinatorProtection/Pages/default.aspx>.

Pesticide incidents (for example, bee kills) should immediately be reported to the state/tribal lead agency. For contact information for your state, go to: www.aapco.org/officials.html. Pesticide incidents should also be reported to the National Pesticide Information Center at: www.npic.orst.edu or directly to EPA at: beekill@epa.gov



Figure 7. Be aware of your neighbors. Consider using [FieldWatch.com](https://www.fieldwatch.com) to find if there are any beekeepers registered near an area where you will spray.

Consider using [FieldWatch.com](https://www.fieldwatch.com), a website that can tell you if any beekeepers have registered bee hives in your area. The site covers Indiana and several other states.

Notify Local Apiaries First

If [FieldWatch.com](https://www.fieldwatch.com) shows any beekeepers are in your area, call them. This allows you to explain what crop you will treat, when you will apply, what product you will use, and any bee warnings on the label. This notification is a common courtesy, and beekeepers greatly appreciate it.

If beekeepers are concerned about the effects of the proposed treatment on their hives, they can close the hives for a few hours. In other cases, beekeepers may choose to do nothing — whether it's because the product is an herbicide, a fungicide, or an insecticide that is less hazardous to bees. Showing concern for beekeepers' hives — and by extension, their livelihoods — is critical to building good will among commercial applicators, farmers, and beekeepers.

Reduce Off-target Drift

Farms may include uncultivated lands that the farmers do not mow — some of these lands are part of a USDA conservation program to protect pollinators. These lands can contain plants that pollinators use for pollen and nectar. Many flowering trees along field edges also attract bees and other pollinators. For these reasons, make every effort to keep pesticides in the target field. Do not allow the pesticide to drift outside of the field boundary — this is a professional and legal responsibility all commercial agricultural applicators must take seriously.

Educate Neighbors, Beekeepers, and Community

There are many misconceptions about the role commercial applicators play in protecting crops and the environment. Be willing to attend programs put on by bee associations, Cooperative Extension Service, Natural Resources Conservation Service, and public libraries. These meetings can give you an opportunity to explain the role in protecting crops and the steps you take to reduce the risks to nontarget insects, plants, and wildlife. Being willing to speak can provide important facts that may be missing from general discussions on pesticides and pollinators.



Figure 8. Keep all pesticide applications on the target field — off-site movement can harm nearby pollinators.



Figure 9. A beekeeper's goal is to manage bees so they remain healthy and productive. An applicator's goal is to safely manage crop pests. These goals can exist at the same time as long as everyone does their part.

Fund Projects That Support Bee Health

Agricultural retailers routinely support local charities and programs that support their communities.

Consider supporting projects that increase pollinator habitat and public education at the local level. Your support can include donating money or volunteering to teach beginning bee classes to hobbyists, planting bee-friendly flowers in urban areas, planting gardens at the high school, conserving undeveloped lands, managing larger tracts of conservation lands for pollinators, planting highway rights-of-way with nectar- and pollen-producing flowers, and introducing bee information in Master Gardener programs.

Conclusion

Maintaining the health of honey bees and other pollinators benefits everyone. There is a natural tension between applicators and beekeepers who are suspicious of products that potentially could harm their bees. If you follow the common-sense recommendations in this publication, it can go a long way toward ensuring that you protect crops from pests while still protecting pollinators. Pesticide applicators, beekeepers, and pollinators are key actors in the food production system. If they work together, both can achieve their individual goals and an abundant food supply.



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