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PESTICIDE NEWS

Pollinators and Pesticides: What you need to Know

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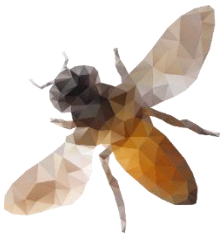

In the spirit of National Pollinator Week, June 19 – 25, producers, bee keepers and pesticide applicators are reminded of best management practices to minimize negative impacts to pollinators. Pollinators include bees, butterflies, wasps, flies, birds and bats, however insects are the most common pollinators with bees performing the most pollination. Pollinators are vital for the survival of most flowering plants including 80% of the approximate 1,300 crop plants grown around the world for food and industrial products. The value of insect pollinated crops in the US ranges from $18 to $27 billion annually. Pollinator numbers have been decreasing worldwide for many years. Studies on this issue point to a multi-faceted problem in which many components interact causing pollinator die-off. One of these components is pesticide use, not only on agricultural land, but also in urban areas. This article discusses pollinators, specifically bees, and steps to reduce the risk of exposing bees to pesticides.

Colony Collapse Disorder and Honey Bee Colony Decline

One of the most discussed pollinator issues in recent years is Colony Collapse Disorder (CCD) of honey bees. CCD occurs when worker bees in a colony disappear, leaving the queen, nurse, and immature bees without a way to do the work of the hive including gathering food, temperature control and producing beeswax. Research suggests only about five percent of honey bee colony losses nationwide are attributed to CCD. General honey bee colony decline, not CCD, cause the other 95% of colony losses, with colony losses exceeding 30% annually in recent years. Declines have been blamed on pesticides, but studies show CCD and honey bee colony decline are caused from a variety of factors including pesticides, mites, diseases, stress, habitat changes, and/or poor nutrition.

Pesticide Exposure

Pesticides are an important part of urban and agricultural pest control, however the areas treated are often shared by bees. Foraging bees may travel 2-3 miles from their hive and may visit multiple sites. Peak pesticide exposure to bees occurs from sunup to sundown on blooming plants, unless it is raining or below 55 degrees F. The majority of bee poisoning events occur when bees come into contact with pesticides applied to blooming plants including direct contact with pesticides through residue on plants and soil or ingesting contaminated pollen and nectar. Contaminated pollen and nectar brought back to a hive can further expose the hive to pesticides.

Reading the Product Label and Bee Toxicity

To understand if a specific pesticide is toxic towards bees, applicators should read the “Environmental Hazard” or “Directions for Use” statements on the pesticide product label. The United States Environmental Protection Agency (EPA) analyzes pesticides for bee toxicity if the pesticide is used outdoors as a foliar application.

The EPA uses two different toxicity tests which dictate the specific language included on the label regarding bee hazards. The acute contact toxicity test is used to determine if the pesticide is toxic to bees. If the pesticide is highly or moderately toxic to bees there will be a bee warning statement on the label

with use restrictions. The residual toxicity time test determines how long the pesticide stays toxic on foliage through contact. If the residual toxicity time is eight or more hours the pesticide is considered to have an Extended Residual Toxicity (ERT). Pesticides with ERTs will have specific language on the label restricting application when bees are visiting the area, specifically when crops or weeds are blooming. Bee toxic pesticides without ERTs will restrict application when bees are actively visiting the area such as from sunup to sundown; these pesticides may be applied from late evening to early morning.

In 2014, the EPA revised labels for Neonicotinoid pesticides which are highly toxic and should be used cautiously. Neonicotinoid active ingredients include clothianidin, dinotefuran, imidacloprid, and thiamethoxan. Labels for products with these active ingredients have a "Pollinator Protection Box," as well as new language in the "Directions for Use" statement.

Best Management Practices

In addition to reading the label, pesticide applicators are encouraged to use Best Management Practices (BMPs) to reduce bee exposure to pesticides. The recommended BMPs for protecting bees is as follows:

1) Utilize Integrated Pest Management (IPM) principles in order to apply pesticides only when needed. Many measures may be taken to control pests prior to using chemicals.
2) Avoid spraying bee toxic pesticides when crops or weeds are in bloom as this is when bees are most likely to be affected by pesticides. Some pesticides cannot be applied during bloom as stated on their labels.
3) Follow the pesticide label instructions regarding timing of application to minimize potential residual toxicity exposure. Pesticide labels that restrict application during times when bees are actively visiting can be applied from late evening to early morning.
4) Be aware of weather conditions. Low temperatures, cloud cover and dew may extend pesticide residuals. Pesticides applied before or during cold nights, followed by warm summer days greatly increases bee kills.
5) Choose a formulation least likely to be a danger to bees. Read the pesticide product label "Environmental Hazard" statement.
6) Take measures to minimize vapor and spray drift.

Communication

Good communication between beekeepers, producers and pesticide applicators is critical to keep bees protected. This could be through face-to-face conversations or the use of FieldWatch (mt.driftwatch.org). FieldWatch is an online mapping program that identifies vulnerable sites, including bee apiaries, whose purpose is to facilitate relationships between bee keepers, producers and pesticide applicators to reduce pesticide and drift impacts. Bee keepers and specialty crop growers are urged to register on FieldWatch to display vulnerable sites on an online map easily viewed by pesticide applicators prior to pesticide applications.

For information on bees and pesticides navigate to www.epa.gov/pollinator-protection or contact the Montana State University Extension Pesticide Education Program at pesticides@montana.edu or (406) 994-5067. Also visit our website at: www.pesticides.montana.edu.