



Protecting Pollinators during Pesticide Spraying – Best Management Practices

May 5, 2023 (Amended from 2013 version)

Insect pollinators are vital to agricultural production and the environment. Many farmers use pesticides to protect their crops from insect pests, weeds and diseases. However, some pesticides are toxic to bees and other pollinators through direct contact, such as from over-spray or from pesticide drift. Residues of certain pesticides that remain on leaves, in pollen and nectar, or in water sources could also harm pollinators through ingestion and/or contact.

The following best management practices are provided to help protect bees and other insect pollinators, including honey bees, from pesticide spray applications and drift throughout the growing season.

Practice Integrated Pest Management

Practicing integrated pest management (IPM) is essential for sustainable pest control. This approach can include cultural practices to discourage pests, correct identification of the pest problem, determination that pest levels warrant pesticide treatment, and pesticide application at the lowest effective label rate.

Know where beehives are located

Communication and cooperation among growers, pesticide applicators and beekeepers on the location of beehives, type of pesticide to be applied, timing and location of spraying, and the potential for drift,

can help reduce pesticide exposure to bees. For example, if spraying is planned, contact beekeepers that have beehives near the crop to be sprayed. Such communication enables beekeepers to confirm that hives are located upwind of areas to be sprayed or in shelter belts. It also helps beekeepers determine when to temporarily protect or relocate hives, when feasible.

Observe pollinator activity to minimize exposure

Honey bees forage most actively during the daytime, on sunny days, and at temperatures above 13°C. Other pollinators, such as bumblebees, may forage at temperatures below 13°C.

Pollinators visit crop and non-crop areas for nectar and pollen – including flower blooms on crops, trees, shrubs, weeds, and native vegetation. Pollinators may also be attracted to certain plants that produce nectar when not in bloom, and to the honeydew produced by many plant-sucking insects. It is therefore important to observe pollinator activity both at the application site and in the vicinity, and take the following steps to minimize pollinator exposure:

- **Always read and follow the pesticide label instructions.**
- When a pesticide label indicates it may be toxic to bees/pollinators, it is important to:
 - Avoid spraying when crops or weeds in the treatment area are in bloom: time applications to minimize bee exposure (for example, before flowering or after blooms have gone).
 - Avoid spraying when bees are foraging: spraying during the day when bees are foraging can be the most hazardous. When environmental conditions permit, apply pesticides late in the evening when most pollinators are not foraging.
 - Avoid spraying when bees are foraging in ground cover containing blooming weeds: (for example, in an orchard) if application is necessary, consider removing flowers before



pesticide application (for example, by mowing, disking or mulching).

Monitor environmental conditions to minimize drift

Environmental conditions can contribute to spray drift, which may be hazardous to pollinators.

- Check the weather forecast before application and be mindful of changing conditions.
- Initiate spray operations when the wind is blowing away from beehives and pollinator-attractive habitat.
- Spray during cool temperatures and high humidity.
- Spray in the evening when winds are low; however, do not spray during periods of “temperature inversion” which may occur when the air mass near the ground is cooler than the air immediately above it. It typically occurs between sunset and one to two hours after sunrise, and can cause pesticides to drift unpredictably and/or be carried over large distances when winds pick up. Some useful indicators of temperature inversions are evening/early morning mist, fog, dew or frost; and smoke, dust or fog that hangs in the air and/or moves sideways without dispersing.

Use equipment that reduces drift

Minimize spray drift to areas adjacent to the application site, particularly when weeds or other plants are in bloom.

- Select drift-reducing spray nozzle technology, whenever possible.
- Since fine droplets tend to drift farther, apply spray at lower pressures or choose low-drift nozzles that reduce drift by producing a medium-to-coarse droplet size. Calibrate spray equipment often.
- Install shrouds or cones on field sprayers to significantly reduce spray drift.
- Airblast sprayers can produce finer droplets with greater drift potential. When using an airblast sprayer, consider redirecting or turning off

nozzles, or use technologies that reduce drift (for example, hooded towers, wraparound, and tunnel and target-sensing sprayers).

- For aerial applications, ensure that the maximum boom width does not exceed 65% of the wingspan. Choose the appropriate nozzle and orient it to deliver as coarse as possible a droplet size without significant decrease in efficacy.

Target only the target area

Apply pesticides only to the area needed.

- Follow the buffer zone instructions on the pesticide label.
- Shut off sprayer when making turns at field ends or gardens, near large puddles, ponds and other sources of water that may be used by pollinators and other wildlife.
- Shut off individual nozzles where it is not necessary to spray, such as gaps in the crop or shrubbery.

Exercise pollinator-friendly practices throughout the growing season

Bees and other pollinators collect pollen, nectar and water from different sources that could become contaminated with pesticide residue.

- Avoid contamination of plants, water and soil that may be used by pollinators.
- Provide pollinator-friendly habitat (for example, alfalfa, clover, wildflowers) away from crops.

Report suspected pollinator pesticide poisonings

For suspected pollinator poisonings related to pesticides, contact the appropriate federal/provincial authority. See the pollinator protection webpage on Canada.ca for the appropriate federal and provincial contacts and additional information:

www.canada.ca/pollinators.



Related information

Additional information and best practices can be found at Health Canada's pollinator protection web page www.canada.ca/pollinators or by contacting Health Canada's Pest Management Regulatory Agency at 1-800-267-6315.