



# Pollinator Friendly Pesticide Applicator Best Management Practices

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## Background

Pollinators, such as bees, bats, birds, and butterflies, are essential to the majority of the flowering plants in our environment and to the production of more than 130 different food crops. Pollinators are highly sensitive to many pesticides, especially insecticides. Your help as pest management personnel is critical to the continued safety of our food supply and environment. Proper pesticide use avoids harm to pollinators and their food sources, water, and habitats.

Use an integrated pest management (IPM) approach:

- Monitor and assess pest populations to determine if levels warrant control.
- Select the best combination of pest control options that minimizes risks to pollinators.

## Read and Follow the Pesticide Label

On pesticide labels, look under the “Environmental Hazards” and “Directions for Use” headings for important information on protecting pollinators. Some labels warn against use of the product on blooming crops by stating, “Do not apply to blooming crops or weeds if bees are visiting in the treatment area.” Some labels limit at-bloom applications to times when bees are not actively visiting, such as late evening. Apply the product in a manner consistent with the label directions.

## Be Alert to Bloom

Presence of bloom is the key factor in pollinator exposure to pesticides. Honey bees and other pollinators are most at risk of poisoning when bee-toxic pesticides are applied to weeds or other vegetation that is blooming. Avoid applying any bee-toxic pesticides on blooming plants that attract bees. Keep pesticide drift from nearby blooming weeds that are attracting bees.



## Timing of Pesticide Application

The time of pesticide application is very important. Apply pesticides that are toxic to bees in the evening when most honeybees have stopped foraging and returned to their hives. This allows the maximum time for the pesticide to decompose before the bees come into contact with it the next day.

## Avoid Residual Toxicity

Use insecticides with short residuals. Do not apply insecticides having a long residual to blooming crops.

## Check the Weather

Environmental conditions affect pesticide persistence. Daytime applications at low temperatures may cause some classes of pesticides to remain toxic much longer than during warm weather. Cloud cover also may prolong toxicity due to lower levels of ultraviolet light which breaks down many pesticides. Do not apply bee-toxic pesticides with extended residual toxicity on nights when dew is forecast. Dew may re-wet pesticides and increase bee exposure. Environmental conditions also affect bee activity. When high daytime temperatures encourage bees to begin foraging earlier or continue later than usual, adjust application times of bee-toxic pesticides accordingly. Experience shows that when bee-toxic pesticides are applied before or during cold nights, followed by warm summer days, the incidence of bee kills greatly increases.

## Use Less Hazardous Pesticides

Neonicotinoid pesticides (i.e. pesticides with the active ingredient clothianidin, dinotefuron, imidacloprid, and thiamethoxam) may potentially cause adverse effects to pollinators. The EPA is taking steps to change these pesticide labels so they better protect bees by being clearer and more precise in their directions for pesticide application.

Use of neonicotinoid pesticides should be avoided in areas where pollinators may be present. Also avoid using them on any flowering plants. Use on flowering plants may result in exposure to bees even if applied when the plant is not flowering because they are taken up systemically and have a long residual.

### Use the Least Hazardous Pesticide Formulation

Granular formulations are the least hazardous when bees are present because they are the least likely to drift. Dust and microencapsulated formulations are most hazardous to bees because they are similar in size to pollen and tend to stick to bee hairs. Dusts almost always drift more than other formulations. Emulsifiable concentrate formulations are usually less hazardous to bees than wettable powders because the powders remain toxic in the field longer. Spray formulations are usually safer to bees than dusts, but there are differences among spray types. Generally, water soluble formulations are safer than emulsifiable formulations, and fine sprays are less dangerous than coarse sprays. Sprays of undiluted pesticides may be more dangerous than diluted sprays.

### Minimize Drift

Honey bees will visit the blooms of crops and/or weeds near target crops and be unintentionally impacted there by drift and pesticide residues. Keep the product on the intended area and apply pesticides with equipment that has been calibrated for the particular application. When appropriate, use ground applications instead of aerial applications to reduce risk of drift out of the target area.

### Communicate with Beekeepers

Cooperation and communication among applicators and beekeepers greatly increases the likelihood of success in protecting pollinators and their habitats. Take the initiative to establish good relations and communication with commercial and local beekeepers. Notify beekeepers of future pesticide applications planned in the area so that they may attempt to protect their bees.

### Learn about Local Regulations/Programs

Check for specific local ordinances pertaining to pollinators, especially beehive locations or designated preserves (if applicable). Some regions require that commercial beehive operations register the location where hives are being kept. Many states have regulations intended to reduce the hazard of insecticide applications to bees.

### References

- The Center for Integrated Pest Management's Pollinator Protection: <http://pesticidestewardship.org/pollinatorprotection/Pages/default.aspx>
- EPA Pollinator Protection: <http://www2.epa.gov/pollinator-protection>



### Contact Information

For more information regarding integrated pest management approaches, contact the installation Applied Biology Professional Pest Management Consultant. A list of Applied Biology contacts can be found at <http://www.afpmb.org/content/navfac-applied-biology-center>.

