



Preventing Pesticide Poisonings of Honeybees

Utah Department of Agriculture and Food

Pesticides are useful tools which, when used properly, help eliminate unwanted pests. Unfortunately, beneficial insects such as bees are sensitive to many pesticides and can be inadvertently killed when a pesticide applicator is targeting another organism. Honeybees are the most economically important pollinators. In Utah managed honeybees pollinate commercial apple, pear, apricot and sweet cherries orchards, as well as many other crops. By following the guidelines provided, unintentional pesticide poisonings of bees can be reduced or eliminated altogether.

Beekeeper & Grower Cooperation

Most bee poisonings are due to a lack of awareness—not an intent to do harm. When beekeepers, growers and pesticide applicators work together, bee kills are dramatically reduced.

If a grower rents hives from a beekeeper for crop pollination, it is wise to have a written contract. Details of the contract should include responsibilities of both parties and protocol for chemical spraying. **Good communication is essential** to making beekeeper and grower cooperation work.

Following the Label

Pesticides that are dangerous to bees have specific precautionary statements that must be followed. **Remember: the label is the law.** Applicators are required to follow these rules in order to protect honeybees as well as other pollinators.

Information about hazards to bees are usually found in the Environmental Hazards section of the label. Look for key words such as “highly toxic to bees,” “toxic to bees” and “residues.”



Fig. 1 Below is excerpt from the Mustang Maxx label that mentions toxicity to bees. The term “highly toxic to bees” is highlighted in this example for emphasis.

thoroughly and put on clean clothing.

Environmental Hazards

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.

Physical/Chemical Hazards



Fig. 2 Applicators can reduce poisonings of honeybees and native bees by spraying later in the day after bees have stopped foraging and avoid spraying plants that are in bloom.

Photo by John Kucharski, USDA-ARS

Pesticide Applicator Best Practices

Pest control programs can almost always be modified to protect bees without created economic burden or inconvenience to the applicator.

Here are some good tips to observe:

- ◆ If an insecticide poses a residual hazard to bees (4 to 8 hours), **only spray after bees have stopped foraging**—between late evening and midnight.
- ◆ Pesticides with extended residual toxicity (ERT) to bees (8 or more hours), should not be applied if plants in bloom are present (this includes weeds).
- ◆ **Don't allow pesticides to drift** to non-target crops or weeds that are in bloom.
- ◆ If a pesticide is toxic to bees, try an alternative pesticide or other control if such options are available.
- ◆ **Use the least hazardous formulation** of the insecticide (see the box on next page).
- ◆ If an insecticide is highly toxic to bees, **ask beekeepers if their colonies can be moved** prior to application.
- ◆ When temperatures are unusually low or dew is forecast, don't make applications. Bees are especially vulnerable during these conditions.

Selecting the Least Hazardous Formulation

Granular Formulations and Soil Treatments:

Least Hazardous

These are the least toxic to honeybees because they are a size bees won't pick up. Be careful not to apply near the habitat of ground nesting bees.

Solutions and Emulsifiable Concentrates:

Less Hazardous

Generally safer for bees than compared to wettable powders because these dry faster and don't leave as much toxic residue.

Dust, Flowable, Microencapsulated and Wettable Powder:

Most Hazardous

Due to the similarity in size to pollen, these pose the greatest treats to bees. The particles will stick to bee hairs and are taken back to the hive. Consequently, the pesticides are sometimes fed to brood or the queen.

Grower Best Practices

Growers can also alter their operations in a way that prevents honeybee poisonings. Below are some simple, inexpensive steps which growers

can take to reduce damage to non-target insects:

- ◆ **Control weeds before they begin to bloom.** If weeds are already in bloom, kill them mechanically or with a selective herbicide (not hazardous to bees) prior to applying an insecticide.
- ◆ Some blossom thinning agents are hazardous to bees. Read the label. **If it is dangerous to bees, consider selecting an alternative chemical.**
- ◆ Understand the pollination requirements of the crops being grown.
- ◆ **Take an Integrated Pest Management (IPM) approach to pest control.** Use economic thresholds to determine when to make pesticide applications. This will reduce the amount of chemicals that are applied and save money!



Fig 3. Growers can prevent bee poisonings by controlling weeds before they begin to bloom. This will also reduce weed problems in future growing seasons.

Photo by Keith Weller, USDA-ARS

Beekeeper Best Practices

In some cases, pesticide poisonings of honeybees would not have occurred if the beekeeper following good practices. The following are some

ways beekeepers can prevent poisonings:

- ◆ **Register hives with the Utah Department of Agriculture and Food (UDAF);** paint the registration number on the side of at least 1 hive in the apiary.
- ◆ **Don't leave hives near orchards or fields that are unmarked.** Consider putting contact information on hives so that pesticide applicators make contact.
- ◆ **Make preparations in case hives need to be moved.** Locate a holding yard at least 2 miles from crops that treated with pesticides.
- ◆ If bees are moved because of an application, wait at 48-72 hours before returning to areas treated with chemicals that are highly toxic to bees.
- ◆ Since insecticides drift downward, **place apiaries on ridge tops instead of canyon bottoms.**
- ◆ **Follow the label when using miticides.** Beekeepers can poison their own bees when they do not follow label instructions.
- ◆ Verify that your bees have a clean water source.

For more information about the proper use of pesticides, please visit UDAF's pesticide webpage:

<http://ag.utah.gov/pesticides.html>

To report suspected cases of honeybees killed by pesticides, please contact UDAF's Pesticide Program:

Scott Oldham

Pesticide Program Manager

(801) 538-7183

UDAF-Pesticide@utah.gov

References:

Hooven, L., Salgili, R. and Johansen E. *How to Reduce Bee Poisonings from Pesticides.* PNW 591. Pacific Northwest Extension. December 2006; Revised September 2013

Pollination: Protecting Pollinators from Pesticides. University of Georgia College of Agriculture and Environmental Science. Accessed on web 7 April 2014.