

Protecting Pollinators: Native Bees and Pesticides



The pesticides, insecticides and herbicides we use on a day to day basis have long term and far reaching environmental consequences. Native bees' invaluable role as pollinators of agricultural crops and other important plant species is threatened by the use of pesticides. Many pesticides used in forestry, agriculture, along highways and in our own backyards can be highly toxic and will kill bees that are exposed to them.

How do bees get exposed to pesticides and other chemicals?

Bees are affected by pesticides, insecticides and herbicides used in commercial agriculture and forestry as well as by homeowners and backyard gardeners.



Most chemical related bee kills (99.5%) occur when bees pick up insecticide residues while foraging on flowers. Pesticides and herbicides applied to plants stay on the plant surface for a long time after application. When

bees begin to collect nectar and pollen from the flowers of the treated plants, they very easily pick up the chemical residue that lingers on the plants surface. Bees gathering nectar and pollen may be directly exposed to pesticides or they may carry contaminated pollen back to nests and hives and expose other bees to it. Bee poisoning may result from contaminated nectar and pollen in flowers as well as from leaves, soil or other materials used by bees in nesting.

FACT:

Up to 90% of pesticides applied never reach the intended targets. As a result, many other organisms sharing the same environment as the pests are accidentally poisoned.

Most bee poisoning occurs when:

- A toxic substance is applied to a crop in bloom
- Spray drifts over to flowering plants or to bee habitat
- Flowering weeds are sprayed
- Bees collect contaminated pollen and nectar
- Bees come into contact with insecticide residues on plants or in water

How do these toxins affect bees?

Chemicals can poison bees either through acting as stomach poisons or by affecting the bee's nervous system. With slow acting pesticides the bee often has the opportunity to return to the hive and expose other bees or bee larvae to contaminated nectar and pollen. The females of native solitary bees both forage and rear young. Contamination of these bees can be especially detrimental as it will affect both the female and her offspring. Chemicals such as those in herbicides can also eliminate nectar sources and nesting materials that are essential to bee survival.



What You Can Do: *Reducing the Harmful Effects of Pesticides on Native Bee Populations*

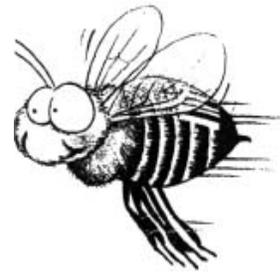


Support Organic Agriculture

There is a long history of bee kills resulting from pesticide use in Canada. Large scale bee kills have resulted from intensive spraying in both forestry and in agriculture. Canola, a main food source for bees in many areas, is also one of the most intensively sprayed crops. In Manitoba in 1995, spraying canola for the Bertha Armyworm caused hundreds of thousands of dollars of damage to honey bee hives along with an unquantifiable amount of damage to native pollinators. Use of organic pest control techniques could prevent the destruction of these invaluable pollinators. Purchasing organic food will provide economic incentives for growers to invest in organic, pollinator friendly pest and weed control methods.

FACT:

According to a 1994 study, 29.6% of British Columbian households use chemical pesticides. This widespread use could have tragic consequences for bee populations if pesticide users are not being careful about what kind of pesticides they use and how they are applied.



Use Pollinator Friendly Garden and Lawn Care Techniques

Prevention: Significant bee kills also result from residential use of harmful chemicals. We can reduce the need for these chemicals by using alternative methods of pest control. The first step in pollinator friendly pest control is prevention. Gardeners should:

- ensure plants are healthy and pest free prior to purchasing
- maintain fertile soil, optimum watering and air circulation
- time planting of annuals to avoid the main generations of certain pests, and plant a mixture of vegetables, flowers, herbs and ornamentals

These steps will ensure a healthy and balanced garden ecosystem where pest populations are often taken care of by other insects and animals. Prevention also includes using techniques such as crop rotation and companion planting and also using barriers such as floating row covers over crops such as onion, carrot, cabbage, broccoli and turnip that are susceptible to root maggots.

Organic Controls: If preventative measures don't work there are a number of organic pest controls that are not harmful to bees. Some organic controls available in stores include:

- Safer's Insecticidal Soap
- wasp traps, fly strips, mosquito cones
- Wilson's Rotenoe Insect Dust for a variety of beetles, aphids and other pests
- Wilson's Green Earth Tree Guard Tape and Tree Guard gum, great for caterpillars, moths and other climbing insects
- Horticultural Oil and Dormant Oil for summer and winter use against leafrollers, aphids, pear psylla, scale and mites
- Lime Sulphur for pests and diseases including pear scale, rose scale, canker, twig bore and black spot
- there are also homemade controls that can be used such as hot pepper or garlic spray for aphids

Use Caution:

If You Do Use Pesticides, Be Sure to Use These Precautionary Measures



Pesticides are poisons, they wouldn't work otherwise! They should be used as a last resort and with extreme caution. Make sure to follow these guidelines:

How to Apply

- Always use the least toxic pesticides and make sure to follow instructions on label carefully for application methods. Use the lowest recommended dosage.
- Apply pesticides only to plants requiring treatment, not as a routine or a broadcast measure.
- Broadcast applications of pesticides kill off beneficial insects as well as the pests, which can lead to more serious pest problems later on.
- Do not spray crops in bloom.
- Do not spray when weeds are in bloom, or remove them before treatment.
- Pay special attention to remove weeds that attract bees once the treatment has been made such as aster, dandelion, mustard, sweet clover, milkweed and goldenrod.

These modification and application techniques can reduce bee loss up to 50% but remember, any loss is still very detrimental to bee populations.

Timing of Application

Do not apply chemicals during hours when bees are collecting nectar and pollen. Generally, bees forage between dawn and dusk. The best time to apply chemicals is in the evening after bees have left for the day. Evening applications provide the longest possible time for the spray to dry and for the active ingredient to start breaking down. However, heavy dew the next morning can make the chemical more likely to stick to bees. Use preventative measures early in the season when insecticides may be more effective and crops are not blooming.

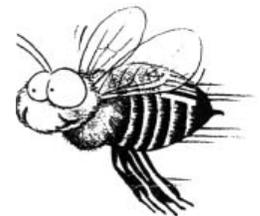
Type of Application

Sprays are generally less harmful to bees than powders and dusts. Granular methods are usually the safest method of treatment. Any aerial application of a pesticide poses a potential threat as bees may come in direct contact with toxins in the air or toxins that have drifted to non-target plants such as flowering weeds.

FACT:

Some herbicides containing 2,4-Dichlorophenoxyacetic acid (2,4-D) can be highly toxic. Herbicides with 2,4-D can also cause serious harm to native bee populations through severely reducing bee plant forage species such as sweet clover. Instead of using 2,4-D, keep your lawn well watered and fertilized.

A healthy lawn is an effective weed deterrent. Dig out weeds by hand.



Learn More

There are a variety of sources for learning about organic gardening techniques that can help you create a healthy garden ecosystem that is pollinator friendly. Integrated pest management (IPM), a method of managing rather than controlling pest populations, is one well known way to create pollinator friendly gardens. For more information on IPM techniques, consult the Ministry of Environment's **Integrated Pest Management Manual for Home and Garden Pests in BC**, available at www.env.gov.bc.ca/elp.

Write a letter!



We can benefit local pollinators greatly by reducing our use of pesticides in the home.

As well, we can help them out by encouraging local parks, schools and highway maintenance crews to adopt pollinator friendly techniques. We can also encourage policy makers to devise programs that reward farmers for implementing practices to protect the habitat of wild pollinators and for using non-toxic growing practices. Write a letter to your local MP (federal) and your local MLA (provincial).

For more information

For more information on LifeCycles projects and programs, and other bee fact sheets, please contact us at the addresses below:



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