

A photograph of a two-lane asphalt road that curves through a dense, vibrant green forest. The road is flanked by a grassy shoulder on the right and a gravel shoulder on the left. The trees are tall and thin, creating a canopy of bright green leaves. The sky is visible through the trees, showing a mix of blue and white clouds.

Answers to Frequently Asked Questions About Pollinators and Vegetative Management

What are pollinators?

Pollinators include bees, butterflies, hummingbirds and other animals that feed from flowers, transferring pollen in the process.¹

Why does vegetation need to be managed?

You may see workers performing maintenance in your community to control vegetation. Their purpose is to control unwanted vegetation that is creating a safety, health, occupational or environmental hazard. They may also be targeting invasive species whose growth and spread can negatively impact biodiversity.

Controlling these plant species allows natural species to flourish and contributes to a safe and diverse environment for wildlife, pollinators, beneficial species and the public.

How is vegetation managed?

Mowing and trimming are important parts of any right of way maintenance program; however, mechanical means alone do not provide long-term sustainable solutions for managing vegetation along right of ways. Mechanical control can reduce pollinator habitat, distribute weed seeds and cause some plant species to re-sprout rapidly resulting in increased stand.

¹ NAPPC. Solving Your Pest Problems Without Harming Pollinators.



In addition, flying debris and cutting equipment can be dangerous to animals, wildlife, work crews and surrounding property. Mechanical control also needs to be repeated frequently in order to maintain the right of way.

Selective application of herbicides allows desirable species to flourish which increases biodiversity. It is less disruptive to the landscape and controls the entire plant so crews only need to visit the right of way for vegetation management once every two to four years.

Integrated vegetation management programs use both mechanical and herbicide control strategies, and they are proven to be the safest, most cost-effective long-term vegetation management strategy.

Vegetation management and pollinators

The Pest Management Regulatory Agency (PMRA), a division of Health Canada, works with manufacturers to identify the safest use of their products relative to pollinators, and requires the appropriate label instructions for each product.

Reported declines in pollinator populations cannot be attributed to a single cause. For this reason it is important that pesticide manufacturers and applicators, beekeepers, and landowners all work together to help protect pollinator health.

Do herbicides affect pollinators?

Herbicides should not be confused with insecticides. Herbicides interrupt or modify a biological process within a plant leading to the plant being controlled. Insecticides usually target the nervous system of an insect, while herbicides target a specific pathway in plants. These target sites do not exist in pollinators, including bees. For this reason Corteva Agriscience™ Industrial Vegetation Management herbicides, when used according to the label, only affect the plants they are designed to control.

Scientific assessments

In North America, honeybees (*Apis mellifera*) are used as a surrogate species for honeybees and native bees. All pesticides, including herbicides, undergo a risk assessment by Health Canada's PMRA to determine potential toxicity to bees. Each product is assessed for oral and contact toxicity. Oral ingestion studies assess the potential for exposure when bees are foraging on flowering plants, and contact exposure studies assess direct contact with a spray application. None of Corteva Agriscience's herbicides used in vegetation management have shown to be toxic to bees.

How do scientists measure the effect of pesticides on pollinators?

Scientists use a measurement to determine the dose that harms 50 percent of the treated test bees. The measurement is described as "Lethal Dose 50" or "LD50." To calculate the LD50, scientists conduct an experiment that consists of feeding or directly spraying bees with different concentrations of pesticide.

For example, the LD50 for ClearView™ herbicide is 100 µg/bee which is equivalent to applying 112 kilograms of active ingredient per hectare², which

² Atkins, EL; Kellum, D; Atkins, KW. 1981. Reducing Pesticide Hazards to Honey Bees: Mortality Prediction Techniques and Integrated Management Techniques. University of California, Division of Agricultural Sciences, Leaflet 2883. 22 pp.



How are herbicides regulated and registered in Canada?

Before a herbicide can be sold in Canada, it must be registered by the PMRA, a division of Health Canada. Pesticides are one of the most stringently regulated products in Canada. Health Canada-PMRA employs over 350 scientists, including biologists, chemists, toxicologists, epidemiologists, plant pathologists, weed scientists and entomologists, for the sole purpose of evaluating pesticides. Before a pesticide can be approved for use in Canada, the PMRA requires that it undergo a thorough scientific review and safety assessment to ensure it meets Health Canada's

standards. Only those products that meet these strict health and environmental standards can be registered by Health Canada-PMRA for use or sale in Canada. A herbicide product will not be registered in Canada unless a health and environmental assessment shows that no harm to human health and the environment will result from its use.

Registered products are re-evaluated regularly to ensure they continue to meet current high-level scientific safety standards. Health Canada also conducts regular investigations and inspections to ensure only registered products are used in Canada, and that they are used according to label directions.

is around 1,000 times higher than the ClearView application rate used to control weeds. An LD50 value that is equal to or greater than 11 µg/bee is considered "practically non-toxic," and is the safest possible category as classified by the PMRA.

Products are registered at rates only high enough to control the target plant. Because these registered rates are much lower than the LD50 rates it would take to harm pollinators, they do not have a toxic effect on pollinators, even if they are present in the area when it is sprayed.

PMRA classification of Corteva Agriscience IVM products

As mentioned previously Health Canada's PMRA conducts a science-based risk assessment on herbicides based on their LD50. An LD50 value that is equal to or greater than 11 µg/bee is not an irritant and is classified as "practically non-toxic", which is the safest possible category by the PMRA for any given compound. The following Corteva Agriscience IVM products are classified in this category: Aspect™, ClearView, ClearView™ Brush, Garlon™ RTU, Garlon™ XRT, Lontrel™ 360, Lontrel™ XC, Milestone™, Sightline™, Tordon™ 22K and VP480™.

What can applicators do to minimize potential pollinator exposure?

Read and follow label directions

Reading and following label directions minimizes error, maximizes environmental protection, and ensures compliance with laws and regulations. It also enables the applicator to be a good neighbor and good steward of the product they are using. Directions and guidelines for minimizing potential off-target application are noted on the labels of all relevant products. Using pesticides in violation of the label is against the law.

Use selective herbicides

Selective herbicides are formulated to control specific weeds or groups of weeds, reducing damage to non-target plants.² Nonselective herbicides control a broad spectrum of weeds. With care, nonselective herbicides can be used selectively, minimizing the impact on the overall plant ecosystem.

Conduct inventories

An inventory of existing vegetation can identify emerging noxious and invasive weed issues. Early action can control outbreaks of problem plants before they spread.² This allows applicators to treat target plants in the seedling or rosette stage prior to flowering.

Adjust application timing

To help reduce exposure to foraging bees, applications should be made when bees are not actively foraging. Bees typically forage from mid-morning to mid-day. They are also less active at cooler temperatures.³

Avoid application when weather conditions increase drift

Apply products when wind speeds are low.



² Atkins, EL; Kellum, D; Atkins, KW. 1981. Reducing Pesticide Hazards to Honey Bees: Mortality Prediction Techniques and Integrated Management Techniques. University of California, Division of Agricultural Sciences, Leaflet 2883. 22 pp.

³ Jennifer Hopwood, Scott Black, and Scott Fleur. 2015. Roadside Best Management Practices that Benefit Pollinators: Handbook for Supporting Pollinators through Roadside Maintenance and Landscape Design. Federal Highway Administration. Washington, DC.

Questions? Visit us at corteva.ca or call the Corteva Agriscience Solutions Center at 1.800.667.3852