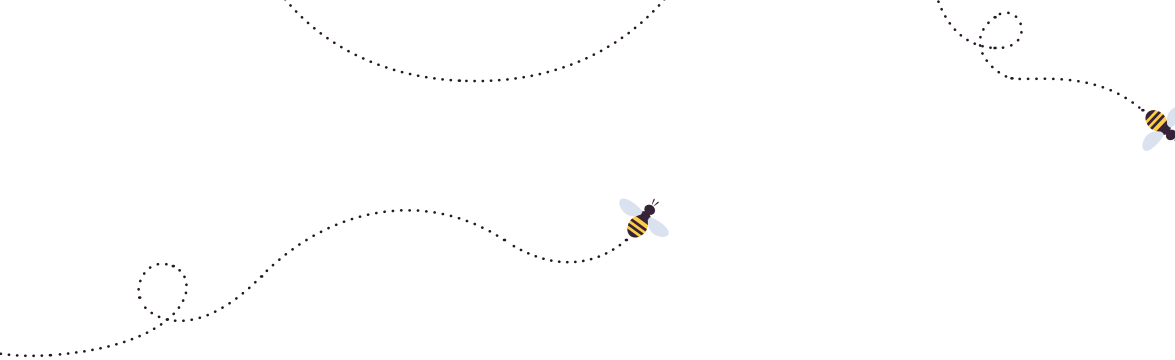
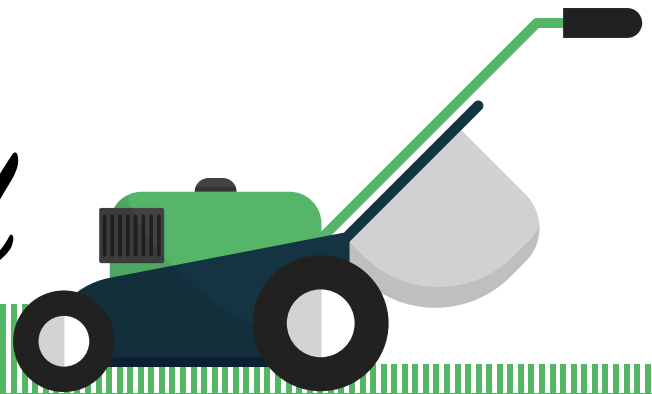




Management of



turfgrass insect pests and pollinator protection



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Insect pests can threaten or even destroy turfgrass by directly feeding on grass blades or the root system. Managing turfgrass pests can be challenging, depending on the insect's feeding site, the stage of the insect's development, and insecticide coverage. A variety of insecticides are used in early spring until late fall to control insect pests.

Insecticides may affect a wide range of insects that include both pests and beneficial insects. Beneficial insects include the insects that pollinate crops and ornamental plants, predators of pest insects (e.g., big-eyed bugs), and parasitic wasps that attack pest insects.

Foraging insect pollinators are not attracted to lawns. Turfgrass rarely produces flowers and is a poor source of nectar and pollen, but grassy areas can support patches of flowering weeds within or around the grass lot. Weeds that flower yearlong, such as white clover (*Trifolium repens*), dandelion (*Taraxacum officinale*), and bird's foot trefoil (*Lotus corniculatus*) can attract foraging pollinators into the turfgrass lots.

Turfgrass is an important component of many landscapes. Research has shown that landscapes support diverse, abundant, and intact bee communities in New York, California, and Ohio. In fact, the abundance and diversity of bees visiting home landscapes have been observed to approach, and even exceed, numbers in nearby natural and/or agricultural systems.

If the turfgrass has been treated or is being treated with insecticides, the pollinators can be exposed directly or indirectly to the insecticides on the weeds. This can cause lethal or sublethal effects on these pollinators.

These guidelines will reduce insecticide exposure to pollinators as they seek nectar and pollen from plants around lawns:



Mow before application. Mowing turfgrass before applying insecticide will remove weed flowers so that the pollinating insects will not be attracted to weeds. If the label says “Do not mow before insecticide application,” consider mowing the contaminated flowers immediately after insecticide application.

Watch the wind speed.

Avoid insecticide application if the wind is blowing more than 5 to 6 miles per hour. This will limit insecticide drift, reducing the risk of unintended exposure.



Manage turfgrass weeds. Good weed control will help keep pollinators off of turfgrass. This can be achieved with a regular pre-emergence herbicide application in winter or a spot application of herbicide during the summer months. Weeds can also be mechanically removed. It is essential to periodically monitor turfgrass lots to prevent weeds from establishing. A well-irrigated and fertilized turfgrass lot will decrease the opportunity for weed establishment. Frequent mowing also discourages weed flowering.



Apply insecticides during periods of low pollinator activity.

In general, pollinating insects actively forage during the day when it is warm. Applying insecticides during early morning and late evening will reduce direct exposure to the pollinating insects. Most weeds produce flowers during early spring. If possible, delay insecticide application by a month until weeds have completed flowering. This will reduce the risk of pollinator insecticide exposure.

Choose the right insecticide formulation.

A granular formulation is considered less hazardous to pollinators than liquid-based formulations. The insecticide residues in granules are absorbed by the roots

and then move to the foliage or flowers to affect the feeding insect pests. The insecticide residues that end up in flowers or nectar are generally low enough not to harm the foraging pollinators.

Use timely irrigation. Under certain circumstances, irrigating insecticide-treated turfgrass, especially during morning hours, washes off the insecticide residues or reduces the concentration of insecticide deposited on the flowers and foliage.



Follow the insecticide label instructions.

The insecticide label provides specific guidelines on how to use the insecticide product with minimum impact on the pollinating insects.

These precautionary or preventive instructions may include application timing (e.g., non-bloom periods or times of the day), delivery methods (e.g., soil injection, foliar spray), or specific dose (e.g., toxicity) to reduce insecticide exposure on pollinating insects.

Reduce insecticide use. Manage turfgrass pests using other integrated pest management (IPM) tactics such as cultural control, biological control, or mechanical control whenever possible. For example, planting a resistant turfgrass species or variety, planting endophyte-treated turfgrass, or reducing thatch build-up can reduce the need for insecticides. Endophytic grasses have shown resistance to leaf-feeding insects and excess thatch can become a beneficial environment for harmful pests. Planting flowering plants that provide pollen and nectar can help build the population size of natural enemies of insect pests. Generalist predators like big-eyed bugs and minute pirate bugs can keep pest populations below damaging levels. Entomopathogenic nematodes (*genera Steinernema* and *Heterorhabditis*) and fungi (*Beauveria bassiana* or *Metarhizium anisopliae*) are commercially available biological control agents that can be effective against mole crickets and white grubs. In addition, these products are less disruptive to natural enemy complexes and are generally compatible with other IPM tactics.

Select appropriate insecticides.

Some insecticide classes better target certain pests. Neonicotinoids are often used for soil-dwelling pests, while pyrethroids and carbamates are used for surface-dwelling pests. Consider using alternative insecticides such as chlorantraniliprole. It can control many soil-dwelling pests and have minimal effects on pollinating insects.

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