

# *Really* know your pest enemies

**G**et to know — really know — the pests that commonly damage the turfgrass and ornamental plants under your care. You will dramatically increase your chances of controlling them.

It will take some training, but your customers, not to mention your company's bottom line, will benefit from your knowledge.

## **A limitless supply**

The number of organisms that inhabit nearly all turfgrass and ornamental plants is almost limitless. These include disease pathogens, insects, weeds, micro-fauna and micro-flora, earthworms and vertebrate animals. Some cause no measurable damage and require no control. Some are beneficial because they help aerify the soil, decompose thatch or control other pest species.

Surprisingly, compared to the millions of insect species on earth, less than 100 plant-feeding species cause measurable damage to turfgrass and ornamental plants. In many instances (and to the untrained eye), pest and non-pest insects, including beneficials, look the same. That's why you must be able to accurately distinguish between them. In other words, before you

**Knowledge is the key to dramatically increasing your chances of controlling turf/ornamental pests**

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You have to get down and look carefully if you want to make an accurate pest ID.

can control a pest, you have to recognize what kind of pest it is and learn as much as you can about its biology. That knowledge must encompass behavior and habits, life cycle, plant-damaging life stages, and the life stage when it's most vulnerable to Integrated Pest Management (IPM) control.

suggests, it specifically targets the pest(s) causing the damage. Therefore, any information related to the pest in question is critical to successfully managing the pest.

Essentially, there are four steps for successful pest management:

## **Control with IPM**

The concept or idea of understanding a pest's biology is fundamental to the concept of IPM, which is a synthesis of all possible control options available to you. IPM is a management approach and, contrary to what some people think, it is not exclusively biological or "organic."

IPM provides you with a variety of pest control options, strategies and techniques. As its title

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► **Precise pest ID.** Spiders, mites, nematodes and other animals inhabit turfgrass and ornamentals. You must be able to tell non-pests and beneficial species from the pests. Often, you've already developed good control strategies for a particular pest because of previous experience. If not, you'll have to rely on resources such as university fact sheets, bulletins, insect flash cards, Web sites or insect collections. Other valuable resources include county extension agents, colleagues, consultants and agricultural chemical technical managers.

► **Behavior and habits.** After conclusively identifying the target pest, study its behavior and habits. You have to know where, when and how the target pest functions. In a sense, you have to be like a football coach who reviews game films of the opponent before building his team's game plan.

For example, consider the biology of black cutworm caterpillars. Since these caterpillars feed on the foliage of turfgrass plants at night, the most effective control strategy is to apply an insecticide that's been proven effective in black cutworm caterpillar control in the late afternoon or early evening, and to withhold irrigation for 12 hours. This gives the caterpillars time to contact and consume the insecticide. If you apply the product in the morning, you may decrease its effectiveness due to factors such as photodegradation (breakdown by sunlight) as well as volatilization (natural dispersion into the atmosphere). All pest insects have different control strategies.

► **Life cycle.** Knowledge of an insect's life cycle allows you to sample and monitor target pests. Monitoring is key to anticipating subsequent damage and implementing timely controls. Some insect species only have one generation per year, while others have multiple generations per year. As a result, control strategies for respective insect pests with only one generation per year are



Late afternoon treatments offer best control for the black cutworm caterpillar.

often different than those for insect pests that have several generations per year.

Insects that have multiple generations per year typically require repeated control treatments. When the best IPM control strategy is the use of an insecticide, however, there's greater risk of promoting pest resistance, especially if similar insecticide chemistries (i.e. modes of action) are used. Technicians who understand the life cycles of insect pests are best prepared to develop control strategies that exploit the most susceptible or vulnerable life stages of the pests.

► **Damaging life stage.** You must be able to recognize signs that point to pest damage before it reaches a certain threshold. Again, frequent sampling and monitoring of plant material reveals early signs of insects and the damage they cause. This knowledge also allows you to solve the insect pest problem when it's easiest to solve — when the pest is at its most vulnerable stage.

Insects are more vulnerable to control measures or strategies at certain life stages. Typically, it's easier to control younger and smaller insect pests. For example, Japanese beetle grubs are considerably more vulnerable to certain insecticide treatments when they're young (newly hatched through first-instar grubs) compared to older or more mature (late-second and third-instar grubs).

This information enables you to time their treatments. Applying a curative insecticide treatment of a grub control product in the spring when the grubs are nearly fully mature would likely not be a good idea. This grub control treatment would be more effective if it was done in August

when Japanese beetle grubs are younger and more vulnerable. (Because dates vary due to geography and climate, check with your local extension service for best dates in your area.)

#### Be smart for a sound plan

Establishing an IPM program requires a sound understanding of growth habits and cultural requirements of your turf and ornamentals. You also need to understand any insect pests that threaten the turf and ornamentals you maintain. This includes knowledge of their behavior, life cycle, damaging life stages and vulnerable life stages.

Remember, there are three critical steps in successfully managing an insect pest. First, accurately identify the specific pest you're attempting to manage or control. Next, gain a comprehensive understanding of the organism's biology including but not limited to behavior and habits, life cycle, damaging life stage and vulnerable life stage. Finally, implement an IPM control strategy that provides the most effect control while taking into consideration the economic cost, potential environmental impact, and public perception. **LM**

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