

Management of Mound Building Ants in Turf

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Ants can be quite annoying pests on golf courses, especially in high-profile areas, such as putting greens, tees, and fairways. Because of the wide use of sand-based putting greens and tees, empirical evidence suggests that ants are a growing problem. This is not to say that they are uncommon in roughs; however, they are considerably less noticeable there. Worker ants excavate underground nest chambers, pushing up soil that creates volcano-shaped mounds. Mounds not only disrupt the smoothness and uniformity of putting-green surfaces, but also smother patches of turf and dull mower blades. As a result, golf-course superintendents often make surface applications of fast-acting (i.e., quick knockdown) conventional insecticides to eliminate this nuisance pest. However, this approach may not be the best solution for managing mound building ants!

Lasius neoniger is native throughout the United States and Canada. It is a relatively small ant and is commonly referred to by golf-course superintendents as the "turf-grass ant" (which is not a common name officially recognized by the Entomological Society of America). This ant species is a social insect that lives in colonies that comprise thousands of sterile female workers and typically only one reproductive queen. An individual ant nest is commonly composed of multiple interconnected chambers approximately 2-3 feet deep. Each passage to the surface is capped with a mound. Depending on the time of year (i.e., spring vs. summer), there can be a considerable fluctuation in the number of ant mounds per nest, ranging from 2 to 10. Generally, the number of ant mounds steadily increases from early spring to late summer, as the colony grows. Previously conducted research has revealed that as food resources become more abundant in the spring, the queen steadily increases egg production; however, once peak production occurs, the offspring

from this brood develop relatively slowly, starting in May and continuing into July. Soon after, new adult workers (all females) begin to emerge, after which mound-building activities intensify. Finally, as the ant colonies begin to mature, by late summer and even into early autumn (late August–October), a sizable portion of the colony develops into winged reproductives (swarmers) consisting of reproductive females and drones.

Once the colony reaches this stage, reproductive females and drones typically swarm by the thousands, typically in the late afternoon on warm days. This event is especially common after rain and thunderstorms. During this swarming process, the reproductive females and drones partake in a nuptial flight in which they mate while flying. Soon after, the queens seek out new locations to build chambers, but before constructing a new chamber, the new queens chew off their wings. Oddly enough, most queens die before making a chamber; however, those that do survive typically construct a small chamber in the soil. Surviving queens typically lay a relatively small number of eggs in the chamber. Within several weeks (<6), new worker ants (which are typically about half the size of normal workers) break open the chamber to forage for food. At this point, colony activity ceases as winter weather arrives. The ant colonies that survive the winter typically resume activity in



Ant mounds on a closely mown putting green can disrupt playability and dull mowers.

the spring as the temperatures become favorable and food sources available.

Research at the University of Kentucky (Potter Lab) suggests that each nest has only one queen, and the future of the colony is largely dependent on her. This is not to downplay the importance of workers; they too serve a crucial role both by protecting the colony and foraging for food for the colony. Different ant species have various food preferences, *Lasius neoniger* appears to prefer foods that contain the three primary nutritional components: protein, carbohydrate (sugar), and fat. In turf, ants commonly forage on the surface for small insects and insect eggs, but they also feed on subterranean root aphids to obtain the sugary honeydew that the aphids produce. Because these mound-building ants are important predators of the eggs and small larvae of sod webworms, white grubs, and other insect pests, they are also considered beneficial insects.

WISCONSIN ENTOMOLOGY REPORT

Management

Unfortunately, ant control in turf is so simple, managing ants can be challenging. Throughout much of the growing season the queen ant, eggs and larvae (young) are located in chambers or nests about 2-3 feet underground. Consequently, surface applications of contact insecticides are effective only in controlling workers on the turf surface, such insecticide applications have little to no impact on the queen safely protected below the turf surface. So, unless the queen is eliminated, additional worker ants will continue to be produced.

Currently, there are three different recommended approaches for managing mound-building ants (Table 1): 1) insecticide applications of relatively short-residual, contact insecticides in the spring when ant mounds first appear (only workers are

affected); 2) applications of long-residual insecticides; and 3) the use of granular ant baits. Because ants are sensitive to the

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freshness of the bait, it is theorized that moisture often renders most baits unattractive, likely due to staleness of the bait. Therefore, it is critical to apply baits to

dry turf, avoid applications before anticipated rainfall events, and to make sure to withhold irrigation for approximately 48 hours. Non-bait insecticide should be watered-in immediately following treatment application with no more than 0.1 inches water (e.g., a syringe cycle).

To further complicate the difficult challenge of controlling mound-building ants, during the late summer and early autumn, ants have a distinctively different behavior where swarmers (i.e., winged adults) begin to emerge from their nests in the late afternoon. In this situation, the most effective ant management approach is to apply a short-residual contact insecticide to the turf surface with the intention of controlling the swarming ants before they have an opportunity to make and construct new brood chambers. ✓

Table 1. Insecticide treatments for ant control and appropriate timing

	Short-residual Insecticide (controls only workers/foragers)	Long-residual Insecticide	Ant Bait	Swarming Ants in late- summer – early fall
Insecticide (active ingredient)	Bifenthrin Chlorpyrifos Cyfluthrin Deltamethrin Indoxacarb Lambda- cyhalothrin	Clothianidin Thiamethoxam * either insecticide can be combined with bifenthrin or cyfluthrin to enhance performance	Hydromethylnon	Bifenthrin Chlorpyrifos Cyfluthrin Deltamethrin Indoxacarb Lambda- cyhalothrin



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