New Prospects for Controlling Ants on Putting Greens

Daniel A. Potter

Small mound-building ants can be a big problem on golf courses, especially on high-sand root zone putting greens. These ants nest underground, pushing up small, volcano-like hills of soil around the nest entrances. The mounds are unsightly, deflect golf balls, and dull mower blades. Unlike fire ants (*Solenopsis* species), which are a hazard in warm-season turfgrasses in the southern U.S., these nuisance ants don't bite or sting. However, with current insecticides, they often require a high frequency of treatment to prevent the mounds from smothering the closely mowed putting green turf, especially bentgrass. Control usually is only partial, at best.

Our research suggests that most of the ant problems on putting greens or tees in the eastern United States are caused by a single species, *Lasius neoniger*. This small brown ant prefers to nest in open, sunny areas and also is found in lawns, cultivated fields, and grassy road strips. The nest is composed of many shallow, interconnected chambers, most less than 1 ft (< 30 cm) underground, but sometimes as deep as 2 ft (60 cm). Each nest has multiple openings that are marked by small, 1 to 3 inch [2.5 to 7.5 cm] craters, often 10 or more per square yard (1 m^2). A nest has only one reproductive female, or queen, who lays eggs in a deep chamber. Each colony also contains thousands of workers that excavate chambers, tend to the queen, care for the eggs and larvae, and forage on the surface for food, which includes small insects, seeds, and the sugary excrement of aphids. Winged reproductive ants are produced in late summer. After swarming and mating, each new queen flies to a suitable nest site to start a new colony.

***Lasius* ants are important predators on eggs of cutworms, sod webworms, and white grubs.** In our research, we allowed black cutworm moths to lay eggs on a creeping bentgrass turf and then transplanted cores containing hundreds of eggs into fairways and roughs. Ants consumed >90% of the eggs within one night! Thus, these ants are beneficial except when the nests occur in high profile areas.

Ant control on golf courses is a frustrating and often futile experience. This is because **insecticide applications kill some worker ants foraging on the surface, but fail to eliminate the queen. Among the currently labeled products, lambda-cyhalothrin (Scimitar®), bifenthrin (Talstar®), and chlorpyrifos (Dursban®) will provide temporary control, often suppressing mound-building activity for 3 weeks or longer.** It works best to initiate control measures in early spring, as soon as the first mounds appear. At that time, the colonies are small and still weak from overwintering, so the treatment may kill enough worker ants to further stress the colony and possibly eliminate the nest.

Several new ant baits have quickly gained wide use by the structural pest control industry, and this concept may soon provide better options for golf course superintendents, too. **These baits contain special combinations of protein, carbohydrates, fats, and other attractants that draw the ants to the bait. The active ingredients, either abamectin, hydramethylnon, or spinosad, are not detected by the worker ants, have no known resistance, and have very low toxicity to humans and other nontarget species.** The granules are picked up by the worker ants and carried back to the nest. Importantly, these selective insecticides act slowly enough to allow the foraging ants to make several trips to the bait before they're killed, ensuring that the entire colony, including the queen, is exposed and eliminated. The baits could be sprinkled selectively to eliminate individual nests, or broadcast at low rates. Because the ants seek out the bait, it may be possible to spot-treat the approach or bordering rough without treating the green itself. Several effective baits are already in use, or soon to be labeled, for fire ants, and products for general, outdoor ant control are being tested. Some fine-tuning may be necessary to ensure that these baits are attractive to nuisance species such as *Lasius*.

Fipronil, the active ingredient in Chipco Choice®, is another target-selective insecticide with exceptional activity against ants. It is presently labeled for mole crickets, and registration for fire ants is pending. Applied as a broadcast (non-bait) treatment, the residues adhere to worker ants as they move through the turf. The insecticide is passed from ant to ant during grooming and other activities so the colony, including the queen, is quickly eliminated. Fipronil residues are persistent in soil, providing the potential for season-long control from one application. Researchers are working on a granular fipronil product to be applied by superintendents.

So, as you battle recurring ant problems on putting greens, take solace in the likelihood that effective new products are on the horizon.

Daniel A. Potter is Professor of Entomology at the University of Kentucky. His new book, "Destructive Turfgrass Insects: Biology, Diagnosis, and Control" *is available from Ann Arbor Press.*