

Fire Ant Management Options for Golf Courses

Paul R. Nester

Extension Program Specialist—Integrated Pest Management

Bastiaan M. Drees

Extension Entomologist Emeritus
 Texas A&M AgriLife Extension Service

Red imported fire ants, *Solenopsis invicta* Buren (Hymenoptera: Formicidae) infest approximately 300 million acres in the United States. Every year these ants cause hundreds of millions of dollars in damage, affecting everyone from small property homeowners, owners of large tracts of land, and ranchers to managers of commercial properties, golf courses, parks, and school grounds.

Fire ants are the single most prolific turfgrass pest. Although they do not damage the turf directly, their mounds are unsightly and can damage mowing equipment. Fire ants hinder outdoor recreation, affecting tourism. Although less than 1 percent of the human population has extreme reactions to fire ants stings, the stings can pose a serious medical threat to public lands visitors (see [Medical Problems and Treatment Considerations for the Red Imported Fire Ant](#)). The liability associated with serious incidents can be costly to managers of these areas.

Golf courses provide living conditions that are especially attractive to fire ants. They are attracted to areas of fertile soil, high moisture content, and open, sunny areas (see [Fire Ant Damage and Control at Texas Golf Courses](#)). Fire ant mounds can ruin a good shot. In fact, the United States Golf Association (USGA) has a rule and decisions specifically addressing situations where a ball lands on anthills:

33-8/22 Local Rule Treating Ant Hills as Ground Under Repair

- Q.** *An ant hill is a loose impediment and may be removed, but there is no other relief without penalty. Some ant hills are conical in shape and hard, and removal is not possible, but relief under Rule 25-1b is not available since an ant is not a burrowing animal. If such ant hills interfere with proper playing of the game, would a Local Rule providing relief be authorized?*
- A.** *Yes. A local rule stating such ant hills are to be treated as ground under repair would be justified.*

Such a local rule is also justified on courses where fire ants exist. A fire ants' mound or hill is removable, but its removal will cause the fire ants to swarm out of the ground. When this



occurs, anyone in the vicinity is in danger of being bitten by the ants, and the bite of the fire ant can cause serious illness.

If a Local Rule giving relief from fire ants has not been adopted and a ball is so close to a fire ants' mound that the player is in danger, the player is, in equity, entitled to relief as prescribed in Decision 1-4/10:

If the ball lay through the green, the player may, without penalty, drop a ball within one club-length of and not nearer the hole than the nearest spot not nearer the hole that is not dangerous and is not in a hazard and not on a putting green.

If the ball lay in a hazard, the player may drop a ball, without penalty, within one club-length of and not nearer the hole than the nearest spot not nearer the hole that is not dangerous. If possible, the ball must be dropped in the same

hazard and, if not possible, in a similar nearby hazard, but in either case not nearer the hole. If it is not possible for the player to drop the ball in a hazard, he may drop it, under penalty of one stroke, outside the hazard, keeping the point where the original ball lay between the hole and the spot on which the ball is dropped.

If the ball lay on the putting green, the player may, without penalty, place a ball at the nearest spot not nearer the hole that is not dangerous and that is not in a hazard.

If interference by anything other than the dangerous situation makes the stroke clearly impracticable or if the situation would be dangerous only through the use of a clearly unreasonable stroke or an unnecessarily abnormal stance, swing, or direction of play, the player may not take relief as prescribed above, but he is not precluded from proceeding under Rule 26 or 28 if applicable.

In the South, the “unofficial” ruling is that you may remove the ball from the mound the distance of one club length.

Golf courses provide recreation for millions of people each year. These man-made ecosystems include natural habitats, wildlife populations (permanent and migratory), ground and surface water, and managed turf. Additionally, grasses release oxygen and reduce glare and noise. Irrigation water applied to golf courses provides an ideal habitat for fire ants.

An Integrated Pest Management (IPM) program is an environmentally justifiable, cost-effective approach to pest control. An IPM program uses a combination of approaches to best manage a pest by keeping pest populations below the level at which they become intolerable (in the case of fire ants, either as a medical threat or a turfgrass pest). Most IPM programs reduce over-reliance on pesticides, which is an important objective in maintaining golf courses and ornamental turf. Most IPM programs monitor pest populations and their natural enemies over time using field monitoring or “scouting” methods (see [Survey-](#)



Based Management of Red Imported Fire Ants). Decisions to use pest suppression methods are based on decision levels (economic threshold or action levels) or historical pest occurrence data to justify pest control practices.

Successful IPM programs have four basic steps:

- 1) Learn to identify pests (see *Texas Pest Ant Identification: An Illustrated Key to Common Pest Ants and Fire Ant Species*) and know their life cycle to select and administer appropriate treatment(s) most effectively and at the right time.
- 2) Map the area to be managed and establish a level of acceptable pest presence/damage/tolerance.
- 3) Check your pest situation early, regularly, and often. Treat only when careful monitoring indicates that the pest situation is becoming unacceptable.
- 4) If pest problems are unacceptably high, start with the least toxic methods that are the least damaging to naturally occurring beneficial insects (see *Fire Ants and the Texas IPM in Schools Program* and *How to Select, Apply, and Develop Insecticides for Imported Fire Ant Control*).

MANAGEMENT OPTIONS

Many golf course budgets do not allow for the treatment of fire ants only. For the ideal situation, a combination of two approaches can provide acceptable levels of fire ant control at a reasonable cost.

The Two-Step Method. This method is suitable for larger turfgrass areas and provides relatively long-term control, but it rarely provides 100 percent control (see *Managing Red Imported Fire Ants in Urban Areas, Broadcast Baits for Fire Ant Control*, or *Fire Ant Control: The Two-Step Method and Other Approaches*).

Step 1) Make an annual or semi-annual broadcast application of a bait-formulated insecticide.

Conventional baits (such as Advion, Amdro, Ascend, Award, Distance, Extinguish, Extinguish Plus, Pro bait, or Varsity) are applied at 1 to 1½ pounds of product per acre. Periodic broadcast applications of fire ant baits provide roughly 90 percent suppression of ants when properly applied (using fresh bait, applied in late evening/mid-morning). The speed and duration of the ant suppression differs with the product used. A late summer or early fall application can produce fewer ants by the following spring.

Step 2) Beginning several days after applying the bait, treat nuisance ant colonies in high-traffic areas using an individual mound treatment other than a fire ant bait (such as products formulated as baits, aerosol injections, dusts, granules, granules drenched with water after application, or liquid drenches).

Surface-applied contact insecticides. This program controls nearly all ants in treated areas. Its effects are more rapid than those of other programs, and reinvasion of treated areas by migrating colonies and mated queen ants is minimized as long as the contact insecticide remains active on the treated surface. However, it is more expensive and uses more insecticide, requiring more frequent treatments. This program is preferable for high-use areas in golf courses such as putting greens and tee boxes that require maximum fire ant control.

Step 1) (Optional) Broadcast a bait-formulated insecticide in areas where there are more than 20 mounds per acre. Wait at least 2 to 3 days before conducting the next step. (Note: Do not apply ant bait products while the effects of a surface-applied contact insecticide application persist.)

Step 2) Periodically apply a contact insecticide (such as the fast-acting pyrethroid products like those containing bifenthrin, cyfluthrin, cypermethrin, lambda-cyhalothrin, permethrin, or others, or products containing the slow-acting long-residual fipronil granules like Bayer TopChoice or Taurus G insect granules)

to turf as directed (for pyrethroid products, generally every 4 to 8 weeks or when you detect ant activity, for fipronil products, one application per season with restrictions on application near bodies of water). Liquid or granular products that you can apply evenly to an area are appropriate for this treatment. However, water treated areas soon after application to wash the insecticide below the surface. Although surface treatment using pyrethroid products may not initially kill ant colonies located deep in the mounds, routine reapplication will eventually eliminate them.

Individual mound treatments. In areas with just a few fire ant mounds, an individual mound treatment product (usually a fast-acting contact product) may be all that is needed. This approach may help preserve native ant colonies that are left untreated. Do not use the fipronil products for single mound treatments.

Electrical installations. Any electrical installations in and around golf courses are vulnerable to ants, including the red imported fire ant, which have an attraction to electrical equipment (see [Ants and Electrical Equipment](#)). Specialty products are now available to prevent ant problems in these units (Nester et al. 2009).

Program combinations. Use the three programs described above on specific sites within a managed area that need different levels of fire ant control (Puckett et al. 2007). On golf courses, surface-applied contact insecticides may be suitable for high-use areas such as putting greens and tee boxes. In fairways and rough areas, the Two-Step Method may be sufficient. Careful monitoring can document the absence of imported fire ants, or the presence of competitor ants that are not a nuisance. These areas can remain untreated. If imported fire ants migrate from nearby untreated areas, apply treatments only as barrier zones to prevent the movement of colonies into the managed areas from these reservoirs.

Nonchemical or cultural practices. Golf course managers also use mowing frequency and height to manage the imported fire ant. The more times areas are mowed, the less time fire ants can establish colonies. Constant disturbance of ant colonies nesting in frequently mowed areas usually causes them to move to less disturbed areas. For example, mow greens seven times a week, tee boxes and fairways three times a week, and roughs once each week. Spot treatments for fire ants may only be needed on roughs. Bodies of water and watering turfgrass will attract ant colonies (see [Red Imported Fire Ant Control around Bodies of Water](#)). Conversely, minimizing watering may result in reduced ant nesting activity. Landscape elements may also affect the distribution of fire ant nests as well as the nests of other pest ant species (see [Red Imported Fire Ants May Find Some Landscape Design Elements Unattractive](#)).

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CITATIONS

Nester, P., A. Camerino, B. M. Drees, and A. Calixto. 2009. "Evaluation of ARINIX Permethrin Impregnated Nylon Plastic Strips in Preventing Fire Ant Invasion in RainBird Par + ES Irrigation Boxes at Bear Creek Golf World, Houston, Texas." *Urban IPM Handbook*. Texas AgriLife Extension Service, College Station, Texas. Pages 42-54.

Puckett, R., A. Calixto and B. M. Drees. 2007. "Copperas Hollow Country Club, Caldwell, Texas." *Urban IPM Handbook*. Texas AgriLife Extension Service, College Station, Texas. Pages 23-31.

REFERENCES

Medical Problems and Treatment Considerations for the Red Imported Fire Ant

u.tamu.edu/ento-005

Fire Ant Damage and Control at Texas Golf Courses

www.extension.org/sites/default/files/Golf_Course_for_Trade_jnls.pdf

33-8/22 Local Rule Treating Ant Hills as Ground Under Repair

www.usga.org/Rule-Books/Rules-of-Golf/Decision-33/#d33-8-22

Survey-Based Management of Red Imported Fire Ants

u.tamu.edu/ento-007

Texas Pest Ant Identification: An Illustrated Key to Common Pest Ants and Fire Ant Species

u.tamu.edu/ento-001

Fire Ants and the Texas IPM in Schools Program

u.tamu.edu/ento-017

How to Select, Apply, and Develop Insecticides for Imported Fire Ant Control

u.tamu.edu/ento-030

Managing Red Imported Fire Ants in Urban Areas

www.extension.org/pages/11004/managing-imported-fire-ants-in-urban-areas-printed-version

Broadcast Baits for Fire Ant Control

www.agrilifebookstore.org/product-p/e-628.htm

Fire Ant Control: The Two-Step Method and Other Approaches

www.agrilifebookstore.org/product-p/ento-034.htm

Ants and Electrical Equipment

www.extension.org/pages/30057/ants-and-electrical-equipment

Red Imported Fire Ant Control around Bodies of Water

u.tamu.edu/ento-024

Red Imported Fire Ants May Find Some Landscape Design Elements Unattractive

u.tamu.edu/ento-010

“Evaluation of ARINIX Permethrin Impregnated Nylon Plastic Strips in Preventing Fire Ant Invasion in RainBird Par + ES Irrigation Boxes at Bear Creek Golf World, Houston, Texas”

bug.tamu.edu/fireant/research/projects/pdf/2009%20IPM%20summary_3-3-10.pdf

“Copperas Hollow Country Club, Caldwell, Texas”

bug.tamu.edu/fireant/research/projects/pdf/urbanipmhandbook2007edited.pdf

For more information regarding fire ant management, see Extension publications *Managing Red Imported Fire Ants in Urban Areas*, *Broadcast Baits for Fire Ant Control*, or *Fire Ant Control: The Two-Step Method and Other Approaches* posted on <http://AgriLifeBookstore.org>.

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