



Survey-Based Management of Red Imported Fire Ants

Bastiaan M. Drees, Fire Ant Director

Department of Entomology, Texas A&M University, College Station, Texas

Integrated pest management (IPM) has been applied to deal with problems caused by the red imported fire ant. One of the primary components of an IPM program is the use of an “economic threshold” or “action level” based on the results of insect scouting or population monitoring efforts. This fact sheet discusses how to monitor red imported fire ants and to base decisions for their management on the results. These same methods can be conducted periodically to evaluate the effectiveness of any chemical or non-chemical suppression methods applied.

Currently recognized approaches for managing the red imported fire ant in home lawns and other ornamental turf, as described in the Extension Service publication, *Managing Red Imported Fire Ants in Urban Areas (B-6043)*, include:

- ◆ the Two-Step Method
- ◆ individual mound treatments
- ◆ the ant elimination method

Considerations for choosing the most suitable approach, or combination of choices, for a given managed area include:

- ◆ Population density of fire ant mounds present (the Two-Step Method, which uses periodic broadcast applications of a bait-formulated insecticide, is discouraged in areas with fewer than 15 to 20 mounds per acre and where preservation of native ant populations is a concern).
- ◆ Sensitivity to contact insecticides (consider using the Two-Step Method and individual mound treatments, which require fewer pesticides)
- ◆ Tolerance for low populations of ants (consider using the ant elimination method)

Monitoring Fire Ant Mounds

Counting the number of active fire ant mounds in your yard or management area is a simple and easy way to document the population of fire ant colonies. This method assumes that each mound is evidence of a fire ant colony. Results can be used to determine the approach most suitable for management of ants in the area. For instance, the action level to justify use of the Two-Step Method is about 5 mounds per 1/4 acre lawn. After products are applied to the area or to individual mounds, numbers of active mounds should decline. However this approach has several disadvantages:

- ◆ During, hot, dry periods of the year, fire ants dwell deeper in the soil and do not make a tall, observable mound. Also, mounds may already have been treated.
- ◆ Some fire ant colonies are located in tree stumps, compost piles, or other structures where their colony may not be readily observed or not associated with a mound.
- ◆ This method does not allow the detection of native ant species, which may not build mounds at all. Maintaining and encouraging native ants that compete with fire ants for resources and prey on newly mated fire ant queens trying to establish new colonies is recognized as one of the best defenses against the red imported fire ant.

In research plots, the numbers of fire ant mounds are usually counted in sub-plot areas of a consistent size (e.g., 1/4 acre), and mounds are often rated to describe numbers of ants present (1 through 5 with 5 being the most). Presence and type of brood (larvae and pupae) are also recorded. These data provide even more information about subtle changes that can occur slowly over time

from any applied biological control agents or chemical treatments.

Surveying for Ant Foraging Activity

Worker ants of almost all ant species forage away from the colony for food and water at certain times of the day and year. Some ant species forage only underground. Although most ants consume a wide variety of foods (they are omnivorous), certain species prefer some types of foods and some even change their preferences over time.

Foraging workers of some ant species, such as fire ants, establish temporary chemical (pheromone) trails that allow nest mates to locate food and water resources. These species can “recruit” other ants to a resource quickly and in high numbers. Normally, collected food is brought back to the colony and is fed communally among the other members of the colony, including the queen(s) and brood.

Conducting foraging ant surveys may take more labor, time, and expertise than simply counting fire ant mounds. However, results can allow managers to better target appropriate management efforts and to document the impact of suppression actions.

A simple way to survey for fire ant foraging and recruitment is to establish a pattern of “bait stations.”

- ◆ **Make bait stations** using an attractant such as moistened, dry cat food (e.g., Tender Vittles®), Vienna sausage pieces, tuna fish, potato chips, or other attractive substances. Place these in some type of small container (e.g., 2-dram vial, scintillation vial or Petri dish) that can be capped upon removal. Containers can even be pre-numbered so that their location in the field can be documented and mapped later.
- ◆ **Make a map of the area**, such as a field, in which ants are to be managed. It will also be useful to indicate the type of cover (drip lines from shade trees, types of landscape plantings, rocks, bare ground, etc.), location of structures, soil types, water sources, slope or grade, soil moisture, and land use in adjacent areas. This information can be useful in analyzing the impact of these factors on ant surveys and may be useful in global positioning system (GPS) entries for global information system (GIS) analysis.

- ◆ **Place vials on their sides** in a grid pattern (e.g., 30 ft. to 50 ft. grid), or transect line with similar spacing on the field. Place bait stations out when ants are foraging, usually when temperatures range from 65° to 90° F.

- ◆ **Wait 45 to 60 minutes** before capping containers to collect, identify, and count ants later. Capped vials can be frozen or filled with alcohol (after bait is removed) for storage until the sample is analyzed.

- ◆ **Identify and count** or estimate numbers of fire ants and other species attracted to each station to provide an indication of their abundance and location in the field map.

This technique can allow managers to better target control tactics by applying treatments only in areas where red imported fire ants are detected. In areas where native ants are found, other methods, such as individual fire ant mound treatments, can be used to more selectively eliminate this species while sparing others.

Furthermore, this sampling method also can be repeated over time to document the effects of treatment(s) on both fire ants and native ants. However, results are only useful if the same method is used over time to provide documentation of the relative abundance of species' composition and population. Methods are currently being improved and standardized in Texas and the nation so that information gathered using this method can be useful in a larger context.

For more information regarding fire ant management, see Extension publications [B-6043](#), *Managing Red Imported Fire Ants in Urban Areas*; [B-6076](#), *Managing Red Imported Fire Ants in Agriculture*; [B-6099](#), *Broadcast Baits for Fire Ant Control*; or [L-5070](#) *The Texas Two-Step Method Do-It-Yourself Fire Ant Control for Homes and Neighborhoods*. Also visit our web site at <http://fireant.tamu.edu>.

The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by Texas Cooperative Extension or the Texas Agricultural Experiment Station is implied.

Educational programs conducted by Texas Cooperative Extension serve people of all ages regardless of socioeconomic level, race, color, sex, religion, disability or national origin.