

Providing Leadership in Environmental Entomology

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FIRE ANT MANAGEMENT IN THE HOME LAWN

The impacts of fire ants are well understood by anyone who has been stung by them. Their impacts, however, go far beyond the medical implications of their venomous stings. Millions of dollars are spent each year attempting to manage fire ants. As an invasive species, they do not have natural enemies. As predators and scavengers, they have direct and indirect impacts on the ecological system.



Figure 1 A fire ant mound

Fire ants are one of the most studied insects, but they may be surrounded by the greatest number of misconceptions and myths. This fact sheet presents a little of what we know about fire ants.

Fire Ant Biology

Fire ants mate when the temperature is between 70° and 95°F, usually within 24 hours of a rain. The humidity must be high and the wind calm. This can occur anytime of year, but peaks in spring and fall months. Winged males and females fly into the air as high as 2,000 ft. After mating the males promptly die having fulfilled their only purpose. The newly mated females can fly as far as 2-3 miles before landing. Once they land, they tear their wings off and search for a suitable nesting site in the soil. Nearly 99.9% of all the females die before they are able to begin a nest

because of predation and poor landing sites such as swimming pools and ponds.

This "queen to be" burrows a few inches into the soil and forms a chamber that she seals with a waterproof mixture of soil and saliva. The queen then begins to lay eggs. Using the energy reserves from her wing muscles, she rears a few young to adulthood. This takes about 45 days or less depending upon the temperature.

The new workers break out of the chamber and begin foraging for food. They care for the queen and the young. From this point on the queen does only one thing - lay eggs to the tune of 100,000 - 300,000 per year. She may live 6-7 years.

Although fire ants are voracious predators, they do not eat solid foods. They place solids on the "lip" of the late stage larvae. The larvae secrete digestive enzymes into this "lip" and convert the solids to a liquid. All other ants feed through a process called trophallaxis where they pass this liquid food from ant to ant. This gives the colony built in "food tasters". If any ant in the colony becomes sick due to bad food (or bait), the queen is not fed from that food source. She can always make more workers and the colony continues as long as she lives.

Fire ants forage when the surface soil temperature is between 70° and 95°F. In the summer months this is primarily at night. They may travel up to 100 yards from their mound in search of food. Bait strategies rely heavily on this behavior and allow us to treat away from sensitive areas while reducing the risk of pesticide contamination.

Fire Ant Management

So what does this mean to the homeowner struggling to control this creature in their back yard? We can use knowledge of fire ant foraging and feeding behavior to gain the upper hand in our battle. With current technology, we must recognize that fire ant control will be a long-term commitment. The ants can reinfest from long distances and their reproductive potential is great.

Fire Ant Management Strategy 1 The Two Step Method

The most commonly recommended fire ant management strategy is the *Two Step Method*:

Step 1: Broadcast fire ant bait at a time of day when the ants are actively foraging.

Step 2: Seven to ten days later treat problem mounds during the period of active foraging with an individual mound treatment.

Fire ants are aggressive and efficient foragers. Because we know they forage for long distances and we know when they forage, we can use this knowledge in the timing and method of bait applications. Baits rely on fire ants to pick the material up and take it back to their mounds. Once in the colony, the bait is incorporated into the food system where the active ingredient is passed to all colony members. What about the “food tasters”? Baits are formulated to act slowly enough that the queen eats the material before the effects are manifest. This is one reason why baits require some patience before a reduction in ant presence is noted.

Bait Formulations: There are several types of bait formulations on the market. Many of the homeowner bait formulations use larger amounts of inert ingredients. The advantage is they are easier to spread with common equipment. However, they often are used to treat smaller areas and cost more than traditional fire ant baits. Read the label carefully to determine the area and rate recommended for the product you purchase.

Hints for a successful bait Treatment: Fire ant baits consistently reduce fire ant populations by 85–95% in most research trials, regardless of the brand or active ingredient. The following tips should allow the applicator to achieve the highest level of control.

1. *Baits must be broadcast while fire ants are actively foraging.* Technically, this is determined by the surface temperature. Temperatures between 70° and 95° F are ideal. The easiest way to determine if fire ants are actively foraging is the use of test bait. Place a small amount of bait in the area to be treated. Fire ants should hit the bait within 30 minutes. During the summer months the evening or night time may be the most active foraging time.

2. *Use fresh bait.* Most bait is formulated with three components; an active ingredient, soybean oil as a carrier and defatted corn grit as a matrix. If the soybean oil goes rancid it is not attractive to the fire ants and they won't pick it up. Baits usually do not store well so should be purchased in one time use quantities and stored in a cool dry place until used. Once the bait package is open, the bait effectiveness will begin to decline. Baits also are

easily contaminated by cigarette smoke and other items that may be stored close to them such as gasoline or insecticides.

3. *Baits need to be applied when it is dry.* A 12-hour window is recommended before rain or irrigation.

4. *1—1.5 lbs of bait is not a lot of product.* This comes to about 30 granules per square foot. Whatever equipment you use to spread the granules must have a minimum opening of 1/8 inch. Using a hand seeder set on the lowest setting usually works pretty well. It is also possible to skip every other swath since fire ants forage long distances.

5. *Fire ants can forage a long distance from their colonies.* Some bait products are labeled for individual mound treatment. These same products also are labeled for broadcast treatments. For reducing the fire ant population the broadcast treatments are recommended, especially when baiting difficult or sensitive areas. For example, a 30 foot buffer can be used around a pond to effectively treat mounds close to the pond. Another example might be fire ants invading homes. Treatment around the outside perimeter is frequently effective against the home invaders.

Individual Mound Treatments There are numerous traditional insecticide products on the market for individual mound treatment of fire ant colonies. Ants are very susceptible to these insecticides and the vast majority of mounds treated will be killed including the queen. The disadvantage is they do not kill ants in mounds you failed to treat because you did not detect them. These missed colonies often lead to the misconception that they are just moving around. The second disadvantage is that individual insecticide mound treatments usually disperse a greater quantity of pesticide into the environment.

Individual insecticide mound treatments are best when used on a particularly troublesome or visible mound, and when a quick kill of the mound/s is needed.

Read the label and directions carefully as the method of treatment can vary greatly from one product to another. For example, some products require a water drench, while some require no moisture.

CAUTION: Label changes occur frequently. Always read the label before you purchase and use any pesticide product.

Fire Ant Management Strategy 2 Broadcast Application of a Granular Insecticide

Some granular insecticides are available to the home applicator. These products are not baits, but

can be broadcast over the entire area that is infested with fire ants. Since these products leave a chemical residue they may give longer-term control of the fire ant population. There are some limitations as to where they can be used so read the label carefully. Research seems to show that these products are relatively friendly to desirable native ant species, while reducing the fire ant population by 95% or more. The disadvantages to these products are cost and they only control fire ants where you have directly treated. If you miss an area, fire ants can establish themselves. These products are best used when treating small areas, high levels of control are desired, or cost of treatment is not a major consideration.

Combining broadcast granular products with bait treatments is often a very productive strategy. This gives the longer-term control of the broadcast granular product and allows the bait product to control ants in areas that are missed or inaccessible to a granular treatment.

The final strategy for the management of fire ants is to hire a professional applicator. There are several high quality products available to commercial applicators that are not available to the general public. More importantly professionals are educated in the science and art of treating for fire ants – what they know is more important than the products they choose.

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