

Managing Red Imported Fire Ants in Electrical Equipment and Utility Housings

Molly Keck

Extension Program Specialist II—Integrated Pest Management
 Texas A&M AgriLife Extension Service

Bastiaan M. Drees

Extension Entomologist Emeritus
 Texas A&M AgriLife Extension Service

Like many other ants, the red imported fire ant, *Solenopsis invicta* Buren (Hymenoptera: Formicidae), frequently infests electrical equipment and utility housings (see [Ants and Electrical Equipment](#)). Two types of ant activity cause problems to electrical equipment: the movement of entire colonies into electrical housings, and the affinity foraging worker ants have for electrical fields and switching mechanisms.

Electrical housings (such as outside electrical disconnects, junction boxes, pad-mounted transformers, etc.) provide warmth during winter months, a dry nesting site during heavy rains, and an undisturbed nesting site throughout the year. When a colony moves into an electrical box, worker ants import soil for nesting. This material can cause corrosion and interfere with maintenance operations.

In electrical transformer boxes, oil regulates the temperature in half of the box. Moisture from the ant mound causes corrosion and oil leaks that inhibit temperature regulation, causing the box to fail. In addition to corrosion, once inside, the ants chew on insulation and can cause short circuits or interfere with switching mechanisms.

MOVEMENT OF ENTIRE COLONIES INTO ELECTRICAL BOXES

Fire ants are found in electrical housings year round. They damage air conditioners, traffic signal boxes, and other devices. Ants nesting in these units are highly defensive of their colony and can be a medical threat to maintenance personnel.

AFFINITY FORAGING WORKER ANTS HAVE FOR ELECTRICAL FIELDS AND SWITCHING MECHANISMS

Imported fire ant colonies (mounds) are often found at the base (slab) or near electrical unit housings. Worker ants leave these nests in search of food to bring back to the rest of the colony members (larvae, other workers, and, indirectly, to the queen and reproductive ants).



However, worker ants can become a problem when they enter electrical equipment switching mechanisms.

Worker ants of many ant species including carpenter ants (*Camponotus sp.*), acrobat ants (*Crematogaster sp.*), and crazy ants (*Nylanderia sp.*) have an affinity for oscillating magnetic fields (60 cycles per second), (see [Texas Pest Ant Identification: An Illustrated Key to Common Pest Ants and Fire Ant Species](#)). When sufficient numbers of ants build up in a switching mechanism and bridge the gap between an open switch, they are shocked and electrocuted. The shocked ants release communication chemicals (pheromones) or other signals that attract other worker ants. The result is that switching units can become tightly packed with the bodies of dead, electrocuted worker ants, causing the mechanism to fail.

MANAGEMENT OPTIONS

Manage fire ant colonies nesting around and at the base of electrical units to prevent them from entering these structures. Use available methods and insecticides that are registered for the sites in which these units are located. For example, if fixtures are located indoors or in food production areas (agricultural lands), use fire ant insecticides registered for these specific sites (see [Managing Red Imported Fire Ants in Urban Areas](#)). For colonies located inside electrical installations or electrical boxes, specialty products with instructions for their application in these locations are available (see below). *Closely follow the product label instructions.*

For safety reasons, let an electrician or a licensed pest management provider treat infested electrical equipment (see “Do electricians need to be licensed by the Structural Pest Control Board?” below). Before treating any equipment, unplug the unit or turn off all electrical service. Specialized control products and training may be necessary to treat these sites effectively and safely.

Treatment program options.

Step 1. Eliminate colonies in and around electrical and plumbing casings and housings. For immediate control around water meter casings, use injectable aerosol products containing pyrethrins or similar products. Treat mounds around structures or areas around electrical structures using one of the programs described for use in the “Home Lawn and Ornamental Turf Areas” section in [Managing Red Imported Fire Ants in Urban Areas](#). For relatively fast control using a bait-formulated product, hydramethylnon bait (Amdro, Amdro Pro, Probait), indoxacarb (Advion), metaflumazone (Siesta, Altrevin), or spinosad bait products (Fertilome Come and Get It! or others) applied to individual fire ant mounds will usually provide control in about one week. Do not use liquid drenches or sprays that can be hazardous around electrical fixtures or products that may damage insulation. Be careful when applying pesticide around water systems and wellheads. Once the ant problem is eliminated, remove debris and soil to reduce the possibility of short circuits. Be careful and *turn off all electrical service* before you begin.

Step 2. If necessary, treat equipment housings to eliminate ants with products labeled for such use, including Stutton JS 685 Powder (synergized pyrethrins plus silica gel).

Maintenance program options. To prevent re-infestation of electrical equipment:

- Where possible, seal all sensitive electrical components, particularly locations that are not insulated, such as plastic housings containing contact points of circuit breakers, relays, and switches.
- Apply insecticide barriers in housings around structures, such as cable bundles, that lead to sensitive components. Use long-residual contact insecticides such as Arinix products (permethrin) or Ultra Dust Fire Ant Killer, Rainbow Technology (chlorpyrifos). Vapor-active insecticide products such as

Elastrel Insecticide (dichlorvos), High Tech Insectape Insecticidal Strips (propoxur) prevent ant infestations in enclosures, and Talstar EZ Granular Insecticide (bifenthrin), a contact insecticide, treats soil around pads.

- ◆ Apply specifically labeled products to the housing (see Step 2 in the program above).

ALTERNATIVE APPROACHES AND POSSIBILITIES

Suppressing imported fire ants in the community. Reducing or eliminating imported fire ants in the larger landscape lowers the probability that ant problems will occur in electrical equipment and utility housings. Community-wide management programs can reduce ant problems by roughly 90 percent and maintain suppression with routine treatments (see *Community-Wide Imported Fire Ant Management Kit* and *Managing Red Imported Fire Ants in Urban Areas*).

Mechanical exclusion. Ants can enter holes as tiny as the diameter of the wire of a paper clip (0.5 mm)(Drees et al. 2008). However, materials with no holes (completely sealed) or holes small enough to exclude ant entry can prevent ants from entering into at least the sensitive components of an electrical installation.

Physical barriers. Certain materials (such as Teflon, Fluon, Tanglefoot, or similar materials) prevent ants from walking up vertical surfaces, although they lose their effectiveness when these materials get dirty, old, or wet. Even certain physical features such as downward angled flanges may disorient foraging workers and prevent them from successfully accessing a sensitive area (see reports about *Fool-a-bug V-m*). Some of these physical features have been used to develop insect or ant-free pet bowls! Ants avoid heated wires or strips that are 140°F or hotter (Drees et al. 2007). These concepts/ components could provide an ant-free unit, or at least could be used in a way that prevents ants from gaining access to sensitive components.

Landscape media considerations. Certain landscaping media such as pea gravel and other types of rock appear to be unfavorable nesting materials for fire ant colonies and foraging ants (see *Fire Ants May Find Some Landscape Design Elements Unattractive*). However, the reasons these substrates are unattractive to ants, under what conditions, and how deep or wide these deposits of landscape materials must be to be effective have not been adequately studied. Also, in many cases, mounting pads are elevated in the landscape, making them attractive to migrating ant colonies particularly during very wet, saturated soil conditions.

Do electricians need to be licensed by the Structural Pest Control Board? Persons serving as electricians can apply pesticides in and on the outside of electrical equipment being serviced WITHOUT a commercial or noncommercial pest control operator's license, providing this service is a necessary part of their normal service activity and NOT a service for which separate charges are being made.

If you receive payment for any pest control or suppression services, either from paying customers or from your employer, please obtain further information about obtaining and maintaining a pest control operator's license by contacting the Texas Department of Agriculture Structural Pest Control Service at 1700 N. Congress, Austin, TX. 866-918-4481, <http://texasagriculture.gov/>.

SOURCES OF SPECIALTY PRODUCTS FOR FIRE ANT MANAGEMENT IN ELECTRICAL HOUSINGS AND EQUIPMENT BOARD?

ARINIX Products. Permethrin-impregnated nylon plastic. (Nix of America, 2674 N. First Street, Suite 206, San Jose, CA 95134, 408-321-8286, <http://nixofamerica.com/arinix.php>)

ARINIX products can be purchased in various forms (flat strips, L-shaped strips, spiral wraps, trackrolls, and grommets) and lengths (Came-

rino et al. 2011, Nester et al. 2010). Laboratory tests conducted under accelerated aging conditions showed that ARINIX is effective for up to four years. This product acts as an insect repellent for red imported fire ants, spiders (except black widow and brown recluse), and ants (except carpenter and pharaoh ants), and is best used as a prevention method.

High Tech Insectape Insecticidal Strips.

Propoxur containing Baygon adhesive-backed strips (Rainbow Technology Corp., 261 Cahaba Valley Parkway, Pelham, AL 35124-1146, 800-637-6047, <http://www.rainbowtech.net>). Protects electronic, power, security, and telecommunications equipment. Kills ants, bees, hornets, roaches, spiders, wasps, and yellow jackets after they walk across the strip's surface. Repels and prevents nesting inside of equipment and enclosures.

Stutton JS-685. Pyrethrins plus silica gel aerosol (Stutton Corporation, 1256 McCaig Road, Lincoln, AL 35096, 205-763-2000 or 800-357-1323, <http://www.stuttoncorp.com/js685.htm>). Aerosol treatment kills ants on contact and has 7-month residual control, non-conductive to 15,320 volts. Also labeled for crickets, fleas, roaches, and silverfish.

Rainbow Fire Ant Killer. Chlorpyrifos 5%G (Rainbow Technology Corp., 261 Cahaba Valley Parkway, Pelham, AL 35124-1146 800-637-6047, <http://www.rainbowtech.net/products/view.php?cn=3925>) Controls ants and fire ants in and around buried cable and cable television pedestals, pad-mounted electric power transformers, and underground vaults. Also controls crickets, earwigs, fleas, millipedes, roaches, scorpions, silverfish, sowbugs, spiders, ticks, and waterbugs. Sold only to utility industry personnel.

Talstar EZ Granular Insecticide. Bifenthrin 0.2%. (FMC Corporation, 800/321-1362, <http://www.fmcprosolutions.com/LawnCare/Products/Insecticides/TalstarEZGranularInsecticide.aspx>) Reduces and prevents ant and fire ant mound-building activity on electrical pads. Only

for sale, use, and storage by commercial applicators.

Historically, pest strips and dispensers were available containing DDVP or dichlorvos to apply to control insects in confined areas (including utility boxes) such as Elastrel Insecticide (see <http://en.wikipedia.org/wiki/Dichlorvos> and products available at http://www.bioquip.com/html/view_catalog.asp?page=9 or <http://www.hotshot.com/Products-and-Solutions/All-Products/No-Pest-Strip.aspx>). No specific mention of imported fire ants or using these in electrical utility units appears on currently available products.

ACKNOWLEDGMENTS

Harlan Thorvilson and Bobby Green reviewed an earlier version of this fact sheet (Fire Ant Plan Fact Sheet #011) released in 1998. It was revised in 2007 and the current revision issued in 2012.

REFERENCES

Ants and Electrical Equipment

www.extension.org/pages/30057/ants-and-their-affinity-for-electrical-utilities

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

u.tamu.edu/ento-001

Managing Red Imported Fire Ants in Urban Areas

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

Community-Wide Imported Fire Ant Management Kit

u.tamu.edu/ento-025

Evaluation of Fool-a-bug V-m Protector as an Exclusion Device Against the Red Imported Fire Ant and the German Cockroach

bug.tamu.edu/fireant/research/projects/pdf/97-99resultdemo.pdf

Fire Ants May Find Some Landscape Design Elements Unattractive

u.tamu.edu/ento-010

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

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>.

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 the Texas A&M AgriLife Extension Service is implied.

Texas A&M AgriLife Extension Service

AgriLifeExtension.tamu.edu

More Extension publications can be found at *AgriLifeBookstore.org*

Educational programs of the Texas A&M AgriLife Extension Service are open to all people without regard to race, color, sex, religion, national origin, age, disability, genetic information, or veteran status.

The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating.