OKLAHOMA COOPERATIVE EXTENSION SERVICE

CR-7309
0500

Current Report

Division of Agricultural Sciences and Natural Resources • Oklahoma State University

Treatment Options for Controlling Red Imported Fire Ants

James T. Vogt
Assistant Researcher

Wayne Smith
Extension Educator, IPM

Kenneth Pinkston
Extension Entomologist

History

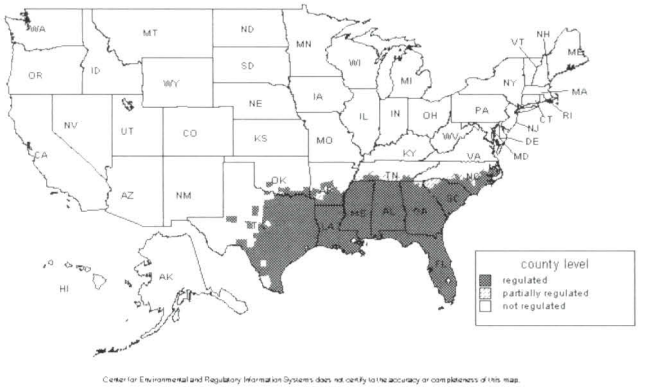
Red imported fire ants are thought to have invaded the U.S. at the Port of Mobile, Alabama, in the 1930s. Since that time, they have spread to infest more than 260 million acres, from North Carolina to Texas, with isolated infestations in California and New Mexico. The red imported fire ant was first officially reported in Oklahoma in the mid-1980s, but was probably present in the state before that time. As of late 1999, the red imported fire ant had been found in 25 Oklahoma counties. Many infestations are thought to be the result of ants being transported in sod or nursery stock. The map illustrates the current quarantine region in the United States. More information on the red imported fire ant quarantine can be found in *Imported Fire Ant Quarantine Treatments for Nursery Stock and Other Related Articles*, USDA-APHIS Program Aid No. 1653, or online at http://www.ceris.purdue.edu/napis/pests/ifa/

Identification

Several species of fire ants reside in the United States. Native fire ants (those originating in the U.S.) can be pests where they are abundant, but some species help suppress populations of red imported fire ants by competing with them for resources. For this reason, it is very important that you know which ant species you are dealing with before deciding on a treatment program.

1999 Regulated areas for Red Imported Fire Ant, Solenopsis invicta

2000-02-08 Data retrieved from Code of Federal Regulations



Center for Environmental and Regulatory Information Systems does not certify to the accuracy or completeness of this map.

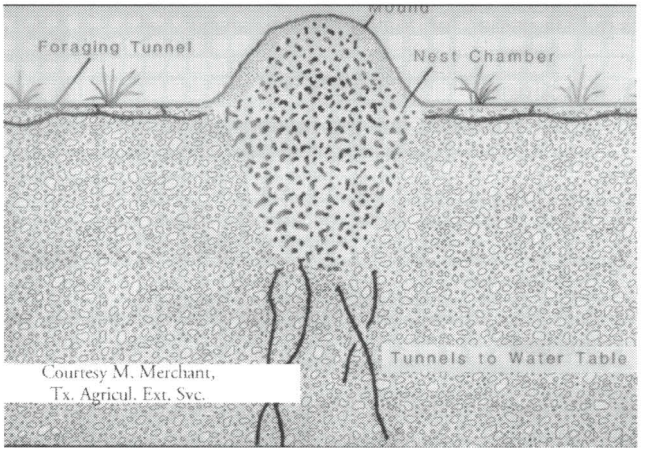
The Mound

One clue to which ant you're dealing with is the nature of the mound. Red imported fire ants build soil mounds that can reach two or more feet in diameter and a foot or more in height. The mounds **do not** have a central entrance/exit hole; rather, the ants enter and leave via underground tunnels that radiate out from the mound. When a mound is disturbed, hundreds or thousands of worker ants rush out to defend the colony.

Fire ant workers range in size from about 1/8 to 1/2 inch in length. Mature mounds may contain 250,000 or more workers. Identification of worker ants is a difficult task, even for experts. For a positive identification, collect a sample of the ants and take it to your local Oklahoma Cooperative Extension Service office, or call one of the experts listed on the back of this publication.

Damage

Fire ants cause damage in several ways. Their activity causes shorts and damage to insulation in electrical equip-



ment Their tunneling activity can remove soil from under roadways and sidewalks, causing cracking and collapse of pavement Their large mounds can damage mowing and harvesting equipment

The primary concern of most people living in fire ant-infested areas is the likelihood of stings A small percentage of people can experience anaphylactic shock as a result of stings During hot, dry periods of the year, fire ants may enter homes and businesses in search of moisture and food, increasing the chance of stings Additional information on health risks associated with red imported fire ants can be found at the websites listed on the back of this publication

Controlling Red Imported Fire Ants

Control decisions should be carefully considered, and based upon several factors Tailoring treatment methods to your particular situation will save money and result in more effective control In agricultural situations, a producer may wish to do a cost analysis to determine whether he or she can make money by treating for the ants In urban areas, there may be less tolerance for fire ants due to the likelihood of stings The first step in initiating a control program is to be certain you do not use insecticides that are not labeled for the area to be treated or the pest you are treating for Some additional things to consider are

1 Is immediate control necessary?
2 How much money should be spent?
3 How much time should be spent?

In general, individual mound treatments (granules, drenches, and dusts) kill colonies quickly, but they require more time and effort than baits, and only destroy colonies that can be seen Baits are more cost-effective over large areas and control small colonies that can't be easily found, but generally take two to six weeks or more before control is realized What follows are three widely recognized options for fire ant control, each of which addresses the need for control under different circumstances

Individual Mound Treatments. This approach is best used in small areas of ornamental turf where there are fewer than five mounds for each quarter-acre yard or where preservation of native ants is desired This option selectively controls fire ants, but you should anticipate reinvasion It generally requires more labor and monitoring than other programs and is not suggested for heavily infested areas

Instructions:

1 Treat unwanted fire ant mounds using the individual mound treatment of choice These are applied as dusts, granules, granules drenched with water after application, liquid drenches, baits, or aerosol injections Home remedies such as very hot water mound drenches also may be used
2 Continue treating undesirable mounds that appear, as needed

Ant Elimination Method. This program eliminates 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 effective However, it is more expensive and uses more insecticide than the other control methods This approach is frequently used by commercial applicators

Instructions:

1 (Optional) Broadcast a bait-formulated insecticide in areas where there are many mounds (more than 20 per acre), or individually treat fire ant mounds Wait two to three days after applying a bait before conducting the next step
2 Apply a contact insecticide to turfgrass every four to eight weeks, or when ant activity is detected Liquid or granular products that can be evenly applied to an area are appropriate for this Some product labels instruct the user to spray "ant hills " Although initial surface treatment may not eliminate ants located deep in mounds, routine reapplication will eventually eliminate colonies

The Two-Step Method

Step One - Baits

Fire ant baits consist of insecticides on processed corn grits coated with soybean oil While baits can be applied as an individual mound treatment, they are best used as a broadcast treatment Broadcast treatments are less expensive (in terms of product costs and time) and control colonies even when mounds are not visible For best results, use fresh bait, preferably from an unopened container or one that has been tightly sealed and stored for no more that two years Apply when the ground and grass are dry and no rain is expected for the next 24 hours Apply when worker ants are actively searching for food This can be determined by leaving a small piece of food (chips or meat) near an active mound If ants are seen removing the food within 10 to 30 minutes, it's a good time to begin application Ants are less active during cold and hot periods (when soil temperature is less than 70° F or greater than 95° F) In the summer, apply bait in late afternoon or evening, when ants are most active

Baits can be applied with hand-held seed spreaders Set the spreader on the smallest opening and make one or two passes over the lawn at a normal walking speed to apply the recommended rate (1 to 1 1/2 pounds per acre, or approximately 4 ounces per 10,000 feet) See the table of homeowner products for further information on baits

Step Two - Individual Mound Treatments

There are a variety of chemical and non-chemical methods for treating individual fire ant mounds After baiting, treat "problem mounds" (mounds near sidewalks, porches, and other sensitive areas) with the mound treatment of your choice

Chemical Treatments: Some products, such as those containing 75 percent acephate (Orthene® Fire Ant Killer), are formulated as dusts Ants walking through the treated soil get dust on their bodies and transport the insecticide into the

mound Within a few days the entire colony should be killed To use a dust, distribute the recommended amount evenly over the mound Do not inhale the dust or get it on your skin

Liquid concentrates are diluted with water and then applied to the mound These liquid mound drenches kill the ants underground, but must be applied in sufficient volume to penetrate the entire nest (one to two gallons of diluted mixture poured over the top of each mound) Mound drenches generally eliminate mounds within a few hours When handling liquid concentrates, avoid getting the product on your skin by always wearing unlined rubber gloves Mix the insecticide in a container such as a sprinkler can Write "Poison" on the container, and do not use it for any other purpose Mound drenches should contact the greatest possible number of ants in the colony The ants are nearest the surface of mounds on sunny mornings following cool nights, so time applications appropriately During hot, dry weather, the ants stay farther underground, decreasing your chance of contacting them with insecticides

Granular insecticides are released when water is poured over the granules on treated mounds To treat a single mound, sprinkle the recommended amount of granules with a measuring cup on top of and around the mound Then, gently sprinkle one to two gallons of water over the treated mound to avoid disturbing the colony or washing the granules off the mound

Remember, if you apply less than the recommended amount of water with either liquid concentrates or granular insecticides you can expect poor results Unless the product completely penetrates the mound, ants will move to a different site via underground foraging tunnels to avoid the poison

Some products come in aerosol containers to which an injection rod is attached The rod is inserted into the mound and the insecticide injected according to the label instructions for a quick kill of problem mounds

Combination. Any of the three programs can be used on specific sites within a managed area where different levels of fire ant control are desired On golf courses, for example, the ant elimination method might 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

General tips

Pay special attention to application instructions on the label of the product(s) you use to insure the best return for your money and time It pays to monitor for fire ant activity before applying baits, since the success of baiting programs is directly related to the ability of ants to rapidly collect materials and return them to the colony If you have questions or concerns, consult the experts listed on the back of this publication before you start your treatment program

Fire ants are probably here to stay Movement in horticultural and agricultural goods, and natural movement during mating flights will continue to spread fire ants to new areas in Oklahoma where sufficient moisture and warm temperatures are present Current research efforts are targeted toward introducing natural enemies and diseases of fire ants to reduce overall infestation levels Management of fire ants in the short term can be accomplished with a little care and persistence by following the tips presented herein

Common Insecticides for Fire Ant Control

Trade name	*Pesticide*	*Control*
	Baits	
Amdro®, Combat®	hydramethylnon	moderate-slow
Raid®, Ascend®	abamectin	moderate-slow
Award®, Logic®	fenoxycarb	slow
Distance®	pyriproxyfen	slow
Extinguish™	methoprene	slow
Eliminator®	spinosad	slow
	*Mound Treatments**	
Insecto Formula 7®	pine oil suspensions	slow
Diazinon	diazinon	fast
Dursban®	chlorpyrifos	fast
Organics Solutions®, etc	pyrethrins	fast
Orthene ®Fire Ant Killer	acephate	moderate
Spectracide ®Bug Stop	permethrin	fast
Sevin®	carbaryl	moderate
Bonide Rotenone 5	rotenone	slow

*Baits containing hydramethylnon and abamectin also can be used as mound treatments

For additional information contact:

Wayne Smith, Oklahoma Cooperative Extension Service (580) 924-5312

James T. Vogt, Ph.D., Oklahoma State University Department of Entomology and Plant Pathology (405) 744-5436

The following **internet sites** have useful information on biology and control of red imported fire ants

http //www entoplp okstate edu/fireants/fireants html (Oklahoma State Univ)

http //fireant tamu edu/ (Texas A&M website)

http //www ttu edu/~catt/RIFA/ (Texas Tech Univ)

http //www ces ncsu edu/TurfFiles/pubs/insects/ag486 html (North Carolina State University)

http //its2 ocs lsu edu/guests/ants/ (Louisiana State Univ)

www ag auburn edu/dept/ent/fireant html (Auburn Univ)

98-053
13 E.S

The Oklahoma Cooperative Extension Service
Bringing the University to You!

The Cooperative Extension Service is the largest, most successful informal educational organization in the world It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system

Extension carries out programs in the broad categories of agriculture, natural resources and environment, home economics, 4-H and other youth, and community resource development Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems

Some characteristics of the Cooperative Extension system are

- The federal, state, and local governments cooperatively share in its financial support and program direction
- It is administered by the land-grant university as designated by the state legislature through an Extension director
- Extension programs are nonpolitical, objective, and based on factual information
- It provides practical, problem-oriented education for people of all ages It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university
- It utilizes research from university, government, and other sources to help people make their own decisions
- More than a million volunteers help multiply the impact of the Extension professional staff
- It dispenses no funds to the public
- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them
- Local programs are developed and carried out in full recognition of national problems and goals
- The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media
- Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes

Some of the information in this publication was adapted from the Department of Entomology, Texas A&M University

OSU Extension Facts are also available on the World Wide Web at: **http://agweb.okstate.edu/pearl/**

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U S Department of Agriculture, Samuel E Curl, Director of Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma This publication is printed and issued by Oklahoma State University as authorized by the Dean of the Division of Agricultural Sciences and Natural Resources and has been prepared and distributed at a cost of $381 99 for 4,000 copies #7904 0500 GB