



Coping With Fire Ants

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Introduction

About 65 million years ago in South America, two species of fire ants – *Solenopsis richteri*, a brown or black ant, and *Solenopsis invicta*, a red ant – originally inhabited different parts of the world's largest wetland. This wetland was known for its frequent disturbances, and the fire ants adapted exploiting the habitat of these disrupted areas.

Around 1918, the ants were transported on ships to Mobile, Alabama, where the fire ants colonized and flourished. In the 1930s, the southern United States underwent modernization which lasted well into the 1970s. Machines replaced field hands, wastelands were plowed and trees were cut down making way for soybean fields and cattle.

The greatest spread of these fire ants is a result of movement of grass



Imported fire ant

(Photo by Matthew Spainhour)

sod and woody ornamental plants used in landscaping. Humans also transported them out of Mobile across the southern United States. With an economic surge, Mobile became the nation's fifth largest horticultural center. Finding their way into nursery stock, ants were shipped across the region, ending up in disrupted development sites. The brown or black ants spread only to parts of northern



Close-up of imported fire ant (Photo by Ross Settle)

Alabama and Mississippi. Since its introduction, the red imported fire ant, more aggressive than the black imported fire ant, has spread quickly.

In 1953 the United States Department of Agriculture (USDA) took its first official survey of imported fire ants and discovered that they had invaded 102 counties in 10 states. Today, the red imported fire ant has spread throughout the southeastern United States and Puerto Rico. Arkansas' first documented case of fire ants was in El Dorado in 1958. Much of southern Arkansas is currently infested, and fire ants have been found in the more northern sections of the state.

Fire Ants Are Pests

Fire ants are aggressive predators, crowding out native ants and other insects. They are known for attacking crops, wildlife and people. These ants cause severe damage, running into the millions of dollars each year. When disturbed, fire ants come out of their nests, stinging their victims repeatedly, while injecting them with venom that causes a fiery, painful discomfort, for which they are named. Although usually proving painful, fire ants can be fatal to humans who are allergic to the venom.

Fire ants have an ecological role in their natural habitat, but in the United States where they have no natural predators, they have become pests. Scientists believe fire ants have thrived in the United States because they have no natural enemies. The ecological balance has been shifted in their favor.

Fire ants have invaded parks, yards, beaches, golf courses and anywhere the ground has been disturbed. Because of their aggressive nature, fire ants are running people away from public places and out of their yards. They are also displacing beneficial insects and ground-nesting wildlife that make up our important biodiversity. The imported fire ant has caused widespread problems to ground-nesting birds and colonial water bird nest sites, attacking birds and their young. Fire ants are omnivorous, feeding on almost any plant or animal material. Insects are their food of choice. In rural habitats, fire ants have a major impact on ground-nesting animals from insects to reptiles, birds and mammals.

Native ants play a critical role in recycling nutrients and other biological material. Fire ants are ravenous feeders and may not redistribute nutrients similarly to other ants. The fire ant reduces the general number of native ant species while altering the insect community structure. Specific native insect species coexist with certain others. During this coexistence, ants divide up resources making use of what's accessible. Some ants will eat seeds, while others eat leaves. But where fire ants are present,



Large fire ant mound on UAPB's campus.



Close-up view of a large fire ant mound on UAPB's campus.

ant communities break down, causing a change that can have a detrimental effect on the efficiency of the food chain.

Fire Ant Movement

Imported fire ants can be inadvertently transported to new noninfested areas by man-made interference. Problems surface when fire ants inhabit cargo. The USDA regulates the movement of articles that pose a risk of spreading the ants into noninfested areas.

Currently, fire ants infest more than 300 million acres in 14 states across the United States – Texas, Oklahoma, Arkansas, Louisiana, Mississippi, Alabama, Florida, Georgia, Tennessee, South Carolina, North Carolina, California, New Mexico and Virginia – and in Puerto Rico. Each year, fire ants spread at the rate of 5 to 12 miles. Eventually fire ants are expected to infest nearly one-fourth of the United States.

Why different species of fire ants invade certain regions is not definitely known. However, research shows these ants prefer mild temperatures or subtropical climates. For years experts have predicted

fire ants could not tolerate cold winters. Studies have shown that a minimum of two weeks of temperatures colder than 10°F would be needed to kill enough ants to affect the number of colonies.

Fire ants are defying the odds and have moved into the mountains of northern Georgia. According to Wayne Gardner, a University of Georgia entomologist, fire ants have spread to all of Georgia's 159 counties, adapting to the colder climates by burrowing deeper into the ground to avoid the cold. Fire ants are predicted to expand into areas of Maryland and Delaware in the east and Arizona, Oregon, Nevada and maybe even Washington and Utah in the west.

Quarantine

The rate of spread through natural mating flights is relatively slow in comparison to transport through man-made means. In 1958 the USDA agency Animal and Plant Health Inspection Service (APHIS) enacted a Federal Imported Fire Ant Quarantine to slow and prevent the artificial spread of imported fire ants from fire ant-infested (quarantined) areas to noninfested (nonquarantined) areas. Either all or part of the following states are included in the quarantine areas: Alabama, Arkansas, California, Florida, Georgia, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Texas, Tennessee, Virginia and Puerto Rico.

The following counties in Arkansas are included in the Imported Fire Ant Federal Domestic Quarantine: Ashley, Bradley, Calhoun, Chicot, Clark, Cleveland, Columbia, Dallas, Desha, Drew, Faulkner, Garland, Grant, Hempstead, Hot Spring, Howard, Jefferson, Lafayette, Lincoln, Little River, Miller, Nevada, Ouachita, Pike, Polk, Pulaski, Saline, Sevier and Union.

Controlling Fire Ants With Insecticides

When fire ants were transported to the United States, they left behind natural enemies including the phorid fly, nematodes, microbes, bacteria, viruses, fungi and parasitic wasps and ants. Fire ants have only a few natural enemies in the United States. In South America, their enemies are abundant. This is the reason fire ants in the United States are so plentiful. Fire ants are 20 percent of the overall ant population in South America, but in the United States they make up 80 percent of the overall ant population.

A successful method of eradicating fire ants has not been found. Each year Americans spend millions of dollars on chemicals promising to relieve them of their pest problem. These methods offer only temporary control. A single fire ant colony can

contain anywhere from 100,000 to 300,000 worker ants. Each colony produces several queens every summer.

The queens eventually fly off, mate in mid-air and start new colonies. To kill an entire mound, it is necessary to kill the queen. If the queen is not killed, unharmed workers will move her, build a new mound and continue to produce. Because the queen is protected, killing her is not a simple task.

To kill the queen, a farmer, gardener or landowner has to go through the workers. Workers collect food, eat and regurgitate it, and feed it to the other ants. The food is then passed through the mound by other ants until it reaches the queen. Insecticides that reach the queen through the food source are typically more effective than contact insecticides. Contact insecticides kill workers shortly after application, generally never reaching the queen. Gardeners and homeowners think they have gotten rid of the ants; actually, they have only caused them to move their mound a few feet over in the yard or into the neighbor's yard.

Managing and controlling fire ants requires repeated treatments. Rarely is a single treatment method of controlling an infestation site successful. A highly successful process is the "two-step method." This technique will stifle the spread of ants in ornamental turf and nonagricultural lands. This method is also suitable for pastures and rangelands, but only if products used are designed for such use.

The two-step process involves (1) broadcasting a bait product, (2) followed by treating mounds individually with a retreatment of the bait. The two-step method is recommended for areas where fire ant infestations are at least 20 mounds per acre, with low numbers of native ants. When this method is used, it controls infestations more effectively. Workers foraging for food take bait back to the mound where the exchange of food takes place. This proves to be the most effective way to reach the queen.

Step 1: This step should be done once or twice, preferably in the spring and again in the fall. Broadcast a bait-formulated insecticide or use a bait station for outdoors. Fire ant baits which are periodically broadcast will not eradicate the ants, but this will suppress about 90 percent of them.

Step 2: Treat individual mounds as needed. Apply 7 to 10 days following the broadcast of bait insecticides. Use dusts, liquid drenches, granules and aerosols, all of which are contact insecticides.

When community-wide treatments are made, the reduction of fire ants is significant and there is usually no reinfestation. This prevents mounds from colonies just moving next door.

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