

Imported Fire Ants:

Alien Invaders

by Troy Smith

Wherever humans are engaged in the raising of livestock, their efforts are complicated by parasites, predators and pests. Face flies, horn flies, stable flies, mosquitoes, lice and ticks take their toll on animal performance and contribute to the spread of disease. As bothersome as those six- and eight-legged pests might be, they inspire no more loathing than the fire ant. If you doubt that, just ask cattle producers residing in a state bordering the Gulf of Mexico.

"They're a nuisance; a real menace!" declares Richard Dyar, a Crossville, Ala., cattle producer and regional manager for the American Angus Association. Actually, Dyar's operation is some distance from the Gulf, up in the northeast corner of the state and near the Tennessee state line.

"We had hoped fire ants wouldn't come this far north, but they did. We've got them," Dyar says. "And I'm afraid we're just stuck with them, too."

The insects have made themselves very much at home in at least 10 southern states. The unwelcome invaders have spread nearly as far north as Virginia and westward across more than half of Texas — and the infestation continues to grow. Experts claim fire ants could spread on across the Southwest and northward along the California coast.

Now, there are species of fire ants that are native to the United States, but we're talking about fire ants accidentally imported from South America. Both black and red varieties are believed to have been brought to the United States in the 1930s. Back in Brazil and Argentina, they are just ants. They are of no serious consequence because pathogens and predators keep populations in check. Similarly, fire ants native to the U.S. are a relatively minor nuisance. However, the imported ants faced no natural biological enemies in the U.S.

Well, that may not be entirely true. Armadillos are known to dig into imported fire ant mounds and feed on the developing insect brood. But predation by armadillos hasn't slowed the spread of imported fire ants — not enough to keep them from becoming a growing economic concern.

Health risk

There is an element of danger, too, for fire ants will attack anything that disturbs their colony's nest. A nest consists of a network of underground tunnels and chambers within a column that can reach 12-18 inches (in.) in diameter and 36 in. in depth. The aboveground portion of the nest is a mound



PHOTOS COURTESY LAWRENCE GILBERT

►A nest consists of a network of underground tunnels and chambers within a column that can reach 12-18 in. in diameter and 36 in. in depth. The aboveground portion of the nest is a mound of loose soil as tall as 2 ft., resulting from tunnel excavations.



►Fire ant mounds harden over time and can tear up mowing equipment, causing downtime and costly repairs.

of loose soil as tall as 2 feet (ft.), resulting from tunnel excavations. The colony then may dwell below or above ground, whichever provides the optimum temperature for brood development.

"If you stir up their mound, those ants are all over you. They are really aggressive," Dyar says. "I've come out of my clothes, right out there in the pasture, trying to keep them from stinging. If they get at your skin, it hurts and every sting raises a blister. It can be really bad for anyone who's hypersensitive to insect stings."

Dyar says consequences can be bad for a baby calf unfortunate enough to be born too close to a fire ant mound. And even older calves have been blinded, at least temporarily, after being stung on the eyes by swarming fire ants.

Texan Robert Bruner notes that any person or animal who disturbs a nest comes under immediate and frenzied attack. According to the Huntsville-area Angus breeder, the advance of imported fire ants during recent decades has coincided with a decline in populations of wildlife. As well as killing some small mammals, reptiles and ground-nesting birds, fire ants compete for food utilized by wildlife.

Collateral damage

"We see fewer snakes and lizards. And we don't have as many quail," Bruner says. "In some pastures and fields there are fire ant mounds every 6 to 8 feet. The mounds harden over time and tear up mowing equipment, causing downtime and costly repairs. And you sure can't drive a pickup across a field full of fire ant mounds."

Bruner says fire ants also are particularly attracted to electrical devices. Short circuits are common, and fires occasionally occur after fire ants move into circuit boxes, relays and electric motors.

"Fire ants do a lot of little things that add up to a lot of money. It's nickels here and dimes there, but it adds up to a significant economic impact," says Texas A&M University (TAMU) entomologist Bastiaan "Bart" Drees. "And every time there is a survey of Texas veterinarians and Texas and

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Southwest Cattle Raisers Association (TSCRA) members, it shows the cost is increasing.”

A recent survey by TAMU agricultural economists estimates the annual effects to the economy, environment and quality of life to be \$1.2 billion in Texas, and \$6 billion in the U.S. But the burden is not shared equally. While imported fire ants have spread across the South, Drees says infestations at the local level are curiously spotty. While one pasture or field may be pocked with the mounds of many colonies, there may be little or no evidence of fire ants on adjacent acreage.

Bruner says he is resigned to the fact that fire ants are a challenge that producers have

to manage as best they can. He applies chemical control to small areas where fire ants are the greatest nuisance, treating around building sites and cattle pens. Broadcasting insecticide baits over the treatment area is a popular method of fire ant control that is sometimes combined with application of insecticide dust or drench to individual ant mounds. However, widespread pesticide application is expensive and comes with undesirable consequences.

According to University of Texas (UT) entomologist Lawrence Gilbert, other ants and insects do compete with imported fire ants for food. Chemical controls used in earlier decades did not target fire ants only. It was a shotgun approach that killed all insects within a treatment area, including beneficial species.

Even with modern bait preparations that do target ants, shutting down their

reproduction or development, nontarget ants are potentially affected unless procedures are followed carefully. Even then, results are temporary and annual treatments are expensive for large areas.

Gilbert says fire ants are just better at colonizing and dominating newly disturbed habitat than the average ant species, and pesticides that target all ants are a disturbance that has been shown to promote fire ants if care is not taken.

Phorid flies

Much like the fire ants' natural enemies that keep populations in their native South America in check, Gilbert says research at the UT Brackenridge Field Laboratory in Austin is focused on developing biological control through the introduction of phorid flies, which prey on specific species of fire ants.

According to Gilbert, female phorid flies

attack worker ants and deposit their eggs within the ants' bodies. Development of the fly larvae kills the host ant. However, the phorid fly impact on fire ant behavior is thought to offer an even more effective, albeit subtle form of biocontrol. Harassment by phorid flies disrupts the fire ants' normal behavior. They retreat into the nest or seek shelter, thus reducing their foraging activity and the amount of food brought to the nest. Consequently, it is believed, fire ant colonies become less competitive and native ant species have opportunity to reclaim lost territory.

Gilbert says there are more than 20,000 species of phorid flies — all tiny insects that are not attracted to humans. Most species are scavengers, but some are specialist parasitoids of ants. Those of greatest interest to biocontrol will only target certain species of fire ants. A species of phorid fly that preys



► **Left:** Female phorid flies attack worker ants and deposit their eggs within the ants' bodies. Development of the fly larvae kills the host ant.

on native Texas fire ants, for example, will not attack the imported fire ant.

Consequently, Gilbert and his colleagues have been researching 23 species of South American phorid flies, to identify the specific phorid fly that attacks imported fire ants in their native habitat. The researchers do not

expect to totally eradicate imported fire ants, for they have become permanent residents of the U.S. Their goal is to control fire ants to the extent their economic impact is reduced.

“I always emphasize that we are working on a complex biocontrol strategy that could take decades to fully play out,” Gilbert explains. “Phorid flies may not be better than pesticides in many local, short-term circumstances, so there will always be a role for careful use of pesticides. However, over an entire region, and over decades, biological control agents like phorid flies are likely to be a more economical and safe way to reduce the pest status of imported fire ants.”

