

Appendix P

Managing Red Imported Fire Ants in Wildlife Areas

by Bastian Drees, Extension Entomologist and Fire Ant Project Coordinator
Texas A&M University

The red imported fire ant, *Solenopsis invicta* (Buren), is an introduced species that arrived in Mobile, Alabama from South America around the 1920s. This species has had an enormous impact in the southeastern United States, and continues to spread into areas of North America with mild climates and adequate moisture and food. About two thirds of eastern Texas is currently infested.

Biology of the red imported fire ant: Like other ants, the fire ant is a social insect and colonies reside in mounds of dirt that may exceed 18 inches in height. Mounds commonly occur in open, sunny areas. Periodically, winged reproductive male and female ants leave colonies on mating flights. Mated females (queens) can fly for miles, land and start a new colony. Development from egg to adult occurs in about 30 days, progressing through four larval stages and a pupal stage. Worker ants (sterile female ants capable of stinging) can number in the hundreds of thousands in a mature colony. Two forms of fire ants occur: single queen and multiple queen colonies. Multiple queen colony infested land can harbor 200 to 800 or more colonies per acre since worker ants are not territorial and move freely from mound to mound.

Fire ant mounds can rapidly become numerous on lands disturbed by mechanical methods, pesticide use or flooding. The ants disperse naturally through mating flights, mass movement of colonies or by floating to new locations in flood water. Fire ants can travel long distances when newly-mated queens land in cars, trucks or trains. Shipments of hay, nursery stock or soil from an infested area may relocate entire colonies or nests. Quarantine regulations, enforced by the Texas Department of Agriculture, prevent movement of infested articles from infested (quarantined) to non-infested areas.

Fire ants feed primarily on other insects and arthropods (ticks, chiggers), although they "tend" some species of sucking insects (aphids) which provide them with a sugary solution (honeydew) upon contact. This imported species has displaced many native ant species and eliminated food used by some wildlife. Fire ants recruit to newborn livestock and wildlife on the ground or those nesting in low trees, causing medical problems associated with multiple stings and, occasionally, death. Populations of some wildlife species may be dramatically reduced.

Impact on wildlife: Certain forms of wildlife, such as deer, ground-nesting birds, and reptiles, are especially affected by ants during and soon after birth or hatching. The risk is greatest during the warm months. Fawns are vulnerable because they are born in June and because they instinctively remain motionless

in their hiding places. Hatching quail and ground-nesting waterfowl chicks are also attacked. However, the impact of fire ants on area-wide populations of wildlife remains controversial and largely undocumented with data from scientific studies. In Texas, no endangered species has been reported lost because of fire ants. ***Insecticide-based fire ant control programs in wildlife areas are discouraged unless the benefits from such treatments have been documented.*** Many pesticides are toxic to non-target organisms (particularly to aquatic organisms) and may directly or indirectly affect game species if not used properly. Below are some considerations when selecting management options:

1. If wildlife breeding areas are considered non-agricultural lands, fire ants on these lands can be treated with insecticide products registered for this kind of usage site, *e.g.*, non-agricultural lands, ornamental turfgrass, way-side areas). However, if these lands are claimed to be agricultural lands, or if the game/wildlife or other livestock is being produced to be harvested and consumed, insecticide products selected to treat ants on these lands must be registered for use on those sites, *e.g.*, wildlife or livestock areas, pastures, rangeland, etc.
2. Exotic game ranches are considered commercial agriculture areas. Breeding areas may be treated with products registered for use in wildlife or livestock areas, pastures, rangeland, etc.

Management Strategies: Non-chemical or cultural approaches to avoiding fire ant problems can reduce various problems caused by fire ants while maintaining a stable ant population that will help suppress lone star ticks, filth breeding flies and other pests, while also deterring the multiple queen form. These include:

1. In operations where wildlife breeding is being managed, try to schedule breeding to assure that young are born during cooler months of the year when fire ants are less active (soil temperature below 65 degrees F). This will reduce the probability of ant attacks.
2. Use shallow discing or drag heavy objects such as railroad ties across pastures particularly after rotating livestock out of a pasture to temporarily flatten tall, hardened mounds (although this practice seldom eliminates fire ants) and scatter manure. Manure can breed fly larvae upon which fire ants feed.
3. Use disc-type (Kountz) cutters to cut hay. These machines are designed and promoted to withstand the impact of fire ant mounds, to reduce equipment damage.
4. Use mechanized balers and bale movers characteristic of round bale production to reduce human contact with potentially infested bales.
5. Remove hay bales from the field immediately to prevent ants from invading them, particularly when rain is anticipated.
6. Store bales off the ground or in an area around which the ants have been treated (Note: A quarantine is in effect which prohibits the shipment of hay from infested to non-infested counties without certificates. Call Texas

Department of Agriculture personnel to certify that hay shipments are ant-free).

Insecticide-based management program: Fire ant populations can be suppressed in pastureland using currently available methods for \$10 to \$15 per acre per year. Current methods are not capable of eradicating this species and treatments need to be periodically re-applied. Applications of some bait-formulated insecticides also affect native ant species that compete with fire ants. However, in "fully-infested areas" (20 or more mounds per acre), implementation of the "Two-Step Method" of fire ant management may be justified. This program relies on the periodic (annual, semi-annual) broadcast application of an effective fire ant bait product. These treatments can reduce mound numbers by up to 90 percent, but reduction requires several weeks to months to achieve, depending upon the product chosen, e.g., Amdro® (hyrdamethylnon), the only bait product currently registered for use in cattle pastures takes 3 to 6 weeks; Logic® (fenoxycarb), currently registered for non-agricultural lands and horse pastures usually requires 2 to 6 months but suppresses ants for over a year). Individual mound treatments registered for use in livestock pastures (*i.e.*, Sevin® (carbaryl) formulations applied as individual mound drench cost about \$0.10 per mound) can be used to treat "nuisance colonies" between bait applications. Additional insecticides being promoted for fire ant control in pastures include Organic Plus? Crop Insecticide (0.2% pyrethrins, 97.9% silicon dioxide from diatomaceous earth, and 1.1% piperonyl dioxide) and True Stop? Fire Ant Insecticide (0.21 percent rotenone and 0.41% cube root extract). **Always follow closely the instructions provided for pesticide use on the product's label.**

In the future, there is great hope that research entomologists will be able to successfully import and release natural enemies of the fire ant from the native habitats in South America to permanently suppress the red imported fire ant. One potential parasite being investigated is a phorid fly which develops inside the heads of ants. In theory, adult phorid flies looking for worker fire ant hosts suppress ant foraging activities during the day, thereby allowing native ant species time to look for food and better compete with the fire ant. Support for fire ant research may allow other sustainable solutions to be developed.

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 Agricultural Extension Service or the Texas Agricultural Experiment Station is implied.