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Managing Imported Fire Ants in Agriculture

A Regional Publication Developed for:

Alabama • Arkansas • Florida • Georgia
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Texas Imported Fire Ant Research & Management Plan

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The red imported fire ant, *Solenopsis invicta* Buren, is an introduced species that arrived in Mobile, Alabama from South America during the 1920s. This ant species has had an enormous effect on the southeastern United States, and continues to spread into areas of North America with mild climates and adequate moisture and food. Approximately 270 million acres in the southeastern United States are currently infested. A second exotic species, the black imported fire ant, *Solenopsis richteri* Forel, and hybrids between *S. invicta* and *S. richteri* occur in northern Alabama, and portions of Georgia, Mississippi and Tennessee, but not farther west.

Fire ants cause many problems in agriculture. They form tall, hardened mounds in clay soils, which can damage equipment and slow down operations. Ant stings can cause medical problems for field workers. The ants have an affinity for electrical units and utility housings and structures, where they can cause equipment failures. Worker ants feed on some seeds and seedlings (sorghum, com, small grains, forages, etc.) and can cause stand failure. Fire ant mounds can rapidly increase in number after agricultural lands are disturbed by mechanical operations or pesticide use.

Fire ants prey on a number of other insects and arthropods, including boll weevils, many species of caterpillars, flea larvae, ticks and chiggers, as well as beneficial insects such as green lacewing larvae. They will also "tend" some species of sucking insects (aphids, mealy bugs) to obtain the sugary solution (honeydew) these insects excrete. The red imported fire ant has displaced many native ant species and reduced food used by some wildlife. Fire ants are a threat to newborn livestock and wildlife, especially animals on the ground or those nesting in low trees. Their multiple stings can cause serious injury or even death. Although the research is not conclusive, populations of some wildlife species may be dramatically reduced.

Fire Ant Biology

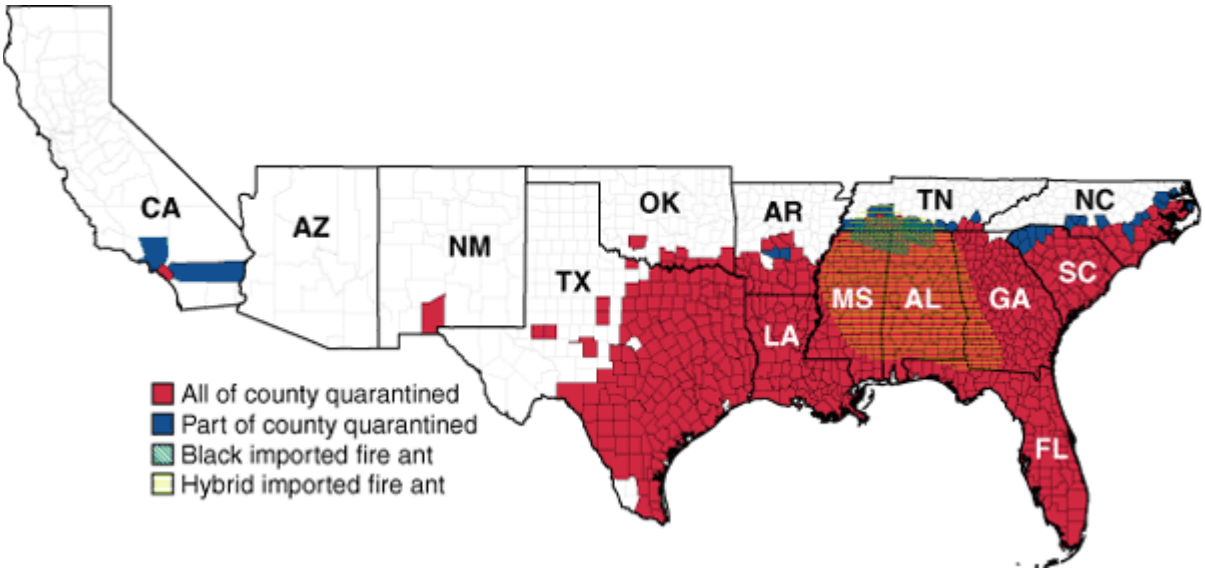
Like other ants, the fire ant is a social insect. Colonies live in mounds of dirt that may be more than 18 inches high. Mounds are often found in open, sunny areas. Periodically, winged reproductive male and female ants leave colonies on mating flights. Mated females (queens) can fly or be carried by winds for miles. When they land they start new colonies. Ants develop from egg to adult in about 30 days, going though four larval stages and a pupal stage. There may be hundreds of thousands of worker ants (sterile female ants capable of stinging) in a mature colony. There are both single queen (monogyne) and multiple queen (polygyne) colonies. The single queen form may build 40 to 80 colonies per acre, while the multiple queen form can build 200 to 800 or more mounds per acre. Worker ants from multiple queen colonies are not territorial and move freely from mound to mound. The opposite is true of workers from single queen colonies. Fire ants disperse naturally through mating flights and mass movement of colonies. When land is flooded, colonies form a mass of floating bodies and float to new locations in flood water. Fire ants can travel long distances when newly mated queens land on cars, trucks or trains. Shipments of hay, nursery stock or soil from an infested area may relocate entire colonies or nests.

USDA Quarantine Program

Because fire ants are easily transported in nursery stock and soil, the United States Department of Agriculture (USDA) developed a quarantine program in the 1950s. This quarantine is designed to slow the spread of imported fire ants by requiring proper inspection and treatment of all nursery stock, turfgrass, hay and other articles shipped out of quarantined counties. Contact your state's Department of Agriculture for specific information about complying with quarantine regulations.

Integrated Pest Management

This bulletin describes site-specific, goal-oriented management programs for dealing with fire ants in agricultural areas. Where applicable, you should select programs that use a combination of non-chemical and chemical methods that are effective, economical and least harmful to the environment. The goal of fire ant management is to prevent or reduce problems caused by unacceptably high numbers of fire ants. Every effort should be made to target control only at the red imported fire ant. Preserving and encouraging native ant species that compete with fire ants for food and resources is thought to be the best long-term solution. Integrated Pest Management (IPM) is a concept used in many areas of agriculture to help producers determine whether the cost of pest control can be offset by production gains, before treatments are applied. The first step in any IPM program is to find out what losses are occurring and how much those losses actually cost. It is up to the individual to decide what "counts" as a fire ant-related loss and to put a value on that loss. If there is some question, it is often a good idea to make two assessments-one for definite losses and one for losses that might be attributable to fire ants. Then you have a range of costs within which treatment expenditures can be justified. In theory, management efforts should begin only when the monetary loss caused by red imported fire ants equals or exceeds the cost of controlling them. This is the Economic Injury Level (ElL). The Economic Threshold (ET) is the level at or below the ElL at which action is justified to pre- vent economic losses. Losses caused by imported fire ants, however, are erratic and unpredictable, and are best estimated from experience on a given property.



Determining Losses

In a recent survey, ranchers said that fire ant problems are widespread and costly, but vary tremendously from ranch to ranch, even within the same locality. As a result, no one management plan can be used in all situations. ***Losses must be determined for each individual operation and treatment plans tailored to minimize those losses at an acceptable cost.***

Ranchers can make two common mistakes when estimating fire ant losses and deciding on treatments. First, they may not include every loss caused by fire ants that takes money out of their pockets. Dead and injured calves and infested hay bales are obvious losses. However, a shorted-out air conditioner or the cost of treating mounds around the children's swing set also should be included, even though they are not directly related to the business part of the ranch. Survey results show, in fact, that electrical damage and pesticide expenditures are the two most common types of losses.

The second mistake involves treatment options. Fire ant "eradication" is not technically or economically feasible. Still, when many ranchers think of fire ant treatments they think of treating large expanses of land to try to kill all ants. At a minimum of about $15 per acre per year, treating large areas is not usually economical, although some methods can cut large-area treatment costs by up to half. What many ranchers fail to realize is that most fire ant problems occur on fairly small areas that can be treated rather easily and at a modest cost.

Points to Remember when Estimating Losses

1	Be honest with yourself. Try to avoid overestimating the value of lost animals and the costs of materials, repairs, etc. Make an honest assessment at the time of a loss. For instance, if hay cutter blades wear out twice as fast because of fire ants, don't hold ants accountable for the entire cost of new blades, just half the cost.
2	Calculate your losses on an annual basis. Most current treatments control fire ants for a year or fraction of a year before they must be repeated. For instance, if fire ants cause a well pump to short out about every other year, include only half the cost in the analysis. If you lose an infested hay bale or two every time you cut hay, multiply the profit you would have made on those bales (remember it often varies) by the number of cuttings per year.
3	Don't sell yourself short. Time is a big, hidden cost of fire ants. Ranchers often spend many hours dealing with fire ant problems but value their time at $10, $5 or less per hour. Even if you don't actually pay yourself, that time could be spent doing something else. Put a value on it. If it takes you all morning to load up a broken shredder and haul it into town for repairs, plus another morning to retrieve it, the cost was not only what the shop charged. You, or your hired help, lost two mornings of otherwise productive work.
4	In analyzing cattle deaths and injuries, be sure to lay the blame correctly. A calf blinded by fire ants is fairly unmistakable, but the reason for a calf's death may not be apparent,

	even if the carcass is covered with ants. Ants will soon find a carcass whatever the cause of death. On the other hand, if an otherwise healthy calf was exhausted from a difficult delivery, couldn't get up for a few extra minutes, and was over- whelmed by ants, and then blames the death on the ants. Only the producer can make this kind of judgment call.
5	Value lost/injured animals accurately. If you paid for a pregnant heifer and ants killed the calf, don't just include the added purchase price of that calf. Include what that calf would have brought at sale time, minus production expenses. Also, don't forget any rebreeding costs for the mother or any other value she may have lost or gained as a result of not having a calf around.
6	Be careful estimating one-time losses and expenditures. For example, a bull rendered sterile by ant stings is certainly a major loss, but it's a rare incident. As another example, many hay producers have switched from sickle-bar to disc-type cutters because of ant mounds. This is a very large expense, but it must be spread out over the life of the cutter and any other benefits or losses the cutter brings must be considered also.
7	Be thorough. Include any unique losses or ones on which you put a particularly high value.
8	This analysis is only as good as the time and information you put into it!

Management Strategies

Nonchemical: Nonchemical or cultural control methods can reduce losses while maintaining a stable ant population that will help suppress other pests (lone star ticks, filth breeding flies, etc.) and deter the multiple queen form. Non-chemical methods include

1	Scheduling cow fertility programs to ensure that calving occurs during cooler weather when fire ants are less active (soil temp below 65 degrees F)
2	Shallow disking of pastures and rangeland or dragging heavy objects such as railroad ties across pastures, particularly after rotating livestock. This temporarily flattens tall harden mounds, although it seldom eliminates fire ants. Dragging a pasture during freezing weather may reduce populations by exposing the ants. Dragging also scatters manure that harbors fly larvae on which the ants feed.
3	Using disc-type (Kountz) cutters designed to withstand the impact of fireant mounds to reduce equipment damage.
4	Using mechanized balers and bale movers to reduce human contact with infested bales. Tightly-bound bales may be more difficult for fire ant colonies to infest loose bales.
5	Removing hay bales from the field immediately to prevent ants from infesting them, particularly when rain is expected.
6	Storing bales off the ground or in an area treated fro ants. (Note: The Quarantine prohibits the shipment of hay from infested to uninfested counties without certificates. Call your department of Agriculture or plant board to certify that hay shipments are ant free).

Chemical: Chemical treatment can suppress fire ants in pastureland for $10 to $15 per acre per year. Chemical treatments do not eradicate fire ants, and the treatments need to be repeated periodically. Some bait-formulated insecticides also affect native ant species that compete with fire ants. However, in areas with 20 or more mounds per acre, using baits as part of the Two-Step Method may be justified. In the Two-Step Method, a fire ant bait is broadcast once or twice a year. These treatments can kill up to 90 percent of the colonies within several weeks to several months Hydramethylnon bait (Amdro®) takes 3 to 6 weeks and the effects last for months or until ants re-infest the treated area. Insect growth regulator baits containing fenoxycarb (Logic® currently registered for horse pastures only; Award® registered for turf grass areas) or s-methoprene (Extinguish® registered for pastures) require 2 to 6 months but suppress ants for more than a year. The second step in the Two-Step Method is to treat individual mounds that are a particular nuisance. Products containing carbaryl or Sevin® are registered as fire ant mound drenches for pastures. Once the broadcast bait treatment has taken effect few individual mounds should need to be treated. Always read and follow the instructions on the product's label.

Biological: There is great hope that in the future fire ant populations will be suppressed through the release of natural enemies from their native habitats in South America. One parasite being investigated is a phorid fly that develops inside the heads of ants. In theory, adult phorid flies looking for worker fire ant hosts suppress ant foraging and allow native ant species to compete more successfully with fire ants.

Poultry Houses, Livestock Barns and Feedlots

Imported fire ants on poultry farms can attack chickens and forage on broken eggs. Fire ant stings cause blemishes that can reduce the quality of poultry. Similar problems occur in animal feeding stations, barns and feedlots.

Treatment Options:
Program 1:Poultry Houses and Egg Farms

Program 2: Broiler Houses and Turkey Operations

Program 3: Livestock Barns and Feedlots

Program 1: (Use a combination of the following suggestions)

1	Remove food sources (trash, piled feed, broken eggs and dead chickens) and potential nesting sites (pieces of lumber, old equipment and manure piles).
2	Mow or use herbicides to remove weeds and grass from around poultry houses.
3	Treat indoor surfaces with a registered product if ants are nesting inside poultry houses. ***Note:*** Although some products such as permethrin (Y- Tex® GardStar) are registered specifically for control of fire ants in poultry houses, other products such as cyfluthrin (Countdown®), dichlorvos (Vapona® Concentrate Insecticide) , and lambda-cyhalothrin (Grenade® ER Premise Insecticide) are more generally registered for "crawling pests"-including ants. Read the poultry sections of labels for precautions. Do not allow insecticides to come into contact with feed or water supplies.
4	If fire ants are foraging inside the poultry house from ant mounds located outdoors, spray a barrier around the outside of the building with products registered for that site (e.g., lambda-cyhalothrin) .
5	On grounds surrounding the buildings, use the Two step Method. Conventionally formulated bait products such as abamectin (Clinch®) , fenoxycarb (Logic®) , hydramethylnon (Amdro®) , pyriproxyfen (Distance®) or s-methoprene (Extinguish®) can be broadcast outside the poultry house, but not where chickens might come into contact with bait.

Program 2:

Program 1 for egg farms can be adapted to broiler houses and turkey operations if the products used are registered for this site, but be sure to treat only the outsides of houses so birds will not come into contact with insecticides. (see Step 5 from Program 1).

Program 3:

1	The programs for poultry houses can be adapted to treat fire ants in livestock barns and holding pens if the products used are labeled for treating animal premises.
2	Around barns and other structures, use the Two-Step Method if the treated areas are inaccessible to animals. Always use registered products. Conventionally formulated baits such as abamectin (Clinch®), fenoxycarb (Logic®), hydramethylnon (Amdro®) or pyriproxyfen (Distance®) can be applied outside livestock pens according to directions. S-methoprene (Extinguish®) bait can be used in pens with no withdrawal or grazing restrictions.

Field Crops and Commercial Vegetables

Red imported fire ants are considered beneficial insects in cotton and sugarcane production, and control is not recommended. In cotton fields, fire ants are effective predators of boll weevils. Fire ants can be sampled using the beat bucket method, whereby the terminals of cotton plants are beaten into a plastic bucket to dislodge insects. Insecticides usually are not needed for boll weevil control when an average of four or more fire ants is collected per ten terminal samples in mid to late season cotton. In Louisiana sugarcane fields fire ants prey on sugarcane borers, *Diatrea saccharalis* (Fabricius). There, controlling fire ants increases the damage caused by the borers and the amount of pesticide that is needed.

Fire ants occasionally feed on germinating seeds and seedlings of corn, sorghum, peanut, soybean, watermelon, cucumber, sunflower and other field or cover crops, particularly in the spring when the weather is dry. They sometimes cause stand loss. Okra growers are constantly battling fire ants because they are attracted to the oils in the plant. Where soybeans are planted flat rather than on raised beds or rows, tall fire ant mounds along the rows interfere with harvesting equipment. During dry periods, the fire ants sometimes chew irrigation tubing, as in vegetable crops.

Fire ants feeding on sap

Fire ants feeding on corn

Fire Ants tending aphids

Treatment Options

1	S-methoprene bait (Extinguish®) is now registered for treating red imported fire ants in cropland. However, the bait is slow-acting and must be broadcast several months before maximum suppression is required. The most effective timing of application(s) and the economic benefits from control are still to be determined. Use where estimated losses exceed the cost of application, and monitor closely for secondary pest outbreaks in treated fields.
2	To prevent damage to corn and sorghum seedlings, treat the seed with a product registered for soil insect control, or band an insecticide such as Lorsban 15G (chlorpyrifos) over open furrows at planting where there is a history of stand loss. Gaucho® 480 Flowable (imidacloprid) is registered as a seed treatment for sorghum.
3	Few contact insecticides are registered specifically for fire ant control in watermelon, sunflower and other crops, although some products containing pyrethrins (Pyrenone Crop Spray and others) are generally labeled for ant control in these sites. Insecticides registered for other pests on these crops (and known to be toxic to fire ants) are occasionally used to temporarily suppress foraging ants when damage is observed and the crop is threatened.

Fruit and Nut Orchards, Vineyards, and Blueberry Plantings

Although fire ants are mostly a nuisance to field workers in these crops, their overall economic and ecological impact is unknown. In pecan orchards, fire ants prey on pests such as pecan weevils and hickory shuckworms; however, they can encourage aphids by preying on their natural enemies. The ants' nest building aerates the soil of the orchard floor, which is beneficial, but they will feed on the meat of cracked pecans and can damage irrigation systems. Ant mounds may interfere with some types of harvesting operations. Chemical control is warranted

only if the cost of control is less than the potential economic loss ants may cause. In pick-your-own operations, customer safety also should be considered.

Picture of Okra bud being attacked by Fire Ants

Treatment Options:

1	S-methoprene bait (Extinguish®) is registered for use in cropland and abamectin (Clinch®) is registered for use in bearing citrus groves. Fenoxycarb (Logic®) and pyriproxyfen (Distance®) are registered for use in young, nonbearing fruit and nut tree orchards. Optimum timing of application(s) is yet to be determined. Where used, monitor closely for secondary pest outbreaks.
2	In pecan and citrus orchards, chlorpyrifos products (Lorsban® 4E and 15G) used to treat the orchard floor will temporarily suppress foraging ants. Spot applications around irrigation systems may help protect equipment from ant damage.
3	Few contact insecticide products are registered specifically for fire ant control in bearing peach orchards, vineyards and blueberry plantings, although some products containing pyrethrins (Fairfield American pyrenone Crop Spray and others) are generally labeled for ant control in these sites. Turf areas around orchards, vineyards and blueberry plantings can be treated with registered products.

Nursery Crops and Sod Farms

A copy of the entire "Imported Fire Ant Program Manual," which describes treatment programs for complying with the United States Department of Agriculture imported fire ant quarantine regulations, may be obtained from the Animal and Plant Health Inspection Service, Plant Protection and Quarantine, Domestic and Emergency Operations (4700 River Road Unit 134, Riverdale, Maryland 20737-1236).

Federal quarantine regulations mandate specific fire ant treatment(s) for plants to be shipped to areas free of fire ants, but each infested state may have additional regulations and agencies that enforce them. In Tennessee the department of agriculture division of regulatory services established the Imported Fire Ant Quarantine Rule in 1990. Treatment suggestions approved for commercially produced ornamental plants to be shipped out of a quarantined area can be found in Imported Fire Ant 2003: Quarantine Treatments for Nursery Stock and other Regulated Articles (http://www.aphis.usda.gov/oa/pubs/ifapub.pdf). In all cases the producer must obtain a Compliance Agreement from the state regulatory agency. Greenhouse-grown plants may be

exempt from quarantine treatment regulations if an inspector determines that the facility is tightly closed, but the grower still must have a Compliance Agreement.

Current Tennessee regulations for treating nursery stock and other commodities before shipping out of the quarantined area can be found on the Tennessee Department of Agriculture Fire Ant Website (http://www.state.tn.us/agriculture/regulate/plants/ifa.html). This website also contains the following information:

Economic Impact of Fire Ants in Tennessee

Imported Fire Ant Quarantine

- Federal Imported Fire Ant Quarantine (7CFR301) USDA IFA Map
- Tennessee Imported Fire Ant Quarantine Rule Tennessee
- IFA Quarantine Map.

Materials Regulated By the Imported Fire Ant Quarantine

Requirements for Growers Concerning the Imported Fire Ant Quarantine

- Imported Fire Ant: Quarantine Treatments for Nursery Stock and Other Regulated Articles (APHIS Program Aid No. 1653) contains detailed information about treatment options.
- USDA Amends Fire Ant Regulations Concerning Fipronil

Transportation of Regulated Items from Quarantined to Non-quarantined Areas

- IFA Hay Advisory

Consequences of Breaking the Imported Fire Ant Quarantine

What Can I Do If I Buy Products Infested With Imported Fire Ants?

- Plant Certification Section or your County Extension Agent to confirm Imported Fire Ant presence so that appropriate steps can be taken to close this potential route of infestation.

Fish Farms and Production Aquaculture

Bodies of water such as rivers, streams, ponds, and lakes are highly attractive to fire ants. Fire ant mounds around ponds and on dams and levees of fish farms can be a nuisance and pose a threat to workers. When using insecticides in theses areas, ***every effort*** must be made to avoid contaminating water sources. Fire ant baits contain very small amounts of active ingredients and can be applied on shorelines close to water, but not directly in the water to minimize the risk of runoff apply baits when ants are actively foraging so that ants collect the bait particles quickly. If individual mounds are treated use products with lower toxicity to fish, such as acephate. Pyrethrins and rotenone products are highly toxic to fish and should not be used. Do not apply any form of insecticide if rain is likely to occur soon after treatment. Nonchemical mound treatments with steam or very hot water may be suitable for sensitive areas.

Apiaries

Fire ants invade bee hives and feed on developing bee larvae, occasionally destroying weak colonies. Use chemicals with care because the bees will be affected by insecticides.

Treatment Options:

1	Treat areas around beehives using the two step method. Use products registered for the site in which hives are located. Conventional bait formations (e.g. those containing Hydramethylnon, fenoxycarb, pyriproxyfen or s-methoprene) are the safest to use near bee hives; dust formulations should be avoided.
2	Elevate the hives several inches on bricks or stones
3	(Optional). The outer surfaces of the stands that elevate hives can be carefully treated with a non-volatile, long residual contact insecticide. Specialty paint-on or paint additive formulations containing chlorpyrifos produce a chemical barrier on surfaces. A registered contact insecticide also can be applied to the ground around bee hives. Applying insecticides late in the evening or early in the morning when bees are not active to prevent bees from contacting treated surfaces. Read product labels and use insecticides and formulations least toxic to bees.

Wildlife Breeding Areas

Certain forms of wildlife are especially affected by ants during and soon after birth or hatching. The risk is greatest during warm months. Fawns are vulnerable because they are born in June and because they instinctively remain motionless in their hiding places. Quail and ground nesting waterfowl chicks are also attacked by fire ants. However, the effect of fire ants on wildlife populations over a large area has not been well documented. Fire ant control programs in wildlife areas are discouraged unless the benefits are clear and can be demonstrated. Many pesticides are toxic to wildlife (particularly to aquatic organisms) and may cause harm if not used properly.

Treatment Options:

1	Wildlife breeding areas are considered nonagricultural lands, and thus can be treated with products registered for this kind of site using the two step method.
2	Exotic game ranches and lands considered commercial agricultural areas can be treated in the same way as livestock grazing areas or pastures.

Maintaining Native Ant Populations

The states infested with red imported fire ants have many native ant species, including several species of fire ants. Native ants often compete for resources with the red imported fire ant, attack mated fire ant queens trying to establish new colonies, and invade weakened fire ant colonies. Preserving and encouraging native ant species is considered the best defense against imported fire ants. If an area had fewer than 20 imported fire ants per acre, insecticidal bait products should not be broadcast because the fire ant problem is not severe enough to justify the destruction of other ant species.

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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 participating states' Cooperative Extension Services is implied.

Worksheet 1

Are Fire Ants Costing Your Operation Money

How many acres are in your cattle operation? _____

1 How much do you spend in an average year to treat injured cattle? (include medicines, Bandages, vet bills, and an estimated cost of your time) _____

2 A. How many cattle/calves do you lose per year to ants? If fewer than one, give a fraction (e.g., 1 calf/2 years = 0.5 calf/year). Include only those directly killed by ants. _____

B. What did you pay for calf or added value of cow? _____

C. How much profit if calf had been sold normally? _____

(B+C)xA=Total Death Losses _____

3 What are your average yearly losses?

	Cost of Material	**Total Labor**	
Ruined Feed			
Ruined Hay			
Shredder Damage			
Electrical Damage			
Other damage/loss			

Total Material and Equipment Losses

4 Losses in hay production, from other form if applicable. _____

5 Any medical costs for you, your family, or workers per year? _____

6 Per year losses to pets, horses, food, animals, exotic breeds, etc. _____

7 Any other per year losses that can be blamed on fire ants. _____

Grand Total _____

CAN YOU AFFORD TO TREAT FOR FIRE ANTS

Grand Total/ Number of Acres in Operation = Per Acre in Losses

If loss per acre is more than $15, you can probably make money by treating entire place.
If loss per acre is less than $15, pinpoint where these losses occur and only treat those areas.

Worksheet 2

Are Fire Ants Costing Your
Hay Operation Money?

On how many acres do you usually produce hay? _____

How many cutting do you usually make per year? _____

What is your average profit per bale? _____

1 How have fire ants increased your operating costs?

More Expensive Equipment Price	Number of Years Used	

2 Cost of broken Equipment or faster wear per year:

Parts _____
Labor (including your time) _____
Add to get total breakage _____

3 Stops to clean out machinery:

Stops per cutting x cuttings per year _____
Minutes per stop _____
Hourly cost (Labor and machine time) _____
Cost of Lost Time _____

4 Do you have to raise your cutter to avoid mounds? If so, how much yield is lost? _____ Bales per acre

_____ Profit per bale

Multiply bales per acre by profit per bale _____ Lose per acre
Multiply number of acres by loss per acre Lost yield= _____

5 Other Cost Give total _____

Total losses from 1-5 _____

Now divide total losses by number of acres to get loss per acre _____

If your loss per acre is:
More than $15 you can probably make money by treating for fire ants
Less than $15 but more than $6, you may still be able to make money using alternative/nonchemical methods
Less than $6, fire ant treatment would not be justified

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COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
The University of Tennessee Institute of Agriculture, U.S. Department of Agriculture and county governments cooperating in furtherance of Acts of May 8 and June 30, 1914.
Agricultural Extension Service, Charles L. Norman, Dean