



ATTENTION BALED HAY PRODUCERS— DON'T TRANSPORT IMPORTED FIRE ANTS



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THE THREAT



Imported fire ants (IFA) pose serious threats to people, young/newborn animals, crops, and agricultural equipment. These non-native pests often make their way into hay bales, which are then transported to other areas where new colonies can become established.

Recent drought conditions in many areas of the United States resulted in a great demand for hay, and bales from ant-infested areas were shipped to regions where the pests had previously not been present. As dry conditions continue in many parts of the country, the chances that IFA will again spread to new areas are great.

Fortunately, there are a number of practical ways to not only prevent initial infestations but also limit the spread of these harmful ants.



DESCRIPTION



Imported fire ants (*Solenopsis invicta* Buren, *S. richteri* Forel, and their hybrid) may look like ordinary ants, but they are far from ordinary. They are best distinguished by their aggressive behavior and mound-shaped nests.

These ants are 1/8 to 1/4-inch long and reddish-brown or black in color (fig.1). They live in colonies inside hard, mound-shaped nests. While these colonies vary in size, a mature colony can grow to 300,000 ants. In addition, the mounds can get quite large, inhibiting field-worker activities and damaging farm equipment during times of cultivation and harvest.

IFA respond rapidly and aggressively when disturbed, clamping onto their victims with powerful jaws and stinging them repeatedly. Each sting injects a dose of venom that causes a burning sensation, earning these pests the name *fire* ants.



Figure 1. Imported fire ants are 1/8- to 1/4-inch long, and they are either reddish-brown or black.

DAMAGE

IFA sting an estimated 14 million people each year in the United States. These stings produce itching blisters that can become infected. Although very uncommon, in severe cases, the stings can send sensitive victims into shock or cause death.

IFA often eat insects, but they will feed on almost any type of plant and animal material. These ants pose a direct danger to many plants, trees, and agricultural crops. They eat the buds of young trees and also feed on the germinating seeds of more than 125 native wildflowers and grasses.

The impact of IFA in Texas alone is estimated to be \$1.2 billion each year.





Figure 2. Most hay intended for shipment is stored in the field or in temporary holding areas.



STOPPING THE SPREAD



IFA were unintentionally introduced into the United States from South America almost 100 years ago. As of 2008, IFA infested more than 320 million acres in 13 States (Alabama, Arkansas, California, Florida, Georgia, Louisiana, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas) and Puerto Rico. IFA commonly move to new, non-infested areas by hitchhiking on agricultural commodities, including baled hay.

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) works to prevent further IFA spread by enforcing a Federal quarantine and cooperating with IFA-infested States to regulate the movement of certain articles.

Regulated articles include:

- baled hay and baled straw that are stored in direct contact with the ground (fig.2);
- soil;
- plants and sod with roots and soil attached that are stored outdoors and intended for commercial sale;
- used soil-moving equipment; and
- any other article or means of conveyance determined to pose a risk of spreading IFA.



Hay from **inside** a quarantined area can be shipped anywhere else **inside** that quarantined area. However, hay from **inside** the quarantined area is not permitted to move **outside** the quarantined area.

APHIS has approved treatments for most regulated articles that kill fire ants and prevent new ant infestations. Once businesses have successfully treated their regulated items, APHIS will issue certificates/permits that allow the movement of those items to locations outside of quarantined areas.

Figure 3 depicts the most recent quarantine map. It is also located online at http://www.aphis.usda.gov/plant_health/plant_pest_info/fireants/downloads/fireant.pdf.

To determine if a specific location is inside or outside the Federal quarantine, you can use APHIS' online zip code locator at http://www.aphis.usda.gov/plant_health/plant_pest_info/fireants/zipcode.shtml.

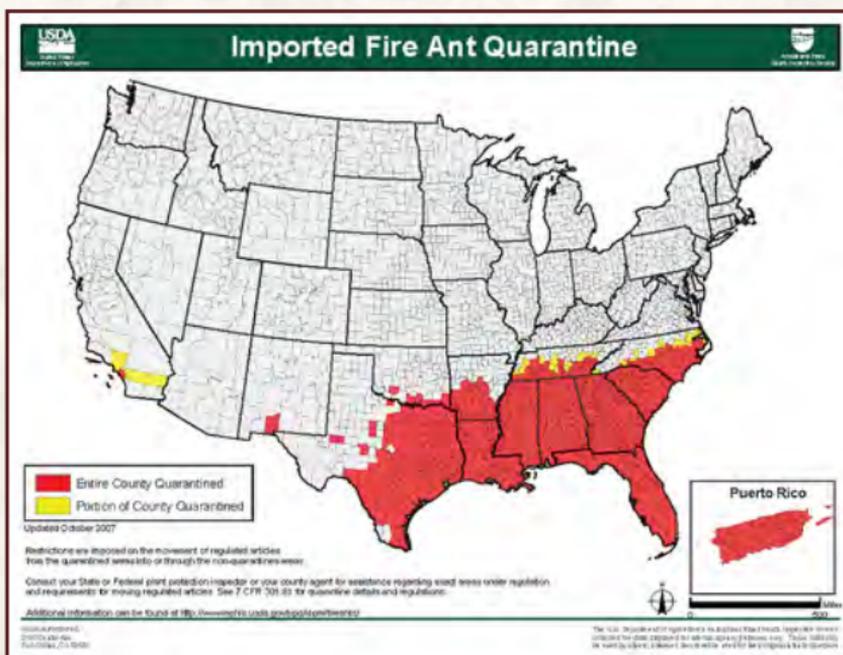


Figure 3. The most recent IFA quarantine map

WHAT YOU CAN DO



Although there are many ways that IFA can get into hay bales, there is no single treatment method that can remove all IFA colonies in the hay while also making sure that the bales can't become re-infested.

However, there are several ways to manage these ants successfully in hay production systems. By following these best management practices, you can reduce the risk that your hay bales will become infested and keep IFA from spreading to new areas.

- Check your hay before you ship to see if it contains any fire ants (fig.4). Attract the ants by putting an attractive food source (i.e., a dab of peanut butter or a piece of sausage) on the hay for an hour, and then check for ants (fig.5). This is best done when the temperature is between 65 and 90 °F.
- Elevate the bales several inches off the ground by placing them on tires or pallets (fig.6). This will discourage ant colonies from moving into hay bales.
- Use broadcast bait applications of approved insecticides around your hay storage area (fig. 7). A list of these products is available on the Texas Imported Fire Ant Research and Management Project Web site at http://fireant.tamu.edu/broadcastbait/products/latest_greatest/pdf/latest_greatest_en_090507.pdf.
- Before loading hay bales onto trucks for transport to non-quarantined areas, use high-pressure hoses to wash away IFA nests and any soil debris from support tires, wood pallets, and other shipping materials.



Figure 4. IFA often nest adjacent to hay bales.



Figure 5. IFA frequently use hay bales as a source of food and refuge. IFA were discovered inside this bale by soaking a card in peanut oil and placing it on the bale.

There are also a number of helpful practices hay buyers can follow to help reduce new IFA infestations:

- Ask if the hay you buy contains ants, and visually inspect the hay bales when they are delivered to you. If possible, request that the hay be certified for movement by the State from which it is shipped.
- Monitor for IFA in areas where hay bales are located and continue monitoring throughout the period that the bales remain onsite.
- If you find any ants, correctly identify them. If you need assistance, contact your State or local cooperative extension office. Contact information for Cooperative Extension System offices is available online at <http://www.csrees.usda.gov/Extension/index.html>.



Figure 6. Keeping harvested hay from directly touching the ground is a good way to prevent IFA from entering the bales.

Figure 7. IFA bait can be broadcast in and around the hay storage sites to significantly reduce IFA populations.



USING INSECTICIDES SAFELY



General Sanitation

Because hay can become contaminated during IFA treatments, it is important to use care when applying insecticides close to hay bales. A two-step treatment regimen is the safest and most effective way to control fire ants.

Step 1 controls approximately 90 percent of IFA colonies in the general vicinity of the hay/straw bales.

- Treat heavily infested areas or potential holding areas using fire ant bait products that are registered with the U.S. Environmental Protection Agency for the site where the hay bales are located. Conventional bait formulas contain hydramethylnon, fenoxycarb, indoxycarb, pyriproxifen or s-methoprene. Apply the bait as a broadcast treatment according to the label instructions once or twice each year in an area extending out 1/2 to 1 acre from where hay bales will be stored (fig. 7). Complete these treatments 1 month prior to moving bales into the storage area.





Step 2 quickly eliminates specific IFA colonies that pose an immediate hazard by applying contact insecticides to individual mounds.

- Apply contact insecticides 3 to 7 days after bait treatments to specific IFA mounds according to label instructions (fig. 8). These contact insecticides come in three forms—granules, liquids, or dusts. Active ingredients include chlorpyrifos, diazinon, carbaryl, permethrin, or other similar agents.



Figure 8. Special care should be taken when using insecticides in close proximity to hay bales so that the bales do not become contaminated.

BARRIER TREATMENTS



Contact insecticides applied either to the soil area under hay bales or to a strip surrounding the bales are effective barrier treatments, provided the insecticides don't come in direct contact with the hay. APHIS recommends these treatments in addition to broadcast baits. Results from previous IFA treatments show that barrier treatments are more effective when used in conjunction with broadcast bait treatments.

- Apply fire ant bait (as in Step 1 of the **General Sanitation** section above) prior to the placement of hay.
- Use strip applications to create a barrier surrounding hay bales by applying contact insecticides approximately one yard around hay bales. Do not allow insecticide to drift onto hay bales.
- If using an area application approach, apply the barrier contact insecticide to that location prior to placing the hay bales there.
- Always use an untreated support pallet, tire, or landscape cloth (fig. 9) to avoid directly exposing the hay to chemicals.
- It is best to wait 24 to 48 hours after applying contact insecticide before placing bales in a specific spot.

For soil treatments, research shows that using full label rates of liquid permethrin as a follow-up method to broadcast bait applications is effective for up to 5 weeks at deterring IFA from foraging and establishing colonies in hay bales. Permethrin also effectively kills IFA colonies when used to drench individual mounds.

However, permethrin should be used with caution, as it is toxic to livestock if applied directly to the hay that they will eat.



Figure 9. Keeping a barrier between the ground and the hay will help prevent IFA from entering the bales and protect the bales from contamination by contact insecticides—thus reducing the likelihood that these pests will be transported to a new area during shipment.



ADDITIONAL INFORMATION



For more information on IFA and associated Federal restrictions, you should contact:

- your county agricultural extension agent (go to www.csrees.usda.gov/extensions/index.html or check the county government section of your telephone directory under Cooperative Extension Service);
- your State regulatory officials (go to www.statelocalgov.net/50states-agriculture.cfm or check the State government section of your telephone directory under Department of Agriculture or Plant Protection); or
- a Federal regulatory official in your State (go to www.aphis.usda.gov/services/report_pest_disease/report_pest_disease.shtml or check the Federal Government section of your telephone directory under U.S. Department of Agriculture, Animal and Plant Health Inspection Service, or Plant Protection and Quarantine).

APHIS' imported fire ant Web page, http://www.aphis.usda.gov/plant_health/plant_pest_info/fireants/index.shtml, also offers a wealth of helpful resources, including pest alerts, brochures, quarantine maps, and Federal regulations.

The Texas Imported Fire Ant Research and Management Project is another useful source of information on IFA. The project's Web site, hosted by Texas A&M University, is located at <http://fireant.tamu.edu/>.



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This publication reports research involving pesticides. All uses of pesticides must be registered by appropriate State and/or Federal agencies before they can be recommended.

CAUTION: Pesticides can be injurious to humans, domestic animals, desirable plants, and fish or other wildlife—if they are not handled or applied properly. Use all pesticides selectively and carefully. Follow recommended practices for the disposal of surplus pesticides and pesticide containers.