

2020 Fire Ant Management in Pastures and Rangeland

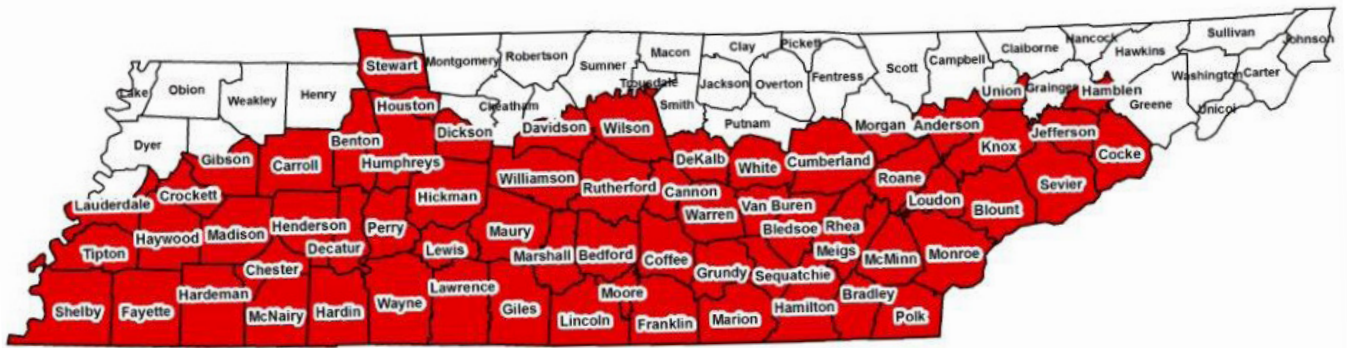
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Imported fire ants have been present in the United States for 100 years. The black imported fire ant, *Solenopsis richteri*, was accidentally introduced into Mobile, AL, around 1918, and the red imported fire ant, *Solenopsis invicta*, followed a few decades later. A viable hybrid of these two species was first identified in 1985. Imported fire ants (IFA) did not become established in Tennessee until 1987. They spread from their original introduction point through mating flights and unintentional human assistance. Today, IFA infest about 367 million acres in 14 mostly southern states, Puerto Rico, and 66 counties in Tennessee (Figure 1). Fire ants are a stinging hazard, and complying with the Federal IFA Quarantine affects the movement of nursery plants, hay, straw, earth-moving equipment with soil contamination and other items

which may harbor IFA. Tennessee areas under the IFA quarantine have expanded during the last three decades and in 2017 covered more than 17.8 million acres or slightly more than 67 percent of Tennessee's land area. About 4.7 million Tennesseans, or 70 percent of the state's population, live in infested counties and are affected by fire ants. The hybrid has extended its range westward into traditionally black IFA-infested areas and now dominates in East and Middle Tennessee with the black most common in the west (Figure 2). We expect the hybrid, which is more cold tolerant than the red or black species, to eventually dominate the Tennessee IFA distribution. Although the red IFA is found throughout the southeastern U.S., it is rare in Tennessee. The largest red IFA population is found in an isolated pocket in Williamson/ Davidson County.

2018 Imported Fire Ant Quarantine



TN Department of Agriculture | Consumer & Industry Services
 March 1, 2018 | <https://www.tn.gov/agriculture/businesses/ag-businesses-plants/plant-pests-diseases-and-quarantines/ag-businesses-ifa.html>

Imported Fire Ant Quarantine Area

Figure 1. The Tennessee areas quarantined for imported fire ants in 2018 are indicated in red. A list of quarantined areas by county can be found at fireants.utk.edu/resources/updates.html.

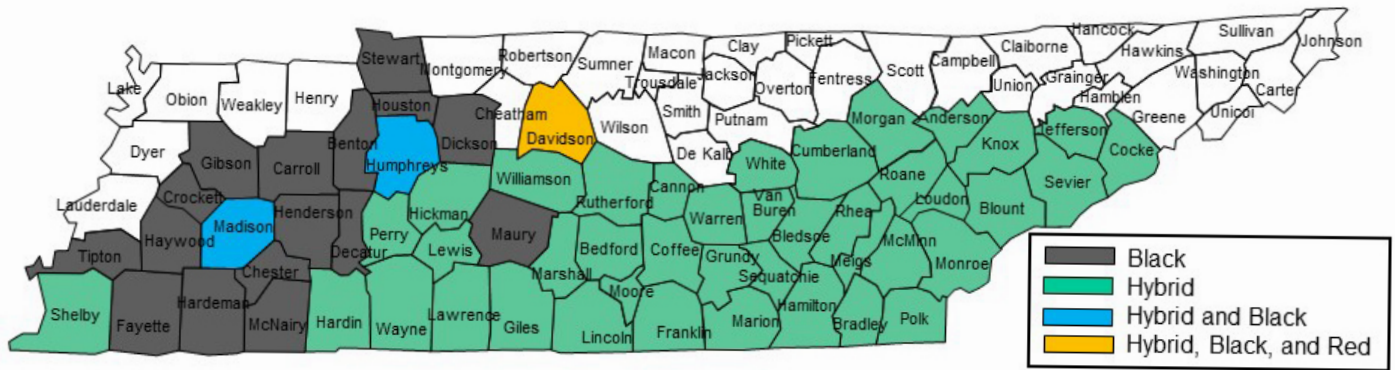


Figure 2. The predominant fire ants in each Tennessee county as determined by a Tennessee State University survey.

Imported fire ants are predators and scavengers and feed on a wide variety of foods. Their mounds are a familiar sight in pastures and roadsides in the infested area. The impact of IFA in pastures is hard to document because they affect different areas of the livestock operation. They injure both cattle and humans, and they also damage hay cutting and baling equipment, electrical equipment and livestock feed. Insecticide-based management strategies have been quite effective for home lawns, golf courses and other public areas. Managing IFA in livestock pastures, however, is more difficult because of the extensive land area involved, the high cost of insecticides, livestock safety concerns and potential contamination of food animal products.

A Texas survey indicated that it may be economically feasible to treat calving pastures and hayfields, but it may not be feasible to treat all pastures and rangeland. Worksheets to determine losses due to IFA can be found on the UT website “Imported Fire Ants in Tennessee” at fireants.utk.edu/management/agriculture.html or at the eXtension website ant-pests.extension.org/management-of-imported-fire-ants-in-livestock-production-systems. As an example, losses due to livestock injury or death in Texas pastures averaged 7 cents per acre. The cost of treatment averaged \$10 to \$20 per acre. However, IFA are a distinct nuisance to humans, and their mounds cause equipment damage and lost work time due to that damage. Therefore, the decision to treat or not treat for IFA mounds will probably be based more on human factors than on actual injury to livestock.

New fire ant colonies are initiated by individual winged queens following mating flights or by colony splitting (in the case of multiple queen colonies). Most colonies in Tennessee are single queen colonies started after mating flights. Flights of winged queens occur throughout the year, but are most common in late spring/early summer. As the new colony grows, the typical IFA mound usually appears. Single-queen IFA colonies are territorial and tend to discourage new colonizers. Therefore, the single-queen IFA mounds usually stabilize at a density around 80 - 100 mounds per acre and are typically found 10 to 20 feet apart. Unfortunately, multiple-queen colonies of IFA are not as territorial as single-queen colonies, and the multi-queen reproductive form of IFA can have mound densities as high as 800 per acre. These multi-queen colonies have been detected throughout the fire ant range in Tennessee, but are still less common than single-queen colonies likely due to their slow rate of spread.

Hay Shipments. In Tennessee, shipments of hay outside the quarantine must be inspected, determined to be free of IFA and accompanied by a permit before movement. Hay must be stored off the ground to be shipped. If hay was stacked, as long as it was not the bottom tier of hay, it would be considered as stacked off the ground. Contact your Tennessee Department of Agriculture Plant Certification Inspector for regulations pertaining to the IFA quarantine. Regardless of whether or not the hay is accompanied by a permit, hay imported from IFA-infested areas into uninfested areas should be inspected before acceptance into the uninfested area. TDA personnel will help with this inspection. Hay being moved from quarantined areas without proper permits should not be purchased. See “Questions and Answers: Moving Baled Hay From Areas Under Quarantine for Imported Fire Ant” located at aphis.usda.gov/aphis/newsroom/factsheets/baled-hay for more information on importing hay.

Cultural Practices. Currently, both cultural and chemical management options are used for IFA control in pastures and hayfields. In hayfields, frequent mowing discourages the building of large mounds even though IFA will still be present. Disc mowers are more practical than conventional sickle-bar mowers because they are less likely to break. In pastures on heavy soils, it is a good idea to clip with a rotary mower two to three times a year to reduce the height of the IFA mounds. UT Extension recommends spreading manure throughout a pasture during the winter months to better distribute nutrients as a best management practice (BMP). If the timing of pasture dragging for the manure spreading BMP is done just before an extreme cold weather event, it could disturb fire ant mounds, allow the cold to penetrate deeper, and cause greater fire ant mortality (a double benefit).

Chemical Control Options. Chemical treatment for IFA is probably not economical in most pasture situations. It may be prudent to treat pastures in which heavy calving activity will occur between March and September when IFA are most active. It may also be prudent to treat hayfields and areas around equipment sheds. As previously mentioned, most IFA are territorial, and defensive actions tend to limit the number of mounds per acre. When insecticides eliminate existing colonies at a site, future populations of IFA may actually increase for a short period because there are no established colonies to discourage re-colonization.. Therefore, chemical treatment for IFA has to be a continuous process. Treatments control what is already there, but cannot prevent reinfestation by incoming flights of queens.

Currently, the most economical treatment for pastures is to broadcast an insecticide-laced bait that will be picked up by the foraging ants and carried back to each colony. Broadcast applications of baits are better than individual mound treatments for pastures because small and non-visible mounds can easily be missed. Mound treatments may be useful follow ups a few weeks after bait has been applied. See the UT or eXtension IFA website for more information on bait applications.

When a bait is broadcast, it will be picked up and carried back to all of the colonies, no matter how large or how small they are. The baits are carefully designed to be slow-acting so that the insecticide will be spread by the foraging ants to their nestmates before the foraging ants die. Because of this, death may take several days to two weeks. Baits must be attractive so that the ants will pick them up. They must be placed where the foraging ants will find them and recognize them as food.

Because baits must be carried back to the nest, they must be applied when ants are actually foraging. Winter applications will not be effective. Morning or late afternoon treatments (70 to 90 F) are best because of high foraging activity in warm weather. Few ants forage during the heat of the day. When in doubt whether fire ants are actively foraging, place a few pieces of hot dogs or greasy chips in the planned application area. If after 30 minutes the test food is covered in fire ants, you know fire ants are actively foraging and your bait application should be successful. Baits should be applied when foliage is dry; therefore, avoid early morning applications when dew is present. Rain immediately following application will reduce efficacy. Unfortunately, there is often a conflict between late afternoon applications to dry foliage and frequent late afternoon thundershowers. In such weather, it is best to wait until after the shower is over and the foliage has begun to dry. Do not apply baits immediately before or after cutting or mowing because mound disturbance can result in a temporary reduction in fire ant foraging.

Baits are most effective when applied between May and September. Individual mound treatments may be useful after baits have been applied. However, it is important to wait a few days after applying bait before treating the mound so that the active ingredient in the bait will be distributed through the colony to the queen.

There are two kinds of IFA baits used in pastures: those containing a metabolic inhibitor, such as AmdroPro, and those containing an insect growth regulator, such as Esteem or Extinguish. Metabolic inhibitor baits act within two to four weeks, but the effect wears off fairly quickly (four to eight months) depending on re-invasion pressure. Insect growth regulator baits take longer to work (four to eight weeks), but tend to give longer lasting control (eight to 12 months). Trials in Texas showed that mixing 0.75 pound of a metabolic inhibitor bait with 0.75 pound of an insect growth regulator bait worked faster than an insect growth regulator alone. It also lasted longer than a metabolic inhibitor alone. Extinguish Plus bait contains both a metabolic inhibitor and an insect growth regulator.

Before applying bait or insecticide products to a pasture or rangeland, ensure these sites are listed on the pesticide label. Many home-use products labeled for lawns are not labeled for pasture. Some products may be labeled for application around corrals and animal holding areas and runs, as well as around commercial structures in livestock production systems, but are not labeled for pastures and rangelands. Others may limit use to specific pasture animals (e.g., labeled for horses but not cattle). So make sure to read the product label carefully. The table below lists products registered for IFA management in Tennessee's pastures and rangeland along with rates and other remarks. Always read the pesticide label before application, since sites and other use requirements may change. It is the user's responsibility by law to follow all the proper pesticide label directions and requirements.

Insect	Material	Rate/Acre	Precautions & Remarks
<p>Imported Fire Ants See “Fire Ants in Tennessee” website at fireants.utk.edu or the eXtension website at https://ant-pests.extension.org for a more thorough discussion of IFA management in pastures.</p>	<p>Amdro Pro Fire Ant Bait (hydramethylnon)</p>	<p>Broadcast 1 to 1½ lbs.</p>	<p>Broadcast bait uniformly. Treat when ants are foraging and when rain is not forecast for 24 hours. Or treat the mound by applying 2 to 5 level tablespoons per mound, distributing material 3 to 4 feet around the mound.</p> <p>Do not exceed 8 lbs per acre per year. Do not apply more than 4 times per year at 9- day intervals. Do not cut or bale hay from rangeland or pasture until 7 days after the treatment. Cutting restrictions do not apply if only companion animals that are not to be used for food or feed are supported by this area. 12 hour REI</p> <p>http://www.cdms.net/LDat/lD3GJo13.pdf</p>
	<p>Extinguish Professional Fire Ant Bait (methoprene)</p>	<p>Broadcast 1 to 1½ lbs.</p>	<p>Extinguish is labeled for use in all forages. Apply as a broadcast treatment when ants are foraging and when rain is not forecast for 24 hours. Or apply as a mound treatment by sprinkling 3 to 5 tablespoons around each mound, distributing material 4 feet around the mound. Extinguish is an insect growth regulator. Reduction in colony size can be seen beginning at three weeks with colony elimination within eight to 10 weeks.</p> <p>No withdrawal or grazing restrictions are necessary on treated areas. 4 hour REI</p> <p>https://www.zoecon.com/sds-labels</p>
	<p>Esteem Ant Bait (pyriproxyfen)</p>	<p>Broadcast 1½ to 2 lbs.</p>	<p>Apply uniformly when ants are looking for food. Avoid application if rain is expected within 4 to 6 hours. Or apply as a mound treatment by sprinkling 2 to 4 level tablespoons around the mound. Within three to four weeks there is substantial colony mortality, and within eight weeks the majority of the colony population has been eliminated. There are no preharvest intervals or grazing restrictions for this product. 12 hour REI. Do not plant any other crop other than those with registered pyriproxyfen uses in treated areas sooner than 30 days after the last application. Do not exceed 26.67 lbs Esteem bait (i.e., 0.134 lb pyriproxyfen) per acre per season.</p> <p>https://www.valent.com</p>
	<p>Extinguish Plus (methoprene and hydramethylnon)</p>	<p>Broadcast 1½ lbs.</p>	<p>Do not exceed 8 pounds bait per acre per year or more than four applications a year, with a minimum re-treatment interval of 90 days. Do not bale and cut treated pastures and rangelands for seven days following application. These cutting and baling hay restrictions for pasture and rangeland do not apply when the treated pasture and rangeland is used solely to support COMPANION ANIMALS (e.g., horses, llamas, etc.). Companion animals grazed on treated areas cannot be used for food or feed. Extinguish Plus may be used on uncultivated, agricultural, nonfood crop and nonagri-cultural land. 12 hour REI</p> <p>https://www.zoecon.com/sds-labels</p>
	<p>Hopper Blend of Extinguish Fire Ant Bait and AmdroPro</p>	<p>Broadcast ¾ lb. Extinguish mixed with ¾ lb. AmdroPro</p>	<p>Mix Extinguish Professional Fire Ant Bait in a 50:50 mix with a hydramethylnon ant bait. Broadcast or treat the mound by applying 3 to 5 tablespoons per mound, distributing material 4 feet around the mound. See individual bait listings above for use restrictions.</p>

Insect	Material	Rate/Acre	Precautions & Remarks
	*Advion Fire Ant Bait (Indoxacarb)	Broadcast 1 1/2 lbs.	*Advion Fire Ant Bait may be applied to control imported fire ants in fenced pastures if grazed only by horses or companion animals (i.e., animals not raised for production of meat or milk). Up to four applications of Advion Fire Ant Bait may be applied per year, generally at 12-16 week intervals. Maximum Annual Rate: 6 lb/A/year (0.0027 lb ai/A of indoxacarb-containing products as a bait formulation. Broadcast or treat mound by applying 4 level tablespoons uniformly 3-4 feet around the mound. Do not disturb the mound. Do not apply to tops of mound when treating mounds individually. 4 hr REI http://www.syngentapmp.com/current-label/advion-fire-ant-bait
	Sevin (carbaryl) Sevin XLR Plus http://www.cdms.net/ldat/ldAK3029.pdf Carbaryl 4L http://www.cdms.net/ldat/ld27Q004.pdf http://www.cdms.net/ldat/doTS005.pdf	Drench — individual mound treatment 3/4 fl. oz. per gallon of water 3/4 fl. oz. per gallon of water 3/4 fl. oz. per gallon of water	Drench mounds with a total of 2 gallons of the diluted solution over each mound or at least 1 quart per 6 inches of mound diameter. Thoroughly wet mound and surrounding area, distributing material 4 feet around the mound. Do not disturb the mound prior to treatment. Pour solution from a height of about 3 feet to give sufficient force to break the mound open and flow into tunnels. For best results, apply when the temperature is between 65 and 80 F. Repeat application if mound activity resumes after 30 days. Pressurized sprays may reduce the effectiveness of the treatment by disturbing the ants and causing migration. For pasture and grasses grown for hay and/or seed, do not apply within 14 days of harvest or grazing. Do not exceed a total of 3.0 quarts per acre per year. BEE CAUTION: Do not apply this product to plants in bloom.

Modified from “Pastures and Forage Crops: Insect and Weed Control,” 2016 Alabama Pest Management Handbook, Volume 1, pages 157-58.

PRECAUTIONARY STATEMENT

To protect people and the environment, pesticides should be used safely. This is everyone’s responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store, or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label and registered for use in your state.

DISCLAIMER

This publication contains pesticide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the pesticide applicator’s responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The label takes precedence over the recommendations found in this publication. Use of trade or brand names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others which may be of similar, suitable composition, nor does it guarantee or warrant the standard of the product. The author(s), The University of Tennessee Institute of Agriculture, the University of Tennessee Extension and Tennessee State University assume no liability resulting from the use of these recommendations.



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