

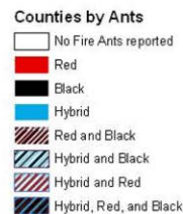
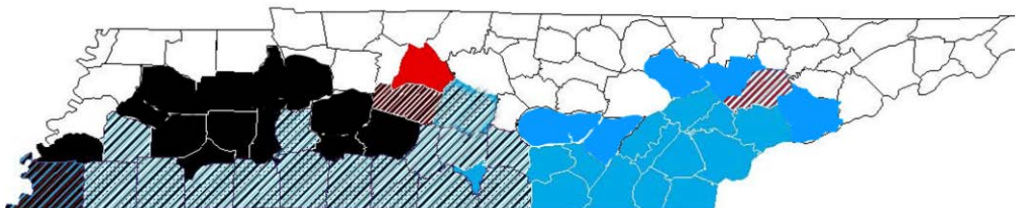
Fire Ants in Pastures and Rangeland

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The black imported fire ant, *Solenopsis richteri*, was accidentally introduced into Mobile around 1918 and the red imported fire ant, *Solenopsis invicta*, followed a few decades later. A viable hybrid of these two species was later identified in 1985. Today, these imported fire ants infest about 325 million acres in 13, mostly southern, states and 1 U.S. territory including 62 counties in the southern portion of Tennessee.

Complying with the federal IFA quarantine places an economic burden on the nursery and sod producers in the state, and affects the movement of hay, straw, earth-moving equipment and other items which may harbor fire ants. Tennessee areas under the IFA quarantine have expanded during the last two decades and in 2009 covered more than 13.8 million

acres or slightly more than 50% of Tennessee's land area. About 3.4 million Tennesseans or 56% of the state's population live in infested counties and are affected by these pests. Analysis of fire ant samples by USDA personnel in Gainesville, FL determined the hybrid dominates in the east, the black in the west and both occur in the center of the state. The hybrid is starting to extend into the traditionally black IFA infested areas. Although the red IFA is found throughout the southeastern US, it is rare in Tennessee. The largest red IFA population is found in an isolated pocket in Williamson/Davidson County.



Imported fire ants are predators and scavengers and feed on a wide variety of foods. Their mounds are a familiar sight in southern Tennessee pastures. The impact of fire ants 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 haying equipment, electrical equipment, and livestock feed. Insecticide-based management strategies have been quite effective for home lawns, golf courses, and other public areas. Managing fire ants in livestock pastures, however, is more difficult because of the extensive land area involved, the high cost of insecticides, and because of livestock safety considerations.

A recent survey in Texas indicated that it may be economically feasible to treat calving pastures and hayfields but not feasible to treat pastures and rangeland. As an example, losses due to livestock injury or death in Texas pastures averaged seven cents per acre. The cost of treatment averaged 10 to 20 dollars per acre. Worksheets to determine losses due to fire ants can be found on the UT web site *Imported Fire Ants in Tennessee* at <http://fireants.utk.edu/management/agriculture.html> or at the eXtension web site http://www.extension.org/pages/Management_of_Imported_Fire_Ants_in_Cattle_Production_Systems. However, fire ants 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 fire ant mounds will probably be based more on human factors than on actual injury to livestock.

Fire ant colonies are initiated by individual winged queens which, after mating, dig chambers and begin to lay eggs. Flights of winged queens occur throughout the year but are most common in spring. As the colony develops, the typical fire ant mound usually appears. Single-queen fire ant colonies are territorial and tend to discourage new colonizers. Therefore, the single-queen fire ant mounds tend to stabilize at a density around 50 mounds per acre. Unfortunately, there is a new form of red imported fire ant that is not as territorial. This form has many queens per colony, and mound densities can reach up to 800 per acre. The extent of these colonies that have many queens thus far is limited to the isolated infestation in Davidson/Williamson Counties.

Cultural Practices. Currently, management options for fire ants in pastures and hayfields are cultural and chemical control. In hayfields, frequent mowing discourages the building of large mounds even though fire ants 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 go through with a flail mower, such as a Bush-Hog, several times a year to reduce the height of the fire ant mounds.

Chemical Control Options. Chemical treatment for fire ants 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 fire ants are most active. It may also be prudent to treat hayfields and areas around equipment sheds. As previously mentioned, most fire ants are territorial, and defensive actions tend to limit the number of mounds per acre. When insecticides are used to treat for fire ants, the number of mounds per acre may actually increase because there are no established colonies to discourage colonization. Therefore, chemical treatment for fire ants 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 the visible mounds are only the tip of the iceberg. There are other colonies that have not yet built mounds. Mound treatments may be useful follow-ups a few weeks after bait has been applied. See the UT or eXtension fire ant web site 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 they 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 90F) are best because of high foraging activity in hot weather. Few ants forage during the heat of the day. Baits should be applied when the foliage is dry. 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. 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 fire ant 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 2 to 4 weeks, but the effect wears off fairly quickly (4 to 8 months) depending on re-invasion pressure. Insect growth regulator baits take longer to work (4 to 8 weeks) but tend to give longer lasting control (8 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.

In Tennessee, shipment of hay outside the quarantine must be inspected, determined to be free of IFA and accompanied by a permit, prior to movement. Hay must have been 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 fire ant quarantine. Regardless if the hay is accompanied by a permit, hay imported from fire ant infested areas into uninfested areas should be inspected prior to acceptance into the uninfested area. TDA personnel will help with this inspection. It's best to import hay from outside the fire ant quarantine. See *Questions and Answers for Producers, Sellers, and Buyers of Baled Hay Moving From Areas Under Quarantine for Imported Fire Ant* located at <http://www.aphis.usda.gov/BaledHayIndustryAlert.pdf> for more information on importing hay.

Insect	Material	Rate/Acre	Precautions & Remarks
<p>Imported Fire Ants See <i>Fire Ants in Tennessee</i> website at http://fireants.utk.edu</p> <p>or</p> <p>the eXtension Web site at http://www.extension.org/fire_ants</p> <p>for a more thorough discussion of fire ant management in pastures.</p>	Amdro Pro Fire Ant Bait (hydramethylnon)	Broadcast 1 to 1 ½ lbs.	<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 90 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 http://www.cdms.net/LDat/ld3GJ013.pdf</p>
	Extinguish Professional Fire Ant Bait (methoprene)	Broadcast 1 to 1 ½ lbs.	<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. It may take several months to see noticeable results.</p> <p>No withdrawal or grazing restrictions are necessary on treated areas. 4 hour REI http://www.zoecon.com/pdfs/extinguish_productLabel.pdf</p>
	Extinguish Plus (methoprene and hyramethylnon)	Broadcast 1 ½ lbs	<p>Do not exceed 8 pounds per acre per year or more than 4 times a year, with a minimum re-treatment interval of 90 days. Do not bale and cut treated pastures and rangelands for 7 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, non-food crop and non-agricultural land. http://www.zoecon.com/pdfs/extinguishplus_productLabel.pdf</p>
	Esteem Ant Bait (pyriproxyfen)	Broadcast 1 ½ to 2 lbs.	<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. Noticeable results may take 4 to 8 weeks. http://www.valent.com/agriculture/products/esteemant/abel-msds.cfm</p> <p>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 0.134 lb pyriproxyfen per acre per season. 12 hour REI</p>
	Hopper Blend of Extinguish Fire Ant Bait and another bait	Broadcast ¾ lb. Extinguish mixed with ¾ lb. AmdroPro	<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>

	<p>Sevin (carbaryl)</p> <p>Sevin XLR Plus http://www.cdms.net/Lab/elsMsds/LMDefault.aspx?pd=894</p> <p>Sevin 4F http://www.cdms.net/Lab/elsMsds/LMDefault.aspx?pd=888&t=</p> <p>Carbaryl 4L http://www.cdms.net/LData/Id0TS004.pdf</p> <p>Sevin 80 Solupak http://www.cdms.net/LData/Id08M012.pdf</p>	<p>Drench - individual mound treatment</p> <p>3/4 fl. oz. per gallon of water</p> <p>3/4 fl. oz. per gallon of water</p> <p>3/4 fl. oz. per gallon of water</p> <p>1 pk per 67.6 gallons of water</p>	<p>Apply a total of 2 gallons of the diluted solution over each mound or at least 1 quart per 6 inches of mound diameter, using a bucket or watering can. 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.</p> <p>Pressurized sprays may reduce the effectiveness of the treatment by disturbing the ants and causing migration.</p>
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Modified from "Pastures and Forage Crops: Insect and Weed Control", 2016 Alabama Pest Management Handbook, Volume 1, pages 157-58 at <http://www.aces.edu/pubs/docs/A/ANR-0500-A/ANR-0500-A.pdf> .

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.

DISCLAIMER STATEMENT

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 and the University of Tennessee Extension assume no liability resulting from the use of these recommendations.