



## Hybrid Fire Ants in Virginia

Authored by Theresa A. Dellinger, Diagnostician, and Eric Day, Lab Manager, Insect Identification Lab, Virginia Tech; and Amy Byington, Extension Agent, Lee County, Virginia Cooperative Extension

### Introduction

Native to South America, both red imported fire ant (RIFA, *Solenopsis invicta*) and black imported fire ant (BIFA, *Solenopsis richteri*) have been found in the US since the 1930s. Imported fire ants are now widespread across the southern US and have been reported in Virginia since 1989. RIFA and BIFA hybridize and produce fertile offspring in areas of the US where both species are found. The *S. invicta* x *richteri* hybrid fire ant zone in the US includes Georgia, Alabama, central Mississippi, and Tennessee. Recently in 2022, hybrid ants were detected for the first time in Virginia in Lee County (Fig. 1) and in several nearby counties in southeastern Kentucky. Hybrid fire ants are well established in eastern Tennessee as well.

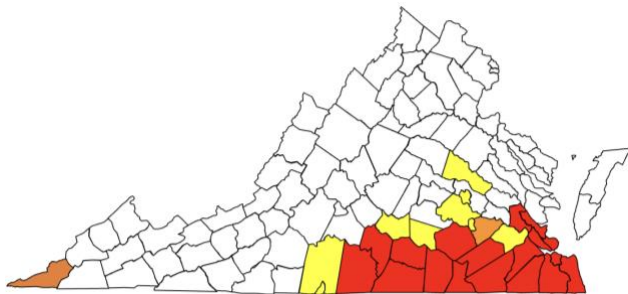


Fig. 1. Currently known distribution of imported fire ants in Virginia as of May 2024. Red indicates heavily infested areas and the current quarantine set by VDACS. Orange indicates widespread infestation in areas not quarantined by VDACS to date. Yellow indicates lightly infested or only small, localized infestations. Lee County (far southwestern VA) is the only known location of hybrid fire ants in Virginia. (Insect Identification Lab, Virginia Tech)

Hybrid fire ants appear more cold-tolerant than either RIFA or BIFA. Researchers previously believed that cold weather would limit the movement of imported fire ants in the US. However, imported fire ants have continued to expand their range farther north than earlier research projected, perhaps due to the greater cold tolerance of the

hybrids and assisted by general climate change. Greater cold tolerance and/or warmer winter weather may allow imported fire ants to spread into the more mountainous regions of Virginia.

### Fire Ant Identification

Imported fire ants range in color from reddish-brown in RIFA (Fig. 2) to a darker brown in BIFA (Fig. 3). Depending on their genetics, hybrid fire ants can vary between reddish-brown and dark brown, with a wide range of variation found among members of the same colony.



antennal club	2 segmented waist	stinger
---------------	-------------------	---------

Figure 2. Adult red imported fire ant (April Noble, Antweb.org, Bugwood.org).

Regardless of genetics, imported fire ant workers range in size from small (about 3 mm or 0.1”) to larger (6 mm or 0.25”). They possess a two-node “waist” and antennae with 10 segments, including a two-segmented club at the tip (Figs. 2 & 3). The body is somewhat glossy and sparsely haired, and there is a visible stinger at the tip of the abdomen.



Figure 3. Adult black imported fire ant (Eli Sarnat, Antkey, USDA APHIS PPQ, Bugwood.org).

## Life History

Like all ants, imported fire ants have a life cycle that consist of an egg, larval, pupal, and adult stages. They have a complex social system where the ant queen lays eggs and the worker ants attend to her needs, including caring for the young brood, collecting food, and defending the colony.

Queen fire ants can live for years, and mature colonies can consist of hundreds of thousands of ants. A colony begins producing reproductive ants about a year after establishment. Hundreds of winged reproductive male and female ants leave the colony during mating flights. Fertilized females establish new colonies as queens wherever they settle, sometimes miles from their original colony.

Some imported fire ant colonies have more than one queen. Colonies with multiple queens tend to be more tolerant of neighboring colonies than single-queen colonies, which will attack any neighbors. Tolerance of neighboring colonies can lead to very high densities of fire ant colonies within a given area.

## Damage

Imported fire ants swarm and attack aggressively when their colony is disturbed. Pheromones released by the ants quickly alert colony members to the threat, leading to a mass attack and many stings by the defending ants. Physical reactions to fire ant venom will vary with a person's sensitivity. Some people may experience anaphylactic shock and require medical treatment. Imported fire ant mounds in the yard or near the home should be managed for

human safety. For information on how to protect yourself from fire ant stings, see [Avoiding Fire Ant Stings](#).

Fire ants can injure livestock, poultry, and companion animals. Broken poultry eggs are an attractive food source for fire ants. Newborn animals are particularly vulnerable to foraging imported fire ants. Treat birthing areas for imported fire ants before animals give birth. Don't pen or cage animals in untreated areas where fire ants are found. See [Fire Ant Management for Livestock Producers: Hayfields and Pastures](#) (VCE Pub. ENTO-527NP) for information about managing fire ants in large fields.

Around the farm, large fire ant mounds can damage agricultural equipment in the field, particularly in areas with heavy soils (Fig. 4). Fire ants may damage irrigation tubing when seeking water sources in dry weather. They are attracted to electrical equipment and may damage it by stripping wires and shorting out circuitry.



Figure 4. Large fire ant mound in field (Imported Fire Ant Station, USDA APHIS PPQ, Bugwood.org).

Fire ants sometimes feed on germinating seeds and young seedlings, leading to stand loss of crops. They prey on caterpillars and other plant pests and can be beneficial in that sense. However, they favor aphids for their honeydew and will protect them against other predators, which may contribute to aphid damage in some crops.

## Habitat

Fire ants prefer open, sunny locations such as pastures, agricultural fields (Figs. 5 & 6), and cutover timberlands. They are particularly attracted to sites near water, including ponds, drainage areas, ditches, and streams. They can also be found in

parcs, flower beds, cemeteries, and lawns (Fig. 7) that are not heavily shaded. They nest inside houses, buildings, and sometimes vehicles. Fire ants are often found near building foundations (Fig. 8), concrete structures, or rock walls where solar radiation helps keep the colony warm. In addition, fire ants may nest in air conditioners, water pumps, switch boxes, transformers, and other electrical housings.



Figure 5. Fire ant mounds in a cattle pasture (USDA APHIS PPQ, Bugwood.org).



Figure 6. Hybrid fire ant mound at the base of a support pole along a fence in Lee County, VA (E. Day, Virginia Tech).

Imported fire ant colonies do not always form large mounds. Their mounds can range from nearly flat to almost 0.46-0.61 m (18-24") tall. Young colonies may make small mounds until the colony is older with enough larger worker ants to build larger mounds. Soil type can influence mounds as well, with lower or flatter mounds in sandy soil and taller mounds in clay soils. During cold weather, the colony retreats deep in the ground and may not actively enlarge their mound until warmer weather returns.



Figure 7. Fire ant mound along a curb (Rebekah D. Wallace, University of Georgia, Bugwood.org).



Figure 8. Fire ants emerging between bricks (Michael Merchant, Texas Cooperative Extension, Bugwood.org).

## Fire Ant Quarantine in VA

To slow the spread of imported fire ants, the Virginia Department of Agriculture and Consumer Services (VDACS) and the US Department of Agriculture have set a Federal Fire Ant Quarantine (FFAQ; Fig. 1) over much of the southeastern portion of the state. The FFAQ does not currently include all the localities in Virginia known to have imported fire ants and will likely be expanded in the future.

Baled hay and straw cannot be moved from inside the FFAQ to areas outside of the FFAQ unless stored on hard, impervious surfaces. No bales of hay and straw containing soil can be moved outside the quarantined area. Movement of baled hay and straw inside the FFAQ is not restricted. For more information, see [Fire Ant Management for Livestock Producers: Hayfields and Pastures](#).

Growers and producers in areas with imported fire ants (regardless of their location inside or outside of the FFAQ) are encouraged to use the [Red Imported Fire Ant Farmer Self-Inspection Checklist](#)) to avoid accidentally moving fire ants to new areas. A [Red Imported Fire Ant Logger Self-Inspection Checklist](#) is also available for forestry workers.

Accidental transport of imported fire ants to new locations is one way fire ants have spread through the US. Homeowners should be aware that any items stored outside in direct contact with the ground could harbor fire ants. This includes but is not limited to household items, firewood, construction materials, potted plants, plant debris, and trailers. Homeowners inside quarantined areas should check for fire ants and treat any found on items being transported outside of the quarantine. Even items being moved inside the quarantine should be checked to slow the spread of imported fire ants.

## Fire Ant Management

Imported fire ant management within the FFAQ is the responsibility of those living and working there. VDACS manages fire ant colonies only found outside the FFAQ to slow their spread into new areas. **If you find fire ants outside of the established FFAQ (Fig. 1), please submit a sample of the ants to your [local Cooperative Extension office](#) or contact VDACS at 804-786-3515.**

Fire ant eradication within the FFAQ is not feasible or realistic. Fire ants can reinfest areas that were previously treated either through natural movement of the winged reproductive ants or by accidental human transport of infested materials. The cost of treating large areas of land can be expensive and time consuming, especially considering the frequency of treatments necessary to keep sites free of fire ants when there are many other colonies nearby. It's best to focus treatments on areas where fire ants present a safety risk for humans and animals.

Many home remedies have been tried against fire ants, but they are often ineffective, dangerous, or pollute the environment. Do not pour gas or other flammable materials on fire ant mounds. Do not set mounds on fire. Boiling water poured on the mound will not reach the queen and brood usually located far underground. Grits do not kill fire ants because adult fire ants cannot eat solid food. Club soda

poured on the mound will not suffocate the ants. Shoveling fire ants from one mound onto another mound so they fight each other is not effective. Hot pepper, cinnamon, and essential oils do not work. Bleach, cleaning products, soapy water, or similar substances do not work or will not kill the queen. It's best to use effective, research-based recommendations to manage fire ants rather than wasting time and money on ineffective or unproven home remedies. In addition, some home remedies will disturb a colony to the extent that the ants enlarge the colony by creating satellite mound. Each satellite mound will also require treatment to ensure that the fire ant queen dies, increasing treatment costs and time.

For imported fire ants found around homes, see recommendations for mound treatments and baiting strategies in the current [Pest Management Guide for Home Grounds and Animals](#). Hybrid fire ants can be managed in the same manner as RIFA or BIFA. Start by being proactive. Regularly scout your property for signs of fire ant activity. Take steps to manage colonies when they are first found. It's easier to treat one mound before the colony increases in size, produces reproductive ants, and spreads. Fire ants can reinfest treated areas in time, so continue to monitor for fire ant activity after treatment to catch new arrivals.

For fire ants in pastures and hayfields, see recommendations in [Fire Ant Management for Livestock Producers: Hayfields and Pastures](#) (VCE Pub. ENTO-527NP).

## Note

Other ants in Virginia are also known to build mounds and/or sting and could be mistaken for imported fire ants. Contact your [local Cooperative Extension office](#) to have ants identified as the appropriate management strategy may differ by the species of ant present. Species of ants other than imported fire ants are not under quarantine in Virginia.

Visit Virginia Cooperative Extension: [ext.vt.edu](http://ext.vt.edu)

Virginia Cooperative Extension is a partnership of Virginia Tech, Virginia State University, the U.S. Department of Agriculture, and local governments. Its programs and employment are open to all, regardless of age, color, disability, gender, gender identity, gender expression, national origin, political affiliation, race, religion, sexual orientation, genetic information, military status, or any other basis protected by law.