

# Insec(tc)ure\*: Are you insecure about your insect cures?

A UT Urban IPM Lab Newsletter for the Pest Management Industry

## Imported Fire Ant Quarantine Expands in Tennessee

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It's been three years since the Tennessee Department of Agriculture updated the imported fire ant (IFA) quarantine. As of June 1, 2021, part or all of 74 counties are now quarantined (Fig. 1), an increase of 8 counties since 2018. Seventy-eight percent of our counties now have established IFA populations. Eight entire counties (Weakly, Sumner, Smith, Putnam, Montgomery, Henry, Grainger, and Cheatham) were added and six counties (Davidson, Dickson, Gibson, Lauderdale, Stewart and Trousdale) were changed from partially to entirely quarantined. A complete listing of the counties and areas within counties that are quarantined for IFA can be found at <https://fireants.tennessee.edu/wp-content/uploads/sites/208/2021/06/TNIFACountylist2021-1.pdf>.

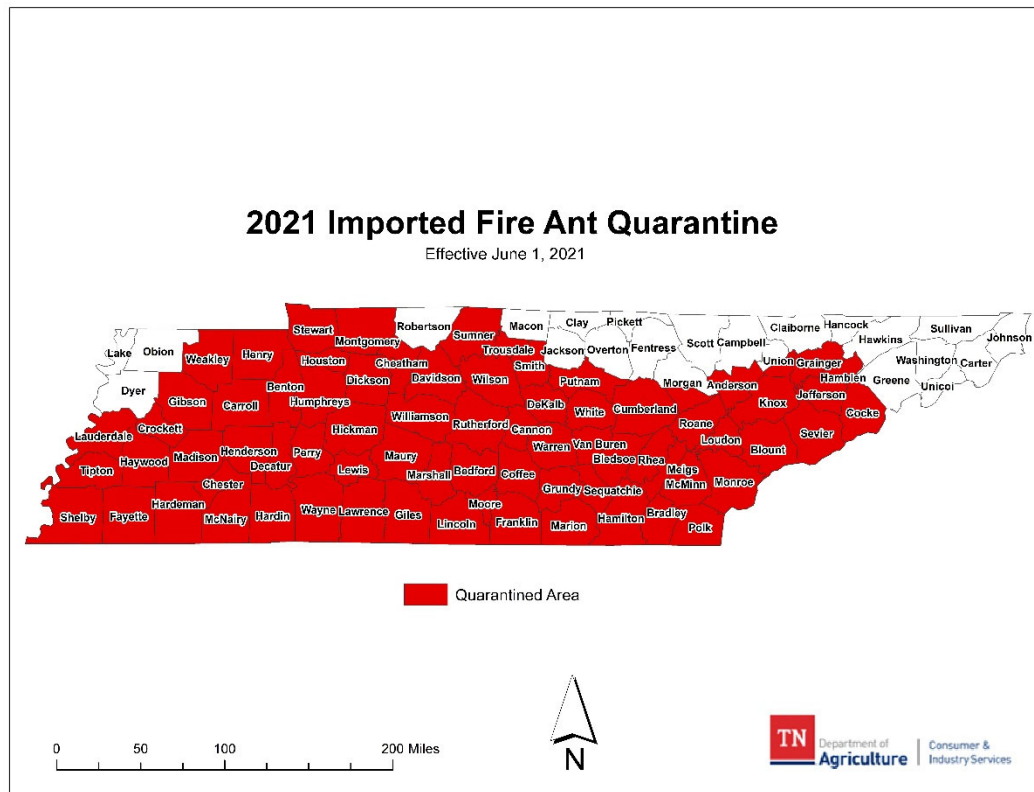


Figure 1. The 2021 Tennessee Imported Fire Ant Quarantine.

This newsletter is intended for pest management professionals (PMPs) that are certified in category 7 so typically you aren't affected by the federal regulations that require compliance agreements or certificates/permits to move regulated items, such as soil, plants with roots and soil attached, grass sod, baled hay and straw that has been stored in contact

with soil, used soil-moving equipment or the ants themselves, from infested to non-infested areas. The quarantine, however, does inform you of where IFA are established.

Because large fire ant mounds are easily seen in areas with short vegetation, e.g. maintained lawns, I think the PMPs' first thought about managing this pest is to drench the mound with, or inject, a diluted insecticide. There are other individual mound treatments such as baiting and granular applications. While these are effective options when performed correctly, I want to discuss the advantages of broadcasting baits over individual mound treatments (IMTs).

Single-queen (monogyne) fire ant mounds are started with a newly mated queen. Mating flights can occur any month of the year, but are most common in late spring and summer. On a calm day after a rain, when temperatures are warm (~80s F), around noon the males take flight and sometime later the female reproductives join them several 100 to 1000 ft in the air to mate. The males die and females find a moist, protected area in the soil to start a colony. The newly mated female, now called a queen, uses nutrients from breaking down her wing muscles to feed the larva that have hatched from her eggs. She will not forage for this first generation and there will be little evidence that she and this small colony are present. The first set of adult ants (workers) that emerge will be very small and are called minors or minor workers. These ants then take over the maintenance of the colony, foraging for food, feeding other members, removing diseased or dying workers, and maintaining and expanding the mound. As the colony grows and more food resources are brought back to the nest, the workers and mound will become larger. As the soil is disturbed to increase the mound, the mound becomes more visible.

Now let's consider your client's property. In front of you is a beautiful green lawn. You notice a few IFA mounds here and there and some near the curb and sidewalk (Fig. 2). Recommendations indicate it's economical to conduct IMTs up until the density reaches about 20 mounds per acre. So, if the property is 10,000 sq. ft or approximately ¼ acre, then it's economical to conduct IMTs when there are five or fewer mounds present. But let's put economics aside for a minute and ponder the real IFA density in this lawn. Have you walked the entire lawn and closely observed any disturbed soil to determine if it's an IFA mound? If you don't bother to closely scrutinize the lawn, you'll probably miss the small mounds if you just treat mounds individually. Repeated inspections will need to be conducted throughout the year to find those mounds as they become larger or new mounds appear. When you broadcast a bait, the bait is fairly evenly distributed over the lawn and foragers from mounds of all sizes will find the bait and bring it back to the colony.



Figure 2. Fire ant mound in crack of sidewalk.

The biggest challenge of broadcasting an IFA bait is calibrating the spreader; this applies to using chest spreaders or electric seeders. The more experience you have using seeders the easier the application becomes. For instance, a few weeks ago, we trained a maintenance supervisor to apply a broadcast application of Extinguish Plus to a soccer field. Because he had used a similar spreader to apply grass seed and was used to going a steady pace, he applied the correct amount of bait on his first try at calibrating. The next week we trained someone with no experience and it took a little less than hour to train them.

It's not rocket science to calibrate a spreader but it's important to be accurate to not waste bait or money. To calibrate requires a few steps. First, determine the swath width the bait is being dispersed. Our chest spreader typically throws the bait 8 – 10 ft. Swath width will vary with humidity, wind, bait, spreader, etc. Next, drag a measuring tape 60 – 100 ft and lay it stretched on the ground. Calculate the area that would be treated by multiplying the swath width by the length of your tape. For instance, 10 ft swath width along 100 ft tape would treat 1000 sq. ft. which is 0.023 acres. If your bait should be applied up to 1.5 lb/acre you should apply 0.0345 lbs while walking the 100 ft. If you applied less, walk more slowly and if too much, walk more quickly the next time. We usually cover the spreader with a plastic bag to capture the bait and weigh the bag before and after application to determine the amount applied. Another, probably less accurate way to broadcast a bait, is to use Google Earth to estimate the area to be treated, put the correct amount

of bait to treat that area in the spreader. Periodically, observe the amount of bait remaining compared to the area remaining to be treated and adjust your pace accordingly. Label application rates vary but usually range from 1 – 2 lbs/acre which is a very light application. I typically close the gate on the spreader to slightly more than the width of one granule or about the depth of two stacked dimes. Many of the bait labels suggest calibration settings. For more details, see *Calibrating a Fire Ant Bait Spreader* at <https://fireants.tennessee.edu/wp-content/uploads/sites/208/2020/11/Publications-CalibratingABaitSpreader-PB1817.pdf>

### **Tips for applying baits.**

- Baits should be applied between 70 and 85 degrees F when maximum fire ant-foraging occurs.
- In summer, apply baits in the evening. During the cooler evening, ants will quickly discover and carry off baits. If applied during the day, in extreme heat, baits quickly lose their effectiveness. Also, ants do not forage much during the day when it is too hot (>90 degrees F)
- Use only fresh bait, preferably from an unopened container. Once opened, baits should be used as soon as possible. Unopened containers may stay fresh for up to two years.
- To see if the ants are active and if the bait is fresh, place a small amount of bait and food (hot dog or oily potato chip) in separate locations next to a mound. If the bait is fresh and the ants are active, ants will begin removing it within 30 minutes. This is a good time to treat. If ants do not remove the bait, but feed on the hot dog or potato chip, then the bait is spoiled. If no ant activity is seen, it is not a good time to treat.
- Apply baits when no rain or dew is expected for at least five hours. Once the baits become soggy, they are not as attractive to the ants.
- Broadcast the bait, or apply it as directed around the mound.
- Avoid disturbing the ants or the mound right before applying the bait.
- Do not contaminate baits by storing them or applying them with fertilizer, other pesticides or odorous compounds.
- Follow the directions on the label. It is against the law to apply baits in areas not listed on the label.

Source: UT PB1788

I mentioned IMTs work effectively when applied correctly. Fire ants thermoregulate – they move their position in the mound according to temperature. The brood and queen are moved deeper, or farther underground, into the mound to avoid temperature extremes, that is, when the above ground temperatures are too hot or cold. In the summer, temperatures may climb into the 90s during the day, and the brood and queens will be moved away from the surface and deeper into the mound making it more difficult to contact these stages with insecticide from a drench, watered-in granular application or injection. Once the mound is disturbed the queen will be moved which also decreases the efficacy of these treatments. In the summer, it is best to apply these IMTs in the evening or early morning. In the cooler times of the year the brood will be closer to the surface of the mound during the day to take advantage of the sun-warmed soil that allows them to grow slightly faster. In the early spring and late fall, it's best to treat mounds during the warmest part of the day. Colonies will need to be retreated if a portion remains active.

Baits can also be applied as an individual mound treatment. Temperature plays an important role in the success of baiting too. Fire ants most actively forage when temperatures range between the high 60s and mid 80s. So typically, fire ant baits should not be applied late morning through the afternoon in the summer and not when the ground or vegetation is wet which leaves out an early morning application too. Of course, late afternoon showers would ruin the bait granules so baits shouldn't be applied before a rain. Ideally, there would be 24 hours between a bait application and expected rain, but if ants are actively foraging you may be able to get away with 5 or so hours (sometimes less) between an application and rain. Other considerations for applying baits are mentioned in the text box.

Remember that I mentioned IFA mounds were along the curb. Here's another situation when it's best to make a bait application. When mounds are found next to heat sinks (sidewalks, curbs, slabs, stumps, etc.) part of the colony may be under these objects and protected from an insecticidal drench. If bait had been broadcasted on the lawn or been used as an IMT, foragers would retrieve the bait and disperse the toxin-laden oil to all members of the colony regardless of their location within the mound.

You can see why it's important to scout properties for IFA mounds at least twice a year. We often see issues of IFA at schools because no one has scouted. Around mid-October we'll receive inquiries about

managing IFA that have moved under slabs and the workers are foraging into the classroom. Ideally these should be treated outside with a bait, but temperatures may not be conducive for applying baits outdoors. If only they had scouted their property earlier and detected these mounds before they moved to these heat sinks they would have had more

treatment options. For schools, we typically suggest scouting in the spring and again in September and broadcasting bait under optimal conditions when thresholds are exceeded.

You probably think I had too much to say about fire ant treatments, but I just scratched the surface. I'll stop now and refer you to the resources below.

Resources:

Websites

UT Extension's Fire Ants in Tennessee, <https://fireants.tennessee.edu/>

TDA's Imported Fire Ants (IFAs), <https://www.tn.gov/agriculture/businesses/plants/plant-pests--diseases-and-quarantines/ifa.html>

Publications

[Calibrating a Fire Ant Bait Spreader](#) (UT Extension publication PB1817)

[Managing Imported Fire Ants in Urban Areas](#) (UT Extension publication PB1739)

[2020 Managing Imported Fire Ants in Pastures and Rangeland](#) (UT Extension publication W648)

[Managing Fire Ants in and around Tennessee's Schools](#) (UT Extension publication PB1788)

[The Two-Step Method: Managing Fire Ants Around Homes and in Neighborhoods](#) (UT Extension publication SP419)

[Available Fire Ant Products for Tennessee](#) (UT Extension publication W652)

[Available Fire Ant Products for Tennessee's Schools](#) (UT Extension publication W649)

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