

Natural, Organic, and Alternative Methods for Imported Fire Ant Management

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Many home remedies, products, and treatments could be considered “organic.” However, several state and federal agencies and some organizations now offer “organic” standards to certify products. In Texas, the Department of Agriculture has developed an [Organic Standards and Certification Program](#). These standards establish the types of materials (including those used as insecticides) approved for use by producers who want to be certified as producing organic crops. The United States Department of Agriculture’s [National Organic Program](#) has also developed organic standards and a certifying process through the National Organic Standards Board (NOSB). These certification programs are solely for certified organic food and livestock production. There is no similar program that applies to nonagricultural pest management practices where options termed “organic” may be based on personal judgment and disputed by others (see [Organic Pest Control: What Does Organic Mean?](#)).

Natural and biological control (see [Potential Biological Control Agents for the Red Imported Fire Ant](#)). A number of organisms kill fire ant queens and workers. These include dragonflies, other ants, and some types of birds, lizards, spiders, and toads. Animals, such as armadillos, that eat ants may disturb mounds and eat some workers, but are not effective in controlling the ants. But preserving and encouraging native ant species that compete with the fire ant for territory and resources is beneficial (see [Natural Enemies of Fire Ants](#)).

Even if biological control agents are successfully introduced and established, at best, they will only suppress fire ant activity, not eradicate it. In South America, where fire ants live with many natural enemies, these ants are also still abundant in disturbed land areas.

Physical and mechanical methods. Using very hot or boiling water is a common treatment for individual fire ant mounds, particularly when the ants are close to the mound surface, such as on cool, sunny mornings or after heavy rainfall. Approximately 3 gallons of hot water poured on each mound will eliminate about 60 percent of the mounds treated (Tschinkel and Howard,



1980, *Journal of the Georgia Entomological Society* 15:102–105). This method may work well in certain situations, but take care to not pour hot water on desired plants and grasses. Also, to prevent serious burns, be careful in handling large volumes of hot water.

Many people try to dig up mounds to move them or dump them onto another mound (see [Control of Imported Fire Ant Colonies by Field Removal](#)). Colonies in mounds that are regularly disturbed or knocked down may move, but this does not eliminate the ants. Since polygyne colonies, colonies with more than one queen, are tolerant of ants from neighboring mounds, attempts to shovel one mound on top of another to force the ants to kill each other are ineffective.

Barriers that fire ants will not cross can be effective in keeping ants out of sensitive areas such as greenhouse benches, wood duck boxes, and other objects. Nonchemical barriers, such as talcum powder and Teflon-like tape or spray products used on vertical surfaces, generally lose their effectiveness in very humid or wet conditions (Drees 2002, *Southwestern Entomologist* 27(1): 111–113). Tanglefoot, a petroleum-based sticky material, available as a gel or aerosol, may be effective temporarily. Such products lose their effectiveness when coated with dust and other debris. You can also use electrical or heating elements to create a barrier.

Control devices. Many products that do not use chemicals are marketed for fire ant control. Devices that do not use chemical insecticides or microorganisms are not required to be labeled as pesticides by the Environmental Protection Agency, and are often marketed without scientific evaluation. The fact that a “control” device is on the market does not indicate that it is effective. These products may kill some ants, but they are often incapable of eliminating a colony (see [Museum of Novel Fire Ant Control Methods and Products](#)). Report deceptive or fraudulent claims concerning fire ant control devices to the office of the Texas Attorney General or the Federal Trade Commission.

Home remedies. In addition to using very hot or boiling water as described above, there are many other “home remedies.” Whether these methods are “organic” or not is arguable. Most home remedies are ineffective, and virtually none are recommended for use by practitioners of “organic” gardening and farming (see [Are there any home remedies that will kill fire ants?](#)).

Using gasoline and other petroleum products (such as refined decomposed plant material similar to dormant, summer, and horticultural oils which are sometimes considered to be “organic” products) is strongly discouraged. These materials are not EPA-registered pesticides, are dangerously flammable, kill grass and plants around the treated mounds, and can seriously pollute the soil and groundwater.

Other home remedies include soap solutions or cleaning products (which are believed to remove the protective oil coating from the ants) soaked into the mound. Although the Organic Food Standards and Certification Program allows the use of EPA-registered insecticidal soap products according to labeled uses, these insecticidal products are not registered to treat fire ant mounds. Manufacturers of soap, liquid detergent, and other nonpesticide products do not support uses that are not specified in the directions and will not assume liability for any problems that may arise with their unregistered use.

Evaluations of home remedies including aspartame, baking soda, cinnamon, club soda, coffee grounds, grits and Malt-O-Meal, and molasses failed to document control of imported fire ant mounds. While some home remedies have been tested, many have not been scientifically evaluated (see [Laboratory Assay of Effect of Instant Grits and Malt-O-Meal for Imported Fire Ant Control](#)).

“Organic” botanical insecticides. Botanical insecticides are those derived from plants (see [Botanical Insecticides](#)). Most are contact insecticides and work in several ways. Pyrethrins, which act on the nerve axon, are effective and

kill ants quickly (within minutes to hours). Some products mix pyrethrins with a synthetically produced additive (piperonyl butoxide or PBO) and diatomaceous earth (silicon dioxide) for application as ant mound treatments or surface sprays. Most practitioners do not accept formulations containing the synthetic chemical synergist PBO as an “organic” product.

Rotenone acts on the respiratory system, including nerves and muscles. Pyrethrins and rotenone products break down rapidly in the environment. Rotenone and pine oil (turpentine) products are slow-acting (days to weeks) contact insecticides applied as mound drenches.

A substance in orange oil released from crushed or grated citrus peels (d-limonene) is toxic to fire ants. Products with d-limonene as an active ingredient are available commercially for use as a fire ant mound drench that provides quick elimination of treated colonies. Other plant oils may also be found in a variety of ant control products.

Inorganic compounds. Diatomaceous earth (D.E., silicon dioxide) products registered by EPA as pesticides are usually applied as a fine dust contact insecticide to ant trails indoors or to produce barriers. No other forms of D.E. (such as swimming pool filter grade or treated D.E.) should be used as a pesticide. D.E. abrades the waxy layer from the insect exoskeleton causing the insect to desiccate (dry out). Although suitable for dusting foraging ant trails indoors, when applied as a dust or drench to fire ant mounds, diatomaceous earth usually does not eliminate colonies. As discussed above, some products use D.E. primarily as a carrier for other active ingredients such as pyrethrins, often synergized with PBO.

Many IPM (integrated pest management) programs for fire ant control include the judicious use of a bait-formulated product(s). Spinosad baits are from compounds called spinosyns, which are the products of the fermentation of the soil actinomycete, *Saccharopolyspora spinosa*. The [Organic Materials Review Institute](#)

or OMRI certifies several spinosad-containing products for fire ant control.

Abamectin baits are from a natural fermentation product produced by a soil microorganism, *Streptomyces avermitilis*, an actinomycete. Because the product is natural, it may fit into some “organic” production programs, but these products are not OMRI-certified.

The Two-Step Method. (See [Survey-Based Management of Red Imported Fire Ants](#), [Fire Ant Control: The Two-Step Method and other Approaches](#), and [Managing Red Imported Fire Ants in Urban Areas](#).) This program is a product-neutral, integrated approach for fire ant control that uses a sequential application of (1) broadcast application of a selected bait product followed by (2) the use of a selective treatment of individual mounds. Available “organic” products or methods such as using spinosad bait for step 1 followed by mound drenches using a d-limonene product can be used in this program. The goal of this program is to minimize the use of individual mound treatments.

This approach provides long-term ant suppression in ornamental turf and nonagricultural lands, including roadsides, and is best suited to moderate-to-larger-sized areas. The cost is moderate. It is not suggested for previously untreated areas with large numbers of native ants and few fire ant mounds—15 to 20 mounds per acre or less.

This program is also suitable for pasture and rangeland, provided that the products selected are specifically registered for use in these sites (see [Management of Imported Fire Ants in Cattle Production Systems](#)). The program can be developed for vegetable gardens using products registered for use in that site such as spinosad bait and drench formulations.

The following version of the Two-Step Method is useful for small areas (less than an acre) such as areas frequented by young children where minimal pesticide use is desired. This option is very labor-intensive, and may be practical if only a few mounds are present (from Oi, D. H.,

D. F. Williams, P. G. Koehler and R. S. Patterson, *Imported Fire Ants and Their Management in Florida*, SP-161, University of Florida):

- Step 1.** (Optional) Broadcast a bait-formulated insecticide.
- Step 2.** At least 3 days after baiting (if baits were applied), drench individual mounds with hot (scalding) water.
- Step 3.** Excavate and/or reapply hot water to mounds that are still active. Repeat when necessary.
- Step 4.** (Optional) Make an annual or semi-annual broadcast application of a bait-formulated insecticide in the spring and/or fall to suppress reinfestations.

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For more information regarding fire ant management, see Extension publications *Managing Red Imported Fire Ants in Urban Areas*, *Broadcast Baits for Fire Ant Control*, or *Fire Ant Control: The Two-Step Method and Other Approaches* posted on <http://AgriLifeBookstore.org>.

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