

Red Imported Fire Ant in New Mexico: A Guide for Nursery Workers

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Red imported fire ant, *Solenopsis invicta* Buren, was accidentally introduced into Mobile, Alabama from Brazil more than 50 years ago, probably on either cargo or ships' ballast. The ants spread rapidly, swarming several times each year and hitch-hiking on a variety of commodities, trucks, and trailers. It was soon recognized as a pest of agriculture and commerce. It also affected the health and well-being of humans, livestock, and wildlife. Over time, it out-competed native ants and even displaced the black imported fire ant, *Solenopsis richteri* Forel, introduced earlier from South America through the same port.

Organized control programs for imported fire ants began in the 1930s in Alabama. Over the years, cooperative control programs using a variety of insecticides, formulations, and application strategies were mounted in other states as the ants entered them and became established. Eventually, eradication programs were abandoned in favor of containment and suppression. Inorganic insecticides and chlorinated hydrocarbon insecticides were replaced by other kinds of ant control chemicals. Contact insecticides were augmented by development of bait toxicants, an especially slow and tedious process due to very stringent efficacy requirements. In the process, products with still different modes of action, such as the insect growth regulators, were discovered and developed for different applications.

In 1958 a federal quarantine was enacted to slow the spread of the pest by regulating the movement of certain items from the infested southeastern U.S. to areas free of red imported fire ants. These regulated items include nursery stock, soil, sod, soil-encrusted earth-moving equipment, hay, straw, and other items that may be found infested. Updated numerous times over

the last 40 years, this quarantine remains in effect today and serves as the basis of numerous state quarantines and fire ant programs throughout the southern U.S.

With respect to nursery and sod production, red imported fire ants can:

- readily invade fields and greenhouses where plants are grown, harvested, stored, or displayed for sale to the public.
- establish colonies in soil or soil-free potting media, mulches, and other landscape products stored on the soil or in unprotected areas.
- quickly and vigorously defend themselves and their colonies. Thousands of ants may "boil" out of a mound in response to a disturbance; each ant can sting numerous times.
- produce painful, swollen, red wheals, often with central blisters or pustules that can become secondarily infected. People sensitive to the venom can have medical complications including anaphylactic shock and death.
- spread naturally through "swarming," when hundreds to thousands of winged males and females disperse to mate and establish new colonies.
- hitch-hike in or on a wide variety of nursery stock and associated items including trucks and trailers.
- damage or kill (by chewing) seeds, seedlings, buds, blooms, fruit, and even underground plant parts.

- out-compete other ants species and exclude them from large areas.

Red imported fire ant was confirmed in Doña Ana County, New Mexico in July, 1998. The known infestations are in or near irrigated areas scattered from Chamberino to Radium Springs. Some of these sites include greenhouse/nurseries, private homes, grounds of public buildings, public recreation areas, and rights-of-way along irrigation ditches and roads. Swarming also was noted in July, 1998, so other infestations in the county are expected.

The widespread nature of this infestation in the Mesilla Valley, the swarming that has already occurred, cost, shortages of other resources, and environmental concerns make successful eradication within New Mexico very unlikely.

Containment and suppression of this pest are attainable through a combination of education and regulation. The resultant federal-state compliance agreements for nursery workers and sod producers address treatment protocols and certification requirements for shipment of nursery stock and related landscape materials out of the quarantine area.

Table 1. Approved quarantine treatments for fire ants on ornamental (nonfood-bearing) plants. Also, each chemical listed below will have “fire ant” listed on the label. DO NOT use brands or formulations that lack “fire ant” on the label.

Commodity or location	Treatment	Chemicals
Containerized nursery stock, including greenhouse-grown plants	Immersion	Chlorpyrifos emulsifiable concentrate
	Drench	Chlorpyrifos emulsifiable concentrate OR Bifenthrin flowable
	Incorporate granules into potting soil	Bifenthrin flowable OR WP Tefluthrin
	Topical application	Bifenthrin
Ball and burlap stock	Immersion OR Drench OR Injection	Chlorpyrifos emulsifiable concentrate
Field-grown woody ornamentals, preharvest field treatment	Broadcast and Bait	Fenoxycarb, Hydramethylnon, Chlorpyrifos granular
Grass sod (turf)	Broadcast and Bait	Hydramethylnon, Chlorpyrifos Granules or WP
Nursery environs	Broadcast and Bait	Fenoxycarb, Hydramethylnon, Chlorpyrifos granular
Mound	Drench	Chlorpyrifos emulorfiabile concentrate
	Bait	Hydramethylnon OR Fenoxycarb

Table 2. Insecticides used in quarantine treatments of red imported fire ants.¹

Insect Growth Regulator (fenoxycarb). This material mimics the effects of the ant's own hormones, reducing the production of viable eggs by the queens and preventing the development of worker ants for up to a year after application. Hormones of ants and other insects are in no way chemically similar to human hormones. Insect growth regulators do not kill adult ants. Treated ant colonies persist for several months after treatment, until worker ants present at the time of treatment die of old age. Fenoxycarb is formulated as a bait to be applied to individual mounds or broadcast. Examples: Award™, Logic®.

Pyrethroids (bifenthrin, tefluthrin). These products destabilize nerve cell membranes. They can persist in the environment longer than pyrethrins and their derivatives. They are relatively quick-killing insecticides applied as mound drenches, dusts, or surface sprays and granules. Examples: Talstar®, Fireban™.

Organophosphates (chlorpyrifos). This product interferes with nerve cell transmission. It is a relatively quick-killing contact insecticide formulated as a granule or emulsifiable concentrate for quarantine treatments. Example: Dursban® 4TNP.

Miscellaneous compounds. Hydramethylnon (amidinohydrazone) kills ants by preventing them from converting food into energy. This bait eliminates fire ant colonies within a week when applied to individual mounds, but takes several weeks when broadcast. Example: Amdro®.

¹This table outlines the features of several categories of insecticides, giving examples by common and trade names.

Other publications in this series feature the biology, distribution, and behavior of this invasive pest; and information for homeowners, turf managers, health care workers, commercial trucking operations, earth-moving equipment companies, and hay/straw producers and shippers. For more publications on red imported fire ant, contact your county Extension office. You can also visit

the college's World Wide Web site at www.cahe.nmsu.edu/pubs/, then scroll down to "How-to Publications," OR contact the Bulletin Office at (505) 646-2701, or bulletin@nmsu.edu.

The user is always responsible for the effects of pesticide residues, as well as for problems that could arise from drift or movement of the pesticide to neighboring areas. **ALWAYS READ AND FOLLOW CAREFULLY THE INSTRUCTIONS ON THE PESTICIDE CONTAINER AND ANY OTHER INSTRUCTION MATERIALS THAT COME WITH THE PRODUCT.** Pesticides must be registered and labeled for use by the U.S. Environmental Protection Agency and the New Mexico Department of Agriculture. The status of pesticide labels and registrations is subject to change and may have changed since this publication was printed.

REFERENCES

Imported Fire Ant, A Guide for Nursery Operators, USDA-APHIS, Program Aid No. 1420, Revised February, 1994.

Bastian M. Drees, et al. 1993. Managing Red Imported Fire Ants in Urban Areas. Texas Ag. Extension Service, Bulletin B-6043. Texas A&M University System, College Station, TX.

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