

An Integrated Pest Management Approach for the Imported Fire Ant

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ABSTRACT

In June, 2000, the USDA/ARS/Center for Medical, Agricultural, and Veterinary Entomology; EPA's Pesticide Environmental Stewardship Program; Department of Defense, U.S. Army Environmental Center, and Center for Health Promotion and Preventive Medicine; South Carolina Army and Air National Guard; Clemson University; the Council of State Governments, Southern Legislative Conference; and Aventis Corporation initiated a cooperative study using integrated management for fire ants in South Carolina. The objective was to determine if an integrated pest management (IPM) strategy using chemicals plus the release of biological control agents would give longer control of red imported fire ant (RIFA) *Solenopsis invicta* populations thus reducing the number of chemical treatments needed to maintain control. The integrated strategy combined the use of the phorid fly, *Pseudacteon tricuspis*, the pathogen, *Thelohania solenopsae*, and the chemical fipronil. Three 10-acre (4 ha) test sites each with a 4.5-acre (1.8 ha) treatment plot located in the center were established on Fort Jackson U.S. Army base and McEntire, South Carolina Air National Guard base. Site 1 was treated with the chemical only, 0.1% Fipronil granular at 12.5 lbs per acre (0.0125 lbs of active ingredient per acre). Site 2 was the integrated site in which the chemical fipronil was applied at the same rate as at Site 1 and two biological control agents were released in the area surrounding the treatment. Site 3 was used as an untreated control. Evaluations were conducted twice per year (spring and Fall) on 1/8-acre circular subplots inside and outside of each 4.5-acre treatment plots. Active mounds within each sampling area were assessed using the USDA population index rating system. All active fire ant mounds were mapped to document fire ant populations, reinfestation rates and spread of the biological control agents. Eight pitfall traps were set per 1/8-acre circle to assess the diversity of ant populations. For the first year, average reductions in fire ant populations in the integrated site was 97% and 91% in the chemical only site. However, after 2 years and 2 months where the chemical plus the biological control agents were applied, the RIFA populations in the integrated site were reduced by 100% while in the site with the chemical treatment only, there was only 59% reduction. In the untreated control, there was an increase of 51% in RIFA populations. In addition, *Thelohania solenopsae* was found in 79% of the colonies inspected at the integrated site and phorid flies were discovered attacking fire ant workers 3 miles from the initial release site. Finally, native ant populations increased as the RIFA populations decreased in the integrated site.

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