

Community-wide Imported Fire Ant Management in Texas

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Abstract

Managing the red imported fire ant, *Solenopsis invicta* Buren (Hymenoptera: Formicidae) has been demonstrated to dramatically reduce the cost insecticide use, maintain control of fire ants and eliminate problems caused by the ant. This demonstration, conducted in the Lago Santa Fe community in Galveston County, Texas, demonstrated several recent advances in conducting community-wide programs, including: 1) the effectiveness of the "hopper blend" treatment (50:50 hydramethylnon plus s-methoprene ant bait); 2) application methods such as the truck-mountable industrial "bait blower"; and 3) scheduling treatments to reach a goal of maximum control for an athletic event, the 2002 National Ski Championships.

Summary

Managing fire ants on a community-wide basis at Lago Santa Fe, Santa Fe, TX has proven to be effective. Site assessment, proper application and judicious use of a hopper blend treatment of hydramethylnon + s-methoprene fire ant bait resulted in 89% control of fire ants in this community 8 weeks after application. As a result, there was minimal need of single mound treatments.

Problem

The red imported fire ant, *Solenopsis invicta* (Buren (Hymenoptera: Formicidae), has become an important economic and health threat in urban Texas. According to a 1998 study conducted by the Department of Agricultural Economics, TX A&M University, of fire ant related costs in Dallas, Fort Worth, Austin, San Antonio, and Houston, fire ants have serious economic effects for these metro areas of Texas. Households experienced the largest costs among sectors examined with an average of \$151 per household spent annually which included repairs to property and equipment, first-aid, pesticides, baits, and professional services. Treatment costs accounted for over 50% of this total cost. A full damage assessment for Texas must include additional sectors, and the estimated costs of \$581 million per year for the selected sectors underscore the impact of this pest.

In Houston the average medical treatment costs per household of \$25.46. The duration of injury for children and adults was 6.6 days and 5.6 days, respectively. The fire ant limits outdoor activities and homeowners and producers incur added costs in managing the fire ant (see Lard et al. 2000, "The Economic Impact of the Red Imported Fire Ant on the Homescape").

Objectives

During the past 5 years the Texas Imported Fire Ant Research and Management Project has championed the development of several "products/processes" that can be used in addressing the goal of eliminating the fire ant as a pest of major economic and health significance (Drees and Frisbie 2002). Fire ant management is centered around the "Two-Step Method" of fire ant control (see publications B-6043 and L-5070) which relies on the broadcast application of an effective ant bait product, followed by selective individual ant mound treatment if necessary. One of the most publicly visible components of the project has been the demonstration of the concept

of managing fire ants on a community-wide basis - even though funding has been restricted by the policy that no dollars could be used to buy or apply pesticides (i.e., no pesticide give-away programs).

Demonstrations of community-wide fire ant management have documented that the cost of pesticides people had been buying and applying to try controlling the ants on a property-by-property basis can be reduced by 84% (Riggs et al. 2002). Also, new tools to apply broadcast bait product treatments are in place and ready for use: 1) Descriptions for modifications needed to apply ant bait products by air are on the project's web site (<http://fireant.tamu.edu> under "management", entitled "Broadcast Application Guide"); 2) A prototype truck-mountable "bait blower" capable of treating neighborhoods by driving down the street at 10 to 30 miles per hour has been developed (Drees and Frisbie 2002). The mounting of bait spreaders to ATV's and other multiple use vehicles common to urban communities have been demonstrated and mounts for these various spreaders can be purchased through various dealers, and 3) Bait combinations and new "safer" bait active ingredients have been highlighted (see Fire Ant Trails 3(6), 5(2) and 6(2)).

Several recent advances in conducting community-wide fire ant management programs were highlighted in this demonstration, conducted in the residential community of Lago Santa Fe, Galveston County, TX. Lago Santa Fe is a private water ski community located 25 miles south of Houston, TX. This Community encompasses approximately 100 acres, with 4, 0.5 mile X 200 ft wide lakes, designed for water skiing events. Forty-eight homes border the 4 lakes in 1 acre lots. The objective was to utilize as many "items" championed by the Fire Ant Project in this community-wide effort.

Materials and Methods

In the Fall of 2001, representatives from the Community of Lago Santa Fe asked the Texas Cooperative Extension for help in controlling fire ants in their neighborhood. This Private Lake Community was to host the 2002 National Ski Championships, and the U.S. Water Ski Open in August of 2002. They also were to host several regional events leading up to the 2002 Nationals and Open. They needed to control the fire ant since they were expecting around 5,000 visitors to their community for these upcoming events. This Community would also host these same events in 2003.

Site and Fire Ant Activity Assessment. Fire ant activity was determined by counting the active fire ant mounds in 0.25 acre circles in 8 undeveloped lots within the community (**Table 1**). A mound was considered active, if after disturbed with a prodding rod, fire ants emerged within a 15 second waiting period. An adjacent pasture area was monitored periodically to make sure fire ant activity monitored in the treated area was due to treatments and not other environmental conditions (**Table 1**).

Products. Because of the nearness of events (some starting in June) we decided to use a combination of hydramethylnon and s-methoprene. The application of the 50:50 "hopper blend" of 0.75 lb. hydramethylnon fire ant bait (ProBait™, Amdro® or Siege® Pro Fire Ant Bait) blended with 0.75 lb. s-methoprene (Extinguish™ Professional Fire Ant Bait) or other "juvenoid" Insect Growth Regulator (IGR) fire ant bait product, applied 1.5 pounds of the blended products per acre has repeatedly resulted in a relatively quick and long-lasting suppression of red imported fire ant mound numbers in replicated tests (see <http://fireant.tamu.edu> under "research" and "applied research"). None of these products applied alone produces this effect.

This combination offered the quick action of metabolic inhibitor (hydramethylnon) to make sure fire ants were contained before the June events, and the extended activity of an IGA (s-methoprene), for continued containment into the August event. Also, the Texas Department of Agriculture (November 30, 2001 memorandum from Phil Tham, Deputy Assistant Director for

the Pesticide Programs Division) had issued a 24(c) (Special Local Needs) registration for the “hopper blend” application of Amdro® or Siege® Pro plus Extinguish Professional Ant Bait (SLN TX - 010016). We wanted to demonstrate that this combination would work well in an urban setting.

If extra baiting was necessary as the events dates drew closer, Justice Fire Ant Bait was chosen because of the active ingredient (spinosad) had been recognized as a “natural substance” by the National Organic Standards Board, and it is one of the fastest acting baits (see FAPFA039, “An Organic Two Step Method For Fire Ant Control” and Fire Ant Trails3(6) and 6(2)).

Finally, because we were trying to control fire ants around man-made lakes that had several fish species, Orthene® Fire Ant Killer containing 50% acephate was chosen over the synthetic pyrethroid dusts for single mound treatments to counter any run-off issues.

Bait Applicators. Three applicators/spreaders were used for the broadcasting of the fire ant bait. A handheld spreader set on the smallest setting was used. The homeowner or volunteer was given 1.5 lb of the blended bait product to spread over a 1.0 acre lot. A truck mounted “bait blower” (Drees and Frisbie, 2002) was used to spread bait along the roadside and in undeveloped lots. A GT-77 model Herd Spreader mounted to an ATV was used to spread bait around lake areas. Both the bait blower and ATV mounted spreader were calibrated to spread 1.5 lb bait/acre.

Results and Discussion

Ant mound counts from 1/4 acre circles in 8 undeveloped lots (**Table 1**) showed an average of 168 mounds/acre. Baiting was initiated on April 18, 2002. Six weeks after treatments circle counts indicated control levels greater than 67%. A count taken in June before preliminary events were to start in July, showed control levels just above 89%.

A count taken one month before the 2002 Ski Nationals indicated control still better than 85%. It was decided at this time to go ahead and use the Justice Fire Ant Bait around those high-traffic areas where exhibitors would be placing product displays, to maintain a high level of control in that area. Heavy rains fell the day before the week long 2002 Ski National and 2002 Open events, and during the events. Greater than 9 inches of rain fell during that week.

Minimal use of Orthene was required to treat single mounds. Less than 1.5 lb of the Orthene Fire Ant Killer was used during this time, to treat mounds that appeared after all of the rain.

Well after the event, a final count taken before the scheduled fall applications of fire ant bait still showed greater than 60% control of the fire ant. It should be noted that fire ant pressure in the adjacent untreated pasture remained at the level for the duration of the study (**Table 1**).

The Lago Santa Fe Community Fire Ant Project was great a success. During the event, informational packets about imported fire ant management were provided to participants together with temporary tattoos and T-shirts promoting the community-wide fire ant program. It showed that communities working together with the right tools used at the appropriate times will give good lasting control of a fire ant problem. The goal of 100% control may not be reached using the methods employed, but the chance that a resident or visitor may come in contact with the fire ant was dramatically decreased. Of all of the problems encountered during the 2002 Ski Nationals and 2002 Open, fire ants did not even make the list.

Literature Cited

- Drees, B. M. And R. E. Frisbie. 2002. Overview of the Texas Imported Fire Ant Research and Management Project (B. M. Drees, ed.). Southwestern Entomologist Supplement No. 25:1-6.
- Riggs, N. L., L. Lennon, C. L. Barr, B. M. Drees, S. Cummings, and C. Lard. 2002. Community-wide red imported fire ant programs in Texas (B. M. Drees, ed.). Southwestern Entomologist Supplement No. 25:31-42.

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Table 1. Red imported fire ant mounds per 0.25 acre circle plot, Lago Santa Fe, Galveston Co., Texas, treated with the hopper blend of Extinguish™ (s-methoprene) and ProBait™ (hydramethylnon) fire ant baits (0.75 lb each product blended together and applied using ground application equipment) on April 18, 2002.

Number of red imported fire ant mounds/0.25 acre			
<u>Lot Number</u>	<u>April 18 (pre-treatment)</u>	<u>May 28 (6 weeks)</u>	<u>June 12 (8 weeks)</u>
Treated area:			
32	38	8	1
25	48	15	1
24	32	11	3
23	29	11	5
20	41	16	8
2	55	23	9
1	48	18	4
46	47	8	6
Mean ± Stand. Dev.	42.25 ± 8.88	13.75* ± 5.23	4.62* ± 2.97
<i>T</i> =		7.8243	11.3686
n = 8; d. f. = 8; <i>P</i> =		0.0000	0.0000
Percent reduction:		-67.46%	-89.07%
Untreated area (plot):			
1	34	27	28
2	27	28	17
3	12	10	13
4	14	15	17
Mean ± Stand. Dev.	21.75 ± 10.53	20.00** ± 8.91	18.75** ± 6.44
<i>T</i> =		0.2537	0.4859

n = 4; d. f. = 6; $P =$

0.4041

0.3221

Percent reduction:

-8.05%

-13.79%

* Mean significantly different ($P \leq 0.05$) from pre-treatment mean using the Student T test (Microstat).

** No significant reduction in mean number of fire ant mounds per plot