

# **SKIP-SWATH APPLICATION OF AMDRO® AND LOGIC® BROADCAST BAIT FOR THE SUPPRESSION OF THE RED IMPORTED FIRE ANT**

Bastiaan M. Drees, Professor and Extension Entomologist,  
Charles L. Barr, Extension Associate, and  
Michael E. Heimer, County Extension Agent - Agriculture

## **Abstract**

Logic® Fire Ant Bait applied at 0.75 lbs./acre in alternate 35 foot swaths provided similar initial and long-term ant mound suppression to a full rate, full coverage application. Amdro® Fire Ant Granules applied at 0.75 lbs./acre in alternate swaths yielded approximately half the initial mound suppression as a full rate, full coverage application followed by faster reinfestation. A hopper box blend of 0.75 lbs./acre each Amdro and Logic gave quicker initial suppression similar to full rate, full coverage Amdro and long-term suppression similar to an application of Logic only.

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Previous studies have indicated that Logic® Fire Ant Bait (fenoxycarb) is effective at active ingredient concentrations of 1% (regular formulation), 0.5% and 0.25% (Drees, et. al., unpublished). Furthermore, spot applications (3 tablespoons) of Logic to active mounds or along a transect affect fire ant mounds up to 20 feet away in areas of multiple queen infestations (Drees, et. al., 1993). Logic is an insect growth regulator (IGR) and relatively slow to act, taking up to six months to achieve full ant suppression, but reinfestation is very slow and suppression often lasts for over a year. Amdro® Fire Ant Granules (hydramethylnon) is a direct toxicant to worker, larval and reproductive fire ants. Broadcast applications of Amdro usually attain maximum suppression within five to eight weeks. However, reinfestation begins thereafter.

The objectives of this trial were: 1) To evaluate the effectiveness of Amdro and Logic for fire ant suppression when applied at half the label rate (full rate over half the treatment area or skip swath); and 2) To attempt to gain the fast suppression of Amdro plus the long residual effectiveness of Logic with a single application of a hopper mix of half rates of both chemicals.

## **Materials and Methods**

This test was located on the earthen dam impounding Lake Conroe, in Montgomery County, Texas. The area is managed by the San Jacinto River Authority and access is strictly limited to authorized personnel. The site is gently sloping, well drained, and with a few scattered clumps of trees. Vegetation is dominated by Bahia grass closest to the dam graduating to Johnson grass. Due largely to heavy spring rains and flooding, ant densities were somewhat clumped, concentrating on the higher patches of ground within the test plots.

This trial consisted of one-acre square blocks, 210 feet on a side. Plots were established with corners flagged and the centers marked with 3-foot wooden stakes and 6 by 8 inch metal plates nailed into the ground. Minimum of a 30-foot buffer was left between adjacent plots. Before treatment (June 11 and June 15, 1992) fire ant-active mounds were counted within an 83-foot radius circle (approx. 0.5 acre) in the center of each plot. Mounds were considered to contain an active fire ant colony if ants came to the surface in numbers within 15 seconds after disturbance with a pointed stick. Treatments were assigned by first ranking the plots from highest to lowest in active mound numbers. The highest six were blocked into the first replication, the next highest six the second replication, and so on to make four replications. Treatments were numbered from one through six and, using a random number table, were randomly assigned to plots within each block.

The treatments were as follows:

- 1) Untreated Control
- 2) Logic, solid coverage (1.5 lbs total)
- 3) Logic, skip swath coverage (0.75 lbs. total)
- 4) Amdro, solid coverage (1.5 lbs. total)
- 5) Amdro, skip swath coverage (0.75 lbs. total)
- 6) Logic/Amdro (1:1 by weight) hopper mix, solid coverage (1.5 lbs. total)

Application of all treatments was delayed by the threat of thunderstorms until June 24 from approximately 4:30 p.m. to 8:30 p.m. The bait was broadcast using a tractor-mounted Herd® Model 77 seeder. Swath width was 35 feet. Six swaths were required to cover the solid coverage plots and four swaths were applied to the alternate swath plots, two on the outer edges and two roughly straddling the center.

Subsequent evaluations were made on 13 July, 13 August, 25 September, 1992; 13 January and 7 June 1993; and 5 January 1994 using the minimal disturbance technique. Data were analyzed using analysis of variance (ANOVA) and separated using Tukey's studentized range test (PC SAS) at  $P \leq 0.05$ .

## **Results and Discussion**

The broadcast treatment of Amdro® Fire Ant Granules required complete area coverage at full label rate to provide significant initial and long-term suppression (Table 1, Fig. 1). Application of Logic® Fire Ant Bait provided statistically similar suppression at both full rate, full coverage and when applied at the same rate to every other pass across the plot (skip-swath or strip application)(Table 1). The slow-acting nature of Logic is the probable cause of the effects of the treatment extending into the 35 ft. strips left untreated within each skip swath treated plot. Results suggest that the treatment costs of Logic may be reduced considerably. The Amdro plus Logic combination appeared to offer the best characteristics of both products: fast suppression and long-term suppression (Fig. 1, Table 1). Effects of all treatments except for the skip-swath Amdro® application suppressed ant mound numbers relative to the untreated control plots for 12 months. At that time, the Logic®/Amdro® treatment provided numerically greater suppression than other treatments. By 18 month of application, no significant differences between treatments remained.

A primary deterrent to large scale application of fire ant bait products in cattle production systems is cost. Product and application costs are usually in the \$10 per acre range (Drees and Vinson, 1992), making their use unfeasible in most production systems. Applying less product and applying it with less labor are both ways in which costs can be reduced. The use of a mixture of Amdro plus Logic can be a good method of achieving rapid suppression characteristic of Amdro and the long-term effectiveness of Logic.

### **Literature Cited**

- Drees, B. M., C. L. Barr, and S. B. Vinson. 1993. Effects of spot treatments of Logic® (fenoxycarb) on polygynous red imported fire ants: an indication of resource sharing? *Southwestern Entomologist*. 17:4 313-317.
- Drees, B. M. and S. B. Vinson. 1992. Fire ants and their management. TAEX B-1536. Texas A&M University System, College Station, Texas.

**Table 1.** Fire ant active mound numbers per 0.5 acre subplot within one acre treatment plots before and after June 24, 1992 treatments, Conroe, Texas.

Treatment	Mean no. fire ant active mounds/0.5 acre*			
	Pre-count	3-weeks	6-weeks	3-months
untreated control	61.25a	62.50ab	34.00a	52.50a
Logic® solid	60.25a	75.25a	22.50ab	17.50b
Logic® skip-swath	66.50a	61.75ab	21.25ab	13.75b
Amdro® solid	59.00a	20.25b	5.00b	9.50b
Amdro® skip-swath	59.00a	38.25ab	15.50ab	27.75ab
Amdro® + Logic®	59.75a	3.25ab	9.25b	10.25b
<i>F</i>	7.57	2.15	5.19	4.56
<i>R</i> -square	0.8016	0.5336	0.7345	0.7085
<i>P</i> > <i>F</i>	0.0004	0.0964	0.0031	0.0056
Treatment	6-months	12-months	18-months	
untreated control	69.00a	66.75a	100.75a	
Logic® solid	8.25c	14.75bc	70.50a	
Logic® skip-swath	6.75c	14.75bc	55.00a	
Amdro® solid	14.75c	22.25bc	87.75a	
Amdro® skip-swath	41.25b	37.75ab	77.25a	
Amdro® + Logic®	6.50c	6.75c	53.25a	
<i>F</i>	13.44	8.74	0.99	
<i>R</i> -square	0.8776		0.8233	0.4780
<i>P</i> > <i>F</i>	0.0001	0.0002		0.3466

\* Means followed by different letters are significantly different using analysis of variance and Tukey's studentized range test (PC SAS)

**Figure 1.** Fire ant active mound numbers per 0.5 acre subplot within one acre treatment plots before and after June 24, 1992 treatments, Conroe, Texas.

