

EVALUATION OF BIFENTHRIN (TALSTAR®) FORMULATIONS AS INDIVIDUAL FIRE ANT MOUND TREATMENTS

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This is the second trial conducted to evaluate bifenthrin formulations as individual mound drenches to control the red imported fire ant. Previously, a trial was conducted by these authors in 1993 to evaluate the effects of bifenthrin formulations applied as a broadcast application to a turf farm. This trial was conducted to gather information on the effects of bifenthrin formulations (liquid and granular) applied as individual mound treatments.

Materials and Methods

Plots, containing ten fire ant mounds each, were established by marking all active mounds with survey flags contained within a strip 30 feet wide and indeterminate length along an abandoned runway on the Texas A&M Riverside Campus, Brazos County, Texas. Mound activity was determined using the minimal disturbance method. Once a set of ten mounds were marked in a plot, flag color was changed for the next plot and so on. Flags were then placed along one edge of the strip and numbered sequentially to divide the groups of ten mounds into plots. Plot length was then measured using a measuring wheel. These lengths were arrayed from lowest to highest and divided into four equal groups (blocks) to represent four replications. Treatments were randomly assigned within replications (blocks).

The following treatments were applied on 7 October:

<u>Name</u>	<u>Product</u>	<u>Rate</u>	<u>Application Method</u>
bifenthrin treatments:			
0.05g-Low	bifenthrin, 0.05G granular	26.13 g. (1/4 cup)	dry/mound with 1 gal. water
0.05G-High	bifenthrin, 0.05G granular	52.26 g. (1/2 cup)	dry/mound with 1 gal. water
0.2G-Low	Talstar® granular, 0.2G	6.53 g. (1 tsp.)	dry/mound with 1 gal. water
0.2G-High	Talstar® granular, 0.2G	32.65 g. (5 tsp.)	dry/mound with 1 gal. water
Talstar-Low	Talstar® Flowable 14.19 ml.	in 1 gal. drench	
Talstar-High	Talstar® Flowable 22.70 ml.	in 1 gal. drench	
"standard treatment":			
Orthene	Orthene® TT&O (75% WP)	2 tsp.	dry per mound
control treatments:			
CK-Dry	none	---	---
CK-Drench	water	1 gal.	drench per mound

Weather during application was partly cloudy with a temperatures ranging from approximately 80 to 90EF. Soil was moderately moist. Post-treatment evaluations were conducted 10, 15, and 23 October and 6 November using the minimal disturbance technique. The plots were surveyed for

"satellite" mounds, 9 October and 6 November. Results were analyzed using PC SAS PROC Analysis of Variance (ANOVA), with means separated by Tukey's studentized range test ($P \leq 0.05$).

Results and Discussion

All bifenthrin treatments produced significant reductions in active fire ant mound numbers per plot compared to both untreated and water-drenched only control ant mounds throughout the test (**Table 1**). No significant differences in "new", satellite mound formation were documented between treatments. The total number of active mounds in treatment plots (treated mounds + satellite mounds) were significantly fewer at 7 days in all plots that received bifenthrin treatments as compared to numbers of mounds in both control plots. However, there were no significant differences in mound numbers per plot between any treatments one month after treatment. However, the 7.25 "new", satellite mounds documented in plots receiving the 0.2 G bifenthrin treatments suggests, perhaps, that low concentrations of this product may aggravate colony movement rather than eliminating ant colonies. Data from all bifenthrin treatments were both statistically and numerically similar to those from the Orthene[®] TT&O (acephate, 75% dust) "standard treatment" on all evaluation dates.

The one or two mounds remaining active for a week or two in most of the bifenthrin treatments had been, in fact, treated since granular residue could be seen on the surface. The Talstar[®] ant mound drench treatments, on the other hand, resulted in 100% activity elimination within 3 days. It is sometimes difficult to distribute granular material evenly across a mound, particularly when little material is used, such as only 1 teaspoon of the 0.2G product. Another difficulty with granular materials is the possibility of washing the product off instead of into a mound with the post-treatment drench. Though neither of these occurrences were noted during treatment and 98% control is quite good, the mix-and-pour drench still performed a little better and was less time consuming and labor intensive to apply.

Table 1. Number of active red imported fire ant mounds or ten and "new" (satellite) mounds within treatment plots following application of individual mound treatments, Brazos County, Texas, applied Oct. 7, 1995.

<u>Treatment</u>	Mean number of active mounds*							
	----- 3 days -----			7 days			----- 1 month-----	
	<u>count</u>	<u>"new"</u>	<u>tot</u>	<u>count</u>	<u>count</u>	<u>count</u>	<u>"new"</u>	<u>tot</u>
bifenthrin treatments:								
0.05G High	0.25 b	2.00 a	2.25 b	0.00 c	0.50 b	0.00 b	2.75 a	2.75 a
0.05G Low	0.50 b	1.75 a	2.25 b	0.25 c	0.00 b	0.00 b	4.75 a	4.75 a
0.2G High	0.75 b	3.00 a	3.75 b	0.25 c	0.00 b	0.00 b	3.00 a	3.00 a
0.2G Low	0.75 b	1.50 a	2.25 b	0.25 c	1.00 b	0.00 b	7.25 a	7.25 a
Talstar High	0.00 b	1.25 a	1.25 b	0.00 c	0.00 b	0.00 b	3.50 a	3.50 a
Talstar Low	0.00 b	0.75 a	0.75 b	0.00 c	0.00 b	0.00 b	2.00 a	2.00 a
"standard treatment":								
Orthene (std.)	0.25 b	1.00 a	1.25 b	0.00 c	0.50 b	0.00 b	3.00 a	3.00 a
control treatments:								
CK Drench	7.50 a	1.00 a	8.50 a	6.50 b	6.50 a	3.25 a	2.75 a	6.00 a
CK Dry	8.25 a	1.50 a	9.75 a	8.75 a	5.75 a	4.75 a	4.00 a	8.75 a
<i>F</i>	31.42	1.11	10.14	39.49	10.45	15.70	1.84	3.15
<i>P.</i>	0.0001	0.3979	0.0001	0.0001	0.0001	0.0001	0.1020	0.0091
MSD 2.453		3.6402	4.3544	2.2062	3.3554	1.8895	7.7812	7.5261
d.f.=24								
Crit. Val.=4.807								

* Means followed by the same letter are not significantly different ($P \leq 0.05$) using PC SAS ANOVA and Tukey's Studentized Range test for mean separation.