

**EVALUATION OF ISAZOPHOS (TRIUMPH®) FORMULATIONS
FOR RED IMPORTED FIRE ANT SUPPRESSION
ON A COMMERCIAL TURF FARM**

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Triumph® 4E (isazophos) is a contact insecticide registered for use on turf for the control of turf pests such as white grubs, mole crickets, chinch bugs, sod webworms and armyworms. It is currently not registered for control of the red imported fire ant (RIFA), *Solenopsis invicta* Buren, although several previous test have documented that this product does not affect this pest.

This trial was conducted to provide further documentation of the efficacy of Triumph 4E and a new formulation, Triumph 1G, against the RIFA. In addition, plots were established to determine if post-treatment irrigation improved the performance of these products.

Materials and Methods

The Walton Turf Farm in Harris County was selected for this trial . On June 8, 1990, Ten one acre square plots were established. The plots were roughly in aline two wide and five deep. The rows were separated by a 20 foot buffer and plots within rows were separated by a buffer of from 10 to 5 feet. The following treatment were applied to each row of five plots:

- 1) Triumph 1G at 1 lb AI and 2 lb AI applied with a granular fertilizer spreader.
- 2) Triumph 4E at 1 lb AI and 2 lb AI applied with an all-terrain vehicle mounted spray apparatus delivering 20 gallons/acre.
- 3) An untreated check plot was left in each row.

The western-most row of plots received a thorough soaking via a rolling stationary irrigation system within 24 hours of treatment application. The eastern row of plots did not receive water until five days later (June 13), after the first follow up evaluation.

An initial count of active RIFA mound was made prior to treatment by using a center stake with a 105 ft. string attached to circumscribe a uniform area within each square acre (approx. 0.8-acre). The number of active mounds were recorded form within each (0.2 acre) quadrant of this circular area. A mound was considered active if ant swarmed to the surface with in a few seconds of

disturbance. Since the area was quite dry and hot, the time and disturbance required for ant emergence varied greatly. Disturbance techniques included kicking, poking with a sharp stick, and deeper digging with a shovel. The latter method was employed in all subsequent evaluations (1 week - 13 June, 3 week - 26 June, 4 week - 10 July, and 8 week - 2 August).

The mean number of active mounds within the 0.2 acre quadrants was calculated and data were statistically analyzed using ANOVA and the Least Significant Difference (LSD) test ($P \leq 0.05$).

Results and Discussion

The results (**Table 1**) of the first evaluation were most intriguing. There was far less decrease in active mound numbers or ant observed in the non-irrigated plots relative to pretreatment levels. However, mound numbers decreased significantly in all irrigated Triumph-treated plots (Triumph 1G 1 lb a.i. = 100%, 1G 2 lbs a.i. = 77%, 4E 1 lb a.i. = 69%, 4E 2 lbs = 72% reduction according to Henderson's formula). Although the results of analysis indicate a significant reduction in non-irrigated Triumph-treated plots relative to the non-irrigated untreated plot after 1 week, this resulted from 1) an increase in the active mound numbers detected in the untreated plot relative to pretreatment numbers, and 2) numerical decreases occurred only in the Triumph 1G 2 lbs a.i. and Triumph 4E 2 lbs a.i. treated plots relative to pretreatment levels.

One striking feature was the difference in mound appearance between the treated and untreated plots in the irrigated test. Because of the very dry conditions, all the mounds encountered initially were very low and indistinct with almost no granular, moundish appearance so distinctive of RIFA colonies. After the irrigation though, in the untreated irrigation plot, mounds were very loose, distinct, and built up. In the treatment plots, however, the surviving mounds were still indistinct with the soil virtually undisturbed. Ants in the untreated mounds were extremely active while the treated mounds had to be poked and/or dug vigorously to obtain any ant response.

At 3 weeks post-treatment, all Triumph-treated plots had been irrigated and all were found to have significantly fewer active RIFA mounds than untreated plots. This condition persisted through the remainder of the evaluation period (**Table 1**). Actual reductions of active mound numbers following a single application of a surface toxicant is usually not expected since the toxicant does not usually penetrate sufficiently deep into the soil to reach the queen(s) and brood. However, the mounds in this site were small and disturbed with frequent mowing and watering. Furthermore, irrigation was applied to thoroughly soak the sod for a 12 hour period. This practice produced saturated conditions, forcing the ant colonies to move up, into contact with treated soil surfaces. Mortality of II ant stages in colonies resulted.

Statistically, the formulation tested produced similar reductions of mound activity. Numerically, however, the Triumph 4E treatments were not as effective as were the granular formulation treatments (**Table 1**, weeks 4 and 8). Increases of rates from 1 to 2 lbs a.i. did not improve control. Reinfestation of RIFA colonies into the treated plots did not occur within the monitoring period.

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Table 1. Mean number of active red imported fire ant mounds per 0.2 acre subplot, Harris County, Texas, 1990.

	Number active mounds per 0.2-acre ^{a/}				
	8 June	13 June	26 June	10 July	2 Aug.
Treatment	Pre-count	1-week	3-week	4-week	8-week
Irrigated					
Untreated	5.50 abcde	9.75 a	3.25 ab	9.0.0 a	13.25 a
1lb AI, 1G	5.00 bcdefg	0.00 e	0.00 c	0.25 c	0.50 b
2lb AI, 1G	5.50abcdef	2.25 bcde	0.50 bc	0.25 c	0.50 b
1lb AI, EC	6.75 ab	3.75 bcd	1.00 bc	1.00 c	3.75 b
2lb AI, EC	3.75 cdefgh	0.25 de	0.00 c	0.00 c	1.50 b
Non-irrigated					
Untreated	5.75 abc	10.00a	5.50 a	4.50 b	12.25 a
1lb AI, 1G	2.25 h	4.00bc	0.00 c	0.00 c	0.25 b
2lb AI, 1G	7.75 a	2.25 bcde	0.50 bc	0.00 c	0.00 b
1lb AI, EC	3.75 cdefgh	9.75 b	1.00 bc	1.00 c	2.75 b
2lb AI, EC	5.75 abcd	3.25 bcde	0.00 c	0.25 c	0.75 b
LSD 5%	2.191	3.099	2.619	2.163	4.028

^{a/} Means followed by different letters are not significantly different according to ANOVA and the Least Significant Difference (LSD) test ($P \# 0.05$).