

**Efficacy of Hydramethylnon Formulated on a Lightweight Aggregate Carrier
for the Control of Red Imported Fire Ants
Coulter Field, Brazos Co., Texas - 1998**

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The TXI Corporation, one of the largest suppliers of aggregates in the world, produces what is called a lightweight aggregate - a dark brown to black, hard, porous, rock-like material that can be ground and screened to any size from near-dust to over half and inch. Previous tests used lightweight aggregate as a carrier for chlorpyrifos, a contact insecticide. Results showed the formulation to be very effective in controlling individual colonies of red imported fire ants (*Solenopsis invicta* Buren) with less dust, and therefore applicator hazard, than a commercial formulation using a vermiculite-type formulation. This test was conducted to determine the suitability of lightweight aggregate as a carrier for broadcast application of a conventionally formulated (soybean oil based) bait using 0.7% hydramethylnon (Amdro[®]) as the active ingredient.

Materials and Methods

This test was included in another test (see Bifenthrin Individual Mound Treatment and Broadcast Treatment Comparison Test for additional details) to make more efficient use of space and effort. Results for the lightweight aggregate treatment were analyzed separately for this report. The test was located at Coulter Field, a municipal airport serving Bryan/College Station, Brazos Co., Texas. The site was gently sloping with shallow, sandy loam soils over a claypan. The test area was covered by native grasses and forbs which had been mowed, but never grazed, for many years. Vegetation ranged from lush to sparse over the course of the test and the site.

Plots consisted of 100 x 100 foot squares (0.23 ac). The sampling area for all plots was a central circle, 40 feet in radius (0.115 ac.). The product was extremely oily and would not flow through a broadcast spreader. Therefore, applications were made using a hand-held shaker can. Treatments were replicated four times and included: 0.73% hydramethylnon formulated on lightweight aggregate, broadcast Amdro[®] (0.73% hydramethylnon) and untreated control.

Treatments were applied 30 April 1998. Evaluations were conducted on 8, 15 and 29 May using the minimal disturbance technique to determine activity of mounds. By June 1 the area had received no rain in over a month and was experiencing 100-degree days. Mound building/rebuilding ceased making it nearly impossible to locate ant colonies. The drought continued into September with the area receiving no rain whatsoever. The site was mowed by Extension personnel in early September in anticipation of an evaluation within the next few weeks. By the time rain and cooler weather were received, the site had been re-mowed by City of Bryan personnel, destroying all plot markers and the test was abandoned.

Results

Mean number of active mounds per 0.11 acre sampling area (4 replications)

<u>Treatment</u>	<u>pre-count</u>	<u>10 day</u>	<u>14 day</u>	<u>30 day</u>
Untreated	13.75 a	16.50 a	14.75 a	11.75 a
Aggregate + hydramethylnon	13.75 a	16.25 a	12.25 a	10.00 a
Amdro	13.75 a	7.75 a	6.75 a	2.25 a
<i>F</i>	9.44	3.46	1.82	3.43
Probability	0.0082	0.0813	0.2426	0.0828
R ²	0.8872	0.7426	0.6031	0.7407
Min. sig. diff.	3.2341	9.6279	11.411	9.5461

Means in the same column followed by different letters are significantly different ($P < 0.05$) using PC SAS analysis of variance and Tukey's studentized range test to separate means.

Discussion

Results indicate that 0.73% hydramethylnon formulated on TXI lightweight aggregate had little effect on fire ant mound numbers. Despite not showing any statistical differences due to high variability, the conventionally formulated Amdro bait produced an average 80% reduction in mound numbers versus untreated control plots. The reason for the failure of the aggregate to control is probably twofold. First, the material was very oily and caked, making it impossible to spread using regular broadcasting equipment. It was also considerably more dense than conventional bait resulting in there being very little volume of material to spread. Consequently, spreading was non-uniform and, even had it been uniform, very sparse on a granule per unit area basis. The second reason, supported by informal laboratory tests, is that fire ants were simply not attracted to lightweight aggregate granules saturated with soybean oil. Why they are not attracted is unknown.

Despite disappointing results in this test, TXI lightweight aggregate still appears to hold promise as a carrier for contact-type insecticides that are "dry" when formulated.

Acknowledgment

The author would like to thank the American Cyanamid Co. for their cooperation in formulating the TXI lightweight aggregate with 0.73% hydramethylnon in soybean oil.