

EVALUATION OF AMDRO® (HYDRAMETHYLNON) FORMULATIONS FOR SUPPRESSION OF RED IMPORTED FIRE ANTS

Bastiaan M. Drees, Professor and Extension Entomologist,
Charles L. Barr, Extension Associate and
David McGregor, County Extension Agent - Agriculture

Amdro® Granular Insecticide (hydramethylnon) is an effective bait-formulated insecticide registered for use in landscapes and pastureland. New formulations of hydramethylnon have been developed, one incorporating the queen pheromone and another using a corn cob grit carrier. These new formulations were evaluated, along with a simultaneous application of Amdro plus fertilizer.

Materials and Methods

This trial was conducted in a pasture on the Look Ranch near Hempstead in Waller County, Texas. Thirty two plots, 0.5 acre squares were established, each containing a 0.2 acre circular sampling subplot area. Prior to treatment, the number of active mounds was documented for each subplot. Plots were arrayed from highest to lowest mound density and divided into four blocks (replicates). Treatments were assigned randomly within each block and included:

<u>Treatment</u>	<u>Rate</u>
1. Amdro® cob formulation	5-6144 Batch 5-150 1 CW, applied 52.6 lb. per plot
2. Amdro®, experimental	Lot# AC9902-94A, "Experimental Amdro", 1.5 lbs./acre
3. Amdro® + pheromone "med"	Lot# AC9677-60, 0.5% Hyd + 0.01% pher., 1.5 lbs./acre
4. Amdro® + pheromone "high"	Lot# AC9677-61, .73% Hyd + 0.01% pher., 1.5 lbs./acre
5. Amdro® standard	24567-08, 429101E, 1.5 lbs./acre
6. Urea + Amdro®	50 lbs. of 38%N urea + 1.5 lbs. Amdro/acre applied simultaneously
7. Urea	50 lbs. of 38%N urea
8. untreated control	---

Treatments were applied 8 and 9 August, 1995 using broadcast application equipment: the fertilizer in treatment 6 was applied with a PTO-driven fertilizer spreader. Treatments 2 through 4 were applied using a hand-held Cyclone 1C1 seeder, and Amdro in treatments 5 and 6 and the Amdro cob formulation in treatment 1 were applied using a Herd GT77 electric powered spreader.

Periodically following treatment, subplots were monitored for active ant mounds. Active mounds were rated on a scale from 1 to 5 (1 = 5 - 25 ants; 2 = 25-50 ants; 3 = 50 - 100 ants; 4 = "normal mound"; 5 = unusually large, active mound). Results were evaluated using analysis of variance (ANOVA) and means were separated using Tukey's Studentized Range Test ($P \leq 0.05$).

Results and Discussion

No significant differences were found between the performance of any of the experimental Amdro® formulations and the untreated control based on number of active mounds per 0.2 acre subplot area except during week 4 after treatment (**Table 1**). At that time, the experimental Amdro formulation performed numerically better than other treatments, but the addition of queen pheromone did not increase performance. Means from the cob formulation of Amdro and urea applied alone were not significantly different from the untreated control. Application of Amdro® simultaneous with fertilizer performed statistically as well as when applied alone.

Results of mound rating efforts documented treatment differences only on weeks 2 and 4 after application (**Table 2**). All Amdro®-based treatments performed similarly and had ratings significantly lower than those of untreated control plot mounds. Dry weather during the course of this trial suppressed ant activity in all plots. By 8 weeks after treatment, ant activity (in terms of number of active mounds per unit area) had returned to pre-count levels or higher (Table 1). The overall performance of Amdro in this trial was rather disappointing, with a maximum suppression of 74 percent 4 weeks after treatment.

Table 1. Number of active red imported fire ant mounds before and after treatment using Amdro® (hydramethylnon) formulations, Look Ranch, Waller County, Texas, treated 8 and 9 August 1995.

<u>Treatment</u>	Mean no. active fire ant mounds/0.2 acre subplot ^a					
	<u>Pre-count</u>	<u>48 hrs</u>	<u>1 wk</u>	<u>2 wks</u>	<u>4 wks</u>	<u>8wks</u>
Exp. Amdro®	30.5	19.8	10.8	13.8	5.0c	35.0
Amdro + Pher. "Med."	27.5	21.5	11.0	11.0	6.8bc	31.0
Amdro + Pher. "High"	27.5	21.5	13.0	12.3	9.3abc	38.0
Amdro standard	27.8	23.0	17.3	14.0	6.5bc	35.0
Urea+Amdro	28.0	NA	11.8	11.3	8.5bc	66.0
Urea	29.8	NA	18.5	15.5	14.0abc	76.0
Amdro cob formulation	30.8	N/A	17.5	15.3	16.5ab	81.0
untreated control	29.3	26.0	19.0	24.3	19.0a	65.0

^a Means followed by different letters are significantly different ($P < 0.05$) using PC SAS, ANOVA and Tukey's Studentized Range test. Statistical analysis for 48 hr., 1 and 2 week evaluations did not include Amdro cob formulation and the two urea treatments.

Table 2. Ratings of active red imported fire ant mounds following treatment using Amdro® (hydramethylnon) formulations, Look Ranch, Waller County, Texas, treated 8 and 9 August 1995.

<u>Treatment</u>	Mean rating of active fire ant mounds/0.2 acre subplot ^a				
	<u>48 hrs.</u>	<u>1 wk</u>	<u>2 wks</u>	<u>4 wks</u>	<u>8 wks</u>
Exp. Amdro®	4.00	3.96	3.05b	2.80b	3.77
Amdro + pher. "Med."	3.70	3.89	3.09b	2.56b	3.81
Amdro + pher. "High"	3.71	3.54	2.73b	2.51b	3.68
Amdro standard	4.10	2.57	2.05b	2.31b	3.06
untreated control	3.96	4.12	3.34a	3.34a	3.65

^a Means (total rating/total number of active mounds) followed by different letters are significantly different ($P < 0.05$) using PC SAS, ANOVA and Tukey's Studentized Range test. Statistical analysis for 48 hr., 1 and 2 week evaluations did not include Amdro cob formulation and the two urea treatments. Ratings: 1 = 5 - 25 ants; 2 = 25-50 ants; 3 = 50 - 100 ants; 4 = "normal mound"; 5 = unusually large, active mound. NOTE: all ratings are subjective and may have varied with temperature and time of day on each evaluation date.